
Draft

**ENVIRONMENTAL ASSESSMENT
FOR FISH PASSAGE AND HABITAT
IMPROVEMENTS TO DRY CREEK**

**YUBA AND NEVADA COUNTIES,
CALIFORNIA**

Prepared on behalf of:

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Pacific Southwest Region
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LIST OF ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
µg/kg	Microgram(s) per kilogram
µg/m ³	Microgram(s) per cubic meter
%	Percent
9 RW	9 th Reconnaissance Wing
ACAM	Air Conformity Applicability Model
AFB	Air Force Base
AFI	Air Force Instruction
AFOSH	Air Force Occupational and Environmental Safety, Fire Protection, and Health
AQCR	Air quality control region
BMP	Best management practice
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CALTRANS	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CO	Carbon monoxide
CO _{2e}	Carbon dioxide equivalent
CRM	Cultural Resource Manager
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DoD	Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
FRAQMD	Feather River Air Quality Management District
ft	Foot (feet)
GHG	Greenhouse gas

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

in.	Inch(es)
INRMP	Integrated Natural Resources Management Plan
IPaC	Information for Planning and Consultation
mgd	Million gallon(s) per day
NA	Data not available
NAAQS	National Ambient Air Quality Standards
ND	Not detected
NEPA	National Environmental Policy Act
NH ₃	Ammonia
NHPA	National Historic Preservation Act of 1966
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NO _x	Nitrogen oxides
NRHP	National Register of Historic Places
Pb	Lead
PM _{2.5}	Particulate matter equal to or less than 2.5 microns in diameter
PM ₁₀	Particulate matter equal to or less than 10 microns in diameter
ppm	Part per million
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
RM	River Mile
SHPO	State Historic Preservation Officer
SO _x	Sulfur oxides
SR	State Route
SSR	Shingle Springs Rancheria
SSPP	Strategic Sustainability Performance Plan
SWA	Spenceville Wildlife Management and Recreation Area
UAIC	United Auburn Indian Community
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile organic compound

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EXECUTIVE SUMMARY

INTRODUCTION

This Environmental Assessment (EA) has been prepared to analyze impacts from the proposed improvements to fish passage and spawning habitat along Dry Creek in the vicinity of Beale Air Force Base (AFB), California. The U.S. Air Force (USAF) has partnered with the U.S. Fish and Wildlife Service (USFWS) to complete this project and each agency has a particular role. The USAF and USFWS are joint lead agencies for this project and have jointly prepared the EA, per 40 CFR § 1501.5. USFWS is providing engineering, design, and fish passage expertise for the project, and USAF would fund all project components occurring on Beale AFB. External funding is being secured to implement the off-base work.

Dry Creek, a tributary to the Bear River, flows for approximately 19 miles southwest from its headwaters in Nevada County, California, through Beale Lake on Beale AFB in Yuba County, and finally joins the Bear River near the city of Rio Oso. Anadromous fish, or fish that migrate up rivers from the ocean to spawn, utilize Dry Creek as part of their native spawning grounds. Two barriers currently impede fish passage on Dry Creek: (1) the River Mile (RM) 6.2 Low Flow Crossing approximately 7.35 miles downstream from the Beale AFB boundary, and (2) Beale Lake Dam on Beale AFB. As a result, fish native to Dry Creek, which historically migrated throughout the Central Valley of California up the Sacramento, Feather, and Bear rivers, are restricted in their ability to pass through these last remaining obstacles to access their native spawning grounds.

This document has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code 4321 et seq.); the Council on Environmental Quality regulations implementing the procedural provisions of NEPA, 40 Code of Federal Regulations (CFR) Parts 1500–1508; and USAF policy and procedures (32 CFR Part 989). In addition, this document is also intended to comply with the requirements of the California Environmental Quality Act (CEQA) (California Public Resources Code 21000-21177) and the Guidelines for CEQA (Sections 15000-15387, California Code of Regulations, Title 14, Chapter 3) for the purposes of fulfilling state permitting requirements.

PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to reduce the USAF liability associated with aging dam infrastructure and to improve fish passage and create spawning habitat for anadromous salmonids in Dry Creek including Chinook salmon (*Oncorhynchus tshawytscha*) and the federally threatened Central Valley steelhead (*Oncorhynchus mykiss*).

The Proposed Action is needed for multiple reasons: dam liability, poor fish passage, and nonviable fish spawning habitat. Beale Lake Dam on Beale AFB is not structurally secure. A U.S. Army Corps of Engineers (USACE) study found Beale Lake Dam to have an overall condition of “poor” (USACE 2016). Currently, the dam’s right abutment is compromised and unstable, and the left abutment is undermined. USACE recommends that USAF implement strategies to improve the safety of the dam structure. The USAF does not require a lake or dam

to meet its current mission. The long-term maintenance of the dam, and the potential liability for the dam's failure, present an unacceptable risk. Further, the cost to safely maintain the dam is substantial.

The Proposed Action is also needed because two fish passage barriers in Dry Creek (RM 6.2 Low Flow Crossing and Beale Lake Dam) currently impede the upstream migration of adult salmonids. A fish ladder is present at Beale Lake Dam; however, the fish ladder is undersized and inhibits passage of anadromous salmonids across a wide range of flows due to excessive turbulence (USFWS 2016). In addition, USFWS has identified that the potential spawning areas located upstream of Beale Lake Dam do not represent viable spawning habitat and need to be enhanced for the project to be successful at improving anadromous fish production.

DESCRIPTION OF THE ALTERNATIVES

Preferred Alternative

RM 6.2 Low Flow Crossing

Under the Preferred Alternative, the RM 6.2 Low Flow Crossing would be removed by excavating the existing slab and rebar, and the associated materials would be transported offsite for recycling at an approved facility. Construction activities would generally involve ground disturbance by heavy construction equipment such as backhoes, bulldozers, graders, wheel rollers, and dump trucks. Sediment removed during construction would be hauled off site and disposed of in accordance with state and federal regulations. A potential disposal facility includes the Ostrom Road Landfill in Wheatland, California (approximately 4 miles northeast of RM 6.2). Dewatering would involve mechanical dredging or related equipment or procedures (pumps, cofferdams, siphons, dewatering areas, etc.). After removal of the barrier, a low flow stream channel would be installed. The resulting channel would be graded to match the grade immediately upstream and downstream of the existing slab. It is anticipated that the disturbed areas outside of the stream bed and existing roads would be seeded following construction with an appropriate stabilizing seed mixture (USFWS 2018b). The seed mixture would meet Beale AFB standards and would be free from noxious weeds.

Beale Lake Dam and Beale Lake Falls

Under the Preferred Alternative, Beale Lake Dam and the existing fish ladder would be fully removed, and Beale Lake would be restored to a free-flowing stream. All exposed portions of the abandoned sewer line located downstream of the dam would also be removed.

Dam removal would include the use of heavy construction equipment such as backhoes, bulldozers, graders, wheel rollers, and dump trucks. No explosives would be utilized. Sediment blocked by the dam would be removed and reused to support project designs. Dewatering may involve mechanical dredging or related equipment or procedures (pumps, cofferdams, siphons, dewatering areas, etc.). The footbridge crossing Beale Lake and Beale Lake Dam would be retained.

Following removal of Beale Lake Dam, the lakebed would be restored to a stream channel. This stream channel would be comprised of adequately sized rock, similar in character to the natural streambed, to help stabilize the lakebed. The channel would also include a low flow channel designed to provide fish passage and habitat under seasonal low flow periods. The upper portion of the restored stream channel would include larger rock to help facilitate fish passage and prevent erosion in the area of Beale Lake Falls.

Gravel Injection Sites

Under the Preferred Alternative, gravel injections would occur at four locations upstream from Beale Lake Dam. These gravel injections would occur outside of the natural low flow channel of Dry Creek, which would allow the gravel material to be naturally distributed downstream of the injection sites during high flow events. A total of approximately 2,000 tons of 0.25- to 5-inch spawning gravel would be equally distributed between the four dump sites (USFWS 2019a). This material would be deposited in the selected locations by dump trucks. It is not anticipated that any grading, tree clearing, or other site alterations would be necessary for the trucks to access these locations. The deposited gravel material would create viable spawning beds as the material washes downstream and naturally settles in the stream channel. Given the uncertainty of where the spawning gravel may deposit, post-project monitoring would be conducted by USFWS to assess gravel mobility and fate. USFWS anticipates that these gravel injections would create spawning beds comprised of suitable grain size and properties to support spawning of anadromous salmonids in Dry Creek. The placement of gravel in the stream as part of this project would be a one-time event. Long-term monitoring by USFWS would determine if additional gravel injections would be necessary in the future to maintain the spawning habitat.

No Action Alternative

RM 6.2 Low Flow Crossing

Under the No Action Alternative, the RM 6.2 Low Flow Crossing would not be removed. This barrier would continue to hinder the upstream migration of anadromous salmonids.

Beale Lake Dam and Beale Lake Falls

Under the No Action Alternative, Beale Lake Dam would not be removed and fish passage past Beale Lake Falls would not be enhanced. Beale Lake Dam would continue to impede upstream migration of anadromous salmonids. In June 2016, USACE inspected Beale Lake Dam and stated the dam's overall condition as "poor." They noted that the right dam abutment was compromised and not stable, and the left abutment was undermined (USACE 2016). Beale Lake Dam's structural condition would continue to deteriorate and eventually fail or require significant efforts to address its structural deficiencies. The exposed and abandoned sewer pipe would remain.

Gravel Injection Sites

Under the No Action Alternative, gravel spawning beds would not be enhanced through a series of gravel injections. These potential spawning areas would remain non-viable habitat for spawning salmonids. In addition, as neither the RM 6.2 Low Flow Crossing nor Beale Lake Dam would be removed under this alternative, anadromous fish would not be able to access these potential spawning areas.

Alternatives Not Meeting the Purpose and Need

Removal of the RM 6.2 Low Flow Crossing, Rehabilitation of the Beale Dam Fish Ladder, and Creation of Spawning Habitat for Anadromous Salmonids in Dry Creek

Rehabilitation of the Beale Lake Dam Fish Ladder, accompanied by removal of the RM 6.2 Low Flow Crossing and creation of spawning habitat for anadromous salmonids in Dry Creek as described above, was included as an assessed alternative but does not meet the Purpose and Need of the proposed project. There is currently a fish ladder at Beale Lake Dam; however, this fish ladder is undersized and is classified as a barrier at most flows by USFWS because excessive turbulence in the fish ladder pools creates suboptimal conditions for upstream fish passage (USFWS 2016). While modifications to the existing fish ladder would improve upstream passage, it would still be undersized given the range of flows that it must operate within.

Rehabilitation of the Beale Lake Fish Ladder would include replacing the existing fish ladder with a pool and chute fish ladder design. The pool and chute fish ladder would be the best fish ladder design for this location as it is capable of operating across a wide range of flow conditions (USFWS 2016). The most likely location for the pool and chute fish ladder would be within the existing spillway, with the ladder aligned parallel to the Dry Creek channel downstream of the dam, thereby improving fish entrance conditions and reducing false attraction of fish to the dam spillway (USFWS 2016). The exposed and abandoned sewer pipe would still be removed.

Although this alternative would improve fish passage in Dry Creek, it would not meet the purpose and need of the Proposed Action because it does not reduce the long-term liability associated with the aging dam infrastructure. In June 2016, USACE inspected Beale Lake Dam and stated the dam's overall condition as "poor." They noted that the right dam abutment was compromised and not stable, the left abutment was undermined. As a result, USACE recommended that USAF develop both short- and long-term strategies to improve the safety of the structure (USACE 2016). USAF does not need the lake or the dam to meet its mission. Long-term maintenance of the dam would impose an unnecessary burden on Base Command to ensure its safe operation.

SUMMARY OF ENVIRONMENTAL IMPACTS

Table ES-1 provides a brief summary and comparison of potential impacts under each alternative.

Table ES-1 Comparison of Environmental Consequences

Resource Area	Preferred Alternative	No Action Alternative
Noise	Short-term, negligible	None – No change
Air Quality and Greenhouse Gases	Short-term, negligible	None – No change
Land Use, Agriculture, Recreation, and Aesthetics	<i>Land Use:</i> None – No change <i>Agriculture:</i> None – No change <i>Recreation:</i> Short-term, minor, adverse Long-term, negligible <i>Aesthetics:</i> Short-term, minor, adverse Long-term, beneficial	<i>Land Use:</i> None – No change <i>Agriculture:</i> None – No change <i>Recreation:</i> None – No change <i>Aesthetics:</i> None – Long-term, minor, adverse
Geologic, Mineral, and Soil Resources	<i>Soils:</i> Long-term, minor, adverse <i>Minerals:</i> None – No change <i>Geology:</i> Negligible <i>Topography:</i> No impact	None – No change
Water Resources	<i>Surface Water:</i> Short-term, minor, adverse Long-term, beneficial <i>Groundwater:</i> Long-term, negligible <i>Wetlands:</i> Long-term, minor, adverse <i>Floodplains:</i> None – No change	<i>Surface Water:</i> Long-term, minor, adverse <i>Groundwater:</i> None – No change <i>Wetlands:</i> Long-term, minor, adverse <i>Floodplain:</i> None – No change
Coastal Zone Management	None – No change	None – No change
Biological Resources	<i>Vegetation:</i> Short-term, minor, adverse Long-term, moderate, adverse Long-term, beneficial <i>Wildlife:</i> Short-term, minor, adverse Long-term, moderate, adverse Long-term, beneficial <i>Threatened and Endangered Species:</i> Short-term, minor, adverse Long-term, minor, adverse Long-term, beneficial	<i>Vegetation:</i> None – No change <i>Wildlife:</i> Long-term, moderate, adverse <i>Threatened and Endangered Species:</i> Long-term, moderate, adverse
Human Health and Safety	Short-term, minor, adverse Short-term, negligible Long-term minor, adverse	Long-term, minor, adverse
Utilities and Infrastructure	Short-term, minor, adverse Long-term, beneficial	Long-term, moderate, adverse
Transportation and Traffic	Short-term, minor, adverse	None – No change
Hazardous Materials and Wastes	Short-term, negligible	None – No change
Socioeconomic Resources, Population, Public Services, and Environmental Justice	<i>Socioeconomics:</i> Short-term, beneficial <i>Population:</i> None – No change <i>Public Service:</i> None – No change <i>Environmental Justice:</i> No impact	None – No change
Cultural and Tribal Cultural Resources	None – No change	None – No change
Energy Resources	Long-term, minor, adverse	None – No change
Wildfires	None – No change	None – No change

Unavoidable adverse effects would result from implementation of the Proposed Action. These effects are anticipated to be minor.

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1. PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

This Environmental Assessment (EA) defines the scope of the action as well as viable or reasonable alternatives to support improvements to fish passage and spawning habitat along Dry Creek in the vicinity of Beale Air Force Base (AFB), California (Figure 1). The U.S. Air Force (USAF) has partnered with the U.S. Fish and Wildlife Service (USFWS) to complete this project and each agency has a particular role. The USFWS' role will be to provide engineering, design, Endangered Species Act (ESA) Section 7 compliance surveys and reports, and fish passage expertise for the project, while Beale AFB will provide funding and cultural resource expertise. The USAF and USFWS are the joint lead agencies for this project and will supervise preparation of the EA. The USAF would fund all project components occurring on Beale AFB. External funding is being secured to implement the off-base work. Both USAF and USFWS will review NEPA documentation and provide signatories for the final EA and Finding of No Practicable Alternative (FONPA) or Finding of No Significant Impact (FONSI), as appropriate.

The Sikes Act (16 U.S. Code 670[a][1]) requires the Department of Defense (DoD) to carry out programs for the conservation and rehabilitation of natural resources on military installations and further requires that each installation with significant natural resources develop and implement an Integrated Natural Resources Management Plan (INRMP). The Act states that installations must have "sustainable multipurpose use of resources, which shall include hunting, fishing, trapping, and non-consumptive use," in addition to preparation and implementation of an INRMP. The Beale AFB INRMP, approved in accordance with the Sikes Act, is an interagency agreement clarifying how natural resources on Beale AFB are managed to meet federal, state, and local standards. The interagency agreement includes Beale AFB, USFWS, National Marine Fisheries Service (NMFS), and California Department of Fish and Wildlife (CDFW). The Beale AFB INRMP calls for the removal of Beale Lake Dam and other impediments to fish passage in Dry Creek in partnership with USFWS during fiscal year 2020 to help meet installation goals of improving upstream passage of steelhead and fall-run Chinook salmon, and achieve Sikes Act goals under the umbrella of "sustainable multipurpose use of resources" (Beale AFB 2018a). In addition, this project allows the USAF to meet Endangered Species Act (ESA) Section 7(a)(1) requirements for federal agencies to carry out programs for the conservation of endangered and threatened species.

Dry Creek, a tributary to the Bear River, flows for approximately 19 miles southwest from its headwaters in Nevada County, California, through Beale Lake on Beale AFB in Yuba County, and finally joins the Bear River near the city of Rio Oso. Anadromous fish, or fish that migrate up rivers from the ocean to spawn, utilize Dry Creek as part of their native spawning grounds by swimming upstream (to the northeast) each year to spawn. This migration is impeded by two man-made obstructions: Beale Lake Dam (on Beale AFB property), and a low flow agricultural crossing at RM 6.2 (sited on private property downstream of Beale AFB). If Beale AFB is to succeed in achieving their restoration goals of improving habitat for anadromous salmonids in Dry Creek, they must restore fish passage at both Beale Lake Dam and at the RM 6.2 Low Flow Crossing. Once the spawning areas become accessible for salmonids in Dry Creek, habitat

quality improvements will be needed to ensure viable spawning habitat in the newly accessible upstream reaches.

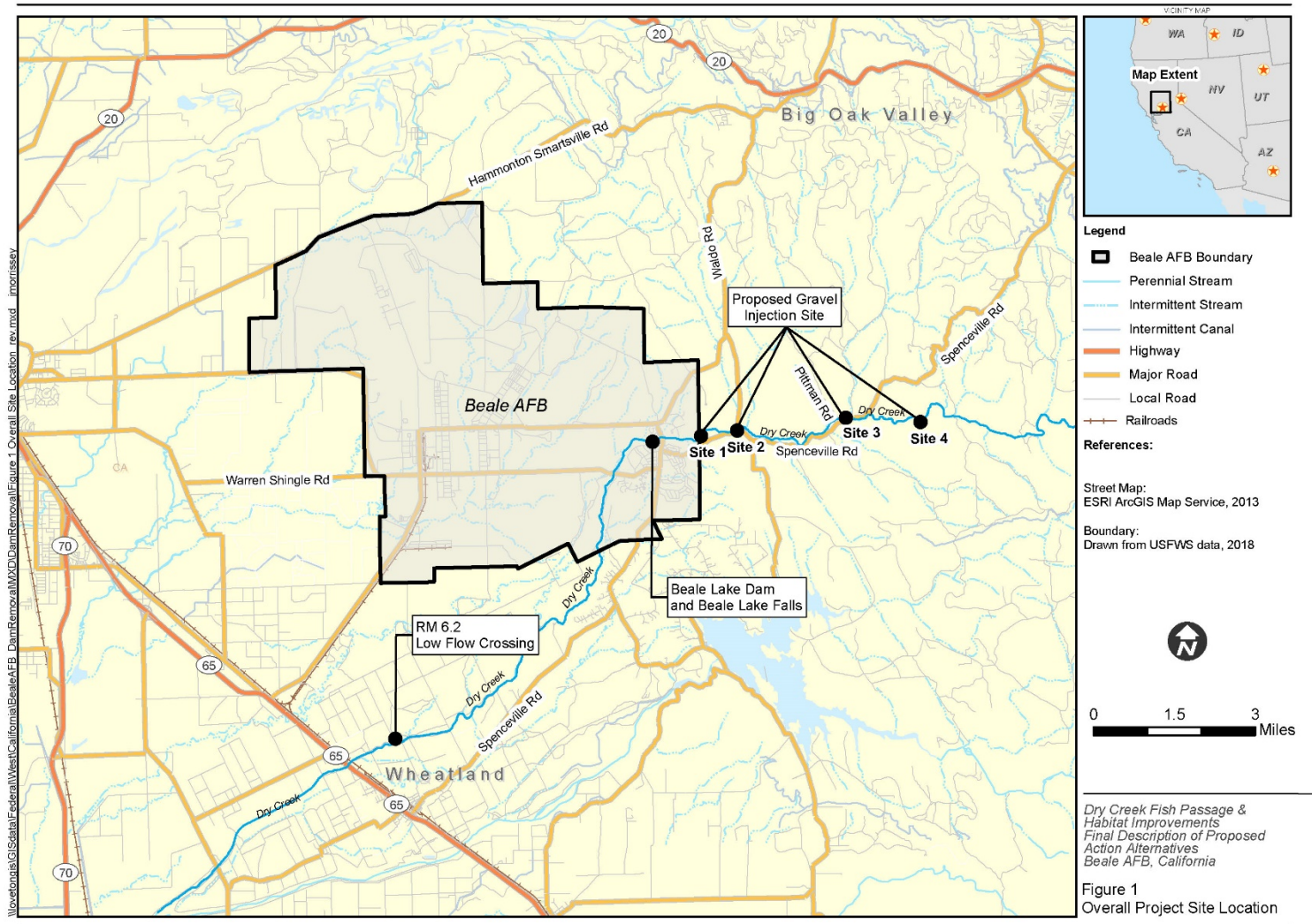
Because these off-base actions are not conventional for USAF installations, and because of the fish passage expertise housed within the USFWS, Beale AFB is partnering with the USFWS to accomplish this Proposed Action.

This document has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code 4321 et seq.); the Council on Environmental Quality (CEQ) regulations implementing the procedural provisions of NEPA, 40 Code of Federal Regulations (CFR) Parts 1500–1580; and USAF policy and procedures (32 CFR Part 989).

This document is also intended to comply with the requirements of the California Environmental Quality Act (CEQA) (California Public Resources Code 21000-21177) and the Guidelines for CEQA (Sections 15000-15387, California Code of Regulations, Title 14, Chapter 3) for the purposes of fulfilling State permitting requirements.

1.2 SITE DESCRIPTION AND BACKGROUND

Dry Creek, a tributary to the Bear River, flows for approximately 19 miles southwest from its headwaters in Nevada County, California, through Beale Lake on Beale AFB in Yuba County, and finally joins the Bear River near the city of Rio Oso. Native American groups in Central California can be traced as far back as the late Pleistocene/early Holocene and were likely to be highly mobile throughout the region. Artifacts from A.D. 500 through A.D. 1880 suggest fishing increased throughout this period, and anadromous fish were a principal subsistence food. Anadromous fish, or fish that migrate up rivers from the ocean to spawn, utilize Dry Creek as part of their native spawning grounds. Anadromous salmonids including Chinook salmon (*Oncorhynchus tshawytscha*) and the federally threatened Central Valley steelhead (*Oncorhynchus mykiss*) migrate upstream in Dry Creek to their native spawning grounds. Two barriers currently impede upstream fish passage on Dry Creek: (1) the River Mile (RM) 6.2 Low Flow Crossing approximately 7.35 miles downstream from the Beale AFB boundary, and (2) Beale Lake Dam on Beale AFB (Figure 1). As a result, anadromous salmonids native to Dry Creek, which historically migrated throughout the Central Valley of California up the Sacramento, Feather, and Bear rivers, are restricted in their ability to pass through these last remaining obstacles to access their native spawning grounds. To improve fish passage and increase spawning habitat, USAF and USFWS have partnered and are proposing to remove these two barriers as a part of the USFWS Anadromous Fish Restoration Program, to comply with the requirements of ESA Section 7(a)(1), and to address management objectives outlined in the Beale AFB INRMP.



In addition, USFWS has identified that the potential spawning areas located upstream of Beale Lake Dam do not currently represent viable spawning habitat and need to be enhanced with an appropriate gravel substrate for the project to be successful at improving anadromous salmonid production for fall-run Chinook salmon and Central Valley steelhead.

RM 6.2 Low Flow Crossing (River Mile 6.2)

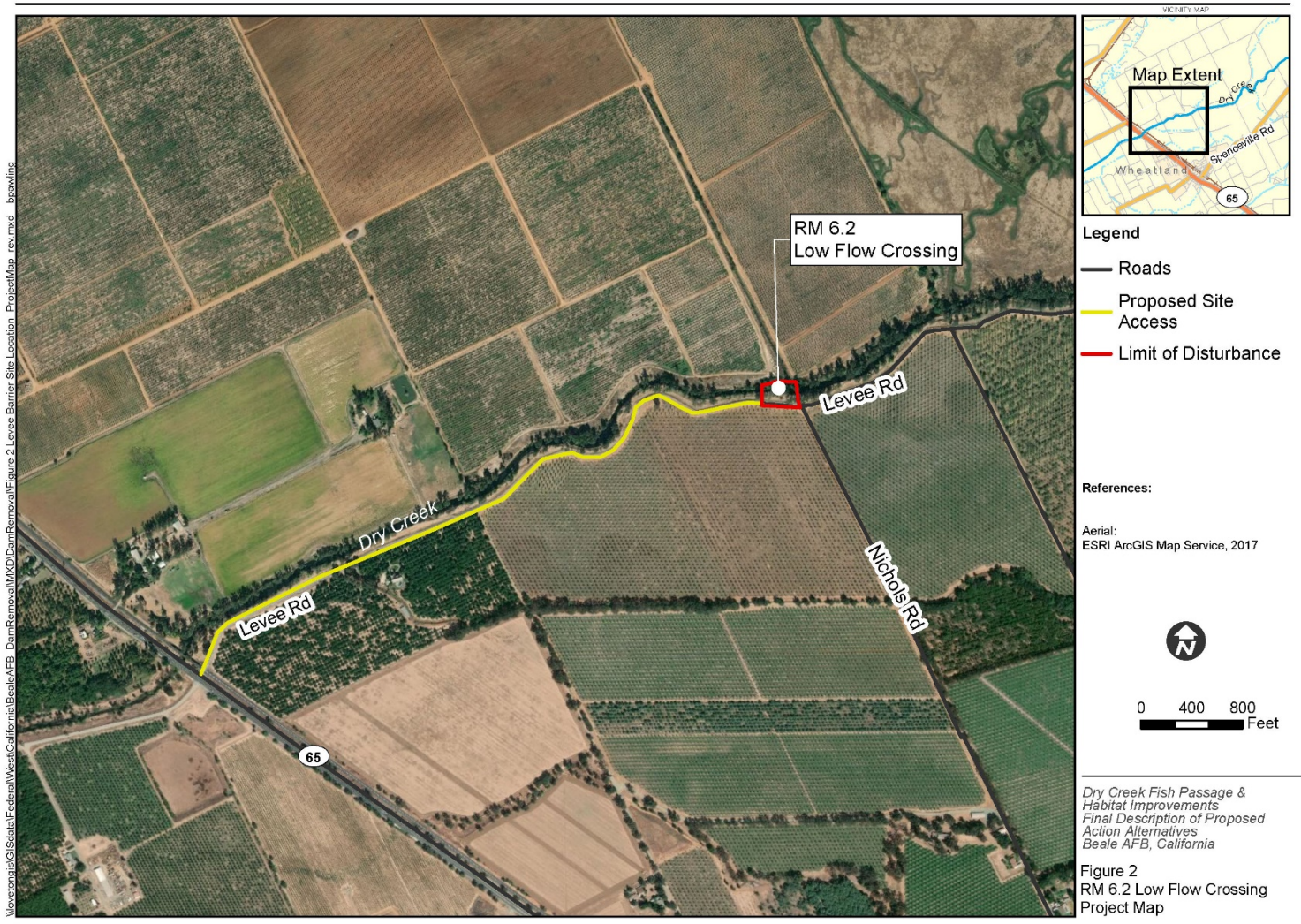
The RM 6.2 Low Flow Crossing is located on Dry Creek (Figures 2 and 3; Photos 1, 2, and 3), and is approximately 7.35 miles southwest of Beale Dam (Figure 1). The age of this structure is unknown. To fish migrating upstream, it is the first of two barriers located upstream of Highway 65—with the second barrier being Beale Lake Dam. The RM 6.2 barrier consists of a concrete slab 20 feet (ft) wide and 70 ft long. The barrier was originally designed as an agricultural crossing from Levee Road to an unnamed road on the north side of Dry Creek. The crossing is still able to function as an agricultural crossing; however, it is no longer needed, and the property owners have agreed to the concept of removal. It currently serves as a fish passage barrier during low flow events and results in restricted fish passage during moderate flows. Because fish passage is only possible during high flow events, USFWS has determined that removal of the Low Flow Crossing is “highest” priority (USFWS 2016).

Beale Lake Dam and Beale Lake Falls (Beale AFB)

Beale AFB

Beale AFB is a 23,192-acre military installation in Yuba County, California, approximately 40 miles north of Sacramento, 13 miles east of Marysville, and 25 miles west of Grass Valley (Figure 1). The installation is located between the Yuba and Bear rivers, in an area characterized by the transition from the eastern Sacramento Valley to the Sierra Nevada foothills (Beale AFB 2014a).

Beale AFB is a USAF installation under the Air Combat Command and is the headquarters of the 9th Reconnaissance Wing (9 RW). The 9 RW is responsible for providing national and theater command authorities with timely, reliable, high-quality, high-altitude reconnaissance products. To accomplish this mission, the 9 RW is equipped with the nation’s fleet of U-2, RQ-4 Global Hawk, and T-38 jet trainer aircraft and associated support equipment. The 9 RW also maintains a high state of readiness in its combat support and combat service support forces for potential deployment in response to theater contingencies. The 9 RW also provides support for Beale AFB, ranging from financial, personnel, housing, maintenance, legal, recreational, and medical needs, to fire protection, chaplain services, and installation security (Beale AFB 2014b).



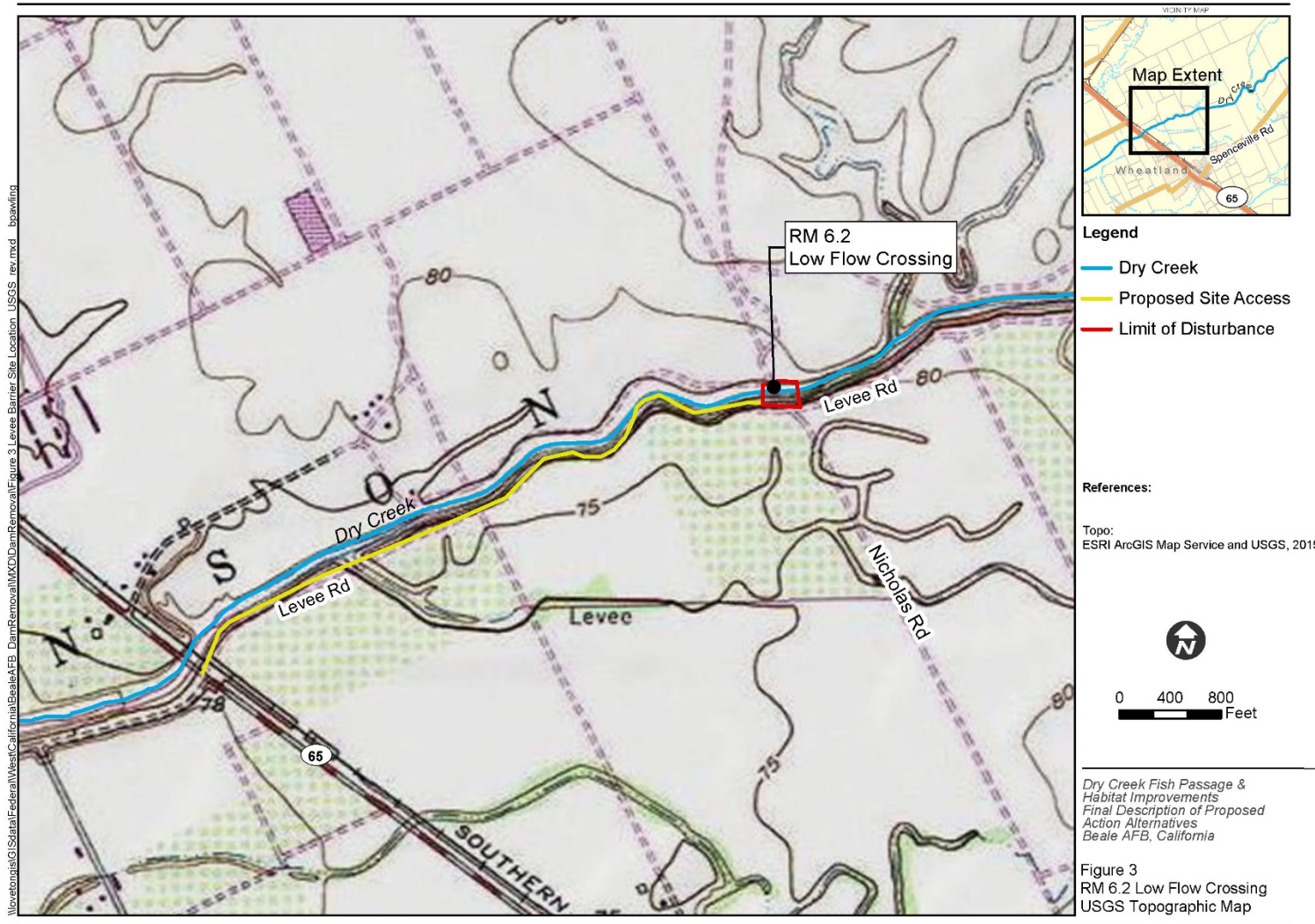




Photo 1 RM 6.2 Low Flow Crossing Located Downstream of Beale AFB near Wheatland (May 2018)



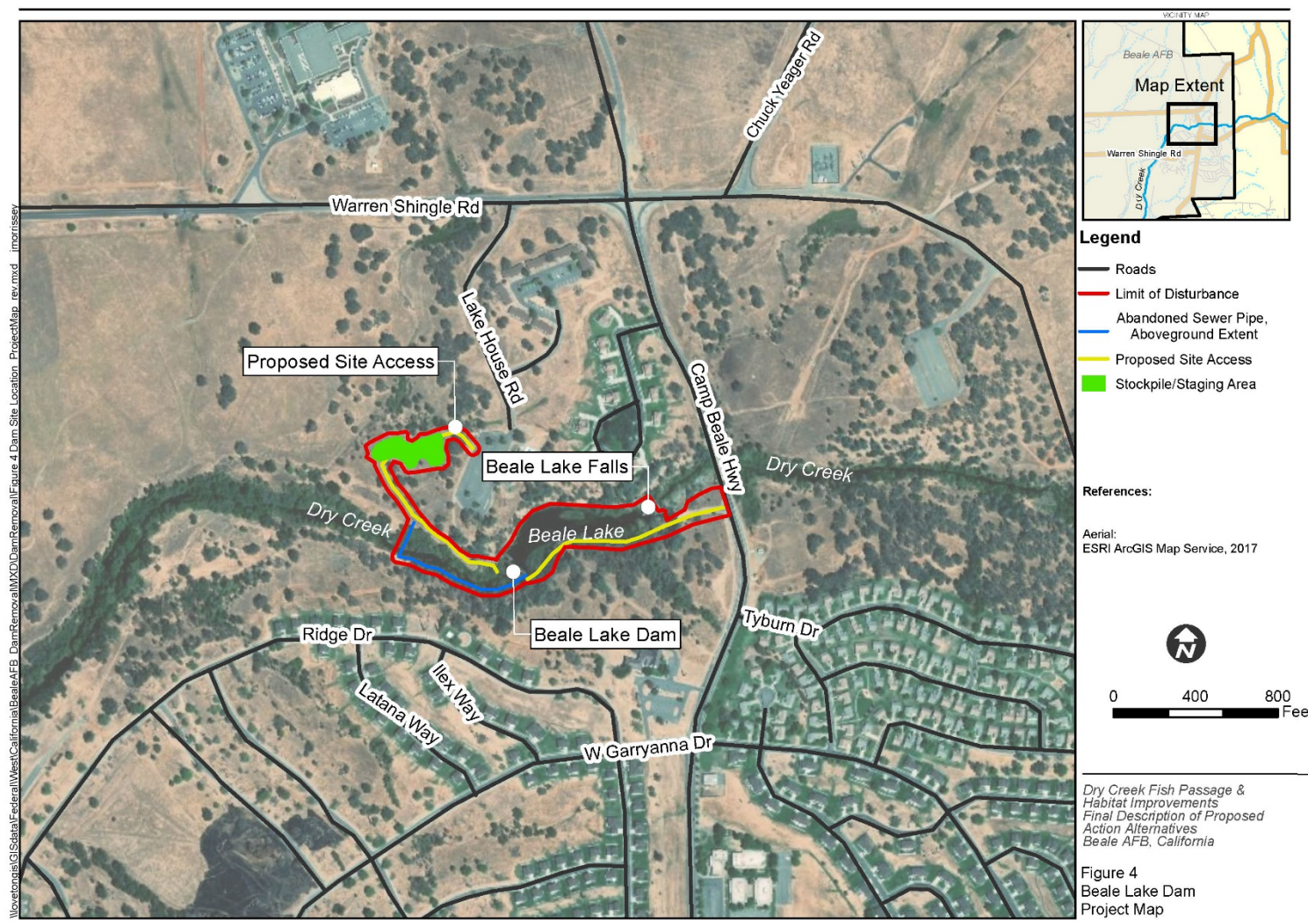
Photo 2 USFWS survey of the RM 6.2 Low Flow Crossing at a Flow of 11.4 Cubic Feet per Second. Located Downstream of Beale AFB near Wheatland (March 2016)



Photo 3 Upstream View of RM 6.2 Low Flow Crossing Located Downstream of Beale AFB near Wheatland. (March 2016)

Dry Creek within Beale AFB

Within Beale AFB, Dry Creek consists of a bedrock-controlled, partially confined reach that transitions to a highly confined bedrock gorge setting called Beale Lake Falls, where Dry Creek enters Beale Lake (Figures 4 and 5; Photo 4). The bedrock influence is high in this area, which lent itself to the historic selection of the site for Beale Lake Dam. The bedrock influence in the channel continues downstream of the dam for roughly 0.3–0.5 mile. At this point, the channel begins to show no valley wall confinement, and consists of a low channel slope and an alluvial system that is greatly incised/entrenched within its banks until the creek meets the Bear River downstream. The high rate of entrenchment of Dry Creek below Beale Lake Dam is likely due to the combination of past dredging/channel clearing, historic land-use activity, and the presence of Beale Lake Dam. However, it is likely that the channel in the area downstream of the dam incised within itself naturally, after Beale Lake Dam was built and coarse sediment (bedload) transport was halted by the dam (USFWS 2016).



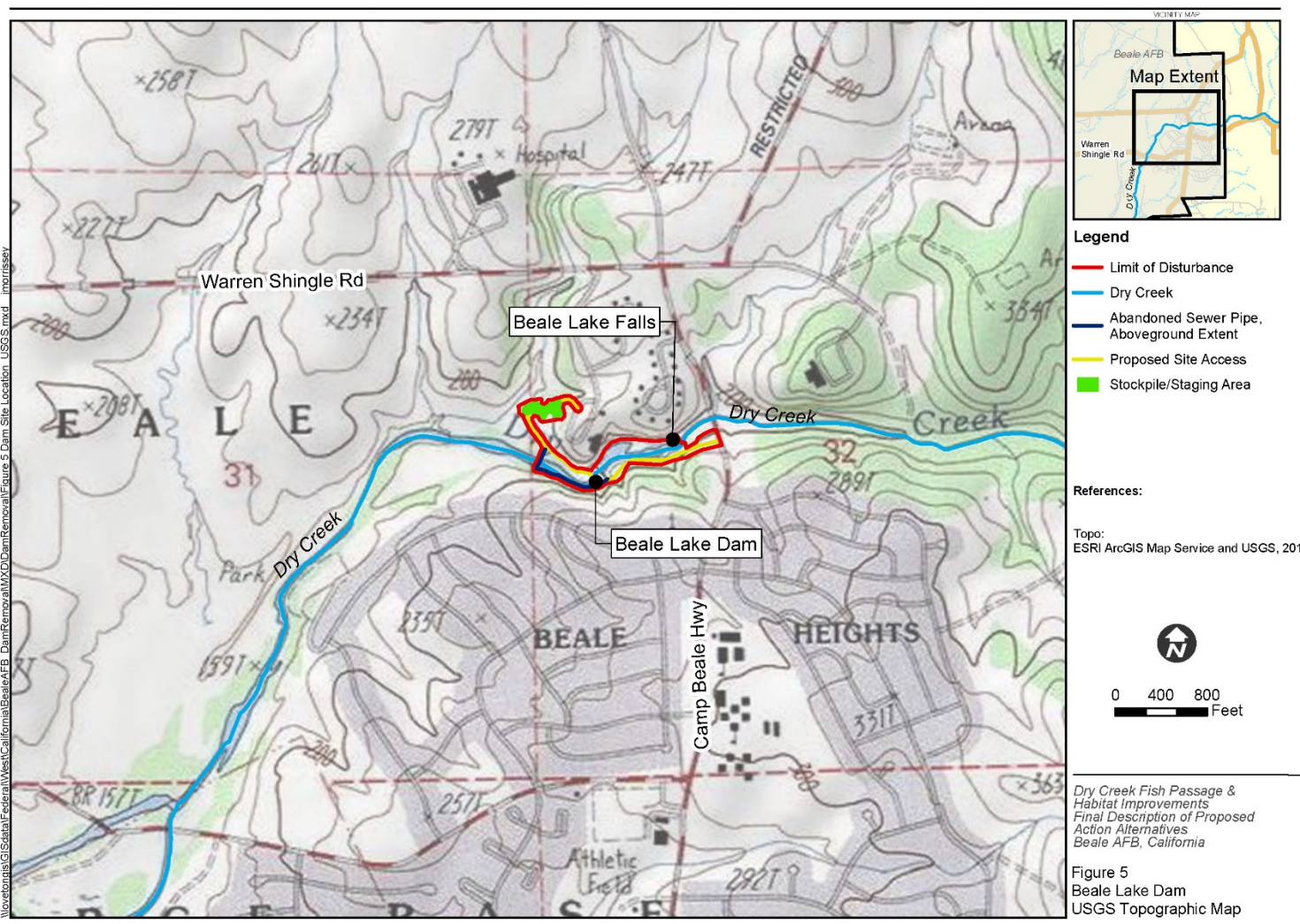




Photo 4 Beale Lake Falls on Beale AFB Where Dry Creek Flows into Beale Lake (May 2018)

Beale Lake Dam (Figures 4 and 5; Photos 5 and 6) is a reinforced concrete gravity dam structure with a spillway located in the middle of the structure and outlet works at the base of the dam near the right abutment. According to the National Inventory of Dams, Beale Dam was completed in 1943 (National Inventory of Dams 2019; USFWS 2018a). The lake has a surface area of approximately 2 acres when the reservoir is at the maximum elevation. The concrete structure of the dam is approximately 150 ft in length and 2 ft in width at the top of the dam. It has a height of 15.7 ft above the landside toe. In June 2016, the U.S. Army Corps of Engineers (USACE) inspected Beale Lake Dam and determined its overall condition to be “poor.” They noted that the right dam abutment was compromised and not stable, the left abutment was undermined. As a result, USACE recommended that USAF develop both short- and long-term strategies to improve the safety of the structure (USACE 2016). Additional features include a fish ladder at the left abutment (Photo 7). The dam is built upon an exposed bedrock foundation. The existing fish ladder at Beale Lake Dam is undersized for the range of flows under which it needs to operate in order to facilitate salmonid migration (USFWS 2016). An abandoned sewer pipe runs along the southern side of the Creek from the fish ladder approximately 600 ft downstream, where it crosses the creek.



Photo 5 Beale Lake Dam on Beale AFB (May 2018)



Photo 6 View of Spillway at Beale Lake Dam on Beale AFB (May 2018)



Photo 7 Beale Lake Dam Fish Ladder on Beale AFB (May 2018)

Upstream Spawning Habitat

Anadromous salmonid fry and juveniles prefer shaded riverine aquatic cover habitats, which typically occur along a river's edges and are composed of natural, eroding substrates supporting riparian vegetation that overhangs the water. These areas contain variable amounts of woody debris, such as leaves, logs, branches, and roots, along with variable depths, velocities, and currents, which create riffles in shallow areas that are commonly used for spawning. All the potential spawning habitat that has been identified in Dry Creek is located upstream of the two fish passage barriers (i.e., RM 6.2 Low Flow Crossing and Beale Lake Dam) (Photos 8, 9, 10, and 11) (USFWS 2016).

Prime spawning habitat for anadromous salmonids also contains a rounded gravel substrate comprised of variable particle sizes ranging from 0.25 to 5 inches (in.) in diameter (USFWS 2006). Currently, prime spawning habitat exists in limited areas upstream of the Beale Lake Dam. Instead, the channel bottom primarily consists of bedrock, boulders, and large cobbles (USFWS 2016). Gravel is scarce in the reaches upstream of Beale AFB, as are well-defined riffles. Where suitable spawning gravel sizes (i.e., 1- to 4-in.-diameter gravels) are present, the gravels are angular in shape. Angular gravel is not considered suitable to spawning adult salmon or steelhead. When combined, the lack of riffle habitat, lack of gravel or suitable shaped gravels, and prevalence of a bedrock creek bed could potentially preclude any realized benefits to spawning adult anadromous salmonids without also performing gravel additions to restore the degraded spawning habitat.



Photo 8 Gravel Injection Site 1 Located on Beale AFB (March 2019)



Photo 9 Gravel Injection Site 2. Located in Spenceville Wildlife Management Area (March 2019)



Photo 10 Gravel Injection Site 3 Located in Spenceville Wildlife Management Area
(March 2019)



Photo 11 Gravel Injection Site 4 Located in Spenceville Wildlife Management Area
(March 2019)

1.3 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to reduce the USAF liability associated with aging dam infrastructure and to improve fish passage and create spawning habitat for anadromous salmonids in Dry Creek.

The Proposed Action is needed for multiple reasons: dam liability, poor fish passage, and nonviable fish spawning habitat. Beale Lake Dam on Beale AFB is not structurally secure. A USACE study found Beale Lake Dam to have an overall condition of “poor” (USACE 2016). Currently, the dam’s right abutment is compromised and unstable, and the left abutment is undermined. USACE recommends that USAF implement strategies to improve the safety of the dam structure. The USAF does not require a lake or dam to meet its current mission. The long-term maintenance of the dam, and the potential liability for the dam’s failure, present an unacceptable risk. Further, the cost to safely maintain the dam is substantial.

The Proposed Action is also needed because two fish passage barriers in Dry Creek (RM 6.2 Low Flow Crossing and Beale Lake Dam) currently impede the upstream migration of adult salmonids. A fish ladder is present at Beale Lake Dam; however, the fish ladder is undersized and inhibits passage of anadromous salmonids across a wide range of flows due to excessive turbulence (USFWS 2016). In addition, USFWS has identified that the potential spawning areas located upstream of Beale Lake Dam do not represent viable spawning habitat and need to be enhanced for the project to be successful at improving anadromous fish production.

The Proposed Action is in alignment with the USFWS Anadromous Fish Restoration Program, which is tasked with doubling the natural production of anadromous fish in the Central Valley and would support the goals and objectives of Beale AFB’s INRMP, which requires Beale AFB to provide “sufficient protection and conservation of salmon and steelhead species and their habitat....” (Beale AFB 2018a). The USFWS will provide engineering, design, ESA Section 7 compliance surveys and reports, and fish passage expertise for the project, while Beale AFB will provide cultural resources expertise for the completion of the project.

1.4 SUMMARY OF KEY ENVIRONMENTAL QUALITY COMPLIANCE REQUIREMENTS

1.4.1 National Environmental Policy Act

NEPA is a federal statute requiring the identification and analysis of potential environmental impacts associated with proposed federal actions before those actions are taken. The intent of NEPA is to help decision-makers make well-informed decisions based on an understanding of the potential environmental consequences, and take actions to protect, restore, or enhance the environment. NEPA established CEQ, which was charged with the development of implementing regulations and ensuring federal agency compliance with NEPA.

The CEQ regulations mandate that all federal agencies use a prescribed structured approach to environmental impact analysis. This approach also requires federal agencies to use an interdisciplinary and systematic approach in their decision-making process. This process

evaluates potential environmental consequences associated with a Proposed Action and considers alternative courses of action.

The regulations established by CEQ ensuring compliance with NEPA are contained in 40 CFR Parts 1500–1508. Those regulations dictate that an EA is prepared to provide evidence for determining whether to prepare a FONSI and FONPA or if an Environmental Impact Statement (EIS) is needed. The Environmental Impact Analysis Process (32 CFR Part 989, as amended) outlines the process for implementing NEPA. Air Force Instruction (AFI) 32-7064 outlines the policy and procedure for implementation of a FONSI or FONPA. If the selected alternative must be located in a wetland or floodplain, and no practicable alternative exists, then a FONPA must be prepared that discusses why no other practicable alternative exists to avoid impact to the wetland or floodplain. The FONPA is a statement included in the FONSI that states there is no practicable alternative to that which is selected. The analysis in the EA must support this finding.

AFI 32-1015, *Integrated Installation Planning*, and 32 CFR Part 989, *Environmental Impact Analysis Process*, provide policy and procedures for DoD officials to review environmental considerations when evaluating major DoD actions. The directive requires DoD components to integrate the NEPA process during the initial planning stages of proposed DoD actions to ensure that planning and decisions reflect environmental values.

USAF Policy Directive 32-70 states that the USAF would comply with applicable federal, state, and local laws and regulations, including NEPA. The USAF implementing regulation for NEPA is AFI 32-1015.

Upon completion of the EA review and consultation process, the project sponsor, USAF, would determine whether the Proposed Action would result in significant impacts to environmental or other resources. If significant impacts are expected to result, USAF would then be required to decide whether to move forward with the development of an EIS or to abandon the Proposed Action altogether. If no significant impacts are expected, then USAF can publish a FONSI/FONPA and move forward with the Proposed Action as such.

1.4.2 California Environmental Quality Act

Under CEQA, state and local agencies are required to assess the impacts of activities that are defined by CEQA as a project, and to avoid or mitigate those impacts where feasible. Projects are defined as activities undertaken by a public agency or a private activity that must receive some discretionary approval (meaning the agency has the authority to deny the requested permit or approval) from a government agency which may cause either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment.

CEQA was codified under Division 13 of California's Public Resources Code, in sections 21000 et seq. The guidelines for implementation of CEQA are in Title 14 of California's Code of Regulations, section 15000 et seq. For projects that are subject to and not exempt from CEQA, the lead state agency conducts an Initial Study to assess the environmental effects of a proposed

project. Depending on the potential effects, a further and more substantial review may be conducted in the form of an Environmental Impact Report. A project may not be approved if there is another alternative that meets the Purpose and Need and has less significant environmental effects. In addition, a project could be approved if mitigation is proposed to lessen the environmental effects to an insignificant level.

1.4.3 Applicable Environmental and Regulatory Compliance

Regulatory requirements relevant to the Proposed Action have been identified for the improved fish passage and spawning habitat. Regulatory requirements under the following laws, among others, are assessed:

- Noise Control Act of 1972
- Clean Air Act (CAA) of 1970
- Clean Water Act (CWA) of 1972
- National Historic Preservation Act of 1966
- Archaeological Resources Protection Act of 1979
- Endangered Species Act (ESA) of 1973
- Resource Conservation and Recovery Act (RCRA) of 1989
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980
- Toxic Substances Control Act of 1970
- Occupational Safety and Health Act of 1970
- Intergovernmental Coordination Act of 1976.

The selected alternative must also comply with the following:

- Executive Order (EO) 11988, *Floodplain Management*
- EO 11990, *Protection of Wetlands*
- EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*
- EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*
- EO 12372, *Intergovernmental Review of Federal Programs*.

NEPA requirements help to ensure that environmental information is made available to the public during the decision-making process and prior to actions being taken. A premise of NEPA is that the quality of federal decisions will be enhanced if proponents provide information to the public and involve the public in the planning process. CEQ regulations implementing NEPA specifically state, “There shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This process shall be termed scoping.” The Intergovernmental Coordination Act and EO 12372,

Intergovernmental Review of Federal Programs, require federal agencies to cooperate with and consider state and local views when implementing a federal proposal. 40 CFR 1501.5–1501.6, *Cooperating Agencies*, and 32 CFR 989.9, *Cooperation and Adoption*, support interagency and intergovernmental coordination. Beale AFB will comply with the spirit and intent of this guidance and will implement a coordination process to facilitate evaluation of the Proposed Action.

1.5 COORDINATION FOR ENVIRONMENTAL PLANNING AND PUBLIC INVOLVEMENT

For the purpose of the EA and overall NEPA process, USAF and USFWS are the joint lead federal agencies and will both provide signatories for all NEPA documents.

1.5.1 Coordination for Environmental Planning and Public Involvement

Beale AFB notified relevant federal, state, and local agencies about the Proposed Action and alternatives. The coordination process provided Beale AFB the opportunity to cooperate with and consider state and local views in implementing the Proposed Action or alternatives. Coordination letters were sent to federal, state, and local agencies containing a description of the Proposed Action and alternatives and provided the means to comment on the Proposed Action and alternatives. The comment period lasted for 30 days. Agency responses have been incorporated into the analysis of potential environmental impacts as part of the development of the EA.

Because the Proposed Action area coincides with wetlands, it is subject to the requirements and objectives of EO 11990, *Protection of Wetlands*. USAF published an early notice in the *Appeal-Democrat* on 05 September 2019 indicating that the proposed action would occur in a wetland. The notice identified the state and federal regulatory agencies with special expertise that will be contacted, and solicited public comment on the proposed action and any practicable alternatives.

Following development of the EA and prior to signature of the FONSI/FONPA, a Notice of Availability will be published in the *Appeal-Democrat*. The Notice of Availability will initiate a 30-day public review period. If public comments are received, they will be incorporated into the analysis, as appropriate, and included as an appendix to the Final EA.

1.6 ORGANIZATION OF THIS DOCUMENT

This EA is organized into six chapters and includes two appendices as follows:

- **Chapter 1** provides the background information, project location, and purpose and need for the Proposed Action.
- **Chapter 2** contains a description of the Proposed Action and alternatives, including the No Action Alternative.

- **Chapter 3** contains a description of the environmental resources and baseline conditions that could potentially be affected by the Proposed Action and alternatives and will present an analysis of the potential environmental consequences of implementing the Proposed Action and the No Action Alternative.
- **Chapter 4** includes an analysis of the potential cumulative impacts to Dry Creek and the surrounding area.
- **Chapter 5** lists the preparers of this EA.
- **Chapter 6** lists the references used in the preparation of this document.
- **Appendix A** provides the list of agencies included in the initial coordination, the coordination letter, and the responses received.
- **Appendix B** provides details of the Air Quality Conformity Analysis.

2. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

The following selection criteria were used to evaluate the Proposed Action and alternatives. Any alternative considered must:

- (1) fulfill the requirements of NEPA and CEQA including preparation of a detailed environmental impact analysis and public review period;
- (2) meet the proposed project's purpose and need including reducing the USAF liability associated with aging dam infrastructure and improving fish passage and creating spawning habitat for anadromous salmonids in Dry Creek; and
- (3) avoid all non-mitigable adverse effects, including those to the environment, cultural resources, or the 9 RW mission.

2.1 DETAILED DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action, including the removal of RM 6.2 Low Flow Crossing, removal of Beale Lake Dam, and enhancement of gravel injection sites, as presented in Section 2.3.2, would improve fish passage and create spawning habitat for anadromous salmonids in Dry Creek. These activities would disturb vegetation and result in impacts to waterbodies, wetlands, floodplains, and potentially threatened and endangered species. In addition, there are known cultural resource sites in the vicinity of the project.

Wetland impacts would be addressed in compliance with EO 11990, the CWA, and State of California Wetland Regulations, through their permit requirements. Impacts to threatened and endangered species would be addressed through the California Department of Fish and Game for state-listed species, and USFWS and the National Oceanic and Atmospheric Administration (NOAA) for federally listed species. NOAA has a programmatic biological opinion for implementation of restoration projects in the Central Valley of California and an Implementation Record (IR) is being prepared for this project to demonstrate compliance with federally listed species under NOAA's jurisdiction. USFWS and USAF have collaboratively prepared a biological assessment to analyze potential effects to federally listed species under the jurisdiction of the Service. USAF will assess potential cultural resource impacts in compliance with Section 106 of the National Historic Preservation Act, including consultation with federally recognized tribes with connections to the immediate project area (in accordance with DoD Instruction 4710.02, Section 3.5) (DoD 2018).

Construction activities associated with the removal of RM 6.2 Low Flow Crossing and Beale Lake Dam, and the enhancement of the gravel injection sites, would generally involve ground disturbance by heavy construction equipment such as backhoes, bulldozers, graders, wheel rollers, and dump trucks. Temporary timber mats or gravel would be utilized along access routes to minimize ground disturbance, and all material would be removed from the site post-construction. If deemed suitable, gravel used for construction access routes would be reused to support implementation of design. Dewatering would likely use both the existing dam appurtenances and pumps, cofferdams, siphons, and dewatering areas. The disturbances would

occur between designated staging areas and in-water work locations at each of the six sites (Figure 1). Best management practices (BMPs) for sediment control and erosion would be implemented. After disturbance, disrupted areas would be regraded and revegetated with an appropriate seed mix and plantings as necessary. In the areas of wetland disturbance, the area would be regraded and restored to the maximum extent practicable. All exposed portions of an abandoned sewer line located downstream of the dam would also be removed.

2.2 PROCESS FOR SELECTING ALTERNATIVES

The following selection standards were used to evaluate the Proposed Action and alternatives. Any alternative considered must:

- Improve anadromous salmonid passage by allowing fish to migrate upstream unimpeded.
- Enhance upstream habitat by providing viable spawning habitat for anadromous salmonids
- Reduce the USAF liability and maintenance costs associated with aging dam infrastructure.

2.2.1 Site Selection Standards

Screening is a process that evaluates an alternative's ability to fulfill the action's purpose and need while meeting the base's mission development standards. The purpose statement explains the goals to be achieved by the statutory authority or programmatic mission under which USAF is proposing to act, and the need statement describes resource conditions that are undesirable and thus need changing. The purpose and need of the Proposed Action is to remove Beale Lake Dam for liability reduction and maintenance costs reasons. In addition, the purpose and need of the Proposed Action is to improve anadromous salmonid passage at Beale AFB to provide adequate, sufficient protection and conservation of salmon and steelhead species and their habitat in the long term. Selection standards are based on the purpose and need statement and are used to develop and narrow the range of alternatives.

Regulatory Guidance—Basic design standards must be followed during implementation of the selected alternative, including the following:

- AFI 32-7064, *Integrated Natural Resources Management* (Secretary of the Air Force 2014b)
- Air Force Manual 32-1084, *Facility Requirements* (Secretary of the Air Force 2016)
- AFI 32-1021, *Planning and Programming Military Construction Projects* (Secretary of the Air Force 2019)
- AFI 32-7042, *Waste Management* (Secretary of the Air Force 2014a)

- National Marine Fisheries Service (2008), *Anadromous Salmonid Passage Facility Design*
- California Department of Fish and Game (2009), *California Salmonid Habitat Restoration Manual*, Part XII Fish Passage Design and Implementation
- USFWS (2006), *Recommended Gravel Specifications*
- USFWS (1992), *Shaded Riverine Aquatic Cover of the Sacramento River System: Classification as Resource Category 1 Under the FWS Mitigation Policy*.

2.3 OTHER ALTERNATIVES CONSIDERED

2.3.1 Alternative 1 – No Action

CEQ regulations require consideration of the No Action Alternative for all Proposed Actions. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and other potential alternatives can be compared. The No Action Alternative will be evaluated in this report as an alternative considered.

RM 6.2 Low Flow Crossing

Under the No Action Alternative, the RM 6.2 Low Flow Crossing would not be removed. This barrier would continue to hinder the upstream migration of anadromous salmonids.

Beale Lake Dam and Beale Lake Falls

Under the No Action Alternative, Beale Lake Dam would not be removed and fish passage past Beale Lake Falls would not be enhanced. Beale Lake Dam would continue to impede upstream migration of anadromous salmonids. In June 2016, USACE inspected Beale Lake Dam and stated the dam's overall condition as "poor." They noted that the right dam abutment was compromised and not stable, and the left abutment was undermined (USACE 2016). Beale Lake Dam's structural condition would continue to deteriorate and eventually fail or require significant efforts to address its structural deficiencies. The exposed abandoned sewer pipe would remain.

Gravel Injection Sites

Under the No Action Alternative, gravel spawning beds would not be enhanced through a series of gravel injections. These potential spawning areas would remain non-viable habitat for spawning salmonids. In addition, as neither the RM 6.2 Low Flow Crossing nor Beale Lake Dam would be removed under this alternative, anadromous fish would not be able to access these potential spawning areas.

2.3.2 Alternative 2 – Remove Fish Passage Barriers and Create Spawning Habitat for Anadromous Salmonids in Dry Creek

The execution of the work described under Alternative 2 would be timed to avoid potential impacts to spawning anadromous salmonids, specifically the fall-run Chinook salmon spawning, which typically occurs between early October and late December. Egg incubation occurs from October through March, and juvenile rearing and smolt migration occurs from January through June. Timing would also avoid impacts to Central Valley steelhead, which spawns December through February. Egg incubation for steelhead occurs between December and March, and juvenile rearing and smolt migration occurs from April to June. It is also notable that water temperatures at the site are too high for juvenile steelhead rearing between late June and late September. Therefore, relevant in-water work activities would be completed between late June and late September to avoid impacts to both species (Beale AFB 2018a).

RM 6.2 Low Flow Crossing

Under Alternative 2, the RM 6.2 Low Flow Crossing (Figures 2 and 3) would be removed by excavating the existing slab and rebar, and the associated materials would be transported off site for recycling at an approved facility. Construction activities would generally involve ground disturbance by heavy construction equipment such as backhoes, bulldozers, graders, wheel rollers, and dump trucks. Debris and associated sediment removed during construction would be hauled off site and disposed of in accordance with state and federal regulations. A potential disposal facility includes the Ostrom Road Landfill in Wheatland, California (approximately 4 miles northeast of RM 6.2). Dewatering would involve mechanical dredging or related equipment or procedures (pumps, cofferdams, siphons, dewatering areas, etc.). After removal of the barrier, a low flow stream channel would be constructed. The resulting channel would be graded to match the grade immediately upstream and downstream of the existing slab.

Site access would be from Highway 65 and would travel for approximately 1 mile through private property on the unpaved Levee Road, which consists primarily of graveled surfaces. Proposed staging areas would be located adjacent to the RM 6.2 Low Flow Crossing (Figure 2) (USFWS 2018b). The removal of the low flow crossing would require clearing and grubbing of existing vegetation within the work area. Where possible, large woody vegetation (oak and sycamore trees) and any elderberry bushes within the work area would be protected during construction. Elderberry bushes within 100 ft of the work zone would be flagged. Plans for flagging and protection, vegetation removal and clearing, revegetation, and mitigation would be developed during permitting. A water tank truck would be used for dust suppression to prevent fugitive dust from causing detrimental impacts to elderberry shrubs that, in turn, may affect the valley elderberry longhorn beetle. Standard construction and BMPs would be used in the excavation of the cut bank and slots and placement of the riprap and weir material to decrease impacts on streambeds. It is anticipated that the disturbed areas outside of the stream bed and existing roads would be seeded following construction with an appropriate stabilizing seed mixture (USFWS 2018b).

Beale Lake Dam and Beale Lake Falls

Under Alternative 2, Beale Lake Dam and the existing fish ladder would be fully removed and Beale Lake would be restored to a free-flowing stream. All exposed portions of the abandoned sewer line located downstream of the dam would also be removed. A total of 1,522 cubic yards of sand, gravel, and sediment is anticipated to be cut from the vicinity of the dam, and 6,189 cubic yards of fill would be used to re-grade the streambed. All the cut volume is anticipated to be used to fill void spaces needed for grading, however all concrete dam material will be removed and trucked off for disposal at an approved concrete recycling facility, per DoD policy. USACE has been notified of the proposed removal of Beale Lake Dam. USACE instructed the USAF to submit a Pre-Construction Notification under USACE Sacramento Regional General Permit 16, Anadromous Salmonid Fisheries Restoration.

Site access during the dam removal would be provided via Lake House Road. A temporary access road with staging and material handling areas would be constructed to the west of the parking lot located at the end of Lake House Road (Figure 4). From this location, the access road leads west before heading south to the base of Beale Lake Dam. Access for work occurring within Beale Lake and in the area of Beale Lake Falls would be provided by a temporary access road extending from an existing dirt lot located off Camp Beale Highway (Figure 4), immediately south of Beale Bridge and upstream of Beale Lake Falls. Dam removal would include the use of heavy construction equipment such as backhoes, bulldozers, graders, wheel rollers, and dump trucks. No explosives would be utilized. Sediment collected upstream of the dam that needs to be removed would be reused to support project designs. Dewatering would likely involve mechanical dredging or related equipment or procedures (pumps, cofferdams, siphons, dewatering areas, etc.). The footbridge crossing Beale Lake and Beale Lake Dam would be retained.

The lakebed, which was formed as a result of the presence of the dam, would be restored to a stream channel. This stream channel would be comprised of adequately sized rock, similar in character to the natural streambed, to help stabilize the lakebed and would include a low flow channel designed to provide fish passage and habitat under seasonal low flow periods. The upper portion of the restored stream channel would include larger rock to help facilitate fish passage and prevent erosion in the area of Beale Lake Falls.

Gravel Injection Sites

Under Alternative 2, gravel injections would occur at four locations upstream of Beale Lake Dam to improve spawning habitat for anadromous species (Figures 6 through 15). An increasing body of research has detailed the geomorphic and ecologic importance of gravel bars in aquatic habitat (Pasternack et al. 2004) as gravel bars are required for the successful spawning of salmon, as eggs are deposited in clusters (egg pockets) and buried in nests (redds) in the gravels. Traditional river management has degraded these gravel bars, as man-made reservoirs obstruct natural gravel replenishment from upstream, thereby degrading and ultimately destroying downstream gravel stream beds. Artificial replenishment of gravels downstream of a reservoir has the potential to mitigate the anthropogenic impact depending on the design and implementation of a replenishment strategy (Kondolf 1997).

The Dry Creek gravel injections proposed here would occur outside of the natural low flow channel of Dry Creek, which would allow the gravel material to be naturally distributed downstream of the injection sites during high flow events. A total of approximately 2,000 tons of 0.25- to 5-in. spawning gravel would be equally distributed between the four placement sites (USFWS 2019b). This material would be deposited in the selected locations by dump trucks. It is not anticipated that any grading, tree clearing, or other site alterations would be necessary for the trucks to access these locations. The deposited gravel material would create viable spawning beds as the material washes downstream and naturally settles in the stream channel. Given the uncertainty of where the spawning gravel may deposit, post-project monitoring would be conducted by the USFWS to assess gravel mobility and fate. The USFWS anticipates that these gravel injections would create spawning beds comprised of suitable grain size and properties to support spawning of anadromous salmonids in Dry Creek. The placement of gravel in the stream as part of this project would be a one-time event. Long-term monitoring by USFWS would determine if additional gravel injections would be necessary in the future to maintain the spawning habitat.

Site access at Gravel Injection Site 1 would be from Spenceville Road on the eastern edge of Beale AFB. Access would then continue north along the base boundary to Injection Site 1 on Dry Creek (Figures 8 and 9). Gravel Injection Sites 2, 3, and 4 are located within the Spenceville Wildlife Area. Site access at Gravel Injection Site 2 would be from the Spenceville Road and Waldo Road junction. Access would extend approximately 300 ft past the road to the injection site (Figures 10 and 11). Site access to Gravel Injection Site 3 would be from an unnamed road heading east that intersects Chuck Yeager Road 2.5 miles north of Injection Site 2. The unnamed road travels south and east for approximately 3.6 miles to Injection Site 3 (Figures 12 and 13). From here, the unnamed road continues for approximately 2.4 miles, where it ends at Injection Site 4 (Figures 14 and 15).

2.4 ALTERNATIVES ASSESSED AND DETERMINED AS NOT MEETING THE PROJECT PURPOSE AND NEED REQUIREMENTS

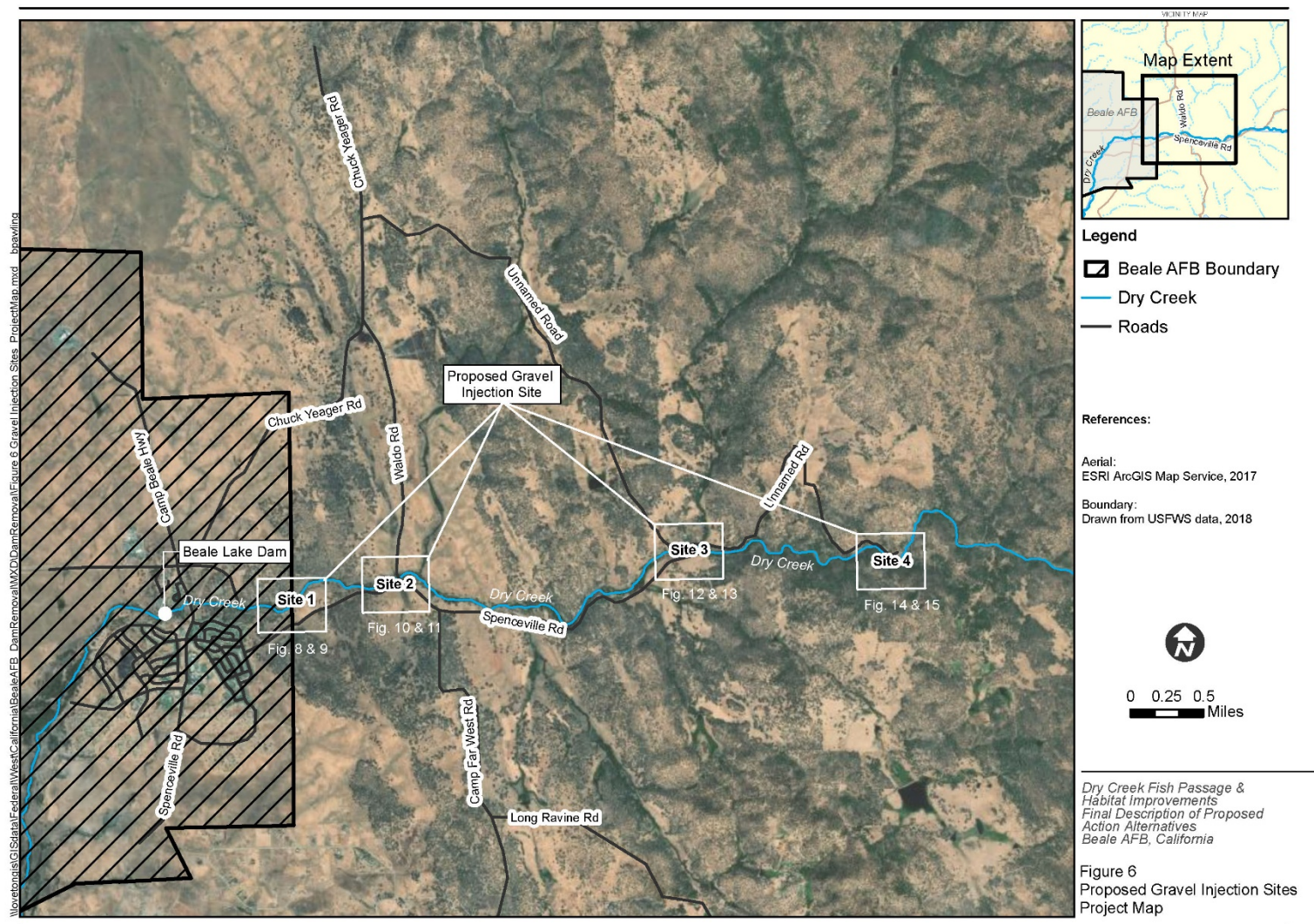
Removal of the RM 6.2 Low Flow Crossing, Rehabilitation of the Beale Dam Fish Ladder, and Creation of Spawning Habitat for Anadromous Salmonids in Dry Creek

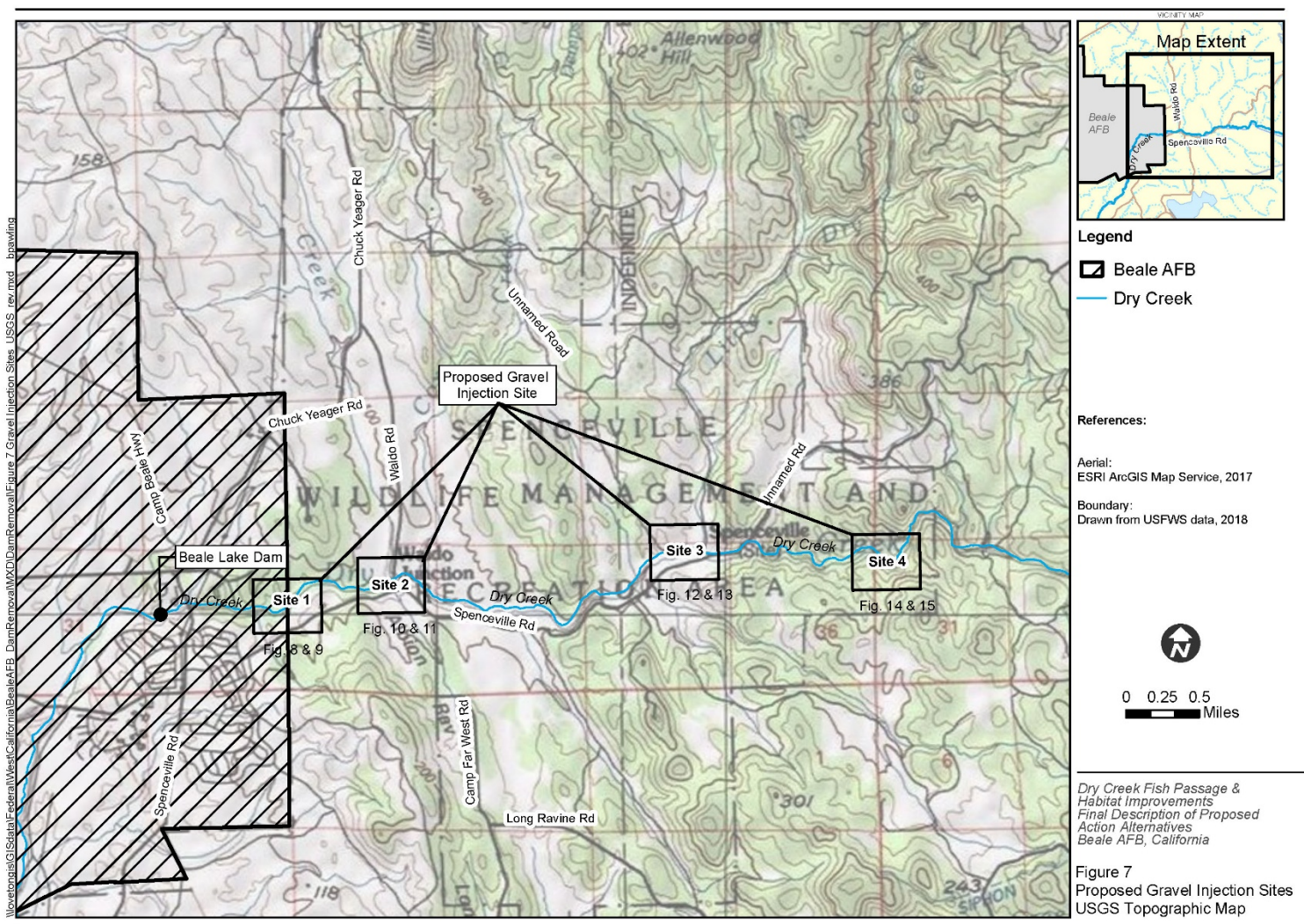
Rehabilitation of the Beale Lake Dam Fish Ladder, accompanied by removal of the RM 6.2 Low Flow Crossing and creation of spawning habitat for anadromous salmonids in Dry Creek as described in Section 2.3.2, Alternative 2, was included as an assessed alternative but does not meet the Purpose and Need of the proposed project. There is currently a fish ladder at Beale Lake Dam (Photo 7). However, this fish ladder is undersized and is classified as a barrier at most flows by USFWS because excessive turbulence in the fish ladder pools creates suboptimal conditions for upstream fish passage (USFWS 2016). While modifications to the existing fish ladder would improve upstream passage, it would still be undersized given the range of flows that it must operate within.

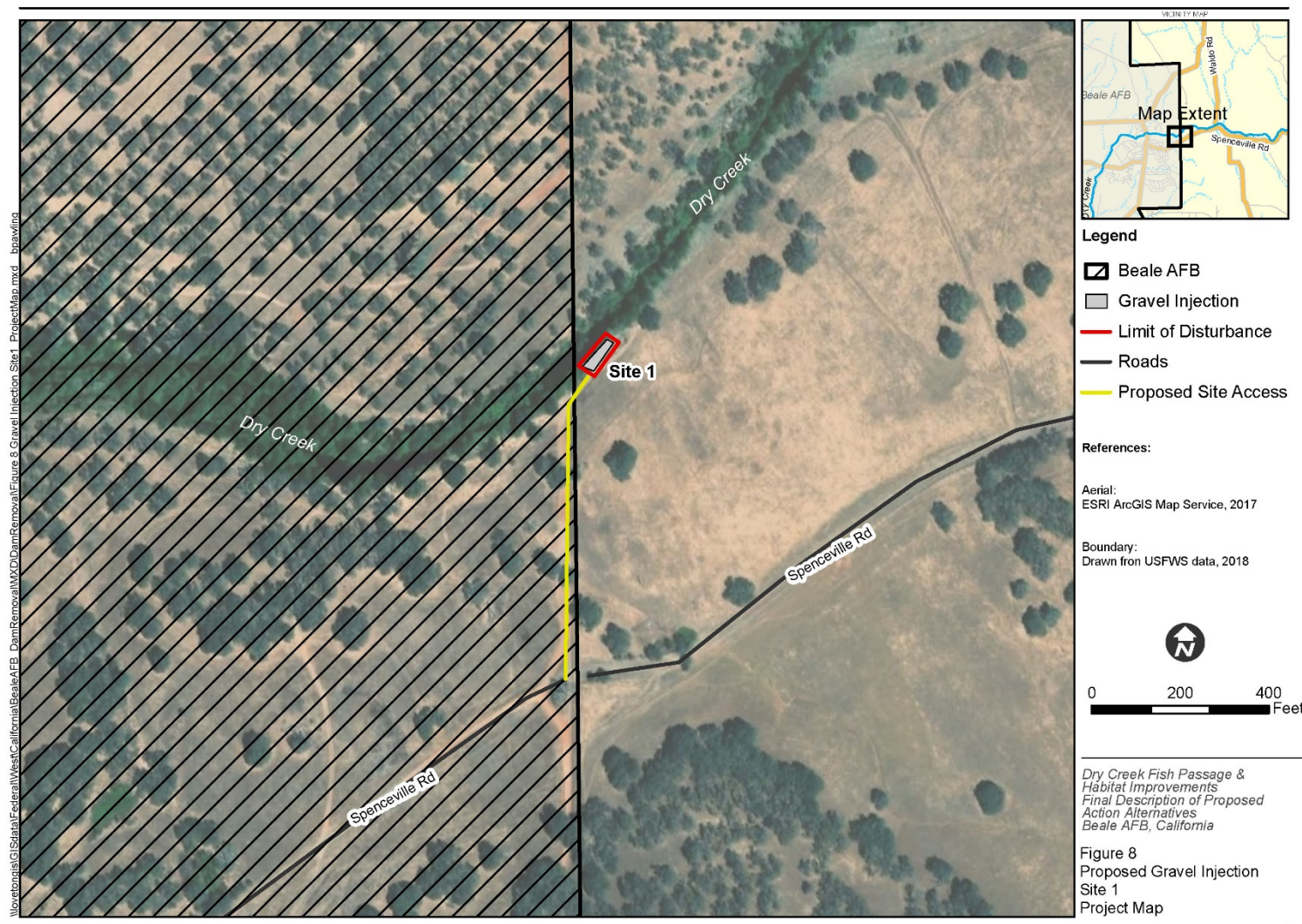
Rehabilitation of the Beale Lake Fish Ladder would include replacing the existing fish ladder with a pool and chute fish ladder design. The pool and chute fish ladder would be the best fish

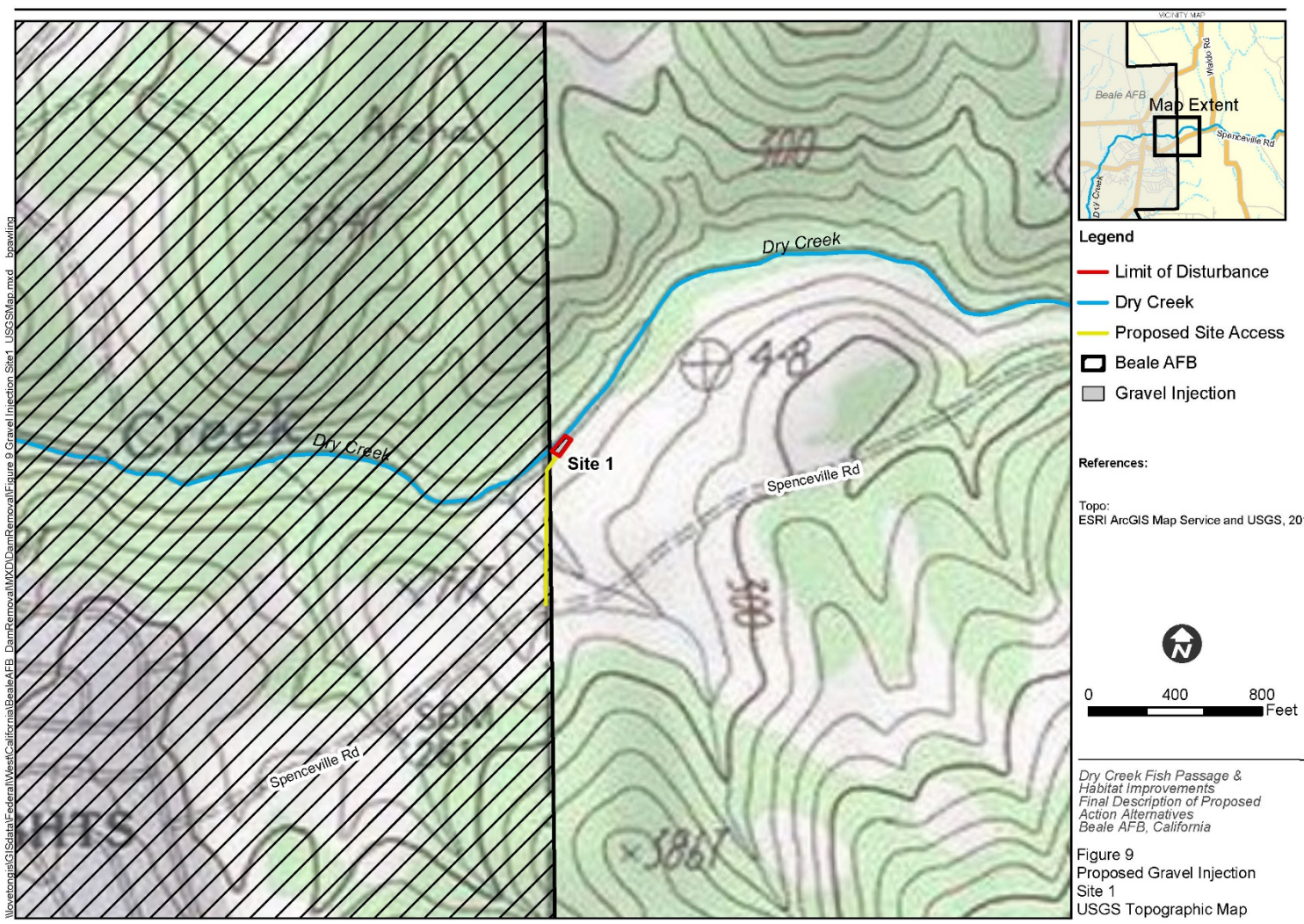
ladder design for this location as it is capable of operating across a wide range of flow conditions (USFWS 2016). The most likely location for the pool and chute fish ladder would be within the existing spillway, with the ladder aligned parallel to the Dry Creek channel downstream of the dam, thereby improving fish entrance conditions and reducing false attraction of fish to the dam spillway (USFWS 2016). The exposed abandoned sewer pipe would still be removed.

Although this alternative would improve fish passage in Dry Creek, it would not meet the purpose and need of the Proposed Action because it does not reduce the long-term liability associated with the aging dam infrastructure. In June 2016, USACE inspected Beale Lake Dam and stated the dam's overall condition as "poor." They noted that the right dam abutment was compromised and not stable, and the left abutment was undermined. As a result, USACE recommended that USAF develop both short- and long-term strategies to improve the safety of the structure (USACE 2016). USAF does not need the lake or the dam to meet its mission. Long-term maintenance of the dam would impose an unnecessary burden on Base Command to ensure its safe operation.

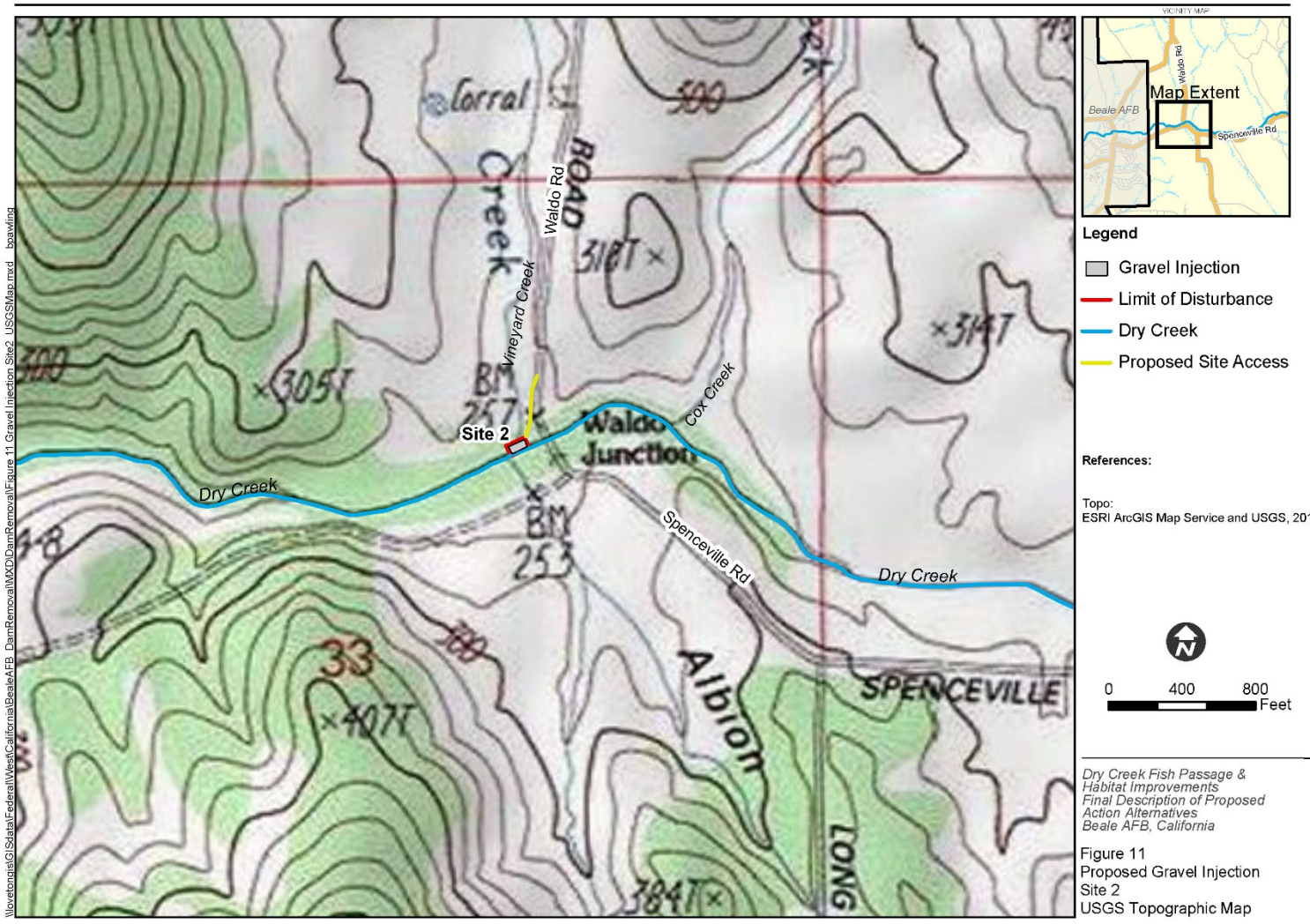




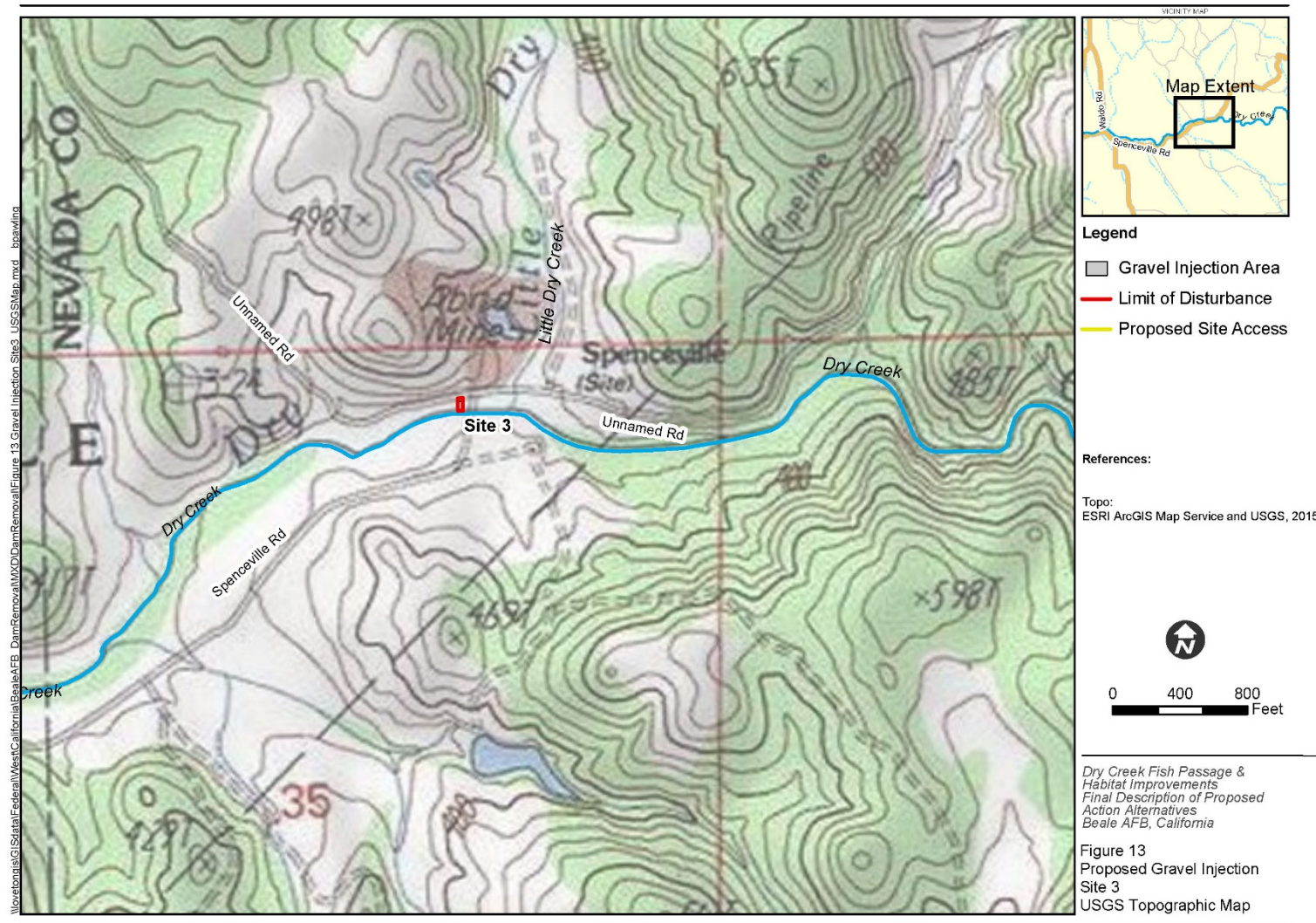


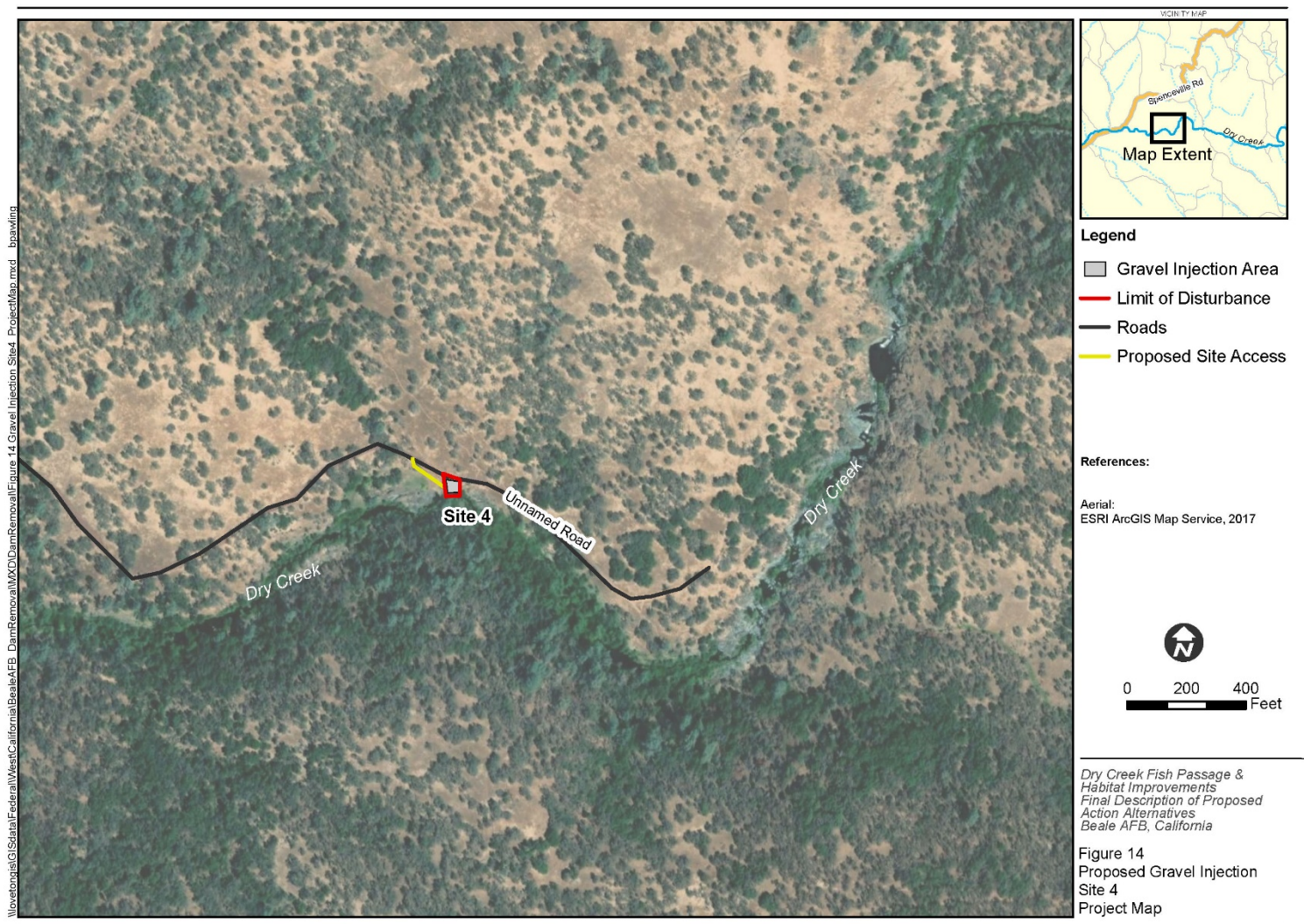


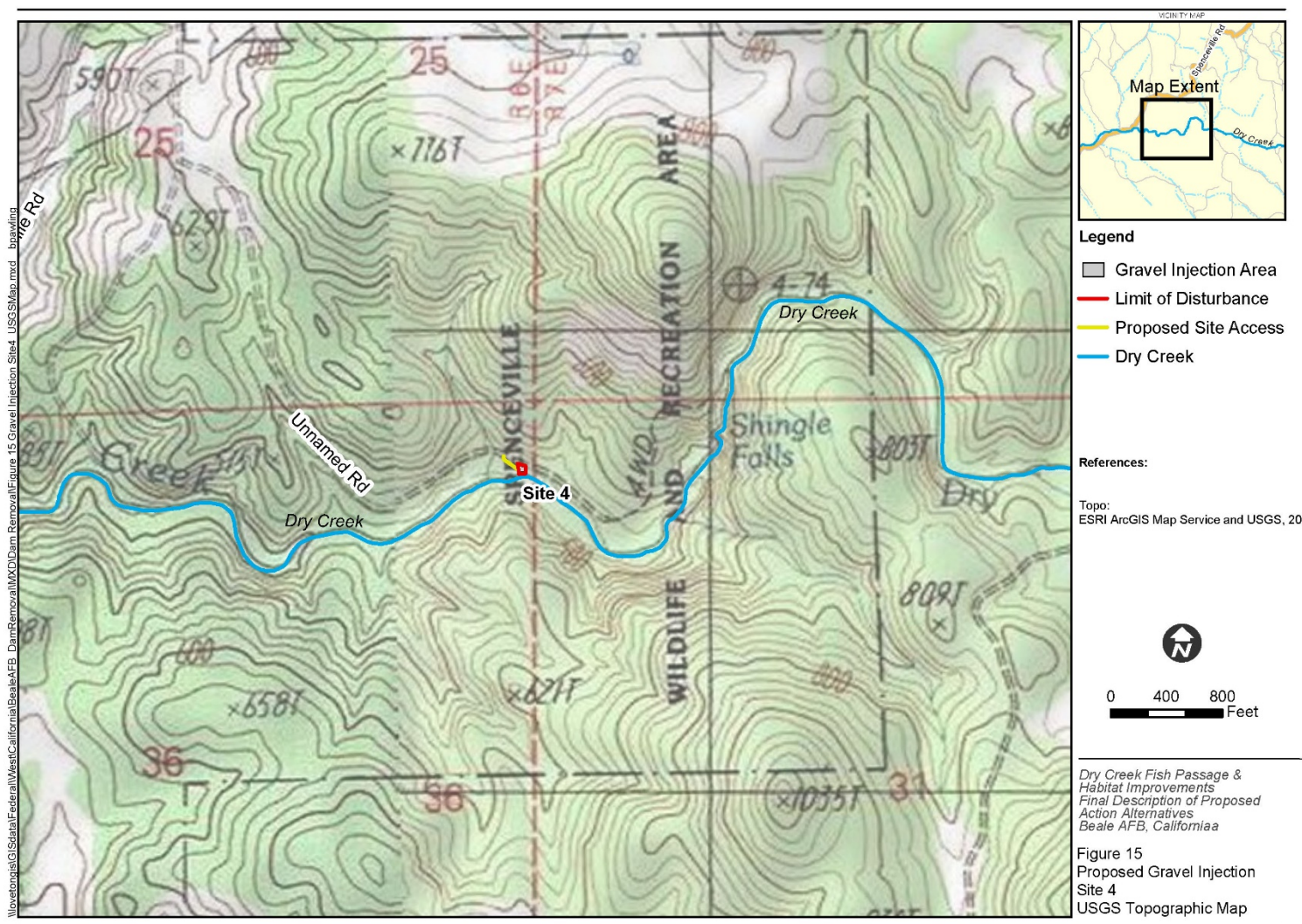












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3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The affected environment reviews the environmental setting or general environmental conditions of the proposed project area. It describes the environmental baseline against which the environmental effects can be evaluated. In compliance with NEPA, CEQA, and other relevant regulations, only those resource areas considered potentially subject to impacts, and with potentially significant issues, are discussed below. This section includes discussions of noise, air quality, land use and recreation, geological resources, water resources, coastal zone management, biological resources, human health and safety, utilities and infrastructure, transportation, hazardous materials and wastes, socioeconomic resources and environmental justice, and cultural and tribal cultural resources.

The following sections present a description of the environmental resources and baseline conditions that could potentially be affected from implementing the Proposed Action. In addition, an analysis of the potential environmental consequences of implementing the Proposed Action, as well as the No Action Alternative, is also presented. In accordance with CEQ guidelines (40 CFR Part 1508.8), each alternative considered was evaluated for its potential effect on physical, biological, and socioeconomic resources.

The impact analyses consider the alternatives discussed in Chapter 2 that have been identified as reasonable for meeting the purpose and need for action. Those alternatives include:

Preferred Alternative—The Preferred Alternative includes removing the RM 6.2 Low Flow Crossing and Beale Lake Dam (including the fish ladder and abandoned sewer pipe). Following removal, a low flow stream channel would be installed at the RM 6.2 Low Flow Crossing and Beale Lake would be restored to a free-flowing stream. In addition, spawning habitat for anadromous salmonids would be created in Dry Creek by inserting gravel injections at four locations upstream of Beale Lake Dam.

No Action Alternative—Under the No Action Alternative, the RM 6.2 Low Flow Crossing and Beale Lake Dam would not be removed and fish passage past Beale Lake Falls would not be enhanced. In addition, the gravel spawning beds upstream of Beale Lake Dam would not be enhanced.

The criteria below were used to analyze impacts on the resources. For the purposes of this report, the existing conditions are used as a baseline comparison for the Preferred Alternative or No Action Alternative impacts. Each impact discussion for each resource area in the Environmental Consequences section will begin with the following:

- No effects would be expected
- Minor adverse effects would be expected
- Minor beneficial effects would be expected

- Moderate adverse effects would be expected
- Moderate beneficial effects would be expected
- Major adverse effects would be expected
- Major beneficial effects would be expected
- Combination of the above (minor beneficial and minor adverse effects would be expected).

To further clarify the nature of the various impacts upon each resource in the Environmental Consequences section of this Draft EA, the following terms were used and are defined.

Short-Term or Long-Term—These characteristics are determined on a case-by-case basis and do not refer to any rigid time period. In general, short-term impacts are those that would occur only with respect to a particular activity, for a finite period, or only during the time required for construction or installation activities. Long-term impacts are those that are more likely to be persistent and chronic.

Direct or Indirect—A direct impact is caused by and occurs contemporaneously at or near the location of the action. An indirect impact is caused by a Preferred Alternative and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action. For example, a direct impact of erosion on a water body might include sediment-laden waters in the vicinity of the action, whereas an indirect impact of the same erosion might lead to lack of spawning and result in lowered reproduction rates of indigenous fish in nearby waters.

Negligible, Minor, Moderate, or Major—These relative terms are used to characterize the magnitude or intensity of an impact. Negligible impacts are generally those that might be perceptible but are at the lower level of detection. A minor effect is slight, but detectable. A moderate impact is readily apparent. A major impact is one that is severely adverse or exceptionally beneficial.

Adverse or Beneficial—An adverse impact is one having unfavorable or undesirable outcomes on the man-made or natural environment. A beneficial impact is one having positive outcomes on the man-made or natural environment. A single act might result in adverse impacts on one environmental resource and beneficial impacts on another resource.

Environmental consequences are weighed by their significance. Under NEPA, significance is based on context and intensity (40 C.F.R. § 1508.27), while under CEQA, significance is contextualized as a significant effect on the environment resulting from the entire action (CEQA Guidelines, § 15382). For the purposes of this document, significance is consistent with how the term is defined under both NEPA and CEQA.

3.1 NOISE

3.1.1 Definition of the Resource

Sound is defined as a particular auditory effect produced by a given source. Noise and sound share the same physical aspects; however, noise is considered a disturbance while sound is defined as an auditory effect. Noise is typically defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise bothersome. Noise can be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of day. Affected receptors can be specific, such as schools or hospitals, or broad, such as green space or wildlife reserves, in which occasional or persistent sensitivity to noise above ambient levels exists.

3.1.2 Existing Conditions

The ambient noise environment at Beale AFB resembles a typical airfield. The noise environment generally includes military aircraft operations and automobile traffic. Beale AFB is equipped with a fleet of U-2, RQ-4 Global Hawk, KC-135A, and associated support equipment. Vehicle use associated with military operations at Beale AFB consists of passenger and military vehicles and delivery and fuel trucks. Noise associated with military operations can include weapons training and aircraft maintenance activities.

Beale Lake Dam is located approximately 5 miles from the Beale AFB airfield; therefore, military-related noise is minimal within the project area. The area surrounding the dam is mostly residential. Noise in this environment is generally associated with vehicles, airplanes, traffic, barking dogs, lawn mowers, and leaf blowers. Much of the area surrounding the gravel injection sites is mostly undeveloped within the Spenceville Wildlife Area. Unnatural noise associated with this area would mostly include vehicles and airplanes flying overhead.

Ambient noise associated with the RM 6.2 Low Flow Crossing, Beale Lake Dam, and the gravel injection sites is natural noise of the water flowing over the crossing and dam, water flowing within Dry Creek, and noise associated with animals such as birds, frogs, and insects.

3.1.3 Environmental Consequences

Preferred Alternative

During construction, short-term, negligible impacts to noise would occur. Table 1 includes a list of construction equipment and the representative noise level during operation. There is a small section of housing located just northeast of Beale Lake Dam and there is a nature trail that leads from Ryden Park, a small park on the base, located west of the dam. Construction noise has the potential to be heard from these areas. Construction noise can often be described as loud, impulsive, or annoying. To reduce impacts related to construction noise, all construction activities would be conducted during normal business hours (from approximately 7 a.m. to

5 p.m.) and all equipment would be outfitted with mufflers that would be in good working condition. The majority of the land surrounding the RM 6.2 Low Flow Crossing and the gravel injection sites is considered open space or agricultural. It is not anticipated that noise from construction equipment in these areas would be problematic. Following the excavation of the low flow crossing and dam, there would be no increase in noise over the ambient levels currently at the site.

Table 1 Noise Levels of Representative Construction Equipment

Equipment	Noise Level (Decibels)
Backhoe	80
Flat Bed Truck	84
Dozer	85
Jackhammer	85
Generator	70
Excavator	85
Excavator-mounted Hoe Ram	90
Front-End Loader	80
Grader	85
Air Compressor	80
Pickup Truck	45
Street Sweeper	80
Vibratory Roller	85
Note: Noise levels are given at a distance of 50 ft from the source. Source: Construction Noise Handbook (Federal Highway Administration 2006).	

No Action Alternative

Under the No Action Alternative, there would be no change in the noise levels at the low flow crossing, Beale Lake Dam, or gravel injection sites.

3.2 AIR QUALITY AND GREENHOUSE GASSES

3.2.1 Definition of the Resource

In accordance with the CAA (42 U.S. Code 7409) requirements, the air quality in a given region or area is measured by the concentration of criteria pollutants in the atmosphere. The air quality in a region is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological “air basin,” and the prevailing meteorological conditions.

Ambient Air Quality Standards—Under the CAA, the U.S. Environmental Protection Agency (EPA) developed National Ambient Air Quality Standards (NAAQS) for pollutants that have been determined to affect human health and the environment (Table 2). The NAAQS represent the maximum allowable concentrations for ozone measured as either volatile organic compounds or total nitrogen oxides, carbon monoxide, nitrogen dioxide, sulfur dioxide, respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM10] and particulate matter equal to or less than 2.5 microns in diameter [PM2.5]), and lead (40 CFR Part 50).

Table 2 National Ambient Air Quality Standards

Pollutant	Average Period	Federal Air Quality Standards			
		Primary Standard		Secondary Standard	
		Level	Statistic	Level	Statistic
Carbon Dioxide	8-hour	9 ppm	Maximum	None	
	1-hour	35 ppm	Maximum		
Lead	Rolling 3-month average	0.15 µg/m³	Maximum	Same as Primary	
Nitrogen Dioxide	Annual	0.053 ppm	Arithmetic Mean	Same as Primary	
	1-hour	0.100 ppm	3-year average	None	
PM ₁₀	24-hour	150 µg/m³	Maximum	Same as Primary	
PM _{2.5}	Annual	12 µg/m³	Annual Mean Averaged Over 3 Years	15 µg/m³	Annual Mean Averaged Over 3 Years
	24-hour	35 µg/m³	3-year average	Same as Primary	
Ozone	8-hour	0.070 ppm	3-year average	Same as Primary	
Sulfur Dioxide	3-hour	None		0.5 ppm	Maximum
	1-hour	0.075 ppm	3-year average	None	
NOTES: µg/m³ = Microgram(s) per cubic meter. ppm = Part(s) per million.					

California Ambient Air Quality Standards—The California Air Resources Board regulates air quality for the State of California, which includes regulations of pollutants that have been determined by the state of California to affect human health and the environment for the most sensitive populations (Table 3). Pollutants for which California Ambient Air Quality Standards (CAAQS) were established include PM₁₀, PM_{2.5}, ozone, nitrogen dioxide, sulfate, carbon monoxide, sulfur dioxide, visibility reducing particles, lead, hydrogen sulfide, and vinyl chloride. California law continues to mandate CAAQS, although attainment of the NAAQS has precedence over attainment of the CAAQS due to federal penalties for failure to meet federal attainment deadlines. California law does not require that CAAQS be met by specified dates as is the case with NAAQS. Rather, it requires incremental progress toward attainment (California Air Resources Board 2019).

Table 3 California Ambient Air Quality Standards

Criteria Pollutant	Average Period	Level	Method
Ozone	1-hour	0.09 ppm	Ultraviolet Photometry
	8-hour	0.070 ppm	
Carbon Monoxide	1-hour	20 ppm	Non-Dispersive Infrared Photometry
	8-hour	9 ppm	
Nitrogen Dioxide	1-hour	0.18 ppm	Gas Phase Chemiluminescence
	Annual	0.030 ppm	
PM ₁₀	24-hour	50 µg/m ³	Gravimetric or Beta Attenuation
	Annual	20 µg/m ³	
PM _{2.5}	Annual	12.0 µg/m ³	--
Lead	30-day Average	1.5 µg/m ³	Atomic Absorption
Hydrogen Sulfide	1-hour	0.03 ppm / 42 µg/m ³	Ultraviolet Fluorescence
Sulfate	24-hour	25 µg/m ³	Ion Chromatography
Vinyl Chloride	24-hour	0.01 ppm / 26 µg/m ³	Gas Chromatography
NOTES: µg/m ³ = Microgram(s) per cubic meter. ppm = Part(s) per million.			

Attainment versus Non-Attainment and General Conformity—EPA classifies the air quality in an air quality control region (AQCR), or in subareas of an AQCR, according to whether the concentrations of criteria pollutants in ambient air exceed the NAAQS. Areas within each AQCR are, therefore, designated as either “attainment,” “non-attainment,” “maintenance,” or “unclassified” for each of the six criteria pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS; non-attainment indicates that criteria pollutant levels exceed NAAQS; maintenance indicates that an area was previously designated non-attainment but is now meeting attainment; and an unclassified air quality designation by EPA means that there is not enough information to appropriately classify an AQCR, so the area is considered unclassified.

Federal Prevention of Significant Deterioration—Federal Prevention of Significant Deterioration (PSD) regulations apply in attainment areas to a major stationary source, (i.e., source with the potential to emit 250 tons per year of any criteria pollutant), and a significant modification to a major stationary source (i.e., change that adds 15–40 tons per year to the facility’s potential to emit depending on the pollutant). Additional PSD major source and significant modification thresholds apply for greenhouse gases (GHGs). PSD regulations can also apply to stationary sources if: (1) a proposed project is within 10 kilometers of national parks or wilderness areas (i.e., Class I Areas), and (2) regulated stationary source pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 microgram per cubic meter or more (40 CFR 52.21[b][23][iii]). A Class I area includes national parks larger than 6,000 acres, national wilderness areas and national memorial parks larger than 5,000 acres, and international parks. PSD regulations also

define ambient air increments, limiting the allowable increases to any area's baseline air contaminant concentrations, based on the area's Class designation (40 CFR 52.21[c]).

Greenhouse Gas Emissions—GHGs are gaseous emissions that trap heat in the atmosphere. These emissions occur from natural processes and human activities. The most common GHGs emitted from natural processes and human activities include carbon dioxide, methane, and nitrous oxide. GHGs are primarily produced by the burning of fossil fuels and through industrial and biological processes. CEQ issued a new Draft NEPA Guidance on Consideration of GHG Emissions on 26 June 2019. This guidance, if finalized, would replace the final guidance CEQ issued on 1 August 2016, titled “Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews,” which was withdrawn effective 5 April 2017 for further consideration pursuant to Executive Order 13783 of 28 March 2017, “Promoting Energy Independence and Economic Growth.”

EO 13514 was signed in October 2009 and requires agencies to set goals for reducing GHG emissions. One requirement within EO 13514 is the development and implementation of an agency Strategic Sustainability Performance Plan (SSPP) that prioritizes agency actions based on lifecycle return on investment. Each SSPP is required to identify, among other things, “agency activities, policies, plans, procedures, and practices” and “specific agency goals; a schedule, milestones, and approaches for achieving results; and quantifiable metrics” relevant to the implementation of EO 13514. On 26 August 2010, DoD released its SSPP to the public. This implementation plan describes specific actions DoD would take to achieve its individual GHG reduction targets, reduce long-term costs, and meet the full range of goals of the EO. All SSPPs segregate GHG emissions into three categories: Scope 1, Scope 2, and Scope 3 emissions. Scope 1 emissions are those directly occurring from sources that are owned or controlled by the agency. Scope 2 emissions are indirect emissions generated in the production of electricity, heat, or steam purchased by the agency. Scope 3 emissions are other indirect GHG emissions that result from agency activities but from sources that are not owned or directly controlled by the agency. The GHG goals in the DoD SSPP include reducing Scope 1 and Scope 2 GHG emissions by 34 percent by 2020, relative to Fiscal Year 2008 emissions; and reducing Scope 3 GHG emissions by 13.5 percent by 2020, relative to Fiscal Year 2008 emissions.

3.2.2 Existing Air Quality

The following sections describe the general climate surrounding Beale AFB and attainment with NAAQS.

3.2.2.1 Climate

Beale AFB is located in the interior valley between the California coast and the Sierra Nevada mountain ranges and has a regional climate described as Mediterranean subtropical. Because Beale AFB is located inland of the Pacific Ocean, the valley experiences hot, dry summers and cool, wet winters. May through October is considered the dry season and is characterized by low precipitation and warm temperatures. November through April is considered the wet season and

is characterized by moderate precipitation, cool temperatures, and high northerly and southerly winds.

In 2019, Beale AFB received an annual precipitation of 26.45 in., with 85 percent of all rainfall occurring from November through April (Table 4). High summer temperatures average in the 80s and 90s, sometimes reaching above 100 degrees Fahrenheit (°F). July and August are typically the hottest and driest months of the year (Table 4). Winters at Beale AFB are mild with average low temperatures in the 40s (Table 4).

Table 4 2019 Weather Data at Beale AFB

Month	Average Mean Temperature (°F)	Average Maximum Temperature (°F)	Average Minimum Temperature (°F)	Total Precipitation (in.)
January	49	59	40	5.43
February	47	54	40	7.20
March	53	62	43	3.71
April	62	74	51	0.90
May	63	76	51	3.61
June	72	87	53	0.00
July	79	94	60	0.00
August	79	94	63	0.00
September	71	86	57	0.30
October	61	78	46	0.00
November	54	68	41	0.46
December	49	57	42	4.84
Source: Weather Underground 2020.				

3.2.2.2 Air Quality Conditions

Beale AFB, located in Yuba County, is regulated by the Feather River Air Quality Management District (FRAQMD). FRAQMD is responsible for implementing and enforcing state and federal air quality regulations in Yuba County, Sutter County, and portions of the Northern Sacramento Valley Air Basin.

Air quality in Yuba County has been assessed by FRAQMD for compliance with the CAAQS and NAAQS. Three air quality designations can be given to an area for a particular pollutant:

- **Nonattainment:** Applies when air quality standards have not been consistently achieved.
- **Attainment:** Applies when air quality standards have been achieved.
- **Unclassified:** Applies when there is not enough monitoring data to determine whether the area is in nonattainment or attainment.

Relevant ambient air quality standards and their attainment status for Yuba County are listed in Table 5. The 2019 status is not yet available for Nevada County.

Table 5 Area Designations for Yuba and Nevada Counties, 2018

Criteria Pollutant	Averaging Time	CAAQS			NAAQS		
		Standard	Yuba Attainment Status	Nevada Attainment Status	Standard	Yuba Attainment Status	Nevada Attainment Status
Ozone	1-hour	0.09 ppm	Attainment	Unclassified	--	--	--
	8-hour	0.070 ppm		Nonattainment	0.070 ppm	Attainment	Nonattainment
Carbon Monoxide	1-hour	20 ppm	Attainment	Unclassified	35 ppm	Attainment	Unclassified
	8-hour	9 ppm			9 ppm		
Nitrogen Dioxide	1-hour	0.18 ppm	Attainment	Attainment	100 ppb	Attainment	Attainment
	Annual	0.030 ppm			0.053 ppm		
PM ₁₀	24-hour	50 µg/m ³	Nonattainment	Nonattainment	150 µg/m ³	Unclassified	Unclassified
	Annual	20 µg/m ³			--	--	--
PM _{2.5}	24-hour	--	--	--	35 µg/m ³	Unclassified	Unclassified
	Annual	12.0 µg/m ³	Attainment	Unclassified	12.0 µg/m ³	Attainment	Attainment
Lead	30-day Average	1.5 µg/m ³	Attainment	Attainment	--	--	--
	Calendar Quarter	--	--	--	1.5 µg/m ³	Attainment	Attainment
	Rolling 3-month Average	--	--	--	0.15 µg/m ³	Unclassified	Unclassified
Hydrogen Sulfide	1-hour	0.03 ppm / 42 µg/m ³	Unclassified	Unclassified	No National Standard		
Sulfate	24-hour	25 µg/m ³	Attainment	Attainment	No National Standard		
Sulfur Dioxide	1-hour	0.25 ppm	Attainment	Attainment	75 ppb	Attainment	Attainment
	24-hour	0.04 ppm	Attainment	Attainment	0.14 ppm	Attainment	Attainment
	Annual	--	--	--	0.030 ppm	Attainment	Attainment
Vinyl Chloride	24-hour	0.01 ppm / 26 µg/m ³	Unclassified	Unclassified	No National Standard		
NOTES: µg/m ³ = Microgram(s) per cubic meter. ppm = Part(s) per million. SOURCE: California Air Resources Board 2018a.							

Various sources on the installation emit criteria pollutants and hazardous air pollutants including generators, boilers, water heaters, fuel storage tanks, gasoline service stations, surface coating/paint booths, and miscellaneous chemical usage. The air quality in Yuba County is characterized by the EPA as maintenance for PM_{2.5} (2006) and as unclassified/attainment for all other criteria pollutants (U.S. EPA 2019). Beale AFB is not within 10 kilometers of a Class I area.

Two of the gravel injection sites (Sites 3 and 4) are located in Nevada County, which is regulated by the Northern Sierra Air Quality Management District. The air quality in Nevada County is characterized by EPA as nonattainment for 8-hour ozone. In addition, the California Air Resources Board has designated western Nevada County as a nonattainment area for 8-hour

ozone in 2018. The Northern Sierra Air Quality Management District has requested a voluntary reclassification to the ozone nonattainment and has prepared an Ozone Plan to address the classification planning requirements that demonstrate attainment of the ozone standard by July 2021 (California Air Resources Board 2018b).

3.2.3 Environmental Consequences

Preferred Alternative

USAF's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impacts associated with the preferred alternative in accordance with AFI 32-7040, *Air Quality Compliance And Resource Management*; the Environmental Impact Analysis Process (32 CFR 989); and the General Conformity Rule (40 CFR 93 Subpart B). Total combined direct and indirect emissions associated with the removal of the low flow crossing and dam, gravel injections, and use of/creation of access roads were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions. General Conformity under CAA Section 1.76 has been evaluated for the preferred alternative according to the requirements of 40 CFR 93, Subpart B. Table 6 and Table 7 provide the general conformity summary for both Yuba County and Nevada County in 2020 and 2021, respectively. Detailed results of the general conformity analysis are located in Appendix B. None of the estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); therefore, the requirements of the General Conformity Rule are not applicable.

Overall, impacts to air quality during construction would be negligible. The operation of construction equipment and use of vehicles along the paved and unpaved access roads would generate criteria pollutant emissions and greenhouse gases; however, none of criteria pollutant emissions would exceed the general conformity thresholds. The calculated emissions for GHGs as CO₂e were well below 25,000 metric tons, which is the reference point provided in CEQ Guidance (CEQ 2014); hence, the impact is considered insignificant. To reduce particulate matter, a water tank truck would be used for dust suppression.

Table 6 General Conformity Summary 2020

Pollutant	Action Emissions (tons per year)	General Conformity	
		Threshold (tons per year)	Exceedance (Yes or No)
Yuba City-Marysville, California			
VOC	0.114	100	No
NOx	0.705	100	No
CO	0.764		
SOx	0.002	100	No
PM 10	0.078		
PM 2.5	0.032	100	No
Pb	0.000		
NH3	0.000	100	No
CO2e	173.8		
Nevada Co. (Western Part), CA			
VOC	0.114	100	No
NOx	0.705	100	No
CO	0.764		
SOx	0.002		
PM 10	0.078		
PM 2.5	0.032		
Pb	0.000		
NH3	0.000		
CO2e	173.8		
Notes: CO = Carbon monoxide. CO2e = Carbon dioxide equivalent. NH3 = Ammonia. NOx = Nitrogen oxides. Pb = Lead. SOx = Sulfur oxides. VOC = Volatile organic compound.			

Table 7 General Conformity Summary 2021

Pollutant	Action Emissions (tons per year)	General Conformity	
		Threshold (tons per year)	Exceedance (Yes or No)
Yuba City-Marysville, California			
VOC	0.081	100	No
NOx	0.541	100	No
CO	0.448		
SOx	0.001	100	No
PM 10	1.813		
PM 2.5	0.022	100	No
Pb	0.000		
NH3	0.000	100	No
CO2e	126.6		
Nevada Co. (Western Part), CA			
VOC	0.081	100	No
NOx	0.541	100	No
CO	0.448		
SOx	0.001		
PM 10	1.813		
PM 2.5	0.022		
Pb	0.000		
NH3	0.000		
CO2e	126.6		
Notes: CO = Carbon monoxide. CO2e = Carbon dioxide equivalent. NH3 = Ammonia. NOx = Nitrogen oxides. Pb = Lead. SOx = Sulfur oxides. VOC = Volatile organic compound.			

No Action Alternative

Under the No Action Alternative, the low flow crossing and Beale Lake Dam would not be removed and gravel would not be distributed within Dry Creek. There would be no impact to air quality as no criteria air pollutants would be emitted.

3.3 LAND USE, AGRICULTURE, RECREATION, AND AESTHETICS

3.3.1 Definition of the Resource

Land use generally refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. Descriptive terms often used include residential, commercial, industrial, agricultural, institutional, and recreational. Aesthetics are important amenities in outdoor environments because people have preferences for certain environmental qualities over others. While often viewed as subjective, these preferences have direct impacts on tourism, recreation, and stakeholder satisfaction (Brady 2006).

3.3.2 Existing Conditions

Beale AFB contains improved, semi-improved, and unimproved land areas based on land classifications defined in AFI 32-7064. A variety of land uses can be found that are typical of military installations. Approximately 96 percent of the land use total for the installation includes open space, airfield, industrial, and housing (Beale AFB 2018a). Beale Lake Dam is located within a Habitat Conservation Area on Beale AFB. Land use north and south of the dam is considered housing (accompanied and unaccompanied), community (commercial and service), and open space (Beale AFB 2018a).

Land use surrounding the gravel injection sites includes a riparian area along Dry Creek and open space. Land use surrounding the RM 6.2 Low Flow Crossing includes a riparian area along Dry Creek and adjacent agricultural fields.

Recreation resources at Beale AFB include a recreation facility (the Harris Fitness center), walking trails, parks and picnic areas, designated hunting and fishing areas, campground, stable, golf course, and other open spaces. Ryden Park is a 3-acre community park located along Dry Creek in the family housing area. The park includes pavilions and picnic areas and is located adjacent to a bridge over Dry Creek. A 1.5-mile nature trail is located near the housing area along Dry Creek. The trail begins at Beale Lake and ends at Ryden Park. A paved pedestrian and bicycle trail, compliant with the Americans with Disabilities Act, with a bridge overlooking Dry Creek extends from the flight line area to Ryden Park. Fishing is permitted in all lakes and streams on Beale AFB including Dry Creek and Beale Lake. Boating is not allowed on Beale Lake.

Gravel Injection Sites 2, 3, and 4 are within the Spenceville Wildlife Area, which has recreational opportunities for fishing, hiking, birding, and hunting. Recreation resources do not exist around the RM 6.2 Low Flow Crossing, as the area is exclusively agricultural.

Aesthetic qualities near Beale Lake Dam are generally high. Beale Lake has a pleasant visual character, typical for a lake. Views of Beale Lake can be enjoyed from the family housing area on the base, and the bridge overlooking Dry Creek provides views of the lake. The abandoned and exposed sewer line is also visible downstream from Beale Lake Dam.

Aesthetic qualities around the RM 6.2 Low Flow Crossing are typical for a riparian zone running through farmland. Due to their location within the Spenceville Wildlife Area, Gravel Injection Sites 2, 3, and 4 are considered to have pleasant natural aesthetics.

3.3.3 Environmental Consequences

Preferred Alternative

The Preferred Alternative would have no impact to land use within Beale AFB and in areas adjacent to the RM 6.2 Low Flow Crossing and gravel injection sites. Following the removal of the low flow crossing, a low flow stream channel would be installed. The resulting channel would be graded to match the grade immediately upstream and downstream of the existing slab.

There would be no impacts to adjacent farmland or agricultural uses. Following the removal of Beale Lake Dam, the lakebed would be restored to a stream channel. This stream channel would be comprised of adequately sized rock, similar in character to the natural streambed. Following the placement of gravel material within the four injection sites, the natural high flows would allow the gravel to naturally distribute within Dry Creek. The overall land use designation of these project areas would remain unchanged.

Short-term, minor adverse impacts to recreation would occur during the construction period. Construction activities may create short-term public safety concerns for recreationists. The nature trail that runs adjacent to Dry Creek within the immediate area of Beale Lake Dam would be unsafe for walkers and bikers during construction and would therefore not be accessible to recreationists. In addition, fishing within the immediate construction area would not be permitted. Visitors to Ryden Park would not be affected during the construction period, as this park is located outside the project area. Recreation within the immediate vicinity of the RM 6.2 Low Flow Crossing and the gravel injection sites would also be interrupted during the construction period; however, gravel injections are expected to be short in duration as compared to the rest of the project.

Following construction, negligible impacts to recreation would occur. Beale Lake would be converted to a natural flowing stream, and recreation activities associated with the presence of the lake would no longer be possible. Fishing opportunities would still be available within the stream, but the fishing experience could be considered different from the previous fishing experience on Beale Lake.

Short-term, minor adverse impacts to aesthetics would occur during the construction period. Adverse impacts to aesthetics include the active construction sites at Beale Lake Dam and the RM 6.2 Low Flow Crossing, as well as the injections of spawning gravel at the gravel injection sites. These impacts would be temporary and are not expected to result in long-term adverse impacts to aesthetics. Long-term impacts to aesthetics are considered negligible. Long-term aesthetics of the RM 6.2 Low Flow Crossing would remain unchanged, with a similar channel profile as compared to pre-removal. Beale Lake would become a free-flowing creek; however, aesthetics of creeks and lakes are often considered to be similar. The abandoned and exposed sewer pipeline at Beale Lake Dam would be removed, which would create long-term, beneficial impacts to aesthetics in the area. Long-term aesthetics of the gravel injection sites would also be similar to their pre-injection states as gravel would eventually be distributed within the channel during high flow events.

No Action Alternative

Under the No Action Alternative, Beale Lake Dam and the RM 6.2 Low Flow Crossing would not be removed. Gravel would not be placed within the four injection sites. There would be no change to the land use categories. Recreation within the project areas would remain as is. The nature trail would continue to be accessible for hiking, running, and biking. Fishing would also continue to be allowed within Dry Creek and Beale Lake. Long-term, minor, adverse impacts to aesthetics would occur as the abandoned and exposed sewer pipeline at Beale lake Dam would not be removed. In addition, as Beale Lake Dam continues to degrade, there is the potential for

dam failure in the future. If the dam were to fail, long-term, moderate, adverse impacts to downstream communities and landowners would occur. Impacts would include flooding of properties adjacent to Dry Creek, which can result in property damage and personal injury.

3.4 GEOLOGICAL, MINERAL, AND SOIL RESOURCES

3.4.1 Definition of the Resource

Geological resources consist of all bedrock and soil materials within the project area. Geologic factors such as soil stability and seismic properties influence the stability of structures. Soil, in general, refers to unconsolidated earthen materials overlying bedrock and other parent material. Soil structure, elasticity, strength, shrink-swell potential, and erodibility all determine the ability for the ground to support structures and facilities. Soils typically are described in terms of their type, slope, physical characteristics, and relative compatibility or limitations with regard to particular construction activities and types of land use.

Topography consists of the physiographic, or surface, features of an area and is usually described with respect to elevation, slope, aspect, and landforms. Long-term geological, erosional, and depositional processes typically influence topographic relief.

3.4.2 Existing Conditions

Geology

Beale AFB is located on the boundary of the Great Valley and Sierra Nevada geologic provinces. The Great Valley Province consists of a deep, northwest-trending sedimentary basin that borders the eastern side of the Coast Ranges. It formed as a basin between the Coast Range Province on the west and the Sierra Nevada Province on the east. The basin has filled with alluvial deposits from the erosion of the Sierra Nevada and the Coast Ranges (Beale AFB 2014b).

Surficial geologic features surrounding Beale AFB primarily consist of unconsolidated sedimentary, metasedimentary, and igneous (volcanic) materials that have eroded off nearby mountains or have been deposited by streams and storm events. Four geomorphic units (i.e., surface features) associated with the Great Valley Province cover most of Beale AFB: river floodplains and channels of the Modesto Formation, low alluvial plains and fans of the Riverbank Formation, and dissected uplands of the Mehrten and Laguna formations. A fifth geomorphic unit, Metavolcanic Rock, occurs in the eastern portion of the base and is characteristic of the Sierra Nevada foothills (Beale AFB 2018a). The proposed project area is in the Metavolcanic Rock geomorphic unit.

Topography

The western and central portions of Beale AFB (flight line and Main Base) consist of relatively flat grasslands, characteristic of the topography of the Central Valley. The elevation of Beale AFB is approximately 80–90 ft above mean sea level (North American Vertical Datum of 1988) along the western and southern border. The eastern portion of the base, including the family housing area and the proposed project area, contains low, rolling hills that gradually merge with the foothills of the Sierra Nevada Mountains. The topography becomes progressively steeper

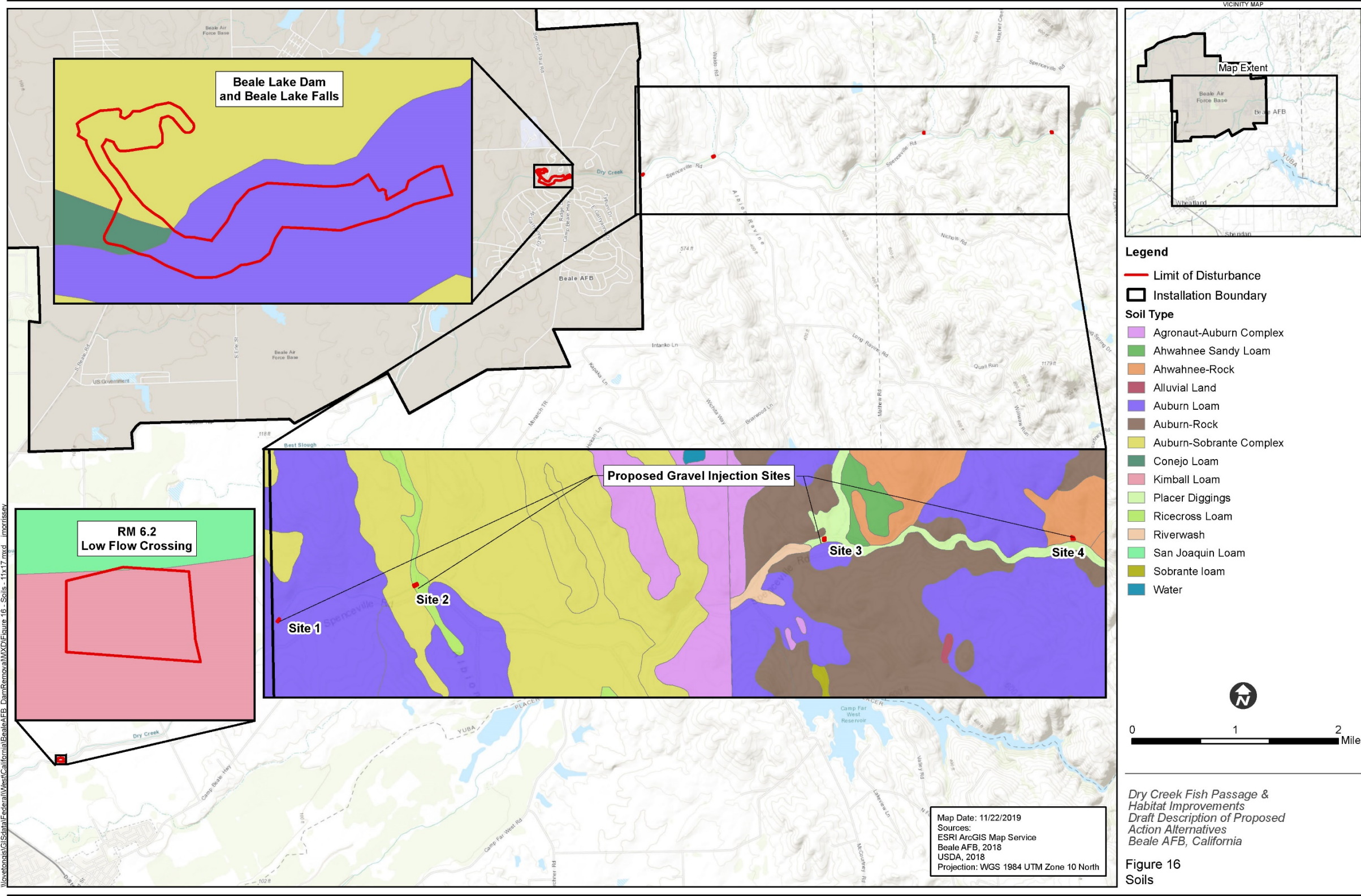
towards the east. The dissected uplands of the Laguna Formations have elevations of 100–300 ft above mean sea level. Further towards the Metavolcanic Rock Formation, elevations exceed 500 ft above mean sea level in some locations. Elevations near Beale Lake Dam are approximately 200–300 ft above mean sea level (Beale AFB 2018a).

Topography of the RM 6.2 Low Flow Crossing is approximately 80 ft above mean sea level. Topography becomes progressively steeper as you move from Gravel Injection Site 1 (approximately 220 ft above mean sea level) to Gravel Injection Site 4 (approximately 430 ft above mean sea level).

Mineral and Soil Resources

There are 14 soil map units of soil series or soil complexes on Beale AFB that can be grouped into two main categories: Central Valley Terraces and Sierra Nevada Foothill. The Main Base and flight line are on the valley soils. The proposed project area (Beale Lake Dam) and family housing area are on the foothill soils. Soils at Beale AFB contain a high amount of clay and have an underlying hardpan; therefore, the construction period at the base is limited to the dry season (May through October). The exclusion period for earth-disturbing activities on Beale AFB is from November 1 through June 1 to avoid problems arising from saturated soils in work areas (Beale AFB 2018a). Foothill soils are suitable for wildlife habitat and livestock grazing. They favor native oaks, shrubs, forbs, and annual grasses. Restrictions are soil depth (highly variable), slope (3–75 percent), and water erosion. Figure 16 includes a soil map of the project areas. Table 8 includes the soils located within the project area and their characteristics.

Mineral lands do occur in both Yuba County and Nevada County, California. Currently, in Yuba County there are 304 mining claims and 887 mining claims in Nevada County (Diggings 2019).



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Table 8 Soils Located within the Proposed Project Area

Soil Type	Project Area	Description
Ahwahnee-Rock	Gravel Injection Site 4	Moderately deep, well-drained soils formed in weathered material from Granite Rocks. Found on gently sloping footslopes to steep mountains. Moderately rapid permeability.
Auburn Loam	Beale Lake Dam, Gravel Site 1, 2, and 3	Shallow or moderately deep, well-drained soils formed in material weathered from basic metavolcanics rock. Found on foothills. Moderately high permeability.
Auburn Rock	Gravel Injection Site 4	Shallow or moderately deep, well-drained soils formed in material weathered from basic metavolcanics rock. Found on foothills. Moderately high permeability. Rock outcroppings common.
Auburn-Sobrante Complex	Beale Lake Dam, Gravel Site 2	Well-drained soils formed in material weathered from greenstone. Found in Sierra Nevada foothills.
Conejo Loam	Beale Lake Dam	Very deep, well-drained soils formed in alluvium from basic igneous or sedimentary rock. Found on alluvial fans and stream terraces. Moderately slow permeability.
Kimball Loam	Low Flow Crossing	Very deep, well-drained soils formed in alluvium from mixed sources. Found on low terraces. Slow permeability.
Placer Diggings	Gravel Injection Sites 3 and 4	Historic gold mine.
San Joaquin Loam	Low Flow Crossing	Moderately deep, well- and moderately well-drained soils that formed in alluvium derived from mixed but dominantly granitic rock sources. Found on undulating low terraces. Very slow permeability.

3.4.3 Environmental Consequences

Preferred Alternative

The Preferred Alternative involves ground disturbance by heavy construction equipment such as backhoes, bulldozers, graders, wheel rollers, and dump trucks; the creation of temporary access roads; and clearing and grubbing of vegetation. The use of heavy construction equipment and creation of and use of temporary access roads would create long-term, minor adverse impacts to soils due to soil compaction. The excavation and removal of RM 6.2 Low Flow Crossing and Beale Lake Dam would also create minor adverse impacts to soil due to the removal of soil during construction. The clearing and grubbing of vegetation would also create minor adverse impacts to soils; however, the use of construction BMPs would reduce soil erosion. Sediment removed during construction would be reused to support project designs. Following construction, the disturbed areas outside of the stream bed and existing roads would be stabilized by seeding these areas with an appropriate seed mixture.

Impacts to geological resources would be negligible. Although excavation would occur during the removal of the low flow crossing and dam, excavation would generally not be very deep to alter the geologic layers underlying the project sites. There would be no impact to mineral resources. The Preferred Alternative would not impact the topography of the area. Following the removal of the low flow crossing and dam, Dry Creek would be graded to match the grade immediately upstream and downstream of the project areas.

No Action Alternative

Under the No Action Alternative, RM 6.2 Low Flow Crossing and Beale Lake Dam would remain in place and gravel injections would not occur. There would be no impact to geologic resources including geology, topography, and soils, as no excavation would occur.

3.5 WATER RESOURCES

3.5.1 Surface Water

3.5.1.1 Definition of the Resource

Surface water resources generally consist of permanently or seasonally flooded water features including lakes, ponds, rivers, streams, and oceans.

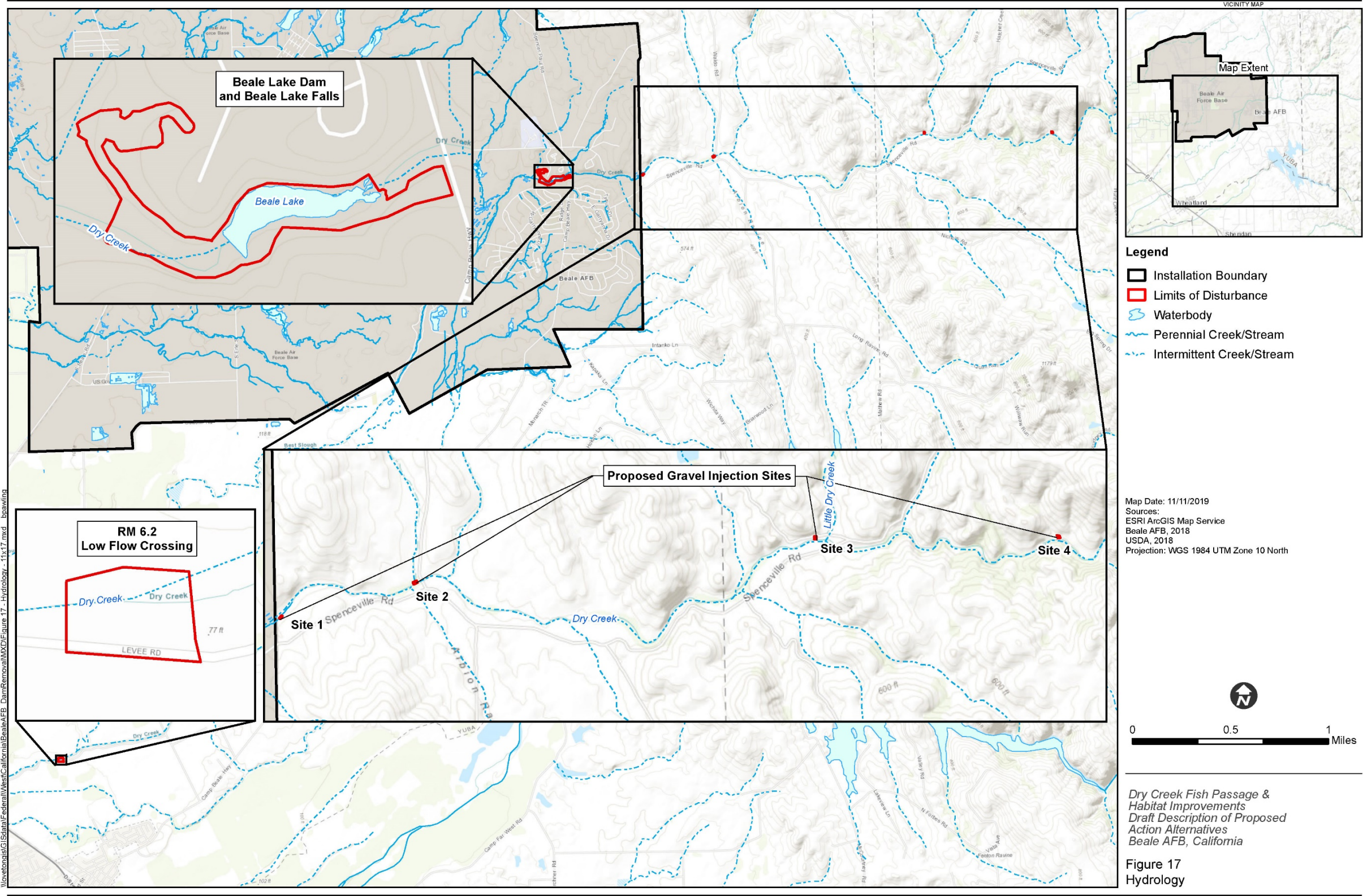
3.5.1.2 Existing Conditions

Beale AFB is flanked by major river systems to the north (Yuba River), west (Feather River), and south (Bear River). Three creeks flow southwesterly across Beale AFB including Dry Creek, Hutchinson Creek, and Reeds Creek (Figure 17).

Dry Creek enters the eastern side of the base from the adjacent Spenceville Wildlife Area and is the main drainage of the eastern side of the base. Surface runoff from the family housing area drains into Dry Creek via small tributaries. Dry Creek is impounded at the northern end of the base, creating Beale Lake. Dry Creek is the sum of two perennial streams originating in the Sugarloaf Mountain and Pilot Peak watershed and is fed by intermittent streams as it flows westward through the Sierra Nevada foothills in eastern Yuba and western Nevada counties. Flows are additionally augmented in the summer by transbasin diversions to the Spenceville Wildlife Area.

Hutchinson Creek is the main drainage for the central portion of the base including the Main Base and the flight line. Hutchinson Creek originates from multiple small tributaries north of the base. Reeds Creek enters the base at its northwestern boundary and flows southwest along its northern border before turning south. Reeds Creek is fed by water released from Miller Lake, drainages around the flight line, and Brophy Canal.

There are currently 44 lakes and stock ponds throughout Beale AFB (Figure 17). Most of these features are manmade and cover approximately 270 acres during the wet season. These surface water features fluctuate in size depending on amount of rainfall and summer temperatures. In general, the lakes and storage ponds range from 0.3 to 46 acres. There are 22 earthen dams associated with the lakes and ponds at Beale AFB. Beale Lake is the only impoundment on the base with a concrete dam.



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Within the project area, Beale Lake, the RM 6.2 Low Flow Crossing, and the gravel injection sites are located along Dry Creek, which is characterized in this area as an intermittent stream (although it is now perennial due to transbasin diversions to Spenceville Wildlife Area). Dry Creek is a bedrock-controlled, partially contained reach that transitions into a highly confined bedrock gorge where it enters Beale Lake. Downstream of the dam, Dry Creek continues to be highly bedrock-influenced for another 0.3–0.5 mile, at which point the valley wall disappears and the system becomes an alluvial system with a low valley slope. Gravel Injection Site 2 is found immediately upstream of an unnamed tributary to Dry Creek and immediately downstream of the confluence of Vineyard Creek and Dry Creek. Site 3 is located downstream of the confluence of Little Dry Creek and Dry Creek. The stockpile area north of Beale Lake Dam is also directly abutting an intermittent stream.

3.5.1.3 Environmental Consequences

Preferred Alternative

The Preferred Alternative would result in the removal of Beale Lake Dam, the low flow crossing at RM 6.2, and the addition of gravel at the upstream gravel injection sites suitable for spawning. The removal of the low flow crossing and Beale Lake Dam would restore Dry Creek and Beale Lake to a free-flowing stream.

Removal of the dam would have short-term, minor adverse impacts on surface water hydrology from instream construction related to removal of Beale Lake Dam and the low flow crossing at RM 6.2.

Dewatering at Beale Lake will require the installation of a mechanical pumping system capable of conveying a maximum flow rate of 20 cfs. The pumping system will consist of submersible electric pumps placed within the pool directly below Beale Lake Falls. The pumps will be provided with screens to prevent incidental take of fish. Power systems for the electric pumps will be placed outside of the stream alignment along the access road to provide for safe access for fueling and maintenance. The system will involve the installation of a temporary supersack cofferdam below the falls, and water will be pumped outside of the stream and discharged below the current dam location. A combination of dissipation devices on the discharge line and the installation of clean rock material at the discharge point will be used to prevent erosion and turbidity in the stream. Similar methods will be utilized to dewater the RM 6.2 Low Flow Crossing, however pumps utilized at that location are not anticipated to be submersible.

These impacts would be minimized through the use of BMPs. Following removal of the structures, water and coarse sediment would once again be able to flow unimpeded in Dry Creek within the project area and downstream. Removal of the dam and low flow crossing would alter hydrology and fluvial processes, which would create a more natural state for the stream. Water temperatures would be likely to decrease as it would no longer sit stagnant in Beale Lake, which would provide a benefit to anadromous salmonids which utilize the river. Removal of the impoundment would also result in a lesser surface area of water due to the loss of Beale Lake, decreasing evaporation, allowing more water to remain within the watershed. Erosion resulting from the placement of Beale Lake Dam would be lessened from the return of sediment transport

and a widening channel. However, Dry Creek is confined and highly bedrock influenced for much of the stretch upstream and downstream of Beale Lake and Beale Lake Dam, and would continue to be highly influenced by the natural bedrock geology in these areas. Although placement of spawning gravel could increase the wetted area of streams due to displacement of water, it should not adversely affect hydrology. Upstream gravel injection would improve the stream's substrate for spawning.

Overall, the Preferred Alternative would have long-term, beneficial impacts to surface waters.

No Action Alternative

Under the No Action Alternative, the project would not be undertaken, and conditions would remain as they are currently at the gravel injection sites and the RM 6.2 Low Flow Crossing. The low flow crossing would not be removed and would continue to act as a barrier to natural stream flow and river migration. Beale Lake Dam located along Dry Creek would be left in place and continue to deteriorate. The dam would continue to impound water and prevent coarse sediment transport downstream. Dry Creek would continue to experience a high degree of entrenchment and would continue to have an incised channel. Under the No Action Alternative, no gravel would be added to the gravel injection sites, and these sections of Dry Creek would continue to provide only limited suitable spawning sites. Overall, the No Action Alternative would have long-term, minor adverse impacts to surface water.

3.5.2 Groundwater

3.5.2.1 Definition of the Resource

Groundwater resources consist of water located beneath the ground surface in soil pore space, bedrock fractures, and subterranean drainage (i.e., karst dissolution features).

3.5.2.2 Existing Conditions

The groundwater table at Beale AFB is shallowest in the eastern portion of the base and deepest in the western portion of the base (Beale AFB 2018b). Groundwater for drinking purposes at Beale AFB occurs 300 to 500 ft below ground surface and is presumed to originate in unconfined aquifer material with local clay/silt lenses overlying the Central Valley groundwater basin. Groundwater in the northern portion of Beale AFB is recharged from the Yuba River drainage basin and is considered to be the highest quality groundwater on the installation because it contains low levels of total dissolved solids, nitrates, and sulfates (Beale AFB 2014b). Groundwater in the central portion of Beale AFB contains higher levels of total dissolved solids and nitrates. Groundwater from the southern portion of Beale AFB, which receives its recharge from Dry Creek and Bear River, has a water quality between that of the northern and central portions of the installation.

Groundwater in several places at Beale AFB has been contaminated with chemicals such as petrochemicals and solvents due to historical Army and Air Force activities. More than 1,000 groundwater monitoring wells, extraction wells, and piezometers are now located

throughout the base (Beale AFB 2018a). Groundwater contaminant levels are monitored at 7 sites using protocols in the Basewide Groundwater Monitoring Program Report (Beale AFB 2018b).

3.5.2.3 Environmental Consequences

Preferred Alternative

Groundwater at Beale AFB and the surrounding areas typically occurs from 4 to 100 ft below ground surface (Beale AFB 2012). Actions under the Preferred Alternative would be unlikely to result in impacts to groundwater. At Beale Lake Dam, the area is immediately underlain by metamorphic bedrock at shallow depths, and therefore current groundwater recharge rates are not anticipated to be meaningfully impacted due to the removal of Beale Lake and associated decrease in the wetted area. Moreover, there are no groundwater production or monitoring wells in the vicinity of Beale Lake, and therefore any minor impacts to groundwater recharge are not anticipated to have any negative impacts.

At the RM 6.2 Low Flow Crossing, groundwater is not anticipated to be impacted. Removal of the concrete slab will result in an increase in permeable substrate beneath the creek, as well as a decrease in the wetted area associated with the grading of the pool that currently exists behind the slab. These impacts are anticipated to negate one another and return Dry Creek in these reaches to a natural, free-flowing creek.

There will be no impacts to groundwater recharge associated with four gravel injection sites, as the gravel will be of large enough size so as not to impact infiltration. Overall, impacts to groundwater associated with the proposed action are considered negligible.

No Action Alternative

Under the No Action Alternative, RM 6.2 Low Flow Crossing and Beale Lake Dam would remain in place and gravel injections would not occur. There would be no impacts to groundwater from the No Action Alternative.

3.5.3 Wetlands

3.5.3.1 Definition of the Resource

Wetlands and waters of the United States are defined within the CWA, as amended, and jurisdiction is addressed by EPA and USACE. These agencies assert jurisdiction over the following:

- Traditionally navigable waters
- Wetlands adjacent to navigable waters

- Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-around or have continuous flow at least seasonally
- Wetlands that directly abut tributaries.

Section 404 of the CWA regulates the discharge of dredge or fills into waters of the United States, including wetlands. Encroachment into waters of the United States and wetlands typically requires a permit from the state and the federal government.

3.5.3.2 Existing Conditions

There are approximately 3,089 acres of wetlands, including vernal pools, and/or other water bodies within Beale AFB that are potential waters of the United States regulated under Section 404 of the CWA. This includes 2,328 acres of wetlands and 761 acres of non-wetland waters (deep water, ditch, seep, stream, and swale) (Beale AFB 2018a; Beale AFB 2015). Beale AFB also includes approximately 1,379 acres of vernal pools, which are extensive in the western, central, and southern portions of the base. These vernal pools have fluctuating water levels seasonally and provide unique habitat for plants that germinate as aquatic/semiaquatic plants but survive a terrestrial life and a drought environment as the vernal pool dries. Wetlands including vernal pools, riparian forests, and freshwater marshes provide habitat for a variety of wildlife on the base. Figure 18 depicts the wetland and non-wetland waters located within the project area.

Beale Lake is characterized as a palustrine, unconsolidated bottom, artificially flooded wetland, (PUBK). Downstream of Beale Lake Dam and still within the project area, Dry Creek is considered a palustrine forested/emergent persistent, seasonally flooded wetland (PFO/EM1C). Downstream at the RM 6.2 Low Flow Crossing, Dry Creek is characterized as a riverine, lower perennial, permanently flooded wetland with an unconsolidated bottom (R2UBH). The staging and stockpile areas directly abutting the stream are characterized as riverine, intermittent, streambed, and seasonally flooded (R4SBC).

The upstream gravel injection sites are located within Dry Creek. At Sites 1 and 2, the riparian area on the banks of Dry Creek is characterized as palustrine, scrub-shrub, emergent, persistent, seasonally flooded wetland (PSS/EM1C). Site 3 is within a wetland area characterized as palustrine, scrub-shrub, and seasonally flooded (PSSC). Site 4, the most upstream of the gravel injection sites, is within a wetland characterized as riverine, upper perennial, unconsolidated bottom, and permanently flooded (R3UBH). The riparian wetland area along Dry Creek is described in greater detail in Section 3.7.1.

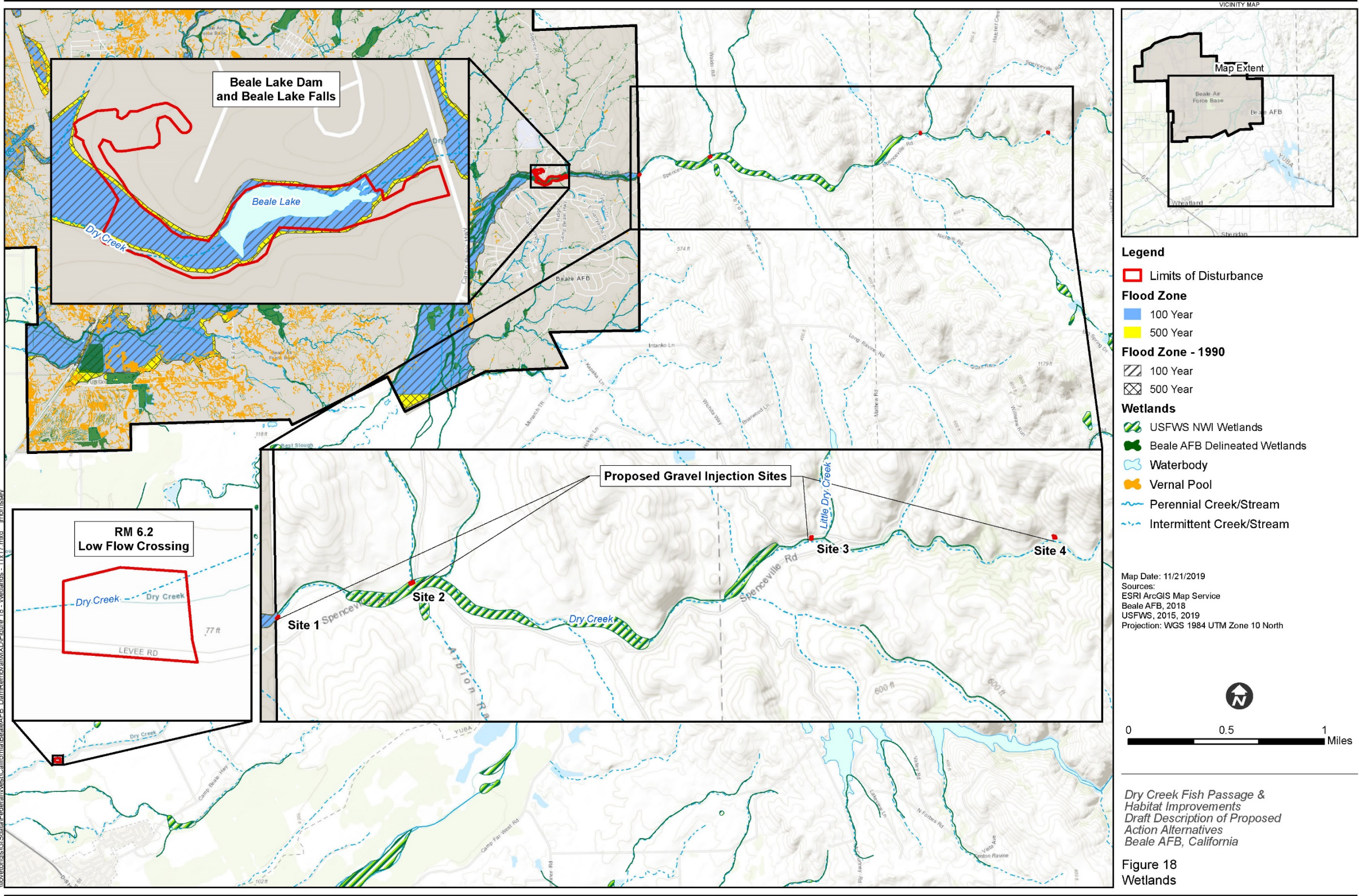
3.5.3.3 Environmental Consequences

Preferred Alternative

The Preferred Alternative would result in the conversion of Beale Lake to a free-flowing stream. This would result in the conversion of approximately 1.97 acres of artificially flooded emergent

wetland to palustrine scrub or riverine wetland. The removal of the low flow crossing at RM 6.2 would also potentially alter the hydrology of the riverine wetland, which could result in a conversion to a different wetland type. The substrate in wetlands found at the gravel injection sites would be altered by the placement of gravel within the wetland, but this gravel would be consistent with other portions of Dry Creek. The intermittent streambed wetlands abutting the staging area near Beale Lake would be protected using silt fence and other appropriate BMPs. Temporary timber mats or similar BMPs would be utilized to minimize ground disturbance along access routes in or near wetlands, and all material would be removed from the site post-construction. The staging area and access routes would be reseeded with an appropriate seed mixture.

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Overall, the proposed action would have long-term, minor adverse impacts on wetlands from the conversion of the artificially created freshwater wetland to a more natural palustrine system. Impacts to wetlands from the Preferred Alternative would be minimized to the extent possible, but the conversion of palustrine wetlands surrounding Beale Lake to riverine wetlands as a result of the dam removal would still occur. There is no practicable alternative to reduce the conversion of these wetlands, as this wetland type only occurs in this area as a result of the artificial hydrology created by the existing dam. The removal of the dam is necessary to meet the purpose and need to improve fish passage and create spawning habitat. Prior to any construction, a Section 404 permit would be submitted to the USACE Sacramento District to ensure compliance with the CWA. In addition, a Section 401 Water Quality Certification would also be submitted to the Central Valley Regional Water Quality Control Board.

No Action Alternative

Currently, the presence of the dam has altered natural flow and riparian wetlands, and resulted in the creation of freshwater palustrine wetlands along Beale Lake. Overall, current conditions have a long-term, minor adverse impact on natural wetlands.

3.5.4 Floodplains

3.5.4.1 Definition of the Resource

Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters. The living and non-living parts of natural flood zones interact with each other to create dynamic systems in which each component helps to maintain the characteristics of the environment that supports it. Floodplain ecosystems function includes natural moderation of floods, flood storage and conveyance, groundwater recharge nutrient cycling, water quality maintenance and a diversity of plants and animals. Floodplains provide a broad area to spread out and temporarily store floodwaters. This reduces flood peaks and velocities and the potential for erosion. In their natural vegetated state, flood zones slow the rate at which the incoming overland flow reaches the main water body.

3.5.4.2 Existing Conditions

The Federal Emergency Management Agency (FEMA) develops floodplain maps to ensure compliance with regulatory statutes and not necessarily from an ecosystem value standpoint. However, for the purposes of this EA, FEMA floodplain maps were utilized. The project area is covered by the following FEMA maps: 06115C0445D, 06115C0475D, 06057C0725E, and 06057C0750E. Beale Lake and Beale Lake Dam are located within the 100-year floodplain (Figure 18). The low flow crossing at RM 6.2 is within the mapped 1 percent annual chance floodplain (Zone A) (FEMA 2011a). The Gravel Injection Sites 1 and 2 are within Zone D of the floodplain, which means the floodplain has not been mapped in this area, and the flood hazard is unknown (FEMA 2011b). Gravel Injection Sites 3 and 4 are characterized as being within Zone X, or areas of minimal flood hazard (FEMA 2010a, 2010b).

3.5.4.3 Environmental Consequences

Preferred Alternative

Under the Preferred Alternative, Beale Lake Dam and the low flow crossing at RM 6.2 would be removed. The low flow crossing is within the 1 percent annual chance floodplain, though the left bank of Dry Creek is diked in this area. Dry Creek is highly constrained in this area by natural bedrock features.

The low flow crossing is in an alluvial system, which would have historically been more connected to the surrounding floodplain. The removal of Beale Lake Dam and the low flow crossing would allow Dry Creek to return in part to a free-flowing stream, which would reconnect the stream to the floodplain and would allow for transport and deposition of coarse sediment into the floodplain. Removing these structures would alter hydrology and fluvial processes in areas not constrained by bedrock, resulting in a widened channel and floodplain, which would benefit the stream channel by decreasing the speed of flood waters and increasing flood flow and storage capacity.

It is likely that removal of the dam would reduce the area impacted by the 1 percent annual flood risk in the current lake area upstream of the dam. As such, the USAF may consider applying for a Letter of Map Revision from FEMA to document this smaller floodplain area. Based on modeling completed by USACE, and under flow events starting at the 2-year event, there is a small or basically zero change in flows at the boundary of Beale AFB both with and without the Beale Lake Dam in place. Therefore, there would be no impacts to flood impacts as a result of the Proposed Action (USACE 2018).

No Action Alternative

The No Action Alternative would result in no impacts on the floodplain. The floodplain of Dry Creek would continue to be impeded from a free-flowing state by the presence of Beale Lake Dam and the low flow crossing at RM 6.2.

3.6 COASTAL ZONE MANAGEMENT

3.6.1 Definition of the Resource

The Coastal Zone Management Act (CZMA) (16 U.S. Code 1451 et seq.) declares a national policy to preserve, protect, develop, and, where possible, restore or enhance the resources of the Nation's coastal zone. The coastal zone generally refers to the coastal waters and the adjacent shorelines, including islands, transitional and intertidal areas, salt marshes, wetlands, and beaches, and includes the Great Lakes. The CZMA encourages states to exercise their full authority over the coastal zone through the development of land and water use programs in cooperation with federal and local governments. Development projects affecting land/or water use, or natural resources of a coastal zone, must ensure the project is, to the maximum extent practicable, consistent with the state's coastal zone management program.

A federal agency may review their activities, other than development projects within the coastal zone, to identify *de minimis* activities, and request state agency concurrence that these *de minimis* activities should not be subject to further state review. *De minimis* activities are activities that are expected to have insignificant direct or indirect (cumulative and secondary) coastal effects and which the state agency concurs are *de minimis*. The state agency is required to provide for public participation under Section 306(d)(14) of the CZMA when reviewing the federal agency's *de minimis* activity request.

3.6.2 Existing Conditions

Beale AFB is not located within the coastal zone.

3.6.3 Environmental Consequences

Preferred Alternative

Beale AFB is not located within the coastal zone; therefore, no impacts are anticipated from the Proposed Action.

No Action

Beale AFB is not located within the coastal zone; therefore, no impacts are anticipated from the No Action Alternative.

3.7 BIOLOGICAL RESOURCES

Beale AFB is in the ecological and geographic transition zone between the flat agricultural lands of the Sacramento Valley and the foothills of the western slope of the Sierra Nevada Mountains. The installation is within the Humid Temperate Mediterranean California Dry Steppe ecoregion (Beale AFB 2018a). This ecoregion is characterized by hot, dry summers and mild winters. Beale AFB is within the alluvial plains of the Sacramento and San Joaquin valleys. Vegetation communities within the Sacramento Valley include forested oak woodlands, grasslands, and riparian areas found along the riverine systems (Beale AFB 2018a). Vernal pools are also present and provide important habitat for several listed species. Much of the land surrounding Beale AFB has been converted to agricultural use, including cropland, pasture, and rural communities. This land use provides some wildlife habitat in irrigation ditches and canals, fallow and flooded fields, and hedgerows.

Beale AFB is adjacent to the Spenceville Wildlife Management and Recreation Area (SWA), and borders three conservation easement areas. Three of the four proposed gravel injection sites are found within the SWA. These wildlife areas and undeveloped land within Beale AFB provide habitat for wildlife and plant communities, as well as rare, threatened, and endangered species. All project activities occurring on Beale AFB are within the area that Beale concentrates enhancement and restoration activities.

3.7.1 Vegetation

3.7.1.1 Definition of the Resource

Vegetation resources refer to the plant communities at any scale including grasses, herbs, forbs, shrubs, vines, and trees.

3.7.1.2 Existing Conditions

There are four main plant communities found at Beale AFB and around the areas in the vicinity of the levee and gravel injection sites: (1) grasslands; (2) vernal pool complexes; (3) oak woodland; and (4) riparian areas. Agricultural lands comprise much of the surrounding land in the area, particularly developed orchards and eucalyptus stands. Other vegetation types include freshwater marsh, aquatic vegetation, ruderal vegetation, scrubland, and invasive species monocultures (Beale AFB 2018a). This section focuses on grasslands, riparian area, oak woodlands, freshwater marshes, and aquatic vegetation, which are the plant communities found within the project area and are most likely to be impacted by the Proposed Action.

Grassland: Annual grassland is the most common plant community at Beale AFB, covering approximately 18,835 acres of the installation (Beale AFB 2018a). It is an upland vegetation community dominated by nonnative annual grasses and a variety of native and nonnative forbs. Non-native grass species dominate this plant community, including wild oats (*Avena fatua*), ripgut brome (*Bromus diandrus*), and annual fescue (*Vulpia myuros*). Species of native perennial bunch grasses also occur in some area, including purple needle grass (*Nassella pulchra*) and California melic (*Melica californica*). Several forb species are intermixed with grass species, including sheep sorrel (*Rumex acetosella*), field mustard (*Brassica rapa*), and lupine (*Lupinus* spp.). Within the project area, grassland occurs in the proposed staging area within the project area near Beale Lake.

Riparian Area: Riparian vegetation is found along rivers, streams, creeks, and lakes within the floodplain at Beale AFB and in the larger region. At Beale AFB, these riparian areas can be further classified into three characterizations: cottonwood riparian forest, valley oak riparian forest, and mixed riparian forest (Jones & Stokes Associates 1995). The first, cottonwood willow riparian forest, supports a complex of cottonwoods (*Populus* spp.) with valley oak (*Quercus lobata*), box elder (*Acer negundo*), sycamore (*Platanus occidentalis*), ash (*Fraxinus* spp.), alder (*Alnus* spp.) and willows (*Salix* spp.), with grapes and non-native species in the understory (Beale AFB 2018a). Stands of Oregon ash (*Fraxinus latifolia*) make up much of the riparian areas surrounding Beale Lake. Beale AFB also supports areas of riparian scrub (Beale AFB 2018a). The highest quality riparian area at Beale AFB is found along Dry Creek and Best Slough (Beale AFB 2014a). Dry Creek supports a well-developed and continuous riparian area on the installation as well as surrounding the gravel injection sites.

Oak Woodland: Oak woodlands occur within patches or groves on the foothills within grasslands at Beale AFB and occur along Dry Creek. Oak woodlands are dominated by oak species (*Quercus* spp.), with an annual grassland understory and some shrub species (Beale AFB 2014a, 2018a). On the installation, the dominant oak species is blue oak (*Quercus douglasii*)

intermixed with interior live oak (*Quercus douglasii*) and valley oak (*Quercus lobata*) interspersed with California buckeye (*Aesculus californica*) and gray pine (*Pinus sabiniana*) (Beale AFB 2018a). The foothills surrounding the gravel injection sites are also predominantly oak woodlands. Typically, valley oak woodlands are found at lower elevation sites with deeper soils, while blue oak woodlands occur at higher sites and sites with shallower soils (USFWS 1999).

Freshwater Marsh: Freshwater marshes occur at Beale AFB in drainages and other areas with permanent and relatively slow-moving fresh water. On Dry Creek, this plant community is found interspersed with riparian areas. These wetlands typically support emergent wetland vegetation such as cattails (*Typha* spp.), tule (*Scirpus* spp.), as well as scattered trees and shrubs (Beale AFB 2018a). Open water portions of Beale Lake are considered lacustrine.

Aquatic Plants: Submerged and free-floating aquatic species occur in areas of impoundment and slow-moving water at the installation. This plant community supports species such as duckweed (*Lemna* spp.), waterweed (*Elodea* spp.), and parrot feather (*Myriophyllum* spp.) (Beale AFB 2018a).

3.7.1.3 Environmental Consequences

Preferred Alternative

Under the Preferred Alternative, temporary impacts to vegetation would occur as a result of the removal of Beale Lake Dam and the low flow crossing at RM 6.2. Removal would require the clearing of vegetation surrounding the structures, as well as clearing of vegetation in staging areas. In addition, the use of heavy equipment on dirt access roads could result in dust, which could impact vegetation along the roadway. Heavy equipment use could also result in soil compaction, which could damage substrates and thus vegetative regrowth. Overall, these impacts would be temporary and minor in nature. The staging area near Beale Lake contains impervious surface as well as grassland, which is an abundant vegetative community at Beale. The reseeded upland staging areas following demolition of the dam would mitigate short-term impacts to vegetation. At the gravel injection sites, temporary impacts would occur in riparian area as the result of placement of gravel, but the vegetation in these areas would recover as gravel was dispersed downstream.

Removing Beale Lake Dam would also have long-term, moderate adverse impacts on emergent freshwater vegetation and aquatic vegetation, as this plant community would likely convert to a riparian area given the resulting change in hydrology and streamflow. This plant community was created as a result of the impoundment and would not have occurred without the presence of the dam in the project area. However, long-term beneficial impacts would occur to other plant communities in the project area from widening of the stream and reconnection with the floodplain. Riparian vegetation along Dry Creek is anticipated to increase, providing additional ecological and habitat value. Overall, the Preferred Alternative would have long-term, beneficial impacts on vegetation.

No Action Alternative

The No Action Alternative would not result in any changes to conditions at the site and would not result in impacts to vegetation. The existing vegetative communities would not be altered; the existence of Beale Lake Dam and the low flow crossing at RM 6.2 would continue to alter the hydrology of Dry Creek, which supports communities that would not necessarily occur in the project area naturally, including the freshwater emergent wetland (Beale Lake).

3.7.2 Wildlife

3.7.2.1 Definition of the Resource

Wildlife resources refer to the animal communities that have been specifically observed or are considered likely to utilize the habitats that occur within the site. The wildlife community at Beale AFB and the surrounding region includes several species of fish, amphibians, reptiles, birds, and mammals.

3.7.2.2 Existing Conditions

Beale AFB and the surrounding areas within the project sites provide habitat that supports a variety of wildlife species. Three of the four gravel injection sites are located within the SWA, which provides oak woodlands as well as riparian habitat. Grassland habitats upland of areas identified in the Proposed Action provide nesting, breeding, and foraging habitat for birds, as well as habitat for mammals, reptiles, and invertebrate species. This section focuses on species present in grasslands, riparian habitat, oak woodlands, freshwater marshes, and aquatic habitats, which are the habitats found within the project area and are most likely to be impacted by the Proposed Action.

Grassland: Grasslands are important nesting and breeding habitat for many bird species, and foraging habitat for many bird species that breed in other habitats. Grasslands also provide foraging habitat and cover for several species of mammals and lizards common at Beale AFB (Beale AFB 2018a). Grasslands provide nesting and foraging habitat for a variety of bird species, including the American kestrel (*Falco sparverius*), western bluebird (*Sialia mexicana*), rough-legged hawk (*Buteo lagopus*), western king bird (*Tyrannus verticalis*), western meadowlark (*Sturnella neglecta*), lark sparrow (*Chondestes grammacus*), savannah sparrow (*Passerculus sandwichensis*), horned lark (*Eremophila alpestris*), and Brewer's blackbird (*Euphagus cyanocephalus*). Grasslands are also an important habitat for common rodents and large and small predators, including the gray fox (*Urocyon cinereoargenteus*) and coyote (*Canis latrans*). Reptiles also inhabit the grasslands, including the gopher snake (*Pituophis catenifer*), western rattlesnake (*Crotalus oreganus*), western yellow-bellied racer (*Coluber constrictor*), common king snake (*Lampropeltis getula*), alligator lizard (*Elgaria coerulea*), and western fence lizard (*Sceloporus occidentalis*) (Beale AFB 2018a). The grasslands also provide habitat for many important pollinator species and the monarch butterfly (*Danaus plexippus*).

Riparian Area: Riparian areas, particularly forested riparian areas, are one of the most complex and important wildlife habitats found at Beale AFB (Beale AFB 2018a). Riparian areas provide

forage, cover, and a migratory corridor for several wildlife species. The structural diversity of the habitat allows for canopy, brush understory, tree cavities, and other microhabitats that support several bird species. These areas also provide cover for nesting and rearing to many species, including the California quail (*Callipepla californica*), wood duck (*Aix sponsa*) and western scrub jay (*Aphelocoma californica*) (Beale AFB 2018a). Beale AFB riparian habitats may also provide stopover habitat for migrating yellow-billed cuckoos (*Coccyzus americanus occidentalis*). Mammals, including raccoon (*Procyon lotor*) and several bat species, forage and roost within riparian habitats (Beale AFB 2014a). This habitat also supports amphibian and species at Beale AFB, including the Pacific tree frog (*Pseudacris regilla*), California slender salamander (*Batrachoseps attenuatus*), and western rattlesnake (*Crotalus oreganus*) (Beale AFB 2018a).

Oak Woodland: Oak woodlands support roosting and perching bird species and cavity nesting bird species, as well as nesting and foraging habitat for bird species including the acorn woodpecker (*Melanerpes formicivorus*), Nuttall's woodpecker (*Picoides nuttallii*), ash-throated flycatcher (*Myiarchus cinerascens*) (Beale AFB 2018a). These woodlands also support both large and small mammals, including bobcats (*Lynx rufus*), coyotes, mule deer (*Odocoileus hemionus*) and rodents (Beale AFB 2014a).

Freshwater Marsh: Freshwater marsh habitat is limited regionally compared to historic coverage. However, these remaining marshes provide important habitat for fish-eating birds, including American bittern (*Botaurus lentiginosus*), great blue heron (*Ardea herodias*), and belted kingfisher (*Megaceryle alcyon*), as well as several species of waterfowl (Beale AFB 2018a). Some species have also been observed nesting in cattails in emergent marshes at Beale AFB, and mammals likely live within this habitat, including beaver (*Castor canadensis*) and river otter (*Lutra canadensis*) (Beale AFB 2018a). Freshwater marshes also support amphibian populations. Freshwater marshes along Dry Creek support native fisheries, including speckled dace (*Rhinichthys osculus*), and tule perch (*Hysterocarpus traskii*). Fall-run Chinook salmon (*Oncorhynchus tshawytscha*) and Central Valley steelhead (*Oncorhynchus mykiss*) have also been observed in Dry Creek (Beale AFB 2018a).

Aquatic Habitats Including Ponds and Reservoirs: Aquatic habitats along Dry Creek support many of the same species as freshwater marshes. Beale Lake provides open-water habitat that supports several waterfowl species and fish-eating birds, including dabbling ducks and other waterbirds. Open water areas are also important bat habitat and provide drinking water sources for bats and are also used as habitat by amphibian species (Beale AFB 2018a). Aquatic habitats along Dry Creek support both native and non-native fisheries (Beale AFB 2018a). Beale Lake also supports a warmwater fish species, including sunfish (*Centrarchidae* sp.), bass (*Micropterus* sp.), and carp (*Cyprinidae* sp.).

3.7.2.3 Environmental Consequences

Preferred Alternative

Temporary impacts to wildlife would occur during dewatering and demolition of the low flow crossing and Beale Lake Dam. This would have a short-term, minor adverse impact on aquatic

species from decreased water quality (increased turbidity, and the potential to suspend contaminants in the water column) and an alteration in the hydrology of Dry Creek during dewatering. Time of year restrictions would be put in place to minimize impacts to listed species, as described in Section 3.7.3.

Demolition would also result in temporary, minor adverse impacts to terrestrial species as a result of disturbance. The use of heavy equipment and machinery would cause increased dust, noise, and activity, which would disturb wildlife in the vicinity. Construction also has the potential to result in injury or mortality of wildlife species. However, it is anticipated that wildlife would move away from the project area during demolition activities and would likely return to the site following construction.

The Preferred Alternative would also have long-term, moderate adverse impacts on species that use emergent wetland habitat for foraging or nesting, as this habitat would not remain in the project area following the removal of Beale Lake Dam. This habitat type is present in other areas of Beale AFB, and many species would continue to forage within adjacent riparian habitats. Warmwater fisheries that are present in the ponded area created by Beale Lake Dam would likely be lost; this habitat was created as a result of the development of the dam and would not naturally occur on Dry Creek. Warmwater fisheries are introduced species in this area, so eliminating their habitat would have a beneficial indirect impact on native species.

The reestablishment of Dry Creek as a free-flowing stream system would have long-term beneficial impacts to both terrestrial and aquatic species. The removal of the low flow crossing and dam would allow greater upstream migration for fish and aquatic species and improve water quality. Reconnection of Dry Creek to the floodplain would improve riparian habitat. Enhanced riparian vegetation would provide temperature-reducing shade, nutrient cycling, production of invertebrates, bank cohesion, woody debris used for ground cover, and a buffer zone to impacts from adjacent uplands, providing important benefits to wildlife species. Riparian areas also serve as corridors for wildlife migration and dispersal. Gravel injection at upstream sites would also have long-term beneficial impacts from the creation of spawning habitat and improvements to substrate in Dry Creek.

No Action Alternative

Under the No Action Alternative, Beale Lake Dam and the low flow crossing at RM 6.2 would remain in place, and no gravel injection would occur upstream of the installation. Long-term, moderate, adverse impacts to anadromous fish species would continue to occur as migration to spawning areas would continue to be impeded by Beale Lake Dam. In addition, Beale Lake would continue to support warmwater fish which are non-native to the area.

3.7.3 Threatened and Endangered Species and Species of Concern

3.7.3.1 Definition of the Resource

The Endangered Species Act (16 U.S. Code 1531 et seq.) establishes a federal program to protect and recover imperiled species and the ecosystems upon which they depend. The ESA requires federal agencies, in consultation with USFWS and the National Marine Fisheries Service (NMFS), to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. An endangered species is defined by the ESA as any species in danger of extinction throughout all or a significant portion of its range. A threatened species is defined by the ESA as any species likely to become an endangered species in the foreseeable future. The ESA also prohibits any action that causes a take of any listed species. “Take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or attempt to engage in any such conduct. Listed plants are not protected from take, although it is illegal to collect or maliciously harm them on federal land.

Critical habitat is designated if USFWS or NMFS determines that the habitat is essential to the conservation of a threatened or endangered species. In consultation for those species with critical habitat, federal agencies must ensure that their activities do not adversely modify critical habitat to the point that it would no longer aid in the species’ recovery.

3.7.3.2 Existing Conditions

Species listed as threatened or endangered under the ESA (federal-listed species) and state-listed species that have potential to be affected by implementation of the proposed projects and their alternatives are discussed in this section. This section presents those federal- and state-listed species that have the potential to inhabit the proposed sites within Beale AFB and outside installation boundaries. There are 55 threatened, endangered, or other special-status plant, fish, and wildlife species with the potential to occur at Beale AFB (Beale AFB 2018a). Beale AFB does not contain designated critical habitat.

A Biological Assessment was completed for the Proposed Action in 2019 in order to review the Proposed Action and the potential for impacts to federally listed and candidate species (USFWS 2019b). At this time, the Biological Assessment is still under review, and a Biological Opinion or concurrence with the Biological Assessment has not been received. A NOAA Implementation Record is being submitted in Fall 2019 to meet ESA Section 7 requirements for NOAA species.

Using the USFWS Information for Planning and Consultation (IPaC) tool, a species list was generated for the project area. The USFWS identified seven species with the potential to occur within the area of the Proposed Action. Additional species, including state-listed species, are presented here that are known to have the potential to occur in the project area based on past survey efforts and geospatial reference data for Beale AFB. The federally threatened delta smelt (*Hypomesus transpacificus*) was analyzed in the biological assessment but is not included here, as it is endemic to the upper San Francisco Bay Estuary (Delta) and was not determined to be impacted by the proposed project. Table 9 provides a listing of the federally listed and state-

listed species that are known or have the potential to occur within the areas of the Proposed Action.

Table 9 Listed Species with the Potential to Occur in the Project Area

Listed Species	Federal Status	State Status	Habitat	Presence/Absence
Giant garter snake <i>Thamnophis gigas</i>	FT	ST	Marshes, water conveyance channels, and adjacent uplands	Not suspected
Western pond turtle <i>Actinemys marmota</i>	FR	SSC	Ponds, marshes, and streams for foraging and cover; adjacent grasslands and savannas for nesting	Known
California red-legged frog <i>Rana draytonii</i>	FT	SSC	Slow-moving streams, perennial and ephemeral ponds with upland sheltering such as rocks, small mammal burrows, logs etc. Breeds in deep, slow-moving water with varying amounts of emergent vegetation that stays cool in the summer	Suspected
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	FT	--	Riparian and oak savannah habitats with elderberry shrubs	Known
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	FE	--	Large, deep vernal pools in annual grasslands	Not suspected
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	FT	--	Vernal pools and sandstone rock outcrop pools	Not suspected
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	FE	--	Vernal pools and ephemeral stock ponds	Not suspected
Yellow-billed cuckoo (western distinct population segment) <i>Coccyzus americanus occidentalis</i>	FT	SE	Wooded forests with dense cover and water nearby	Not suspected
Central Valley steelhead <i>Oncorhynchus mykiss</i>	FT	--	Perennial and intermittent streams	Suspected
Fall-run Chinook salmon <i>Oncorhynchus tshawytscha</i>	SoC	SSC	Perennial and intermittent streams	Known
Pallid bat <i>Antrozous pallidus</i>	--	SSC	Open, dry habitats with rocky areas for roosting; roosts in undisturbed areas, such as abandoned buildings and caves	Known
Western red bat <i>Lasiurus blossevillii</i>	--	SSC	Known to roost in cottonwoods or willows, but it is commonly detected in a variety of habitats	Known

Listed Species	Federal Status	State Status	Habitat	Presence/Absence
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	--	SSC	Coniferous forests, mixed meso-phytic forests, deserts, native prairies, riparian communities, active agricultural land and coastal habitats	Known

The giant garter snake (*Thamnophis gigas*) has historically been found in freshwater wetlands, tributary streams, and flood basins, but much of this habitat has been lost in California's Central Valley (USFWS 2019b). While Dry Creek provides some marginal habitat that could be used by the giant garter snake, there has only been one possible sighting in Reeds Creek (approximately 5 miles from the project area) in 2004. Three past surveys occurring between 2005 and 2015 within Beale AFB have not resulted in detections of this species. It is unlikely to occur within the project area (Beale AFB 2018a; USFWS 2019b).

The western pond turtle (*Actinemys marmota*) is found in several areas of Beale AFB and the surrounding landscape. Western pond turtles forage in ponds, marshes, and streams, but nest in grassland habitat adjacent to these areas for nesting (Beale AFB 2018a). Western pond turtles have been noted in the past in Beale Lake, and likely use the riparian habitat surrounding the lake as well as the potential to use the grassland area adjacent to the lake.

The California red-legged frog (*Rana draytonii*) is found in streams with slow-moving water, and pond areas that provide upland sheltering (rocks, logs, burrows, etc.). They breed in areas with cool, slow-moving water (Beale AFB 2018a). Although this habitat is present within the project area in a backwater area on the north side of the lake, past surveys have not resulted in detections of this species at Beale AFB, and the species is believed to be extirpated from the area (Beale AFB 2018a; USFWS 2019b).

The valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) occurs in riparian habitats that support elderberry (*Sambucus* spp.), which is the host plant for the beetle. The valley elderberry longhorn beetle adults eat elderberry leaves and flowers, while larvae burrow into elderberry stems and consume the inside of the stems. This species is rarely seen, as they spend the majority of the life cycle inside elderberry stems; however, their presence can be identified by the holes seen in elderberry stems (Beale AFB 2018a). Several past surveys have been completed to document this species and habitat within the installation, and elderberry stands exhibiting beetle exit holes have been observed along Best Slough and in other areas of the installation (Beale AFB 2018a; USAF 2016). Stands of elderberry shrubs are found within 100 ft of the project area (USFWS 2019b).

Vernal pool crustacean species, including the conservancy fairy shrimp (*Branchinecta conservatio*), vernal pool fairy shrimp (*Branchinecta lynchi*), and vernal pool tadpole shrimp (*Lepidurus packardii*), occur in vernal pools and rocky outcrop pools. While these species occur in other ephemeral waterbodies, they are not known to occur in riverine environments (USFWS 2019b). The project area contains no vernal pools and is not within the critical habitat for these species; it is unlikely these species would be found within the project area.

The western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) is primarily found in mature cottonwood-willow forests, but also use young stands of willows found along meandering streams with erosion and deposition and continual habitat succession (USFWS 2019b). Potential habitat for the western yellow-billed cuckoo occurs roughly 1.25 miles downstream of Beale Lake Dam on Dry Creek, within the project area. Two possible visual detections and one audible detection of western yellow-billed cuckoos have occurred at Beale AFB in the past several years, and the species is known within a 10-mile radius of the installation (Beale AFB 2018a). A base-wide assessment for yellow-billed cuckoo habitat was completed in 2018. Areas along the riparian areas downstream of Beale Lake Dam were deemed to be potential cuckoo habitat, yet poor in quality. This suggests that those areas along Dry Creek may serve as migratory stopover points, rather than breeding habitat. Past surveys have not indicated the presence of cuckoos within the project area (USFWS 2019b).

Central Valley steelhead (*Oncorhynchus mykiss*) are anadromous, meaning they migrate to sea as juveniles, and typically return to the freshwater streams where they were born to spawn. Successful steelhead spawning sites have water temperatures from 48 to 52 °F, an average water depth of 14 in., current flowing at 2 ft per second, and gravel particle sizes within 0.25 to 3.0 in. (Beale AFB 2018a). Historically, Dry Creek provided spawning and rearing habitat for Central Valley steelhead downstream of Beale Falls (USFWS 2019b). Steelhead are currently mostly precluded from accessing spawning habitat in Dry Creek within the project area by the low flow crossing at RM 6.2. Surveys have not detected steelhead in Dry Creek, but they have been observed upstream in the SWA (Beale AFB 2018a; USAF 2016).

Fall-run Chinook salmon (*Oncorhynchus tshawytscha*) are also anadromous and had historical spawning habitats within Dry Creek downstream of Beale Falls (USFWS 2019b). Like the steelhead, Chinook salmon require cold, freshwater streams with suitable gravel substrate and swift-moving water (Beale AFB 2018a). Egg incubation occurs at temperatures from 39 to 57 °F, and juveniles may rear in stream nearshore environments for up to 5 months before heading downstream to the sea (Beale AFB 2018a). Fall-run Chinook have been observed in Dry Creek during high flow in recent years, and successful spawning in Dry Creek has been observed (Beale AFB 2018a; USAF 2016).

Three bat species that are considered species of special concern in California have been noted in proximity to the project area, and several bat surveys have been conducted at Beale AFB in the past. The pallid bat (*Antrozous pallidus*) occurs in several habitats, including grasslands, shrublands, and woodlands, but predominantly roosts in dry open areas in crevices and caves (Beale AFB 2018a). The pallid bat was detected roosting in the recreation center near Beale Lake, which was demolished in 2010, and has also been detected at Beale AFB in acoustic surveys (USAF 2016; Beale AFB 2018a).

The western red bat (*Lasiurus blossevillei*) is known to roost in cottonwoods and willows but is found in a variety of habitats (Beale AFB 2018a). This species was noted in past surveys within Dry Creek, as well as at other locations at Beale AFB in proximity to the project area (Beale AFB 2018a; USAF 2016). The Townsend's big-eared bat (*Corynorhinus townsendii*) roosts in caves and buildings, with night roosts in open settings. This species is known to be common in

the area, though it is difficult to detect by acoustic and mist net surveys (Beale AFB 2018a). Potential day roost sites and night roost sites are located in the vicinity of the project area within Beale AFB (Johnston 2016), but presence of bat species at the upstream gravel injection sites at the low flow crossing are not known.

3.7.3.3 Environmental Consequences

Preferred Alternative

The following species are not likely to occur in the project area and would not be impacted by the Preferred Alternative: giant garter snake, California red-legged frog, vernal pool crustacean species, western yellow-billed cuckoo, and delta smelt. The Preferred Alternative would have no effect on these species (USFWS 2019b).

The Preferred Alternative has the potential for short-term, minor impacts on listed species from dewatering, disturbance resulting from noise and the use of heavy equipment, and demolition of the low flow crossing and Beale Lake Dam. Work at the low flow crossing would require the removal of vegetation, which could impact the valley elderberry longhorn beetle, which completes its life cycle exclusively within the inner bark of elderberry shrubs. The removal of Beale Lake Dam would also have the potential to cause disturbance, and increase sedimentation in Dry Creek, which could have a short-term adverse impact on fish and turtle species. Western pond turtles and bat species could be disturbed by construction activities. No Reasonable and Prudent Measures have been identified by the USFWS and NOAA. The following avoidance and minimization measures, as described in the Biological Assessment, have been incorporated into the project to protect species and to reduce the potential for adverse effects to listed species (USFWS 2019b):

- A qualified biologist would conduct environmental awareness training for all individuals working at the RM 6.2 low-flow crossing site before site work begins. A qualified biologist is defined as someone with training, knowledge, and experience with the valley elderberry longhorn beetle. The education program would cover the life history, habitat requirements, and conservation measures for the beetle. Upon completion of training, crews would sign a form stating that they attended the training and understand all conservation measures. If new personnel are added to the project, the new personnel shall receive the training prior to starting work.
- Elderberry shrubs within 100 ft of the proposed action area, including unpaved access roads, would be identified and flagged to prevent inadvertent disturbance to a shrub.
- Pre-construction surveys would be conducted and relocation would be performed by USFWS on an as-needed basis for western pond turtles. Initial dewatering of the impoundment would be limited to a rate of 2-inches per hour in order to prevent stranding. Listed fish species are not expected to be present as work will occur outside of time-of-year restrictions.

- A water tank truck would be used along dirt access roads to prevent fugitive dust from causing detrimental impacts to elderberry shrubs that, in turn, may affect the valley elderberry longhorn beetle.
- Project activities shall occur only during daylight hours (one-half hour prior to sunrise and one-half hour after sunset).
- Off-road traffic outside of designated project areas shall be prohibited.
- A Fire Prevention and Suppression Plan would be prepared prior to the proposed action.
- A Spill Prevention, Control, and Countermeasure Plan would be prepared prior to the project implementation. All machinery would be properly maintained and cleaned to prevent spills and leaks. Any spills or leaks from the equipment would be reported and cleaned up in accordance with applicable local, state, and federal regulations.
- All excavated material would be kept onsite.

The Preferred Alternative would result in the removal of the low flow crossing at RM 6.2, the removal of Beale Lake Dam, and the addition of gravel substrate at four upstream sites in Dry Creek. The purpose of the project is to improve access for Central Valley steelhead and fall-run Chinook salmon to historical spawning and rearing sites upstream of Beale AFB, and to improve these sites for spawning. The removal of barriers to fish passage and the improvement to gravel substrates would result in a long-term, beneficial impact on salmonid species. There would be long-term, minor adverse impacts to the western pond turtle, as the artificially created Beale Lake would become a free-flowing segment of Dry Creek. However, this species would likely use Dry Creek for habitat, and additional pond habitat exists nearby at Beale AFB. The Preferred Alternative could have long-term beneficial impacts on bat species and the valley elderberry longhorn beetle from the increase and improvement of riparian area.

Overall, the Preferred Alternative may affect, but is not likely to adversely affect, the valley elderberry longhorn beetle and would have beneficial effects on the Central Valley steelhead and fall-run Chinook salmon.

No Action Alternative

Under the No Action Alternative, the low flow crossing at RM 6.2 and Beale Lake Dam would not be removed, and no gravel would be added to upstream sites in Dry Creek. These structures would continue to preclude most of the passage of fall-run Chinook salmon and Central Valley steelhead to historical spawning sites upstream of these structures. These spawning areas would not contain suitable gravel substrate for fish that were able to pass above the low flow crossing in high-flow years and through the fish ladder at Beale Lake Dam.

The No Action Alternative would not result in impacts to other listed species with the potential to occur in the project area and would have no effect on these species. Overall, the No Action

Alternative would have long-term, moderate adverse impacts on steelhead and Chinook salmon populations. The No Action Alternative may affect, and is likely to adversely affect, these salmonid species.

3.8 HUMAN HEALTH AND SAFETY

3.8.1 Definition of the Resource

A safe environment is one in which there is no, or there is an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Human health and safety addresses both workers' health and public safety during demolition activities.

Construction site safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by numerous DoD and USAF regulations designed to comply with standards issued by the Occupational Safety and Health Administration and EPA. These standards specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits for workplace stressors.

Safety and accident hazards can often be identified and reduced or eliminated. Necessary elements for an accident-prone situation or environment include the presence of the hazard itself together with the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the proximity of the hazard to the population. Activities that can be hazardous include transportation, maintenance and repair activities, and the creation of extremely noisy environments. The proper operation, maintenance, and repair of vehicles and equipment carry important safety implications. Any facility or human use area with potential explosive or other rapid oxidation process creates unsafe environments for nearby populations. Extremely noisy environments can also mask verbal or mechanical warning signals such as sirens, bells, or horns.

The Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program (Secretary of the Air Force 1996) implements the Occupational Safety and Health Air Force Policy Directive by outlining the AFOSH Program. The purpose of the AFOSH Program is to minimize loss of USAF resources and to protect USAF personnel from occupational deaths, injuries, or illnesses by managing risks. In conjunction with the USAF Mishap Prevention Program, these standards ensure all USAF workplaces meet federal safety and health requirements. This instruction applies to all USAF activities.

3.8.2 Existing Conditions

Aspects of health and safety related to this EA are associated with construction activities and use of Beale Lake Dam. Construction contractors are responsible for following federal and California Occupational Safety and Health Administration and National Institute of Occupational Safety and Health safety regulations. Construction activities are required to be conducted in a way that would not pose risks to workers or personnel.

Beale Lake is used for recreational purposes including fishing and hiking. Any activities near open water have associated health and safety risks including drowning, especially for children who do not know how to swim. No Environmental Restoration Program or Installation Restoration Program sites have been identified in the vicinity of the project area.

3.8.3 Environmental Consequences

Preferred Alternative

The Preferred Alternative would have short-term, minor adverse impacts to human health and safety. A short-term risk associated with construction contractors performing work at Beale AFB would occur due to the operation of heavy construction equipment and work performed in water. To minimize impacts, contractors would be required to establish and maintain safety programs and wear appropriate safety gear. Short-term, negligible impacts to base personnel would occur due to the increase of construction vehicles along roads within the installation. In addition, there would be a safety risk for any base personnel recreating within the immediate vicinity of Beale Lake Dam. Similar impacts to human health and safety would occur from the removal of the low flow crossing and gravel injections. The removal of the deteriorating dam would create long-term, beneficial impacts to health and safety by eliminating the risk of dam failure and potential injury.

No Action Alternative

Under the No Action Alternative, the removal of RM 6.2 Low Flow Crossing and Beale Lake Dam would not occur. Long-term, minor adverse impacts to human health and safety would occur. Long-term, adverse impact to health and safety would continue from the use of the lake for recreational purposes. The risk of drowning would continue to occur during fishing and hiking near the open water. Beale Lake Dam's structural condition would continue to deteriorate and eventually fail, creating safety risks for base personnel recreating within the vicinity of this structure. In addition, long-term, adverse impacts would continue from the existing safety risks associated with recreating near open water.

3.9 UTILITIES AND INFRASTRUCTURE

3.9.1 Definition of the Resource

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function, to include utility lines. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure, and the degree to which an area is characterized as "urban" or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to the economic growth of an area. Utilities and infrastructure generally include water supply, storm drainage systems, sanitary sewer and wastewater systems, power supply, and solid waste management.

3.9.2 Existing Conditions

The infrastructure and utility information presented in this section provides an overall general description of each infrastructure component at Beale AFB.

Water Supply: Water on Beale AFB is supplied from seven on-installation wells containing submersible pumps. Water is pumped to a treatment plant where iron and manganese are removed from the well water. The installation has a total water storage capacity of 5.2 million gallons and has an average demand of 1.28 million gallons per day (mgd) during the winter months and 3.5 mgd during the summer months. Beale AFB has funded more than \$15 million in upgrading their water supply infrastructure including replacing steel piping, renovating wells, and grouting casings (Beale AFB 2014a). Within the project area, a water utility line is located downstream of Beale Lake Dam and within the proposed stockpile/staging area.

Sanitary Sewer and Wastewater System: The Beale AFB sanitary sewer system consists of a gravity and force main collection system and a wastewater treatment plant. The system includes approximately 47 miles of sewer main. Because the elevations at Beale AFB are 400 to 500 ft higher on the eastern portion of the base, much of the sanitary sewer system is gravity fed. The wastewater treatment plant treats, on average, 0.26 mgd, with a peak flow of 2.06 mgd in the winter. Effluent from the plant is pumped to the golf course pond or discharged to the 40-acre irrigation field and is regulated by National Pollutant Discharge Elimination System Permit Number CA01 10299 (Beale AFB 2014a). Within the project area, a wastewater utility line runs along Dry Creek and crosses through the proposed stockpile/staging area and would be removed as part of this project.

Storm Drainage System: Dry Creek, Hutchinson Creek, and Reeds Creek are the three principle surface drainage systems for Beale AFB. Dry Creek flows perennially and Hutchinson and Reeds creeks' flows are intermittent. Stormwater runoff is discharged through a system of open ditches, storm sewers, culverts, and pipes. Stormwater flow is directed to drainage ditches and is discharged into the creeks and regulated by the California Statewide General Industrial Activities Stormwater Discharge Permit Number 5A58S009991 (Beale AFB 2014a).

Electrical System: Pacific Gas and Electric is the primary supplier of electrical power at Beale AFB. Power is delivered by three transmission lines and two metering points, which enter Beale AFB at the Grass Valley Substation. At peak demand the installation is at approximately 35 percent of the design capacity of its electrical system. Within the limit of disturbance, electrical lines cross the site access road off of Camp Beale Highway.

Natural Gas System: Pacific Gas and Electric also supplies non-interruptible natural gas to Beale AFB. There are no natural gas lines located within the limit of disturbance.

Communication Systems: The communication system at Beale AFB consists of aerial and underground copper and fiber optic cables. A government-owned buried copper cable plant services the installation, except for multi-family housing units, where the cable plant is owned by Pacific Bell. The Beale AFB fiber optic backbone cable system joins local area networks

together across the installation and carries the heaviest information transfer traffic (Beale AFB 2014a). There are no communication lines within the project area.

Solid Waste: Recology Yuba-Sutter, Inc. is contracted to provide storage, collection, handling, and disposal of solid waste at Beale AFB. They are responsible for collecting refuse, yard, and wood waste; handling office paper and cardboard recycling; and handling refuse disposal. Once collected, solid waste is transported to the Ostrom Road Landfill, an off-installation landfill located in Wheatland, California (Beale ASF 2014a).

Other Infrastructure: Other infrastructure within the project area includes Beale Lake Dam, a pedestrian bridge, a fish ladder, the RM 6.2 Low Flow Crossing, and Waldo Bridge. Beale Lake Dam, built in 1943, is a reinforced concrete gravity dam structure with a spillway located in the middle of the structure and outlet works at the base of the dam near the right abutment. The concrete structure of the dam is approximately 150 ft in length and 2 ft in width at the top of the dam. It has a height of 15.7 ft above the landside toe (USACE 2016). Additional features include a fish ladder at the left abutment. A pedestrian bridge is located over Dry Creek at Beale Dam and a paved pedestrian bridge, compliant with the American with Disabilities Act, is located over Dry Creek in Ryden Park in the family housing area. The RM 6.2 Low Flow Crossing is located on Dry Creek and is approximately 7.35 miles southwest of Beale Dam. The barrier consists of a concrete slab 20 ft wide and 70 ft long.

3.9.3 Environmental Consequences

Preferred Alternative

A water utility line, wastewater utility line, and electrical lines are located within the project area. The Preferred Alternative would include excavation and removal of Beale Lake Dam and the low flow crossing. The water utility line crosses Dry Creek downstream of Beale Lake Dam. The water utility line and the wastewater utility line area are also located under the stockpile/staging area. There would be no impacts to the water and wastewater utility lines as no excavation would occur within these areas. The electrical line runs above ground across the Beale Lake Dam site access road off of Camp Beale Highway. Impacts to the electrical lines during construction would be negligible. There is the potential that construction equipment would come in contact with electrical lines; however, with proper use of equipment this is unlikely. None of the utilities would be removed or reconfigured.

Removal of the low flow crossing and Beale Lake Dam would generate additional solid waste that would be transported off base to an approved facility. The generation of waste would create short-term, minor adverse impacts to the solid waste program at Beale AFB.

The removal of Beale Lake Dam would create long-term beneficial impacts to infrastructure at Beale AFB. Beale Lake Dam is currently deteriorating and would eventually fail in the future creating safety risks for base personnel. The removal of the dam would remove this risk and prevent maintenance in the future.

No Action Alternative

Under the No Action Alternative, Beale Lake Dam and the RM 6.2 Low Flow Crossing would not be removed and the gravel injections would not occur. There would be no impact to the utilities including water, wastewater, electrical, and solid waste within the proposed project area. Long-term, moderate, adverse impacts to infrastructure would occur because the Lake Beale Dam would continue to deteriorate and eventually fail. Deterioration/fail of the dam would create safety risks and also would require frequent maintenance.

3.10 TRANSPORTATION AND TRAFFIC

3.10.1 Definition of the Resource

Transportation is defined as the system of roadways, highways, and all other transportation networks that are in the vicinity of the proposed project area and could reasonably be expected to be affected by the Proposed Action. Traffic relates to changes in the number of vehicles on roadways and highways as a result of a proposed action.

3.10.2 Existing Conditions

Regional access to Beale AFB is provided by State Route (SR) 65, SR 70, and SR 20. Five roads provide access to the installation through five gates. North Beale Road extends from SR 70 in Linda to the Main Gate. This is the primary road that connects the installation and SR 70, Marysville, and Yuba City. Hammonton-Smartville Road provides access to the installation at the Doolittle Gate. Smartville Road provides access to the installation at the Grass Valley Gate and is south of SR 20. South Beale Road provides access from SR 65 northwest of Wheatland to the Wheatland Gate. Spenceville Road connects SR 65 at the City of Wheatland to the Vassar Lake Gate (Beale AFB 2014a).

The road network at Beale AFB consists of arterials, collectors, and local streets. The majority of traffic at the base is on Gavin Mandery Drive (Main Gate to Camp Beale Highway), Doolittle Drive (Doolittle Gate to Warren Shingle Road), Grass Valley Road/Warren Shingle Road (Grass Valley Gate to J Street), Camp Beale Highway (Vassar lake Gate to Warren Shingle Road), and J Street (Wheatland Gate to Doolittle Drive). Beale Lake Dam can be accessed by Camp Beale Highway and Warren Shingle Road. Lake House Road off of Warren Shingle Road provides direct access to a parking lot for Beale Lake. RM 6.2 Low Flow Crossing can be accessed from SR 65 via Levee Road to the west of the site or from Jasper Lane via Levee Road to the east of the site. Three of the four gravel injection sites are located off of Spenceville Road outside of Beale AFB. Gravel Injection Site 1 is located within Beale AFB.

3.10.3 Environmental Consequences

Preferred Alternative

Under the Preferred Alternative short-term, minor impacts to transportation would occur during the construction period. Access to the RM 6.2 Low Flow Crossing would be via Jasper Lane and

Levee Road. Access to Beale Lake Dam would be via Lake House Road and Camp Beale Highway. Site access for the gravel injection sites would be via Spenceville Road and an unnamed road, which intersects with Waldo Road. Based on hydrology and hydraulic modeling calculations performed by USFWS, there would be no impacts to Waldo Bridge near Gravel Injection Site 2. During construction, an increase in traffic is expected on these roads and along SR 65 and SR 70, which provide connection to the access roads. Increased traffic would include construction vehicles and also contractors' personal cars. Construction vehicles on these roadways may disrupt traffic speeds and cause delays. Impacts would be short term in nature and localized.

No Action Alternative

Under the No Action Alternative, the RM 6.2 Low Flow Crossing and Beale Lake Dam would not be removed. In addition, there would be no gravel injection sites. There would be no impact to transportation, as there would be no increase or decrease of traffic to and from these structures.

3.11 HAZARDOUS MATERIALS AND WASTES

3.11.1 Definition of the Resource

A hazardous substance, pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (42 U.S. Code 9601(14)), is defined as, "any substance designated pursuant to Section 1321(b)(2)(A) of Title 33; any element, compound, mixture, solution, or substance designated pursuant to Section 9602 of this title; any hazardous substance having the characteristics identified under or listed pursuant to Section 3001 of the Resource Conservation and Recovery Act of 1976, as amended (42 U.S. Code 6921); any toxic pollutant listed under Section 1317(a) of Title 33; any hazardous air pollutant listed under Section 112 of the CAA; and any imminently hazardous chemical substance or mixture with respect to which the Administrator of the EPA has taken action pursuant to Section 2606 of Title 15. The term does not include petroleum, including crude oil or any fraction thereof, which is not otherwise specifically listed or designated as a hazardous substance; and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas)."

Hazardous materials are defined by 49 CFR Part 171.8 as "hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR Part 172.101), and materials that meet the defining criteria for hazard classes and divisions." Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations within 49 CFR Parts 105–180.

RCRA defines a hazardous waste as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or pose a substantial present or potential hazard to human

health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.”

3.11.2 Existing Conditions

Hazardous Materials

AFI 32-7086, *Hazardous Materials Management*, establishes procedures and standards that govern management of hazardous materials throughout the USAF. This AFI applies to all USAF personnel who authorize, procure, issue, use, or dispose of hazardous materials, and those who manage, monitor, or track any of those activities. Under this regulation, the USAF has established roles, responsibilities, and requirements for the hazardous material management program. The purpose of the program is to control the procurement and use of hazardous materials to support USAF missions, ensure the safety and health of personnel and surrounding communities, minimize USAF dependence on hazardous materials, and maintain compliance with laws and regulations for hazardous material usage. The base's *Hazardous Materials Management Plan* applies to all hazardous materials brought onto Beale AFB.

Asbestos testing was conducted at Beale Lake Dam and at the abandoned sewer line (Bovee Environmental Management, Inc. 2019). No asbestos (friable or non-friable) was detected at either location. Asbestos is not anticipated to occur at the RM 6.2 Low Flow Crossing, nor at the gravel injection sites.

Hazardous Waste

The Beale AFB *Hazardous Waste Management Plan* is required under AFI 32-7024, *Waste Management*, and complies with 40 CFR Parts 260 to 272. It prescribes the roles and responsibilities of all members of Beale AFB and organization assigned to Beale AFB with respect to the waste stream inventory, waste analysis plan, hazardous waste management procedures, training, emergency response, and pollution prevention. The plan establishes procedures to comply with applicable federal, state, and local standards for solid waste and hazardous waste management. The plan outlines procedures for transport, storage, and disposal. The Hazardous Waste Stream Inventory is maintained as part of the Beale *Hazardous Waste Management Plan*. Beale AFB is a permitted Large Quantity Generator of hazardous waste. The most common hazardous wastes generated at Beale AFB include corrosive cleaning compounds, photographic waste, solvents, waste paint-related materials, and waste petroleum products

Contaminated Sediments

In February 2018, an assessment of the general sediment chemistry at Beale Lake Dam was conducted to identify any potential chemicals of concern within the sediments. The area is surrounded by agriculture and grazing fields, housing, wildlands, and recreational hunting lands. While there are a number of historic mines in the Spenceville area, one historic mine (the Spenceville Copper Mine) is known to have operated between 1863 and 1918, approximately 4 miles upstream of the dam (Russell 2008), and was deemed the only potential source of

industrial contamination for this project. A total of 10 sediment samples were collected from the perimeter of the lake. The lake bottom was characterized as sandy with large amounts of rock and cobble. NOAA has developed Screening Quick Reference Tables (SQuiRT) to evaluate potential risks from contaminated water, sediment, and soil. This tool presents screening concentrations for inorganic and organic contaminants in various environmental media, including freshwater sediments.

No analytes were detected above levels of concern in any of the 10 samples. One sample resulted in a detectable concentration of organochlorine pesticides (4-4'-DDE) that was less than the reporting limit, but above the method detection limit. The concentration was an approximate value and was not at a level of concern. One sample resulted in a detectable concentration of organophosphate pesticides (Coumaphos, EPN, Famphur, and Azinipos-methyl). This concentration was also less than the reporting limit, but above the method of detection limit and was not at levels of concern. The samples were analyzed for 16 metals and trace elements. Detectable concentrations of arsenic, barium, beryllium, cadmium, cobalt, chromium, copper, nickel, lead, vanadium, and zinc were found in all samples. Silver was also found in one sample. All metal concentrations were at background levels for sediments and were not at a level of concern. Three samples resulted in mercury concentrations between 17 and 37 micrograms per kilogram ($\mu\text{g/kg}$) (parts per billion). All three of these samples were located in areas adjacent to areas of significant marsh vegetation and mercury binds to organic compounds in aquatic environments. The concentrations detected were within those deemed as typical background levels (4–51 $\mu\text{g/kg}$) and do not represent levels of notable concern.

Additional sediment sampling at Beale Lake was conducted by USFWS in July 2019. A total of four samples were collected and tested for volatile organic compounds, semivolatile organic compounds, organochlorine pesticides, herbicides, metals, mercury, and polychlorinated biphenyls. The lake bottom was characterized as sand and gravel. No analytes were detected above levels of concern in any of the 4 samples. One sample resulted in a detectable concentration of semivolatile organic compounds (3- & 4-methylphenol) that was less than the reporting limit, but above the method detection limit. The concentration was an approximate value and was not at a level of concern. All other analytes were not detected and the study did not identify any additional contaminants in the impounded sediments.

3.11.3 Environmental Consequences

Preferred Alternative

Under the Preferred Alternative, the excavation of the low flow crossing and Beale Lake Dam would generate waste that would be transported off site for recycling at an approved facility. The Beale AFB *Hazardous Waste Management Plan* would be implemented if wastes are deemed to be considered hazardous. The plan establishes procedures to comply with applicable federal, state, and local standards for solid waste and hazardous waste management. The *Hazardous Material Management Plan* would also be implemented if hazardous materials are brought onto Beale AFB during the construction period.

Sediment built up upstream from the dam would be removed prior to dam removal and used in project designs. In addition, some sediment may be pushed downstream once the dam is removed. To minimize the amount of sediment migrating downstream during dam removal, BMPs including silt fences and straw wattles would be used. Sediment at Lake Beale Dam was collected and tested for a variety of contaminants. Although organochlorine pesticides, organophosphate pesticides, metals, and mercury were detected in some of the sediment samples, all concentration levels were not considered at a level of concern. Even though hazardous wastes would be generated and hazardous materials would be used, impacts to hazardous wastes and materials would be short term and negligible due to the implementation of the Beale AFB plans.

All refueling associated with the project would occur outside of the Dry Creek channel, and, whenever possible, be sited 250 ft or more from the edge of mapped wetlands. Although one of the standard BMPs for refueling operations at Beale AFB stipulates a minimum distance of 250 ft from surface waters, physical limitations of the project site may require that refueling occur at a shorter distance. In order to minimize potential for releases due to refueling operations, additional BMPs would be implemented, including use of spill containment berms and drip pads. Further, onsite fuel tanks for generators would be of dual-walled construction and would be placed within tertiary containment.

No Action Alternative

Under the No Action Alternative, the low flow crossing and Beale Lake Dam would not be removed and gravel would not be placed at the injection sites. There would be no impact to hazardous wastes and materials as no waste would be generated and hazardous materials would not be used at the site.

3.12 SOCIOECONOMIC RESOURCES, POPULATION, PUBLIC SERVICES, AND ENVIRONMENTAL JUSTICE

3.12.1 Definition of the Resource

Socioeconomics—Socioeconomics is typically defined as the relationship between economies and social elements, such as population and economic activity. Factors that describe the socioeconomic resources represent a composite of several attributes. There are several factors that can be used as indicators of economic conditions for a geographic area, such as demographics, income, unemployment, poverty level, and employment.

Environmental Justice—EO 12898 pertains to environmental justice issues and relates to various socioeconomic groups and the disproportionate impacts that could be imposed on them. That EO requires that federal agencies' actions substantially affecting human health or the environment do not exclude persons, deny persons benefits, or subject persons to discrimination because of their race, color, or national origin. The EO was enacted to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Consideration of environmental justice concerns includes race, ethnicity, and the poverty status of populations in the vicinity of a Proposed Action.

3.12.2 Existing Conditions

Beale AFB is located in Yuba County, California, approximately 40 miles north of Sacramento and 13 miles east of Marysville and Yuba City. The RM 6.2 Low Flow Crossing is also located in Yuba County approximately 7 miles from Beale AFB. The gravel injection sites are located in both Yuba County and the western portion of Nevada County.

Table 10 presents general demographic data for Beale AFB, Yuba County, and Nevada County. Beale AFB has a population living on base of 1,530 persons. The median age is 22.9, and 59 percent of the population are males and 41 percent are females. The population for Yuba County is 78,041 persons and 99,696 persons for Nevada County (U.S. Census Bureau 2018a). There is a total of 382 housing units at Beale AFB with 99 percent of these properties being rental homes. The main housing area is located north of the proposed project area (U.S. Census Bureau 2018b). Approximately 58 percent of homes in Yuba County are owner occupied and 74 percent are owner occupied in Nevada County. Education and employment data are presented in Table 10. This information is unavailable for Beale AFB because the population is less than 5,000.

Table 11 presents census data on race and income. These data are used to determine there are environmental justice concerns in the vicinity of the proposed action. Approximately 37 percent of the population at Beale AFB is considered a minority population (U.S. Census Bureau 2018b). Within Yuba County, minorities comprise approximately 22 percent of the population. In Nevada County, minorities comprise approximately 7 percent of the total population. The 2018 Federal Poverty Level for households with four people is \$25,100. The median household income and percent of the population living within the poverty level is unavailable for Beale AFB. In Yuba County, the median household income was approximately \$52,000 with 15.4 percent of the population living below poverty level. In Nevada County, the median household income was approximately \$61,000 with 11 percent of the population living below the poverty level (U.S. Census Bureau 2018a).

There are no schools within the immediate vicinity of the proposed project area. Public areas including Ryden Park are located within the Beale Lake Dam area. Gravel Injection Sites 2, 3, and 4 are located within the Spenceville Wildlife Area.

Table 10 2018 General Demographic Information

Demographic	Beale AFB	Yuba County	Nevada County
Total Population	1,530	78,041	99,696
Total Housing Units	382	28,693	54,258
% Owner Occupied Housing Units	0.5%	58.2%	74.2%
% Population High School Graduate	NA	82.1%	93.5%
% Population Bachelor's Degree or Higher	NA	16.4%	35.8%
% in Civilian Labor Force	NA	55.3%	54.4%
Notes: % = Percent. NA = Data not available.			
Source: U.S. Census Bureau 2018a, 2018b.			

Table 11 2018 Race and Income Information

Demographic	Beale AFB	Yuba County	Nevada County
Race			
% Population White	62.5%	78.3%	93.4%
% Population Black or African American	9.9%	4.4%	0.6%
% Population American Indian and Alaska Native	0.3%	2.9%	1.3%
% Population Asian	7.5%	7.5%	1.4%
% Population Native Hawaiian and Other Pacific Islander	0.0%	0.5%	0.2%
% Population Two or More Races	19.9%	6.4%	3.1%
Income			
Median Household Income		\$51,776	\$60,610
% Persons in Poverty		15.3%	11.0%
Source: U.S. Census Bureau 2018a, 2018b.			

3.12.3 Environmental Consequences

Preferred Alternative

During construction, short-term beneficial impacts to socioeconomics would occur. The removal of the low flow crossing and Beale Lake Dam and the distribution of gravel at the injection sites would create additional jobs for contractors within the local area. In the long term, there would be no impact to socioeconomics following the construction phase of the project.

In order for a population to be considered a minority population, the non-white population within a given geographical area must be greater than 50 percent. In addition, in order for a population to be considered low income, 50 percent of the population within a given geographical area must be living below the poverty level. Based on the socioeconomic data provided, neither a minority nor a low-income population occurs within Beale AFB, Yuba County, or Nevada County. Therefore, there would be no impact to environmental justice as there are no disproportionately high and adverse human health or environmental effects on a minority or low income population.

The Preferred Alternative would have no impact to the population or public services. The construction period would have no impact to the response times associated with fire and police protection. In addition, performance objectives of nearby schools and parks would not be impacted.

No Action Alternative

Under the No Action Alternative, the low flow crossing and Beale Lake Dam would not be removed. In addition, the gravel would not be distributed within the injection sites. There would be no impact to socioeconomics or environmental justice as there would be no change to the local economy.

3.13 CULTURAL AND TRIBAL CULTURAL RESOURCES

3.13.1 Definition of the Resource

Cultural resources is an “umbrella term” for many heritage-related resources, including prehistoric and historic sites, buildings, structures, districts, objects, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason.

Several Federal laws and regulations govern protection of cultural resources, including the National Historic Preservation Act (NHPA) (1966), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), the Native American Graves Protection and Repatriation Act (1990), and Executive Order 13007. Cultural resources are commonly subdivided into archaeological resources (prehistoric or historic sites where human activity has left physical evidence of that activity but no structures remain standing), architectural resources (buildings or other structures or groups of structures that are of historic architectural, or other significance), and traditional cultural resources (for example, traditional gathering areas).

The NHPA defines historic properties as properties eligible for or listed in the National Register of Historic Places (NRHP). The NRHP is the official listing of properties significant in U.S. history, architecture, or prehistory, and includes both publicly and privately-owned properties. The NRHP list is administered by the National Park Service. Historic properties might be buildings, structures, prehistoric or historic archaeological sites, districts, or objects that are generally 50 years of age or older, are historically significant, and that retain integrity that conveys this significance. More recent resources, such as Cold War-era buildings, might warrant listing if they have the potential to gain significance in the future or if they meet “exceptional” significance criteria.

Section 106 of the NHPA requires agencies to take into account the effect of their undertakings on properties listed in or eligible for listing in the NRHP and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking.

3.13.2 Existing Conditions

Cultural resources reported for Beale AFB include archaeological sites related to the prehistoric occupation of the area by the Southern Maidu (Nisenan); historic archaeological sites representing Euro-American settlement and the development of a farming/ranching economy; transportation, and mining; the U.S. Army operation of Camp Beale during World War II; and the Cold War-era Precision Acquisition Vehicle Entry Phased Array Warning System (PAVE PAWS) facility (Beale AFB 2020).

Camp Beale was established in 1942 to train the 13th Armored Division and the 81st and 96th Infantry divisions. Camp Beale also housed a prisoner-of-war camp for captured German soldiers. Camp Beale was closed at the end of World War II, but in 1948 the post was transferred to the Air Force and renamed the Beale Bombing and Gunnery Range. The

installation was used as a bombing and gunnery range until 1951. In 1952, the installation was transferred to the 2275th Air Base Squadron, which was later redesignated the 2275th Air Base Group. In 1954, Beale AFB was selected to house facilities for the Semi-Automatic Ground Environment program and the Headquarters Strategic Air Command Alert program as part of the Cold War defense effort. Beale AFB's contribution to the Strategic Air Command Alert program included the construction in 1957 of a runway and other facilities to support KC-135 stratotanker aircraft as the 100th Air Refueling Wing. In 1959, Beale AFB was designated the administration and service center for three Titan I Intercontinental Ballistic Missile complexes. Titan I missiles were phased out in 1964 in favor of the Titan II and Minuteman missiles. In 1963, the Semi-Automatic Ground Environment program was terminated and in 1964 the Semi-Automatic Ground Environment building was converted to house the new reconnaissance wing, making Beale AFB the primary base for the SR-71 "Blackbird." The SR-71 was operated by the 4200th Strategic Reconnaissance Wing. In 1976, the U-2 reconnaissance plane was transferred to the 9th Strategic Reconnaissance Wing at Beale AFB. In 1975, Beale AFB was selected as the site for one of four large phased-array radars known as the PAVE PAWS, a system designed to monitor potential Soviet missile launches. Today, Beale AFB is home to the 9 RW, the 940th Air Refueling Wing, the 548th Intelligence Group, the 7th Space Warning Squadron, and Air Force Office Special Investigations Detachments 218 and 11 (Beale AFB 2020).

The Beale AFB Integrated Cultural Resources Management Plan states that approximately 91 percent of Beale AFB has been systematically surveyed for cultural resources by more than 20 archaeological investigations and two historic architectural investigations (Beale AFB 2020). The portions of the installation that remain unsurveyed are limited to heavily disturbed areas associated with the flightline, main base, and military family housing areas in the interior of the installation. These areas have been defined by Beale AFB as "archaeological free zones" based on low potential for intact archaeological deposits (Beale AFB 2020). Cultural resources identified by archaeological surveys include 37 prehistoric archaeological sites and 1 multicomponent site with a prehistoric component; these sites consist primarily of bedrock milling stations and flaked lithic artifact scatters. Archaeological surveys have also identified 4 pre-military historic sites on Beale AFB consisting of ranch/farm complexes, refuse scatters, and bridges. Some sites have been determined not eligible for NRHP, and some sites still require consultation with the State Historic Preservation Officer (SHPO) for a formal determination of eligibility. Finally, surveys have identified 8 military-era historic sites and 6 sites with a military-era historic component. These sites consist primarily of the structural remnants of Camp Beale as established as a training site for the 13th Armored and 81st and 96th Infantry Divisions in October 1942 (Beale AFB 2020).

All of the parcels included in the project were examined for this study. Additionally, a record search of the Native American Heritage Commission Sacred Lands file was completed in March 2019 (with negative results) and in April 2019 a records search was also conducted at the North Central Information Center of the California Historical Resources Information System. California OHP DPR 523 Forms were completed for each newly identified resource. The Beale AFB Environmental staff submitted NRHP eligibility determinations to the California SHPO for review and concurrence. The SHPO concurred with the eligibility determinations, as reported in a letter dated January 30, 2020.

Beale AFB contacted Nisenan and Maidu descendants of the region's indigenous populations who were identified by the Native American Heritage Commission as interested in the area. Specifically, this includes the Enterprise Rancheria of Maidu Indians, Shingle Springs Rancheria (SSR), Berry Creek Rancheria of Maidu Indians, Mechoopda Indian Tribe of Chico Rancheria (Maidu), Mooretown Rancheria of Maidu Indians, and United Auburn Indian Community (UAIC). All of these tribes are federally recognized. Additionally, Beale AFB common practice is to inform non-federally recognized groups, and three of these groups were also contacted. All outreach to our Native American partners was initiated via U.S. Mail, and follow-up telephone or email communications were placed. One group, UAIC, has requested formal consultation and to be allowed to monitor ground-disturbing activities. A second group, SSR, requested to be informed of new project new information or discovery of human remains.

3.13.3 Environmental Consequences

Preferred Alternative

With implementation of protective measures, the Preferred Alternative would have no significant impact on cultural resources under NEPA. Twelve pedestrian cultural resources investigations (including the study for the Proposed Project) have analyzed the project area. Four resources are located within the project footprint. Three of these (RM 6.2 Low Flow Crossing, Beale Lake Dam Complex, P-58-3181), established to be more than 50 years of age, date to the historic era. The RM 6.2 Low Flow Crossing, Beale Lake Dam Complex, and P-58-3181 have been evaluated and were determined ineligible for listing in the NRHP. California OHP DPR 523 Forms were completed for each and have been submitted to the California SHPO for review and concurrence with this determination. These properties need not be considered further.

The other resource within the project footprint, CA-YUB-1439, is a prehistoric bedrock mortar site with three mortar features; subsurface exploration identified no deposit or other prehistoric materials at the site. The site was not formally evaluated but is assumed eligible for listing in the NRHP for the purposes of this project. Impacts to CA-YUB-1439 would be avoided by implementation of Mitigation Measure 1.

Mitigation Measure 1: The construction contractor will create a temporary dam for creek diversion near CA-YUB-1439. Where directed by a Beale AFB environmental representative, the bedrock mortar features of CA-YUB-1439 would be cordoned off with orange construction fencing as an Environmental Sensitive Area. Construction equipment would be excluded from entering the site boundaries. A crane may be used to place pumps, "supersack" temporary dam structure, and other paraphernalia outside the identified CA-YUB-1439 site boundaries.

Additional cultural resources exist as part of maintained roads in the project vicinity. The Dry Creek Bridge at Waldo Junction (California Department of Transportation [CALTRANS] Bridge No. 16C0006) has been evaluated as eligible for listing in the NRHP, but this finding has not been concurred with by SHPO (CALTRANS 2019). This is an operational bridge that carries Waldo Road across Dry Creek, but it has been determined to be substandard (Pacific Legacy 2018). To protect Bridge No. 16C0006, institute Mitigation Measure 2.

Mitigation Measure 2: The construction contractor will prohibit project traffic from using Bridge No. 16C0006, the Dry Creek Bridge at Waldo Junction.

CA-NEV-1566H is a bridge (CALTRANS Bridge No. 17G0001) that carries Spenceville Road across Dry Creek. This bridge is blocked by gates but is used regularly by California Fish and Wildlife (CDFW) personnel. This bridge is considered not eligible for listing in the NRHP by CALTRANS (1986), but this determination has not been concurred with by the SHPO. For purposes of this project, CA-NEV-1566H would be considered eligible for listing in the NRHP. To avoid possible impacts, institute Mitigation Measure 3.

Mitigation Measure 3: The construction contractor will prohibit project traffic from using bridge CA-NEV-1566H.

CA-NEV-1565H consists of two small bridges (i.e., each approximately 21 ft long) that carry Spenceville Road across Little Dry Creek near its confluence with Dry Creek. These bridges are part of a maintained graveled road that is used regularly by CDFW personnel and would be the project access route for delivering gravel to Gravel Injection Site 4. CA-NEV-1565H has not been evaluated for listing in the NRHP but is assumed eligible for the purposes of this project. To avoid possible impacts to CA-NEV-1565H during gravel deliveries, institute Mitigation Measure 4.

Mitigation Measure 4: Before use of CA-NEV-1565H by gravel delivery equipment, the construction contractor will place weight dispersal plates across the CA-NEV-1565H bridges. The plates must extend beyond the unsupported span section.

Any project that involves ground disturbance has the potential to uncover buried, unanticipated cultural resources. Disturbance of these resources may be in violation of federal, state, and local law (Beale AFB 2020: SOP 7.4). To avoid impacts to previously unidentified cultural resources, implement Mitigation Measure 5, Mitigation Measure 6, Mitigation Measure 7, and Mitigation Measure 8.

Mitigation Measure 5: Cultural Resources Awareness Training. All construction personnel would receive cultural resources awareness training by the Beale AFB Environmental Office regarding the appropriate work practices necessary to protect cultural resources. This training would address federal, state, and local laws regarding cultural resources; the importance of these resources and the purpose and necessity of protecting them; and the appropriate methods for reporting and protecting inadvertently discovered cultural resources. It is the construction contractor's responsibility to seek training from the Beale AFB Environmental Office for personnel as they join the project.

Mitigation Measure 6: Monitor for Archaeological Resources. The environmental contractor shall provide an archaeological monitor to witness ground-disturbing activities. The monitor shall meet the Secretary of the Interior Standards for an Archaeological Technician, with a minimum of a Bachelor's degree or comparable experience. In the advent of an inadvertent discovery, the monitor shall (in conjunction with the tribal monitor) notify the Beale AFB Cultural Resources Manager and Mitigation Measure 8 will be instituted.

Mitigation Measure 7: Tribal Monitor for Archaeological Resources. Tribal partner UAIC has requested the presence of a tribal monitor to witness ground-disturbing activities. The monitor shall be provided by UAIC. In the advent of an inadvertent discovery, the tribal monitor (in conjunction with the archaeological monitor) shall notify the Beale AFB Cultural Resources Manager and Mitigation Measure 8 will be instituted.

Mitigation Measure 8: Inadvertent Discovery of Archaeological Resources. In the event that human remains, artifacts, or other archaeological materials are discovered during the course of any action, project, or activity, all ground-disturbing activity at the point of discovery, and within a 100 ft exclusionary area, must be halted and the Beale AFB Cultural Resources Manager (CRM) notified. Any inadvertent discovery would be initially assumed to be potentially eligible for the NRHP and afforded appropriate protection until it is determined to be otherwise. If the find proves to be human remains additional legal responsibilities are instituted, and the appropriate county coroner, SHPO, and Beale AFB Wing Commander would be notified by the Beale AFB CRM (Beale AFB 2020: SOP 7.4). If the find is located outside of Beale AFB, then the landowner would be notified by the CRM. If the remains prove to be of Native American origin, then the CRM would notify the consulting federally recognized tribal partners (Beale AFB 2020: SOP 7.4).

No Action Alternative

Under the No Action Alternative, there would be no impact to cultural resources. The RM 6.2 Low Flow Crossing and Beale Lake Dam would not be removed. In addition, the distribution of gravel within the injection sites would not occur. There would be no excavation that could potentially damage an archaeological site and no historic structures would be changed.

3.14 ENERGY RESOURCES

3.14.1 Definition of the Resource

The California Environmental Quality Act requires a discussion of the potential energy impacts of proposed projects, including avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. The goal of conserving energy implies efficient use of energy by decreasing overall energy consumption, decreasing reliance on natural gas and oil, and increasing reliance of renewable energy resources.

3.14.2 Existing Conditions

Currently there are limited amounts of energy resources used within the project site. The use of oil and fuel are used for visitors that come by vehicle to Beale Lake Dam and Spenceville Wildlife Area for recreational purposes. There are no others forms of energy used within the project area, as these areas are considered natural areas.

3.14.3 Environmental Consequences

Preferred Alternative

The Preferred Alternative would have long-term, minor, adverse impacts to energy resources. During construction, the use of construction equipment including backhoes, bulldozers, graders, wheel rollers, and dump trucks would require the use of fuel and oil. In addition, fuel and oil would be used to transport materials to and from the site and from workers traveling to and from the work site. Use of these resources would last the duration of the construction period. Overall, the proposed project would have minimal impact on local and regional energy supplies.

No Action Alternative

Under the No Action Alternative, Beale Lake Dam and the RM 6.2 Low Flow Crossing would not be removed and the gravel injections would not occur. There would be no impact to energy resources.

3.15 WILDFIRES

3.15.1 Definition of the Resource

In the past several years California has experienced extreme and devastating wildfires throughout the state. As a result, the California Environmental Quality Act now requires a of project impacts to wildfires.

3.15.2 Existing Conditions

Wildfires are a regular occurrence on Beale AFB between May through October. Between 1998 and 2017, there were 131 wildfires on the installation, with nearly half having an unknown cause. Some documented causes of wildfires at the installation include powerlines, USAF and Army mission related activities, cigarettes, escaped prescribed burns, and fireworks. The average fire size is approximately 31 acres. Wildfires have occurred within the housing area north of the project area. Beale AFB has an active prescribed fire program. Between 2001 and 2015, a total of 70 prescribed fires were implemented, with most occurring between June and September. The average treated area was 622 acres (Beale AFB 2018a).

A Wildland Fire Management Plan was prepared for Beale AFB in 2017. The Wildland Fire Management Plan provides for wildland fire prevention, management, and safety using methods that protect public property and natural and cultural resources. Wildland fire management on Beale AFB is guided by Chapter 13 of AFI 32-7064, AFI 32-2001, *Fire Emergency Services* Program, the Air Force Civil Engineer Center Environmental Operations Fire Playbook, and Federal Wildland Management Policy. Firebreaks occur throughout the installation and are maintained by Grounds Maintenance staff. Beale AFB is responsible for suppressing Wildland Urban Interface fires and supporting natural resource suppression efforts during wildfires and prescribed burns.

3.15.3 Environmental Consequences

Preferred Alternative

The Preferred Alternative would have no impact to wildfires. The RM 6.2 Low Flow Crossing, Beale Lake Dam, and gravel injections would not exacerbate wildfire risk. To ensure this, a portable trailer with a mounted 500 gallon water tank or a 2,000 gallon water truck will be onsite at all times. In addition, the proposed project would not require the installation or maintenance of fuel breaks, emergency water sources, power lines, or other utilities that may result in wildfires. Removal of Beale Lake will not impact fire suppression efforts as water in the lake is not used for firefighting purposes.

No Action Alternative

Under the No Action Alternative, Beale Lake Dam and the RM 6.2 Low Flow Crossing would not be removed and the gravel injections would not occur. There would be no impact to wildfires.

4. CUMULATIVE AND OTHER EFFECTS

4.1 CUMULATIVE EFFECTS/MANDATORY FINDINGS OF SIGNIFICANCE

CEQ regulations stipulate that the cumulative effects analysis of an EA should consider the potential environmental effects resulting from “the incremental impacts of the action when added to other past, present, and reasonably foreseeable future action regardless of what agency or person undertakes such other actions” (40 CFR Part 1508.7). CEQ guidance, in considering cumulative effects, affirms this requirement, stating that the first steps in assessing cumulative effects involve defining the scope for the other actions and their interrelationship with a Proposed Action. The scope must consider other projects that coincide with the location and timetable of a proposed action and other actions. Cumulative effects analyses must also evaluate the nature of interactions among these actions (CEQ 1997).

To identify cumulative effects, the analysis needs to address two questions:

1. Does a relationship exist such that affected resource areas of the Proposed Action or alternatives might interact with the affected resource areas or past, present, or reasonably foreseeable actions?
2. If such a relationship exists, does an EA or an EIS reveal any potential significant impacts not identified when the Proposed Action is considered alone?

The scope of the cumulative effects analysis involves both timeframe and geographic extent in which effects could be expected to occur, and a description of what resources could potentially be cumulatively affected. For the purposes of this analysis, the temporal span of the Proposed Action is 2 years, which would encompass removal of RM 6.2, Beale Lake Dam, and gravel placement at the four gravel injection sites. For most resources, the spatial areas for consideration of cumulative effects are confined to the Limits of Disturbance depicted in Figures 2–15, though a larger area is considered for some resources (e.g., air quality).

4.1.1 Projects Identified for Potential Cumulative Effects

One project has been identified within the vicinity of the proposed project to be evaluated for cumulative impacts. This project includes the replacement of four bridge segments along Gavin Mandery Drive that provide access to the Military Family Housing area. Recent severe storm events generated flood flows that exceeded the conveyance capacity of Dry Creek and Best Slough channels causing deterioration to the structures of the four bridges. The current bridge segments pose a safety hazard to vehicle and pedestrian traffic. The proposed action includes replacing the four bridge segments and would include raising the bridge height 3 ft and reducing the number and size of piers within the channel. Sewer and communication lines would be reinstalled along the raised bridges, a new sewage pump station would be installed, and communication and electrical cables would be installed belowground. During construction, the Best Slough and Dry Creek channels would be temporarily dewatered using a bladder dam. Flows would be routed or pumped around the construction area and re-enter the channel

downstream. Gavin Mandery Drive would be closed to vehicle traffic for approximately 3 to 5 months.

4.1.2 Cumulative Effects Analysis

Noise – During construction, noise at the site would only constitute a negligible increase in noise levels, and thus no significant cumulative impacts are expected as a result of the Proposed Action.

Air Quality and Greenhouse Gasses – Use of construction equipment and vehicles associated with the Proposed Action would result in minimal adverse cumulative impacts related to air quality. Criteria air pollutants would be generated but would not exceed the general conformity thresholds; therefore, no long-term cumulative impacts are anticipated.

Land Use, Agriculture, Recreation, and Aesthetics – There would be no cumulative impact to land use and agriculture, as land use and agriculture would remain the same as a result of the Proposed Action. During construction recreational impacts are expected; however, no long-term cumulative impacts to recreation are anticipated. Overall long-term, beneficial impacts to aesthetics would occur from the removal of the degrading structures along Dry Creek; therefore, beneficial cumulative impacts to aesthetics would occur.

Geologic, Mineral, and Soil Resources – The Proposed Action would have no impact to geology, topography, or mineral resources; therefore, no cumulative impacts would occur. The removal of the dam and low flow crossing would create long-term, minor, adverse impacts to soil resources. Because the soils removed would be used for project design; cumulative impacts would be negligible.

Water Resources – Removal of the dam and low flow crossing would alter the hydrology and fluvial processes within the project area; however, overall impacts to surface water would be beneficial. Therefore, cumulative impacts to surface waters would be beneficial. The Proposed Action would result in negligible impacts to groundwater volumes and recharge rates but would have beneficial impacts from the reconnection of Dry Creek to its floodplain. Overall, cumulative impacts to groundwater would be negligible. The Proposed Action would create long-term, minor adverse impacts to wetlands due to the conversion of artificially flooded emergent wetland to palustrine scrub or riverine wetland. Cumulative impacts to wetlands are expected to be negligible. Beneficial impacts to the floodplain are expected; therefore, cumulative impacts to floodplains would be beneficial.

Coastal Zone Management – There would be no impacts to the coastal zone; therefore, no cumulative impacts are expected.

Biological Resources – Overall, the Proposed Action would have long-term, beneficial impacts vegetation; therefore, cumulative impacts are expected to be beneficial. Long-term, moderate, adverse impacts to wildlife would occur for species that use the emergent wetland habitat for foraging and nesting. The Proposed Action would also have beneficial impacts for anadromous fish species. Overall cumulative impacts to wildlife would be negligible. Short-term, adverse impacts to state and federal listed species would occur during construction. Following the

removal of the dam and low flow crossing, long-term, beneficial impacts to bat species, elderberry longhorn beetle, Central Valley steelhead, and Chinook salmon would occur. Cumulative impacts are expected to be beneficial.

Human Health and Safety – The removal of the dam and low flow crossing would have short-term, adverse impacts to human health and safety during construction, but long-term, beneficial impacts overall. Therefore, cumulative impacts to human health and safety would be beneficial.

Utilities and Infrastructure – There would be no long-term impacts to utilities within the proposed project area; therefore, no cumulative impacts are expected. The removal of the dam would create long-term, beneficial impacts to infrastructure. Overall long-term, beneficial cumulative impacts to infrastructure are expected.

Transportation and Traffic – The Proposed Action would have short-term, minor, adverse impacts to transportation during the construction period. Overall, cumulative impacts are expected to be minor and adverse within the vicinity of the proposed project area.

Hazardous Materials and Wastes – The Proposed Action would create short-term, negligible impacts to hazardous material and wastes due to the generation of solid waste and hazardous materials. Cumulative impacts are expected to be negligible.

Socioeconomic Resources, Population, Public Services, and Environmental Justice – Short-term, beneficial impacts to socioeconomics would occur during the construction period. Cumulative impacts are expected to be negligible. There would be no impacts to population, public services, or environmental justice; therefore, no cumulative impacts would occur.

Cultural and Tribal Cultural Resources – With implementation of mitigation measures, the Proposed Action would have no impact to cultural resources. Therefore, no cumulative impacts to cultural resources would occur.

Energy Resources – The use of construction equipment would create long-term, minor, adverse impacts to energy resources due to the consumption of oil and fuel. Cumulative impacts to energy resources would be negligible.

Wildfires – The Proposed Action would have no impact to wildfires; therefore, no cumulative impacts would occur.

4.2 UNAVOIDABLE ADVERSE EFFECTS

Unavoidable adverse effects would result from implementation of the Proposed Action. These effects are not anticipated to be significant.

Noise—The Proposed Action would result in temporary adverse impacts to noise resulting from the use of construction equipment. Following completion of the dam and low flow crossing removal and the gravel injections, the noise levels would return to ambient levels.

Air Quality—The Proposed Action would result in negligible impacts due to the use of construction equipment and travel along the access roads. Following completion of the project, the air quality would return to ambient levels.

Geological Resources—The Proposed Action would result in minor adverse impacts to soils due to compaction from the use of construction vehicles. Impacts would also result from soil disturbance from the creation of access roads, excavation, and removal of vegetation. Although unavoidable, effects on soil at the project site are not considered significant.

Wetlands—The Proposed Action would have long-term, minor adverse impacts from the conversion of freshwater emergent wetlands to riverine wetland systems, resulting in the loss of freshwater emergent wetlands from the project area. Although these impacts would be minor for freshwater wetlands, these wetlands were artificially created as a result of the dam. The project would also create additional riverine wetland habitat.

Vegetation, Wildlife and Threatened and Endangered Species—The Proposed Action would result in temporary, minor adverse impacts to vegetation from the clearing of vegetation for construction. The conversion of freshwater emergent plant communities to riparian area would have long-term, moderate adverse and unavoidable impacts. This plant community was not naturally occurring at the site, and the proposed project would expand native riparian area, ultimately aiming to bring Dry Creek closer to a natural state. There would be short-term, minor adverse impacts to wildlife and listed species from disturbance during construction, but these impacts would be temporary in nature. Long-term, minor and moderate adverse impacts would occur from loss of emergent habitat; it is anticipated that most wildlife and listed species would use the riparian habitat or similar habitat in other parts of Beale AFB, but it is likely that warmwater fisheries would not continue to exist in the Beale Lake site. This lake and habitat was artificially created as a result of the dam, and impacts are unavoidable from removing the dam.

Human Health and Safety—The Proposed Action would result in short-term, minor adverse impacts to the safety of contractors due to safety risks associated with working with construction equipment and on the water. Impacts to base personnel would be negligible.

4.3 COMPATIBILITY OF PROPOSED ACTION AND ALTERNATIVES WITH THE OBJECTIVES OF FEDERAL, REGIONAL, STATE, AND LOCAL LAND USE PLANS, POLICIES, AND CONTROLS

The Proposed Action would be consistent with existing and future land uses. The removal of the dam and low flow crossing, along with the gravel injections would not interfere with applicable land use policies or objectives.

4.4 RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Short-term uses of the biophysical components of the human environment include direct impacts, typically associated with activities that occur over a period of less than 5 years. Long-term uses of the human environment generally include those impacts that occur over a period of more than 5 years, including the permanent loss of resources.

This EA identifies potential short-term, adverse effects on the natural environment as a result of the Proposed Action. These potential adverse effects include noise emissions, air emissions, recreation, health and safety, transportation, hazardous wastes and materials, and socioeconomics.

4.5 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be reversed or recovered, even after an activity has ended and facilities have been decommissioned. A commitment of resources is related to use or destruction of non-renewable resources, and effects that such a loss will have on future generations. The Proposed Action would involve the irreversible and irretrievable commitment of material resources and energy, land resources, and human resources. The impacts on these resources would be permanent.

Material Resources—Material resources irretrievably used for the Proposed Action would include imported rock of various sizes and other materials that may be utilized during the restoration of the area to a vegetated green space. Riprap would be placed along the cut banks at the RM 6.2 Low Flow Crossing. Rock would also be used to stabilize the lakebed after removal of Beale Lake Dam. Larger rock would be used in the upper restored stream channel. A total of 3,749 tons of 0.25- to 0.5-in. spawning gravel would also be distributed among the injection sites. These materials are not in short supply and would not be expected to limit other unrelated construction activities. Where practicable, materials such as soils removed from the project site would be recycled and reused to avoid excess use of material resources, the irretrievable use of material resources would not be considered significant.

Energy Resources—Energy resources used for the Proposed Action would be irretrievably lost. These would include petroleum-based products (e.g., gasoline and diesel) and electricity. During construction, gasoline and diesel fuel would be used for the operation of construction vehicles. Consumption of these energy resources would not place a significant demand on their availability in the region; therefore, no significant impacts would be expected.

Human Resources—The use of human resources for demolition is considered to be an irretrievable loss only in that it would preclude base personnel and the public from recreating in the project areas during the construction period. The use of human resources for the Proposed Action would represent employment opportunities and would be considered to provide a net benefit.

4.6 GROWTH INDUCING IMPACTS

CEQA Guidelines require an evaluation of the growth-inducing impacts of a proposed action (Section 15126.2(e)). A growth-inducing impact is defined by the CEQA guidelines as:

“[T]he ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.”

The Proposed Action would not result in growth-inducing impacts. Human population growth is unrelated to fish passage within Dry Creek, and no additional construction of housing would occur either directly or indirectly as a result of the Proposed Action. Impacts to local economic growth would be negligible to nonexistent. An increase in fish populations within Dry Creek may increase recreational fishing opportunities in the region, however it is anticipated that anglers who may fish in Dry Creek would already be fishing within the watershed. Daily bag limits and other restrictions on anadromous fish catches would prevent significant changes in typical recreation levels. The restoration of Beale Lake to a free-flowing creek may alter recreation activities on base, however replacement recreational activities associated with the stream would be similar, and therefore would not constitute a growth-inducing impact.

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Appendix A

Coordination for Environmental Planning and Public Involvement

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**Environmental Assessment
Interagency and Intergovernmental Coordination for Environmental Planning List**

Federal Agency Contacts

U.S. Environmental Protection Agency,
Region 9
Director, Officer of Federal Activities
75 Hawthorne Street
San Francisco, CA 94105

Laura Shively
U.S. Army Corps. Of Engineers
Sacramento District
Regulatory Division
1325 J Street -- Room 1513
Sacramento, CA 95814

U.S. Department of the Interior
U.S. Fish and Wildlife Services
California/Nevada Operations Office
2800 Cottage Way, Room W-2606
Sacramento, CA 95825

National Oceanic and Atmospheric
Administration
National Marine Fisheries Service
650 Capitol Mall
Suite 5-100
Sacramento, CA 95814

State Agency Contacts

California Environmental Protection Agency (CalEPA)
1001 "T" Street
P.O. Box 2815
Sacramento, CA 95812

California Air Resources Board
Air Quality and Transportation Division
1001 "T" Street
P.O. Box 2815
Sacramento, CA 95812

Central Valley Regional Water
Quality Control Board
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670-6114

Tina Bartlett
California Department of Fish and Wildlife
Regional Manager - North Central Region
1701 Nimbus Road
Rancho Cordova, CA 95670

California Department of Conservation
801 K Street, MS 24-01
Sacramento, CA 95814

Ms. Julianne Polanco
State Historic Preservation Officer
Department of Parks and Recreation
1725 23rd Street, Suite 100
Sacramento, CA 95816

Central Valley Flood Protection Board
3310 El Camino Avenue, Suite 170
Sacramento, CA 95821

California Department of Fish and Wildlife
Habitat Conservation Planning Branch
1700 9th Street, 2nd Floor
Sacramento, CA 94244-2090
Mailing: P.O. Box 944209
Sacramento, CA 94244

State Agency Contacts (Continued)

State Clearinghouse
Office of Planning and Research
P.O. Box 3044
Sacramento, CA 95812

Mark Carroll
Spenceville Wildlife Area Manager
CDFW
945 Oro Dam Boulevard W
Oroville, CA 95965

California State Lands Commission
Land Management Division
100 Howe Avenue, Suite 100 South
Sacramento, CA 95825

Tribal Contacts

Estom Yumeka Maidu Tribe of the Enterprise
Rancheria
Glenda Nelson, Chairperson
2133 Monte Vista Avenue
Oroville, CA, 95966

Tsi Akim Maidu
Don Ryberg, Chairperson and
Grayson Coney, Cultural Director
P.O. Box 510
Browns Valley, CA, 95918

Mooretown Rancheria of Maidu Indians
Benjamin Clark, Chairperson and
Guy Taylor, Council Member
1 Alvera Drive
Oroville, CA, 95966

United Auburn Indian Community of the
Auburn Rancheria
Gene Whitehouse, Chairperson
10720 Indian Hill Road
Auburn, CA, 95603

Mechoopda Indian Tribe
Dennis Ramirez, Chairperson
125 Mission Ranch Boulevard
Chico, CA, 95926

KnoKow Valley Band of Maidu
Jessica Lopez, Chairperson
2086 North Villa Street
Palermo, CA 95968

Pakan'yani Maidu of Strawberry Valley
Rancheria
Tina Goodwin, Chairperson
P.O. Box 984
Marysville, CA, 95901

Local Contacts

Yuba County Board of Supervisors
District 4 Supervisor
Gary Bradford
915 8th Street Suite 109
Marysville, CA 95901

Nevada County Board of Supervisors
District 4 Supervisor Susan Hoek
Eric Rood Administrative Center
950 Maidu Avenue
Board of Supervisors' Chambers
Nevada City, CA 95959

Local Contacts (Continued)

Nevada Irrigation District
1036 West Main Street
Grass Valley, CA 95945

Northern Sierra Air Quality Management
District
530-274-9360
200 Litton Drive, Ste 320
Grass Valley, CA 95945

Friends of Spenceville
Richard Thomas
10066 Robinson King Rd.
Nevada City, CA 95959

Feather River Air Quality Management District
541 Washington Avenue
Yuba City, CA 95991

Yuba County Water Agency
1220 F Street
Marysville, CA 95901

Reclamation District No. 2103
F. Dean Webb
1935 Lewis Rd.
Wheatland, CA 95692

Land Owner/Operator Contacts

North Bear River Walnut Ranch
128 Nichols Road
Wheatland, CA 95692

Roger Abe
2075 Highway 65
Wheatland, CA 95692

Royal Lands LLC
PO Box 3546
Yuba City, CA 95992

Clyde Douglas
2674 Jasper Lane
Wheatland, CA 95692



DEPARTMENT OF THE AIR FORCE
9TH CIVIL ENGINEER SQUADRON (ACC)
BEALE AIR FORCE BASE, CALIFORNIA

MEMORANDUM FOR CENTRAL VALLEY REGIONAL WATER
Quality Control Board
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670-6114

FROM: 9 CES/CD
6425 B Street, Bldg. 25390
Beale AFB, CA 95903-1708

SUBJECT: Notification and Solicitation of Comments for Fish Passage and Habitat
Improvements to Dry Creek, Yuba and Nevada Counties, California

1. The U.S. Air Force (USAF) is in the process of preparing a Draft Environmental Assessment in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended; Council on Environmental Quality Regulations (40 Code of Federal Regulations 1500-1508); and USAF *Environmental Impact Analysis Process* (32 Code of Federal Regulations Part 989).
2. Under the Proposed Action, the USAF, in partnership with the U.S. Fish and Wildlife Service (USFWS), is seeking to improve fish passage and create spawning habitat for anadromous salmonids in Dry Creek, a tributary to the Bear River (Figure 1). Dry Creek flows for approximately 19 miles southwest from its headwaters in Nevada County, California, through Beale Lake on Beale Air Force Base (AFB) in Yuba County, and finally joins the Bear River near the City of Rio Oso. Currently, two barriers prevent fish passage on Dry Creek: (1) the River Mile 6.2 Low Flow Crossing located approximately 7.35 miles downstream from the Beale AFB boundary (Figure 2), and (2) Beale Lake Dam on Beale AFB (Figure 3). As a result, anadromous fish native to Dry Creek have been unable to pass to their native spawning grounds. To improve fish passage and increase spawning habitat, USAF and USFWS are proposing to remove these two barriers. In addition, USFWS has identified that the potential spawning areas located upstream of Beale Lake Dam in the Spenceville Wildlife Management Area, do not currently represent viable spawning habitat and need to be enhanced through a series of gravel injections (Figure 4) for the project to be successful at improving anadromous salmonid production.
3. The Environmental Assessment will assess the environmental consequences of two alternative options for the Proposed Action: removal of fish passage barriers and creation of spawning habitat for anadromous salmonids in Dry Creek and the No Action Alternative.
4. The Air Force requests your input on the Proposed Action as part of the consultation process with relevant agencies, property owners, and stakeholders. This process is formally referred to as the Interagency and Intergovernmental Coordination for Environmental Planning process. Through this notice, the USAF is contacting you to notify you of the Proposed Action and to solicit comments. This is the initial step in the review process, and a draft of the Environmental Assessment will be released once specific details on each Alternative have been developed.

5. Please address all questions and comments to Ms. Kathryn Curtis, Compliance Section Chief, at (530) 634-2642, kathryn.curtis@beale.af.mil, 9 CES/CEIE, 6425 B Street Bldg. 25390, Beale AFB, CA 95903-1708, by 3 October 2019.

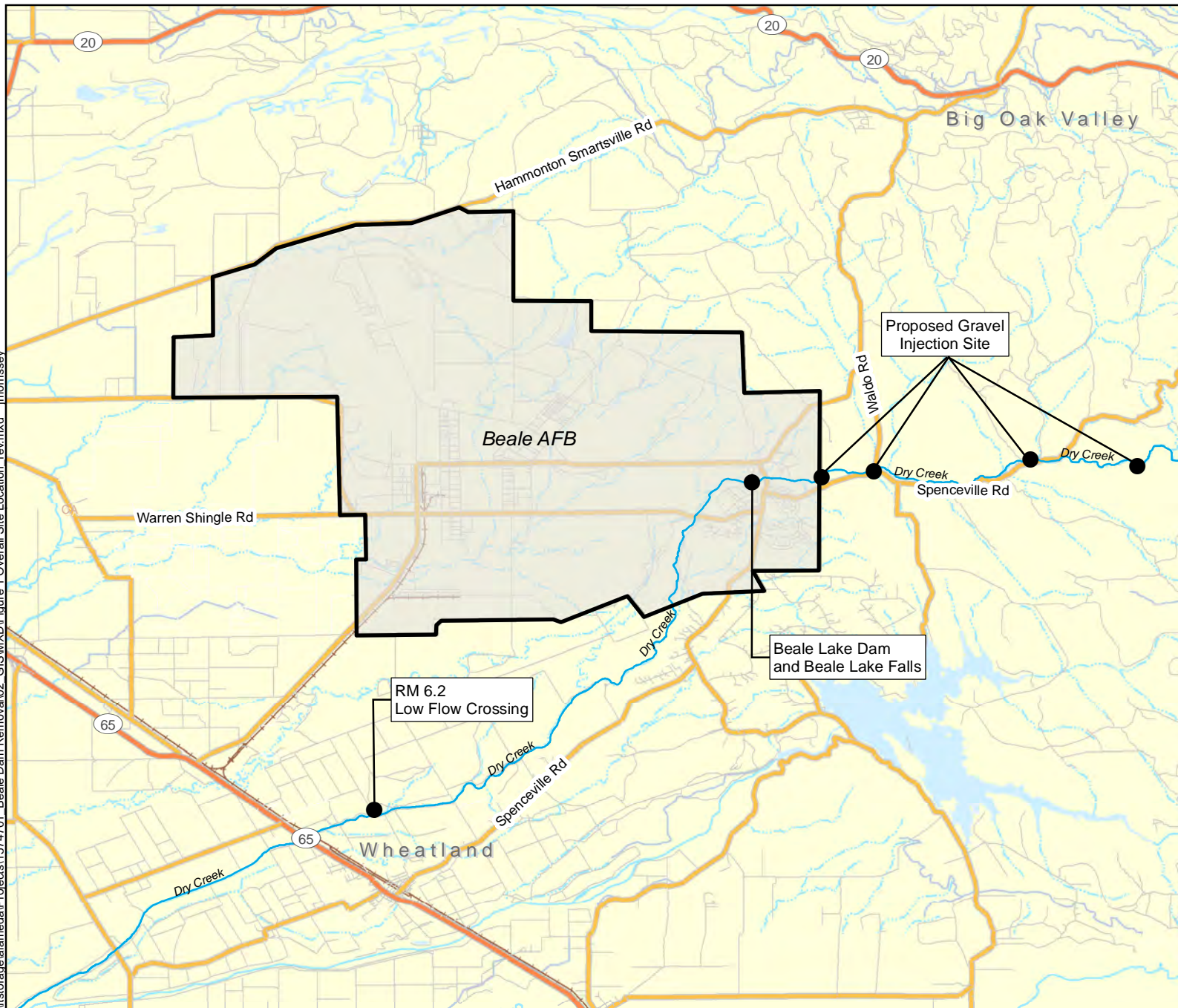
A handwritten signature in black ink, appearing to read 'C. G. Hendrix'.

CALVIN G. HENDRIX
Deputy Base Civil Engineer

4 Attachments:

1. Overall Project Area Location Map
2. Project Map - River Mile 6.2 Low Flow Crossing
3. Project Map - Beale Lake Dam
4. Project Map - Dry Creek Gravel Injections

\\storage\blameda\Projects\1574701_Beale Dam Removal\02_GIS\MXD\Figure 1 Overall Site Location_rev.mxd morrissey



Legend

- Beale AFB Boundary
- Perennial Stream
- Intermittent Stream
- Intermittent Canal
- Highway
- Major Road
- Local Road
- Railroads

References:

Street Map:
ESRI ArcGIS Map Service, 2013

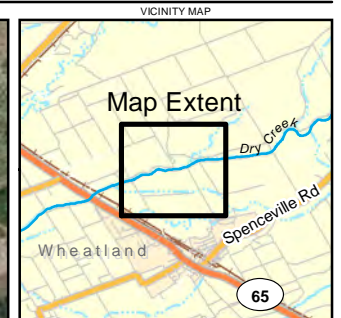
Boundary:
Drawn from USFWS data, 2018



0 1.5 3
Miles

*Dry Creek Fish Passage &
Habitat Improvements
Beale AFB, California*

Figure 1
Overall Project Site
Location



Legend

- Roads
- Proposed Site Access
- Anticipated Limit of Disturbance

References:

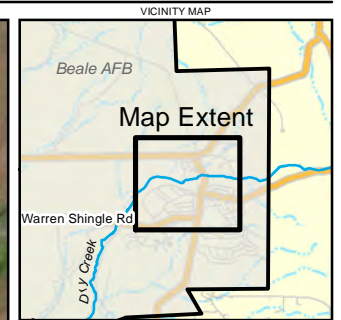
Aerial:
ESRI ArcGIS Map Service, 2017



0 400 800
Feet

*Dry Creek Fish Passage &
Habitat Improvements
Beale AFB, California*

Figure 2
RM 6.2 Low Flow Crossing
Project Map



Legend

- Roads
- Proposed Site
- Anticipated Limit of Disturbance
- Stockpile/Staging

References:

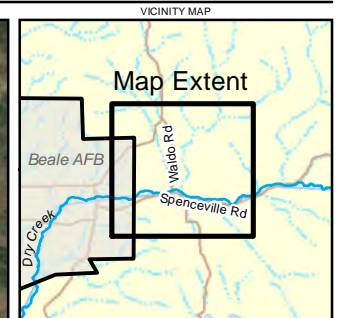
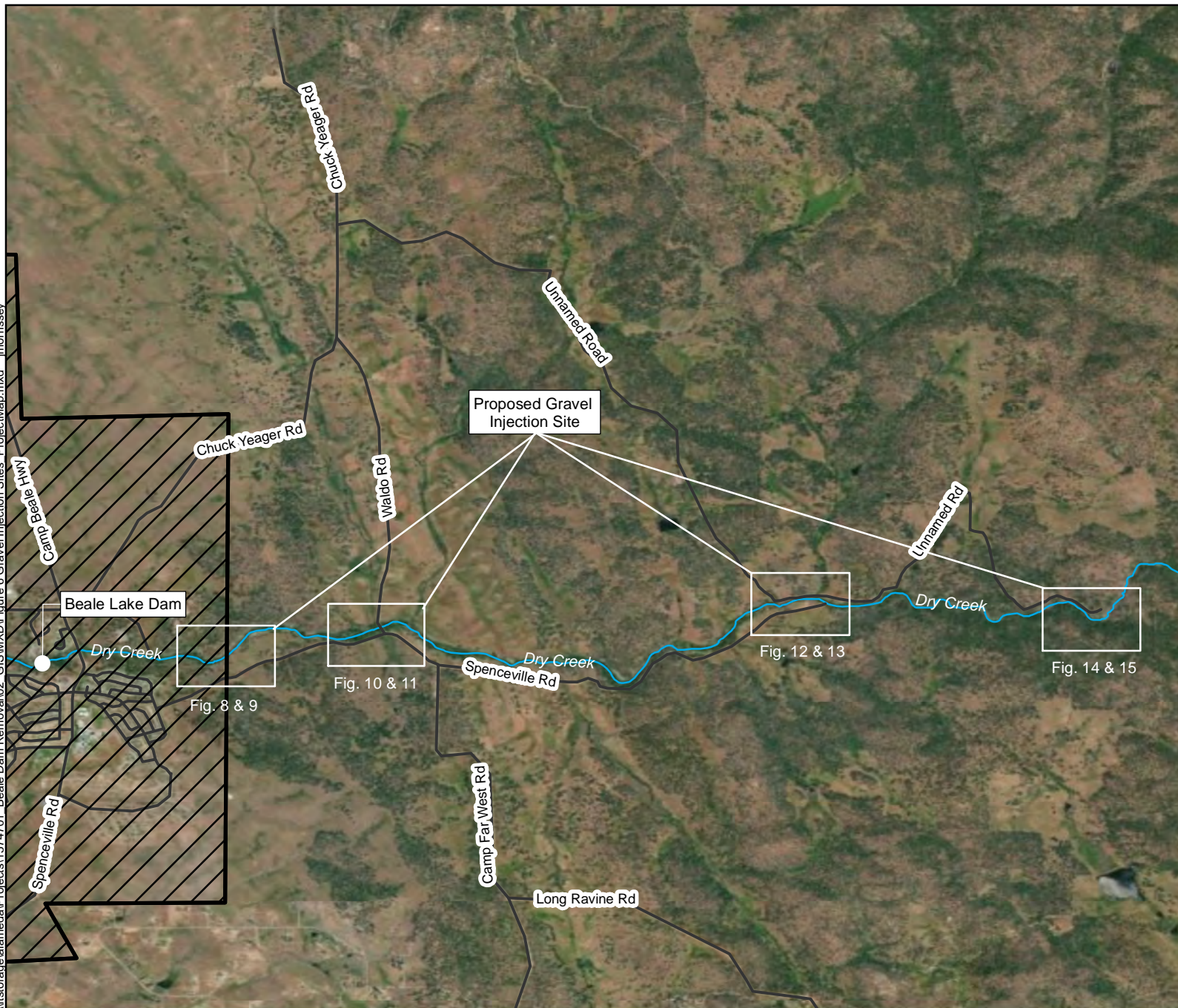
Aerial:
ESRI ArcGIS Map Service, 2017



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Feet

*Dry Creek Fish Passage &
Habitat Improvements
Beale AFB, California*

Figure 3
Beale Lake Dam
Project Map



Legend

- Beale AFB Boundary
- Dry Creek
- Roads

References:

Aerial:
ESRI ArcGIS Map Service, 2017

Boundary:
Drawn from USFWS data, 2018



0 0.25 0.5
Miles

*Dry Creek Fish Passage & Habitat
Improvements
Beale AFB, California*

Figure 4
Proposed Gravel Injection
Sites
Project Map

Central Valley Regional Water Quality Control Board

~~26 September~~ 7 October 2019

Kathryn Curtis
Department of the Air Force
Beale Air Force Base
9 CES/CD
6425 B Street, Building 25390
Beale AFB, CA 95903-1708

CERTIFIED MAIL

7017 2620 0001 1359 3032

COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT ASSESSMENT, FISH PASSAGE AND HABITAT IMPROVEMENTS TO DRY CREEK PROJECT, YUBA AND NEVADA COUNTIES

Pursuant to the Department of the Air Force Beale Air Force Base's 9 September 2019 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environmental Impact Report Assessment* for the Fish Passage and Habitat Improvements to Dry Creek Project, located in Yuba and Nevada Counties.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original

KARL E. LONGLEY ScD, P.E., CHAIR | PATRICK PULUPA, ESQ., EXECUTIVE OFFICER

Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases, the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues. For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:

http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Implementation Policy is available on page 74 at:

https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf

In part it states:

Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the

development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). For more information on the Construction General Permit, visit the State Water Resources Control Board website at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits¹

The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

Industrial Storm Water General Permit

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 2014-0057-DWQ. For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACE). If a Section 404 permit is required by the USACE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant

¹ Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements. If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications. For more information on the Water Quality Certification, visit the Central Valley Water Board website at:

https://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_certification/

Waste Discharge Requirements – Discharges to Waters of the State

If USACE determines that only non-jurisdictional waters of the State (i.e., “non-federal” waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation. For more information on the Waste Discharges to Surface Water NPDES Program and WDR processes, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/water_issues/waste_to_surface_water/

Projects involving excavation or fill activities impacting less than 0.2 acre or 400 linear feet of non-jurisdictional waters of the state and projects involving dredging activities impacting less than 50 cubic yards of non-jurisdictional waters of the state may be eligible for coverage under the State Water Resources Control Board Water Quality Order No. 2004-0004-DWQ (General Order 2004-0004). For more information on the General Order 2004-0004, visit the State Water Resources Control Board website at:

https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2004/wqo/wqo2004-0004.pdf

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Risk General Order) 2003-0003 or the Central Valley Water Board’s Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Risk Waiver) R5-2013-0145. Small temporary construction dewatering projects are projects that discharge groundwater to land from

excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Risk General Order and the application process, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Risk Waiver and the application process, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2013-0145_res.pdf

Regulatory Compliance for Commercially Irrigated Agriculture

If the property will be used for commercial irrigated agricultural, the discharger will be required to obtain regulatory coverage under the Irrigated Lands Regulatory Program.

There are two options to comply:

1. **Obtain Coverage Under a Coalition Group.** Join the local Coalition Group that supports land owners with the implementation of the Irrigated Lands Regulatory Program. The Coalition Group conducts water quality monitoring and reporting to the Central Valley Water Board on behalf of its growers. The Coalition Groups charge an annual membership fee, which varies by Coalition Group. To find the Coalition Group in your area, visit the Central Valley Water Board's website at: https://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/regulatory_information/for_growers/coalition_groups/ or contact water board staff at (916) 464-4611 or via email at IrrLands@waterboards.ca.gov.
2. **Obtain Coverage Under the General Waste Discharge Requirements for Individual Growers, General Order R5-2013-0100.** Dischargers not participating in a third-party group (Coalition) are regulated individually. Depending on the specific site conditions, growers may be required to monitor runoff from their property, install monitoring wells, and submit a notice of intent, farm plan, and other action plans regarding their actions to comply with their General Order. Yearly costs would include State administrative fees (for example, annual fees for farm sizes from 11-100 acres are currently \$1,277 + \$8.53/Acre); the cost to prepare annual monitoring reports; and water quality monitoring costs. To enroll as an Individual Discharger under the Irrigated Lands Regulatory Program, call the Central Valley Water Board phone line at (916) 464-4611 or e-mail board staff at IrrLands@waterboards.ca.gov.

Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Limited Threat Discharges to Surface Water* (Limited Threat General Order). A complete Notice of Intent must be submitted to the Central Valley Water Board to obtain coverage under the Limited Threat General Order. For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at:

https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016-0076-01.pdf

NPDES Permit

If the proposed project discharges waste that could affect the quality of surface waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit. For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at:

<https://www.waterboards.ca.gov/centralvalley/help/permit/>

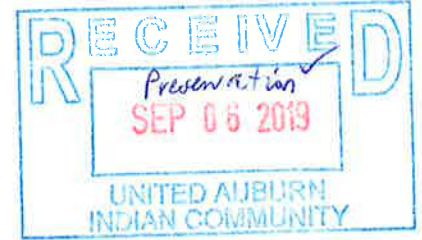
If you have questions regarding these comments, please contact me at (916) 464-4812 or Jordan.Hensley@waterboards.ca.gov.

Original Signed By:

Jordan Hensley
Environmental Scientist



DEPARTMENT OF THE AIR FORCE
9TH CIVIL ENGINEER SQUADRON (ACC)
BEALE AIR FORCE BASE, CALIFORNIA



MEMORANDUM FOR UNITED AUBURN INDIAN COMMUNITY
ATTN: MR. GENE WHITEHOUSE
Chairperson
10720 Indian Hill Road
Auburn, CA 95603

FROM: 9 CES/CD
6425 B Street, Bldg. 25390
Beale AFB, CA 95903-1708

SUBJECT: Notification and Solicitation of Comments for Fish Passage and Habitat
Improvements to Dry Creek, Yuba and Nevada Counties, California

1. The U.S. Air Force (USAF) is in the process of preparing a Draft Environmental Assessment in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended; Council on Environmental Quality Regulations (40 Code of Federal Regulations 1500-1508); and USAF *Environmental Impact Analysis Process* (32 Code of Federal Regulations Part 989).
2. Under the Proposed Action, the USAF, in partnership with the U.S. Fish and Wildlife Service (USFWS), is seeking to improve fish passage and create spawning habitat for anadromous salmonids in Dry Creek, a tributary to the Bear River (Figure 1). Dry Creek flows for approximately 19 miles southwest from its headwaters in Nevada County, California, through Beale Lake on Beale Air Force Base (AFB) in Yuba County, and finally joins the Bear River near the City of Rio Oso. Currently, two barriers prevent fish passage on Dry Creek: (1) the River Mile 6.2 Low Flow Crossing located approximately 7.35 miles downstream from the Beale AFB boundary (Figure 2), and (2) Beale Lake Dam on Beale AFB (Figure 3). As a result, anadromous fish native to Dry Creek have been unable to pass to their native spawning grounds. To improve fish passage and increase spawning habitat, USAF and USFWS are proposing to remove these two barriers. In addition, USFWS has identified that the potential spawning areas located upstream of Beale Lake Dam in the Spenceville Wildlife Management Area, do not currently represent viable spawning habitat and need to be enhanced through a series of gravel injections (Figure 4) for the project to be successful at improving anadromous salmonid production.
3. The Environmental Assessment will assess the environmental consequences of two alternative options for the Proposed Action: removal of fish passage barriers and creation of spawning habitat for anadromous salmonids in Dry Creek and the No Action Alternative.
4. The Air Force requests your input on the Proposed Action as part of the consultation process with relevant agencies, property owners, and stakeholders. This process is formally referred to as the Interagency and Intergovernmental Coordination for Environmental Planning process. Through this notice, the USAF is contacting you to notify you of the Proposed Action and to solicit comments. This is the initial step in the review process, and a draft of the Environmental Assessment will be released once specific details on each Alternative have been developed.

Please note this letter does not cover Section 106 of the National Historic Preservation Act (54 United States Code (U.S.C.) § 306108) and 36 Code of Federal Regulations (CFR) Part 800, which will be sent at a future date.

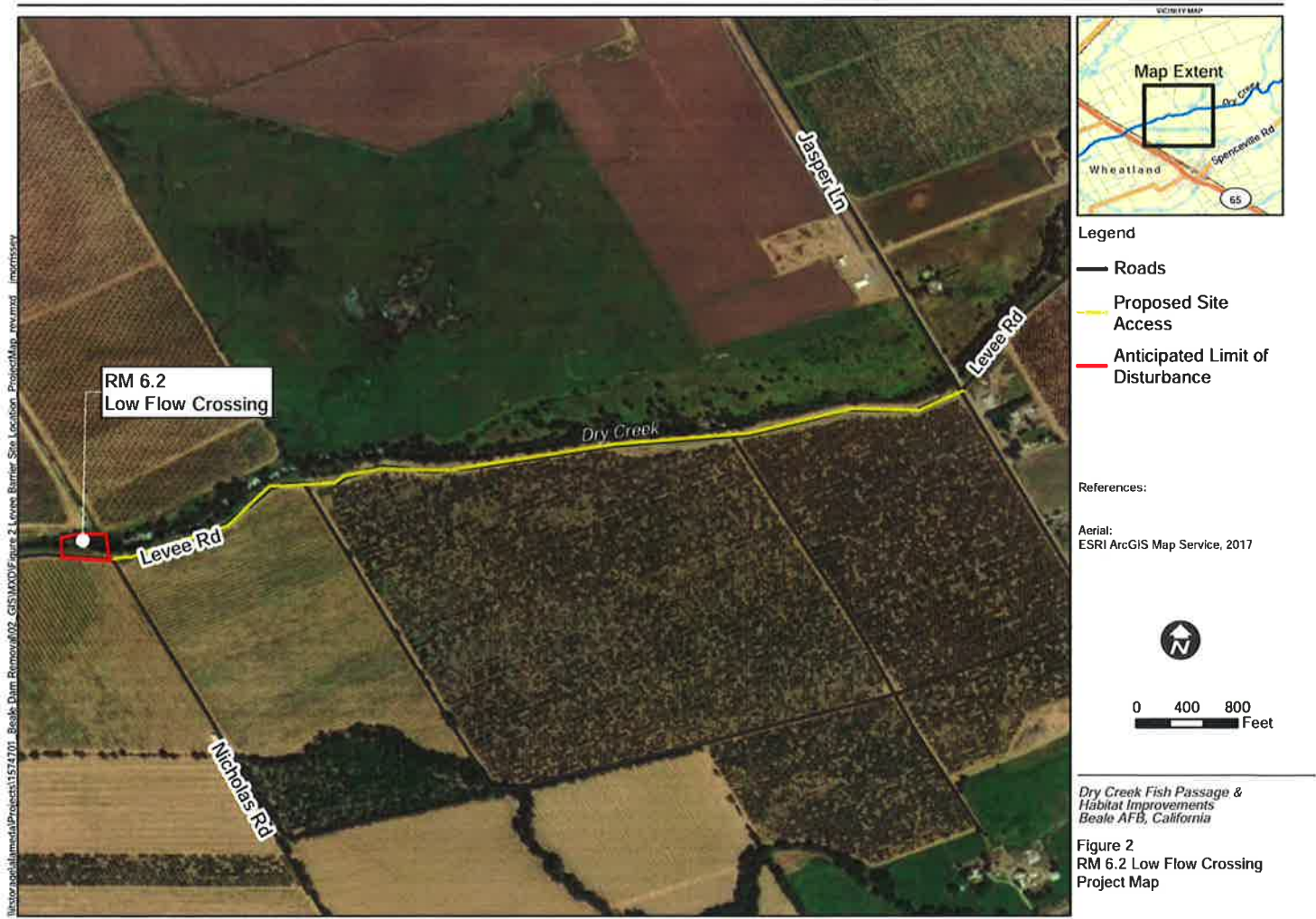
5. Please address all questions and comments to Ms. Kathryn Curtis, Compliance Section Chief, at (530) 634-2642, kathryn.curtis@beale.af.mil, 9 CES/CEIE, 6425 B Street Bldg. 25390, Beale AFB, CA 95903-1708, 3 October 2019.

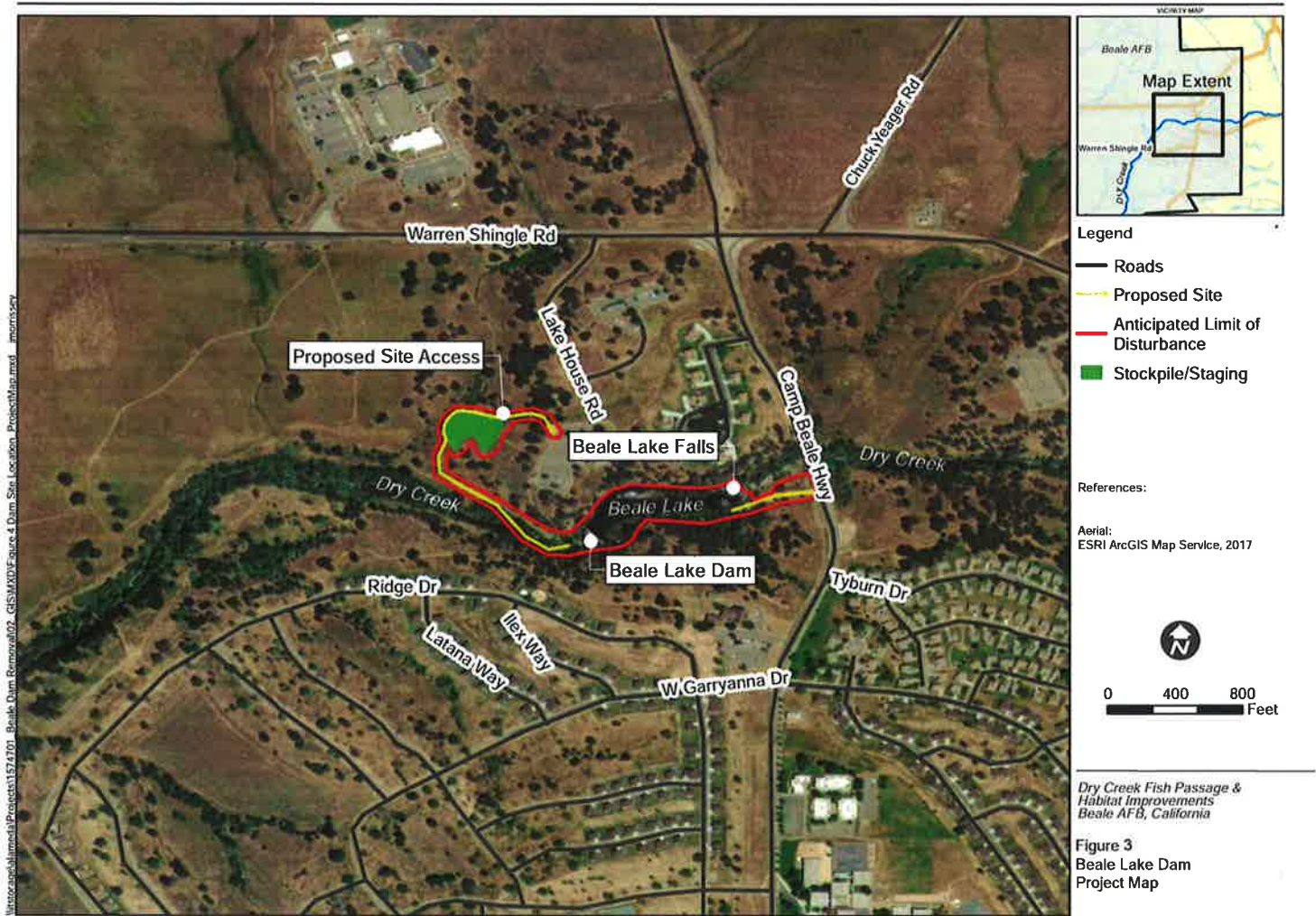
A handwritten signature in black ink, appearing to read 'Calvin G. Hendrix', with a stylized, cursive script.

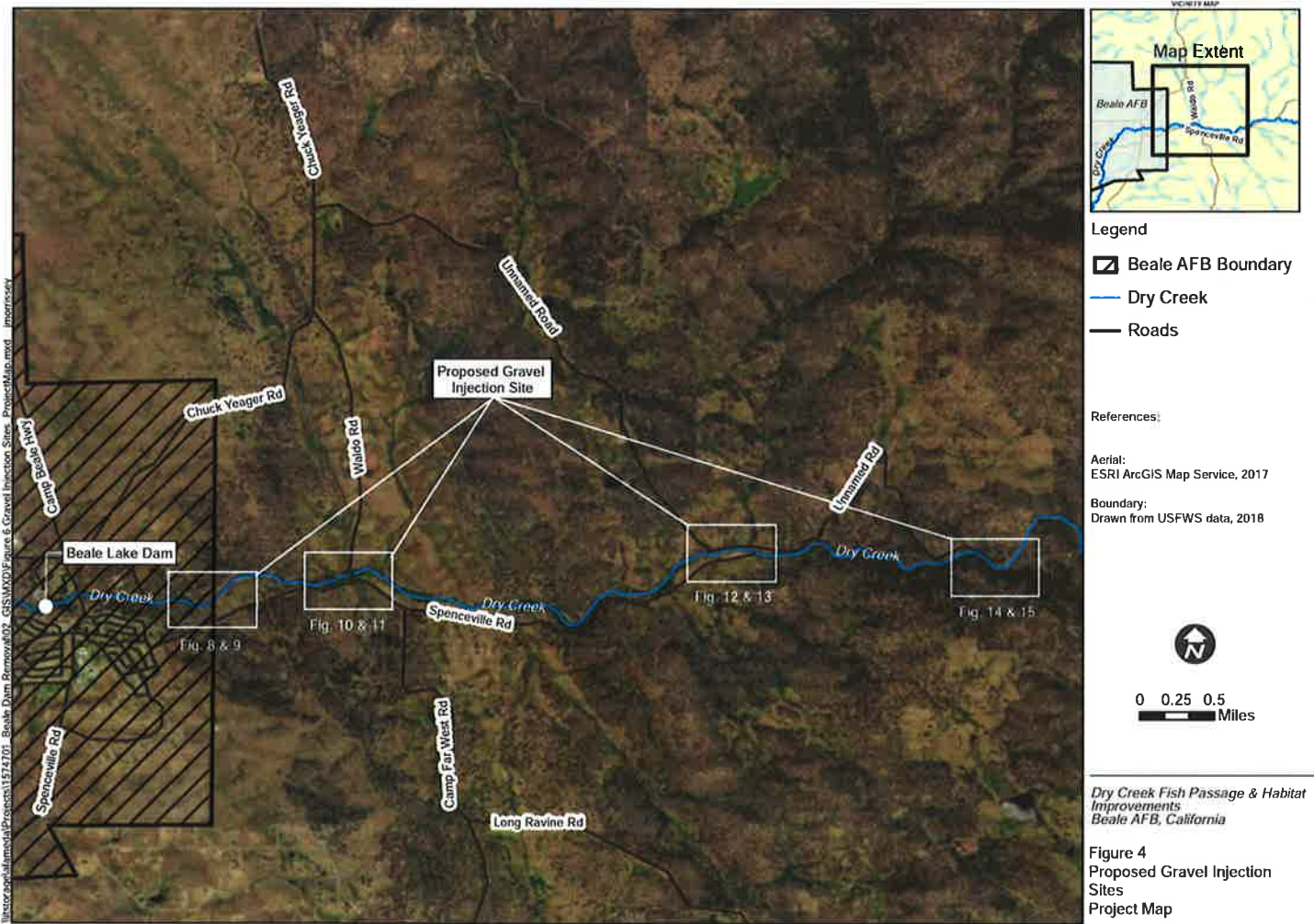
CALVIN G. HENDRIX
Deputy Base Civil Engineer

4 Attachments:

1. Overall Project Area Location Map
2. Project Map - River Mile 6.2 Low Flow Crossing
3. Project Map - Beale Lake Dam
4. Project Map – Dry Creek Gravel Injections







Appendix B

Air Quality Conformity Analysis

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DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location

Base: BEALE AFB

State: California

County(s): Nevada; Yuba

Regulatory Area(s): Yuba City-Marysville, CA; Nevada Co. (Western Part), CA

- Action Title: Fish Passage and Habitat Improvements to Dry Creek

- Project Number/s (if applicable):

- Projected Action Start Date: 7 / 2020

- Action Purpose and Need:

The purpose of the Proposed Action is to improve fish passage and create spawning habitat for anadromous salmonids in Dry Creek and to reduce the USAF liability associated with aging dam infrastructure. The Proposed Action is needed because two fish passage barriers in Dry Creek currently impede the upstream migration of adult salmonids, and the existing Beale Lake Dam on Beale AFB is no longer needed to support the USAF mission. In addition, USFWS has identified that the potential spawning areas located upstream of Beale Lake Dam do not represent viable spawning habitat and need to be enhanced for the project to be successful at improving anadromous fish production.

- Action Description:

The Proposed Action would improve fish passage and create spawning habitat for anadromous salmonids in Dry Creek. These activities would disturb vegetation and result in impacts to waterbodies, wetlands, floodplains, and potentially threatened and endangered species. In addition, there are known cultural resource sites in the vicinity of the project.

- Point of Contact

Name: Sunhee Park

Title: Engineer

Organization: EA Engineering, Science and Technology, Inc., PBC

Email: spark@eaest.com

Phone Number: 410-584-7000

- Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	Fish Passage and Habitat Improvements to Dry Creek

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location

County: Nevada; Yuba

Regulatory Area(s): Nevada Co. (Western Part), CA; Yuba City-Marysville, CA

- Activity Title: Fish Passage and Habitat Improvements to Dry Creek

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Description:

1. The RM6.2 Low Flow Crossing would be removed.
2. Beale Lake Dam and existing fish ladder would be fully removed and Beale Lake would be restored to a free-flow stream.
3. Gravel injections would occur at four locations upstream from Beale Lake Dam, outside of the natural low flow channel of Dry Creek.

- Activity Start Date

Start Month: 7
Start Month: 2020

- Activity End Date

Indefinite: False
End Month: 9
End Month: 2021

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.195515
SO _x	0.003115
NO _x	1.245822
CO	1.212206
PM 10	1.891095

Pollutant	Total Emissions (TONs)
PM 2.5	0.054822
Pb	0.000000
NH ₃	0.000598
CO _{2e}	300.4

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date

Start Month: 7
Start Quarter: 1
Start Year: 2020

- Phase Duration

Number of Month: 3
Number of Days: 0

2.1.2 Demolition Phase Assumptions

- General Demolition Information

Area of Building to be demolished (ft²): 900
Height of Building to be demolished (ft): 15.7

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Tractors/Loaders/Backhoes Composite	2	6
-------------------------------------	---	---

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0483	0.0006	0.3409	0.3782	0.0195	0.0195	0.0043	58.572
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2117	0.0024	1.5772	0.8005	0.0630	0.0630	0.0191	239.56
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0436	0.0007	0.2744	0.3616	0.0134	0.0134	0.0039	66.897

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

2.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (0.00042 * BA * BH) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

0.00042: Emission Factor (lb/ft³)

BA: Area of Building to be demolished (ft²)

BH: Height of Building to be demolished (ft)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$\text{VMT}_{\text{VE}} = \text{BA} * \text{BH} * (1 / 27) * 0.25 * (1 / \text{HC}) * \text{HT}$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

BA: Area of Building being demolish (ft²)

BH: Height of Building being demolish (ft)

(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd³ / 27 ft³)

0.25: Volume reduction factor (material reduced by 75% to account for air space)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$\text{V}_{\text{POL}} = (\text{VMT}_{\text{VE}} * 0.002205 * \text{EF}_{\text{POL}} * \text{VM}) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$\text{VMT}_{\text{WT}} = \text{WD} * \text{WT} * 1.25 * \text{NE}$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$\text{V}_{\text{POL}} = (\text{VMT}_{\text{WT}} * 0.002205 * \text{EF}_{\text{POL}} * \text{VM}) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

2.2 Site Grading Phase

2.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date

Start Month: 7

Start Quarter: 1

Start Year: 2021

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Phase Duration

Number of Month: 3

Number of Days: 0

2.2.2 Site Grading Phase Assumptions

- General Site Grading Information

Area of Site to be Graded (ft²): 60000

Amount of Material to be Hauled On-Site (yd³): 2680

Amount of Material to be Hauled Off-Site (yd³): 0

- Site Grading Default Settings

Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

2.2.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)

HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)

HC: Average Hauling Truck Capacity (yd³)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

WT: Average Worker Round Trip Commute (mile)

1.25: Conversion Factor Number of Construction Equipment to Number of Works

NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL} : Vehicle Emissions (TONs)

VMT_{WT} : Worker Trips Vehicle Miles Travel (miles)

0.002205: Conversion Factor grams to pounds

EF_{POL} : Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

2.3 Trenching/Excavating Phase

2.3.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date

Start Month: 7

Start Quarter: 1

Start Year: 2020

- Phase Duration

Number of Month: 3

Number of Days: 0

2.3.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft²): 1400

Amount of Material to be Hauled On-Site (yd³): 0

Amount of Material to be Hauled Off-Site (yd³): 181.5

- Trenching Default Settings

Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd³): 20 (default)

Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.3.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	CH ₄	CO _{2e}
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO _x	NO _x	CO	PM 10	PM 2.5	Pb	NH ₃	CO _{2e}
LDGV	000.114	000.003	000.084	000.992	000.047	000.020		000.023	00298.845
LDGT	000.288	000.004	000.178	001.871	000.048	000.021		000.024	00379.038
HDGV	000.600	000.011	001.339	008.875	000.183	000.078		000.045	01128.468
LDDV	000.026	000.003	000.125	000.281	000.060	000.032		000.008	00271.718
LDDT	000.094	000.003	000.533	000.594	000.112	000.082		000.008	00364.857
HDDV	000.194	000.014	004.796	001.133	000.211	000.117		000.028	01514.699
MC	004.452	000.002	001.252	023.791	000.019	000.009		000.054	00187.891

2.3.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$$PM10_{FD} = (20 * ACRE * WD) / 2000$$

PM10_{FD}: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)

ACRE: Total acres (acres)

WD: Number of Total Work Days (days)

2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$$

CEE_{POL}: Construction Exhaust Emissions (TONs)

NE: Number of Equipment

WD: Number of Total Work Days (days)

H: Hours Worked per Day (hours)

EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$$

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd³)
HA_{OffSite}: Amount of Material to be Hauled Off-Site (yd³)
HC: Average Hauling Truck Capacity (yd³)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd³)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$$VMT_{WT} = WD * WT * 1.25 * NE$$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF CONFORMITY ANALYSIS (ROCA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

a. Action Location:

Base: BEALE AFB

State: California

County(s): Nevada; Yuba

Regulatory Area(s): Yuba City-Marysville, CA; Nevada Co. (Western Part), CA

b. Action Title: Fish Passage and Habitat Improvements to Dry Creek

c. Project Number/s (if applicable):

d. Projected Action Start Date: 7 / 2020

e. Action Description:

The Proposed Action would improve fish passage and create spawning habitat for anadromous salmonids in Dry Creek. These activities would disturb vegetation and result in impacts to waterbodies, wetlands, floodplains, and potentially threatened and endangered species. In addition, there are known cultural resource sites in the vicinity of the project.

f. Point of Contact:

Name: Sunhee Park

Title: Engineer

Organization: EA Engineering, Science and Technology, Inc., PBC

Email: spark@eaest.com

Phone Number: 410-584-7000

2. Analysis: Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

Based on the analysis, the requirements of this rule are: _____ applicable
_____X_____ not applicable

Conformity Analysis Summary:

2020

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Yuba City-Marysville, CA			
VOC	0.114	100	No
NOx	0.705	100	No
CO	0.764		
SOx	0.002	100	No
PM 10	0.078		
PM 2.5	0.032	100	No
Pb	0.000		

AIR CONFORMITY APPLICABILITY MODEL REPORT

RECORD OF CONFORMITY ANALYSIS (ROCA)

NH3	0.000	100	No
CO2e	173.8		
Nevada Co. (Western Part), CA			
VOC	0.114	100	No
NOx	0.705	100	No
CO	0.764		
SOx	0.002		
PM 10	0.078		
PM 2.5	0.032		
Pb	0.000		
NH3	0.000		
CO2e	173.8		

2021

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Yuba City-Marysville, CA			
VOC	0.081	100	No
NOx	0.541	100	No
CO	0.448		
SOx	0.001	100	No
PM 10	1.813		
PM 2.5	0.022	100	No
Pb	0.000		
NH3	0.000	100	No
CO2e	126.6		
Nevada Co. (Western Part), CA			
VOC	0.081	100	No
NOx	0.541	100	No
CO	0.448		
SOx	0.001		
PM 10	1.813		
PM 2.5	0.022		
Pb	0.000		
NH3	0.000		
CO2e	126.6		

2022 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Yuba City-Marysville, CA			
VOC	0.000	100	No
NOx	0.000	100	No
CO	0.000		
SOx	0.000	100	No
PM 10	0.000		
PM 2.5	0.000	100	No
Pb	0.000		
NH3	0.000	100	No
CO2e	0.0		
Nevada Co. (Western Part), CA			
VOC	0.000	100	No
NOx	0.000	100	No

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CO	0.000		
SOx	0.000		
PM 10	0.000		
PM 2.5	0.000		
Pb	0.000		
NH3	0.000		
CO2e	0.0		

None of estimated emissions associated with this action are above the conformity threshold values established at 40 CFR 93.153 (b); Therefore, the requirements of the General Conformity Rule are not applicable.

Sunhee Park, Engineer

DATE