San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project

Final Initial Study/Mitigated Negative Declaration
State Clearinghouse No. 2025110364

March 2026

SAN LUIS CANAL (CALIFORNIA AQUEDUCT POOLS 17 AND 18) LINER RAISE PROJECT

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Acronyms and Other Abbreviations

BUOW	western burrowing owl
CalGEM	California Department of Conservation, Geologic Energy Management Division
CBB	Crotch's bumble bee
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
DWR	California Department of Water Resources
Final IS/MND	Final Initial Study/Mitigated Negative Declaration
IS/MND	initial study/mitigated negative declaration
ITP	incidental take permit
MMRP	Mitigation Monitoring and Reporting Program
proposed project	San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project
SJKF	San Joaquin kit fox
SWHA	Swainson's hawk
TRBL	tricolored blackbird
WESP	western spadefoot

1 INTRODUCTION

This Final Initial Study/Mitigated Negative Declaration (Final IS/MND) has been prepared for the San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project (referred to herein as the "proposed project") in accordance with the California Environmental Quality Act (CEQA), as amended (Public Resources Code Section 21000 et seq.), and the CEQA Guidelines (California Code of Regulations Title 14, Division 6, Chapter 3, Article 1, Section 15000 et seq.).

1.1 CEQA Requirements

In accordance with CEQA Guidelines Section 15074(b), prior to approving a project, the decision-making body of the lead agency shall consider the proposed initial study/mitigated negative declaration (IS/MND) together with any comments received during the public review process. As required, the California Department of Water Resources (DWR) will adopt the Final IS/MND only if it finds, on the basis of the whole record before it, that there is no substantial evidence that the proposed project would have a significant effect on the environment and that the IS/MND reflects DWR's independent judgment and analysis.

This Final IS/MND includes the comments received on the Public Review Draft IS/MND, responses to those comments, the Mitigation Monitoring and Reporting Program (MMRP), and the IS/MND. These components constitute the Final IS/MND. This Final IS/MND is organized as follows:

Chapter 1: Introduction provides an overall introduction to the Final IS/MND and explains the CEQA process.

Chapter 2: Comments on the Public Draft IS/MND and Responses to Comments presents a table of public agencies that commented on the Public Review Draft IS/MND, the comments received and written responses to all comments received on the Public Review Draft IS/MND.

Chapter 3: Revisions to the Draft IS/MND provides a summary of changes that were made to the text of the Final IS/MND in response to comments.

Chapter 4: Mitigation Monitoring and Reporting Program summarizes the mitigation commitments identified in the Final IS/MND.

In addition to these chapters, this Final IS/MND includes the following appendices:

Appendix A: Public Review Draft IS/MND Comment Letters includes the comment letters received by DWR on the Public Review Draft IS/MND for the San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project.

Appendix B: San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project Final IS/MND.

1.2 Purpose of the Initial Study/Mitigated Negative Declaration (IS/MND)

Public Participation Process

Notice of Intent to Adopt an IS/MND

The Notice of Intent to Adopt an IS/MND was posted on November 11, 2025, with the State Clearinghouse (No. 2025110364) and the Fresno County Clerk. The Public Review Draft IS/MND was circulated for a 30-day public review until December 10, 2025. In response to a December 8, 2025, request by the California Department of Fish and Wildlife (CDFW) for an extension to submit public comments, DWR confirmed its acceptance of the deadline extension to December 17, 2025. The Public Review Draft IS/MND was circulated to federal, state, and local agencies and interested parties who requested a copy of the Public Review Draft IS/MND. The Public Review Draft IS/MND was made available to the public online at https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/CanalEmbankment.

Evaluation and Response to Comments

In accordance with CEQA Guidelines Section 15074, DWR, as the lead agency, has evaluated substantive environmental comments received on the Public Review Draft IS/MND. This Final IS/MND contains written responses to each comment received on the Public Review Draft IS/MND (see Chapter 3).

Approval of the Final Mitigated Negative Declaration

As the lead agency, DWR is required to determine the adequacy of the Final IS/MND. DWR can approve the Final IS/MND if it determines that the environmental documentation is adequate.

Notice of Determination

Pursuant to CEQA Guidelines Section 15094, DWR is required to file a Notice of Determination with the State Clearinghouse within five working days of project approval.

2 COMMENTS ON THE PUBLIC DRAFT IS/MND AND RESPONSES TO COMMENTS

The Public Review Draft IS/MND for the proposed project was circulated for public review for 30 days (November 11, 2025, through December 10, 2025). On December 8, 2025, DWR granted a time extension to CDFW for submittal of public comments. Two comment letters were received on the Public Review Draft IS/MND (**Table 2-1**).

Table 2-1 List of Commenters on the Public Review Draft Initial Study/Mitigated Negative Declaration

Commenter No.	Commenting Agency	Comment Type	Date(s) of Comment
1	California Department of Conservation, Geologic Energy Management Division	Letter	November 21, 2025
2	California Department of Fish and Wildlife	Letter	December 19, 2025

Source: Data compiled by Environmental Science Associates in 2025

Copies of the comment letters received during the review period for the Public Review Draft IS/MND are included in **Appendix A**. Each comment letter is presented with brackets indicating how the letter has been divided into individual comments. Each comment is given a binomial, with the agency name appearing first, followed by the comment number. For example, comments in Commenter 1's letter are numbered CalGEM-1, CalGEM-2, CalGEM-3, and so on. Immediately following the individual comments below are responses, each with binomials that correspond to the bracketed comments. Where text changes to the Draft IS/MND are warranted based on comments received on the document, those changes are included in Chapter 3, "Revisions to the IS/MND."

Commenter 1: California Department of Conservation, Geologic Energy Management Division, November 21, 2025

Comment CalGEM-1

Public Resources Code (PRC) section 3208.1 establishes re-abandonment responsibility when previously plugged and abandoned oil, gas or geothermal wells will be impacted by planning development or construction activities. Local Permitting agencies, property owners, and/or developers should be aware of, and fully understand, that significant and potentially dangerous issues may be associated with development near previously abandoned oil, gas, and geothermal wells.

The California Department of Conservation, Geologic Energy Management Division (CalGEM) has received the above-referenced project dated November 10, 2025. To assist local permitting agencies, property owners, and developers in making safe and practical land use decisions regarding potential development near oil, gas, or geothermal wells, CalGEM provides a table in the attached enclosure of the wells within the parcel boundary or in its vicinity, based on CalGEM's Well Finder database (https://maps.conservation.ca.gov/doggr/wellfinder/).

Response to CalGEM-1

DWR thanks CalGEM for the table identifying wells in the vicinity of the project site. See also Response to CalGEM-9 below.

Comment CalGEM-2

CalGEM categorically advises against building over, or in any way impeding access to, oil, gas, or geothermal wells. Impeding access to a well could result in the need to remove any structure or obstacle that prevents or impedes access including, but not limited to, buildings, housing, fencing, landscaping, trees, pools, patios, sidewalks, roadways, and decking at the landowner's expense if there is a need to access a well. Maintaining sufficient access is considered the ability for a well servicing unit and associated necessary equipment (consisting of well servicing rig, pumping equipment, pipe trailer) to reach a well from a public street or access way, solely over the parcel on which the well is located. A well servicing unit, and any necessary equipment, should be able to pass unimpeded along and over the route, and should be able to access the well without disturbing the integrity of surrounding infrastructure. Impermeable barriers such as asphalt, concrete, and plastic may trap hazardous gases and liquids underneath and could create a safety hazard if built over a well that later develops a leak.

CalGEM recommends that any well for which access is impeded or built over, against CalGEM's advice, should be evaluated by a qualified petroleum professional for compliance with the statutory objectives of isolating all hydrocarbon-bearing strata; protecting underground and surface waters; prevention of subsequent damage to life, health, property, and other resources; and prevention of loss of oil, gas, or reservoir energy. CalGEM recommends that wells that do not meet these standards are abandoned or re-abandoned prior to construction. The well information can be accessed through CalGEM's Well Finder database mentioned above. PRC section 3208, subdivision

(a), provides the primary statutory authority for CalGEM to oversee adequate abandonment of wells. Additionally, CalGEM has developed the regulatory guidance for operators to be followed during well abandonment, which are listed within California Code of Regulation, title 14 (CCR) section 1723 and associated sub-sections (for onshore wells), and section 1745 and associated sub-sections (for offshore wells).

Response to CalGEM-2

The wells identified in the comment letter are not on DWR property or within the project site. There are no wells on the project site; therefore, the project does not propose the abandonment of any wells.

Comment CalGEM-3

There is no guarantee that a well abandoned in compliance with current Division requirements as prescribed by law will not start leaking in the future. Due to the inability to predict all subsurface conditions or changes, it always remains a possibility that any well may start to leak oil, gas, and/or water after abandonment, no matter how thoroughly the well was plugged and abandoned. CalGEM acknowledges wells plugged and abandoned to the most current Division requirements as prescribed by law have a lower probability of leaking in the future, however there is no guarantee that such abandoned wells will not leak.

CalGEM advises that all wells identified on the development parcel prior to, or during, development activities be tested for liquid and gas leakage. Surveyed locations in Latitude and Longitude, NAD 83 decimal format, and leaking leak results should be provided to CalGEM. CalGEM expects any wells found leaking to re reported to CalGEM immediately.

Response to CalGEM-3

The project does not propose abandonment of any wells.

Comment CalGEM-4

PRC section 3208.1 gives CalGEM the authority to order or permit the re-abandonment of any well where it has reason to question the integrity of the previous abandonment. Responsibility for re-abandonment costs may be affected by the choices made by the local permitting agency set forth in this letter. The PRC continues to define the person or entity responsible for re-abandonment as:

1. The property owner – If the well was plugged and abandoned in conformance with Division requirement at the time of abandonment, and in its current condition does not pose an immediate danger to life, health, and property, but requires additional work solely because the owner of the property on which the well is located proposes construction on the property that would prevent or impeded access to the well for purposes of remedying a currently perceived future problem, then the owner of the property on which the well is located shall obtain all rights necessary to re-abandon the well and be responsible for the re-abandonment.
2. The person or entity causing construction over or near the well – If the well was plugged and abandoned in conformance with Division requirements at the time of plugging and abandonment,

and the property owner, developer, or local agency permitting the construction failed either to obtain an opinion from the supervisor or district deputy as to whether the previously abandoned well is required to be re-abandoned, or to follow the advice of the supervisor or district deputy not to undertake construction that impedes access, then the person or entity causing the construction over or near the well shall obtain all rights necessary to re-abandon the well and be responsible for the re-abandonment.

The party or parties responsible for disturbing the integrity of the abandonment – If the well was plugged and abandoned in conformance with Division requirements at the time of plugging and abandonment, and after that time someone other than the operator or an affiliate of the operator disturbed the integrity of the abandonment in the course of developing the property, then the party or parties responsible for disturbing the integrity of the abandonment shall be responsible for the re-abandonment.

Response to CalGEM-4

The project does not propose abandonment of any wells.

Comment CalGEM-5

Should any wells require abandonment or re-abandonment, the responsible party must submit a Notice of Intention (NOI) to CalGEM through WellSTAR. The NOI form can be accessed in the "Plugging and Abandonment" section of the following link: https://www.conservation.ca.gov/calgem/for_operators.

No well work may be performed on any oil, gas, or geothermal wells without written approval from CalGEM. Well work requiring approval includes, but is not limited to, mitigating leaking gas or other fluids from abandoned wells, modifications to well casings, and/or any other re-abandonment work. CalGEM also regulates the top of a plugged and abandoned well's minimum and maximum depth below final grade. CCR section 1723.5 states well casings shall be cut off at least 5 feet but no more than 10 feet below the surface of the ground. If any well needs to be lowered or raised (i.e. casing cut down or casing riser added) to meet this regulation, a permit form CalGEM is required before work can start.

Response to CalGEM-5

The project does not propose abandonment of any wells.

Comment CalGEM-6

CalGEM makes the following additional recommendations to the local permitting agency, property owner, and developer:

1. To ensure that present and future property owners are aware of (a) the existence of all wells located on the property, and (b) potentially significant issues associated with any improvements near oil or gas well, CalGEM recommends that information regarding the below identified well(s),

and any other pertinent information obtained after the issuance of this letter, be communicated to the appropriate county recorder for inclusion in the title information of the subject real property.

2. CalGEM recommends that any soil containing hydrocarbons be disposed of in accordance with local, state, and federal laws. Please notify the appropriate authorities if soil containing significant amounts of hydrocarbons is discovered during development.

Response to CalGEM-6

The wells identified in the comment letter are not on DWR property or within the project site. Borrow sources for the proposed project are identified in the IS/MND at six locations along the east side of the California Aqueduct. All of the material needed for the liner raises would come from these on-site borrow locations. Any remaining stockpiles or materials would be removed from the site and would be disposed of in an approved location according to contractor specifications.

Comment CalGEM-7

As indicated in PRC section 3106, CalGEM has statutory authority over the drilling, operation, maintenance, and abandonment of oil, gas, and geothermal wells, and attendant facilities, to prevent, as far as possible, damage to life, health, property, and natural resources; damage to underground oil, gas, and geothermal deposits; and damage to underground and surface waters suitable for irrigation or domestic purposes. In addition to CalGEM's authority to order work on wells pursuant to PRC sections 3208.1 and 3224, it has authority to issue civil and criminal penalties under PRC sections 3236, 3236.5, and 3359 for violations within CalGEM's jurisdictional authority. CalGEM does not regulate grading, excavations, or other land use issues.

Response to CalGEM-7

The comment is noted.

Comment CalGEM-8

Should you have any questions, or if any wells are encountered that were not part of this letter, contact CalGEM at (661) 322-4031 or via email at CalGEMCentralCSWR@conservation.ca.gov.

Response to CalGEM-8

The CalGEM contact information is noted.

Comment CalGEM-9

Enclosure: The wells listed below are reported to be located within and nearby the parcel boundary and may have future access impeded.

Township, Range, Section	API No.	Well Name
T17S, R15E, Section 14	0401900183	Richfield Cantua Land Co.1
T17S, R15E, Section 14	0401900181	Denlinger 1
T17S, R15E, Section 14	0401922087	Brawley 1
T17S, R15E, Section 14	0401900182	Myers 1
T17S, R15E, Section 14	0401920258	Giffen, In c., et al 67

Response to CalGEM-9

DWR reviewed the well locations listed in CalGEM's comment letter enclosure and determined that none of the wells are located within the boundaries of the project site. Further, none of the wells identified therein would be made inaccessible or built over as a result of project-related activities. The wells are located on agricultural lands adjacent to the San Luis Canal and the proposed project would make no changes to the lands or roadways that provide access to the wells.

Commenter 2: California Department of Fish and Wildlife, December 19, 2025

Comment CDFW-1

The California Department of Fish and Wildlife (CDFW) received two Notice of Intent to Adopt an MND from the California Department of Water Resources (DWR) for the above-referenced Projects pursuant the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1] The above Projects are similar in scope and located adjacent to each other. Therefore, CDFW is providing a single comment letter for both MNDs.

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in these Projects that may affect California fish and wildlife. Likewise, CDFW appreciates the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code. While the CEQA comment period may have ended, CDFW respectfully requests that the DWR still consider our comments.

Response to CDFW-1

DWR thanks CDFW for the agency's comments.

[1] CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

Comment CDFW-2

CDFW ROLE

CDFW is California's **Trustee Agency** for fish and wildlife resources and holds those resources in trust by statute for all the people of the State (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a)). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (Id., § 1802). Similarly, for purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

CDFW is also submitting comments as a **Responsible Agency** under CEQA (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381). CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's lake and streambed alteration regulatory authority (Fish & G. Code, § 1600 et seq.). Likewise, to the extent implementation of the Project as proposed may result in take as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), related authorization as provided by the Fish and Game Code will be required.

Other Special Status Species: Species of plants and animals need not be officially listed as Endangered, Rare, or Threatened on any State or federal list pursuant to CESA and/or the federal Endangered Species Act (ESA) to be considered Endangered, Rare, or Threatened under CEQA. If a species can be shown to meet the criteria specified in the CEQA Guidelines (Cal. Code Regs., tit. 14, Chapter 3, § 15380), it should be fully considered in the environmental analysis for the Project.

Bird Protection: CDFW has jurisdiction over actions that may result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Fish and Game Code sections that protect birds, their eggs, and nests include section 3503 (regarding unlawful take, possession, or needless destruction of the nest or eggs of any bird), section 3503.5 (regarding the take, possession, or destruction of any birds-of-prey or their nests or eggs), and section 3513 (regarding unlawful take of any migratory nongame bird).

Response to CDFW-2

DWR acknowledges CDFW's role as both a trustee and responsible agency pursuant to CEQA.

Comment CDFW-3

PROJECT DESCRIPTION SUMMARY

Project Proponent: DWR.

SCH No. 2025110364. San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project:

This project would raise portions of the concrete liner of the California Aqueduct's Pools 17 and 18 between Milepost (MP) 128.4 and MP 135.6 to maintain functionality in Pools 17 and 18 to enable DWR to avoid future disruptions of water deliveries, thereby maintaining operational flexibility and improving safety and reliability. The existing concrete liner would be raised approximately 1 foot 9 inches over a total length of approximately 8.9 miles on both sides of Pools 17 and 18. Construction activities would be performed above the waterline and would not require dewatering of the California Aqueduct. Work would include excavation and use of on-site borrow material, road drain rerouting, and the removal and reinstallation of guardrails, road delineators and other existing features.

SCH No. 2025110365. San Luis Canal (California Aqueduct Pools 20 and 21) Liner Raise Project:

This project would raise portions of the concrete liner of the California Aqueduct's Pools 20 and 21 between MP 158.7 and MP 170.3 to maintain functionality in Pools 20 and 21 to enable DWR to avoid future disruptions of water deliveries, thereby maintaining operational flexibility and improving safety and reliability. The existing concrete liner would be raised over approximately 18 miles, with varying raise heights: up to 1.5 feet over 5 miles, up to 2.5 feet over 3.5 miles, and up to 3 feet over 9.5 miles. Construction activities would be performed above the waterline and would not require dewatering of the California Aqueduct. Work would include excavation and use of on-site borrow material, road drain rerouting, and the removal and reinstallation of guardrails, road delineators, and other existing features to accommodate the liner raise.

Locations: The proposed project alignment for Pools 17 and 18 is located between MP 128.4 and MP 135.6, in unincorporated Fresno County, near Cantua Creek and Three Rocks. The proposed project alignment for Pools 20 and 21 is located between MP 158.7 and MP 170.3, south of the Community of Huron in Fresno and Kings Counties.

Timeframe: Construction for both projects is anticipated to begin in 2027, and each project would occur over nine months.

Response to CDFW-3

The comment is noted.

Comment CDFW-4

COMMENTS AND RECOMMENDATIONS

CDFW offers the comments and recommendations below to assist DWR in adequately identifying and/or mitigating the significant, or potentially significant, direct and indirect impacts on fish and wildlife (i.e., biological) resources from both projects. Based on a review of both project descriptions, a review of California Natural Diversity Database (CNDDB) records, our familiarity with the project areas, and a review of aerial photographs of the projects and surrounding habitat, several special status species could potentially be impacted by project activities of both projects.

CDFW is concerned regarding potential impacts for the following special status wildlife species and habitats known to occupy both project areas: the State threatened and federally endangered San Joaquin kit fox (*Vulpes macrotis mutica*); the State threatened Swainson's hawk (*Buteo swainsoni*) and tricolored blackbird (*Agelaius tricolor*); the State candidate for listing western burrowing owl (*Athene cunicularia hypugaea*) and Crotch's bumble bee (*Bombus crotchii*); and the State species of special concern American badger (*Taxidea taxus*), western mastiff bat (*Eumops Perotis ssp. californicus*), Yuma myotis (*Myotis yumanensis*), spotted bat (*Euderma maculatum*), Brazilian free-tailed bat (*Tadarida brasiliensis*), silver-haired bat (*Lasionycteris noctivagans*), greater bonneted bat (*Eumops perotis californicus*), loggerhead shrike (*Lanius ludovicianus*), San Joaquin coachwhip (*Masticophis flagellum ruddocki*), and western spadefoot (*Spea hammondii*). Cliff swallows (*Petrochelidon pyrrhonota*) are known to nest on bridges and check structures along aqueduct. Other species of birds, amphibians, reptiles, mammals, fish, invertebrates, and plants also compose the local ecosystem within the Project boundary. Vegetation communities and habitat types documented along the Project area include annual grassland, Alkali desert scrub (Russian thistle and quailbush scrub), Valley foothill riparian (Goodding's willow riparian), and fresh emergent wetland (cattail marshes, mulefat thickets).

CDFW recommends that the following modifications and/or edits be incorporated into both MNDs, including proposed avoidance, minimization, and compensatory measures, prior to their adoption by DWR.

Response to CDFW-4

See Response to CDFW-5 through Response to CDFW-12 below for responses to comments about special-status wildlife species and habitat in the project area.

Comment CDFW-5

COMMENT 1: San Joaquin kit fox (SJKF)

The MNDs determined that SJKF have no potential to occur in the project areas based on desktop review, field site visits, and lack of data collection at camera/track stations. However, SJKF are known to occur along the California Aqueduct within both project areas (CDFW 2025) and likely utilize the California Aqueduct as a wildlife movement corridor. Specifically, several SJKF observations are documented in the CNDDB along the California Aqueduct in the project areas (CDFW 2025). The project areas provide medium suitability SJKF habitat (Cypher et al. 2013). As a result, SJKF should be assumed to be present in all suitable habitat within the boundaries of both projects and surrounding areas. Without appropriate avoidance and minimization measures for SJKF, potential significant impacts associated with construction and elements of implementation of both projects include habitat loss, loss of connectivity, den collapse, inadvertent entrapment, reduced reproductive success, reduction in health and vigor of young, and direct mortality of individuals.

Recommended Mitigation Measure 1: SJKF Preconstruction Surveys

CDFW recommends assuming presence of SJKF in both project areas and assessing presence of SJKF dens by having qualified biologists conducting surveys of Project areas and a 500-foot buffer of Project areas to detect SJKF and their sign.

Recommended Mitigation Measure 2: SJKF Avoidance Buffer

CDFW recommends implementing no-disturbance buffers, as described in the United States Fish and Wildlife Service (USFWS) (2011) Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance during Project implementation.

Recommended Mitigation Measure 3: SJKF Take Authorization

If the no-disturbance buffers outlined in the USFWS Protocol for SJKF is not feasible, consultation with CDFW is warranted to discuss how to avoid take. If avoidance is not feasible, acquisition of an Incidental Take Permit (ITP) for SJKF prior to ground-disturbing activities, pursuant to Fish and Game Code section 2081, subdivision (b) would be necessary to comply with CESA. An ITP could be either be issued for the combined projects or for each project separately.

Response to CDFW-5

Regarding potential impacts on San Joaquin kit fox (SJKF) (*Vulpes macrotis mutica*) from the proposed project, the comment states that the IS/MND determined that the SJKF has no potential to occur in the project area. However, IS/MND Table 3-5 (IS/MND page 59) states that the species has low potential to occur (rather than no potential to occur) in the project area based on the presence of marginal suitable habitat and the absence of detections during surveys, and notes that the area has been documented as a corridor for the species in the past. Based on CDFW's determination of medium-suitability SJKF habitat in the project area, **Mitigation Measure BIO-7** (Impacts on Federally and State-Listed Species Habitat) was revised as indicated in Chapter 3 below.

Comment CDFW-6

COMMENT 2: Swainson's Hawk (SWHA)

The MNDs and Biological Assessments determined SWHA have a high potential to occur within both project areas. SWHA nests were observed in 2021 in a mesquite tree located immediately adjacent to the aqueduct at MP 133.60, and a cottonwood tree at MP 138.40. An active SWHA nest was observed in 2024 at the same cottonwood tree at MP 138.40. An active nest was identified in 2021 at MP 169.8 and another active nest identified in 2024 at MP 169.0. Other nesting and foraging SWHA observations are documented within a ½ mile of the Project (CDFW 2025). Suitable foraging habitat for this species exists within the vicinity of both project areas, including annual grassland. Construction of both projects and habitat conversion may result in degradation or loss of nesting habitat, nest abandonment, and reduced reproductive success, including mortality of young and reduced health and vigor of eggs and/or young. In the San Joaquin Valley, suitable nest trees may be a limiting factor for SWHA productivity. The loss of suitable nest trees, particularly in proximity to foraging habitat, has the potential to significantly impact local SWHA (CDFW 2016). CDFW

considers removal of known bird-of-prey nest trees, even outside of the nesting season, a potentially significant impact under CEQA.

The MNDs state that a qualified biologist will conduct pre-activity surveys of potential SWHA within ¼-mile of the work areas. Pre-activity nesting surveys will be conducted during the nesting season (February 15 through August 31) if work areas are within ¼-mile of potential nest trees. If an active SWHA nest is identified within ¼-mile of work activities then the biologist will establish a temporary no-work buffer until the nest is vacated, young have fledged, and there is no evidence of a second nesting attempt. Pre-activity nesting surveys will be conducted no more than 7 days prior to the initiation of Project activities.

The MND analysis does not provide a biological basis of how a no-disturbance buffer will be determined as adequate to avoid significant impacts, including but not limited to avoiding take of individuals through nest failure or other means, as a result of implementation of both projects.

Recommended Mitigation Measure 4: SWHA Nest Tree Mitigation

In addition to avoiding occupied nest trees, CDFW recommends that impacts to known nest trees be avoided at all times of year, or that compensatory mitigation occurs for these impacts. Regardless of nesting status, if potential or known SWHA nesting trees are removed, CDFW recommends that they be replaced with an appropriate native tree species, planted at a ratio of 3:1 (replaced to removed), in an area that will be protected in perpetuity. This mitigation would offset potential impacts of the loss of nesting habitat.

Recommended Mitigation Measure 5: Focused SWHA Surveys

To reduce potential Project-related impacts to SWHA, CDFW recommends that a qualified biologist conduct surveys for nesting birds of prey, including SWHA, following the survey methodology developed by the SWHA Technical Advisory Committee (SWHA TAC 2000) during the nesting season of or prior to Project initiation, within each Project area and a ½-mile buffer around each Project area. In addition, if Project activities will take place during the species nesting season (i.e., March 1 through September 15), CDFW recommends that additional preconstruction surveys for active nests be conducted by a qualified biologist no more than 10 days prior to the start of construction.

Recommended Mitigation Measure 6: SWHA Avoidance Buffers

If an active SWHA nest is found during preconstruction surveys, CDFW recommends implementing a minimum ½-mile no-disturbance buffer around the nest until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest site or parental care for survival.

Recommended Mitigation Measure 7: SWHA Take Authorization

If a ½-mile no-disturbance nest buffer is not feasible, consultation with CDFW is warranted. If avoidance is not feasible, acquisition of an ITP for SWHA prior to ground-disturbing activities,

pursuant to Fish and Game Code section 2081, subdivision (b) would be necessary to comply with CESA. An ITP could be either be issued for the combined projects or for each project separately.

Response to CDFW-6

Regarding potential impacts on Swainson's hawk (SWHA) (*Buteo swainsoni*) from the proposed project, the comment states that the IS/MND lacks a biological basis for how a no-disturbance buffer will be determined to be adequate to avoid significant impacts. However, **Mitigation Measure BIO-10** (Nesting Birds [IS/MND page 83]) provides no-disturbance buffers based on the guidance in the Swainson's Hawk Technical Advisory Committee's *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (2000, or more recent version).

In response to the comment's request for an additional round of focused surveys during the SWHA nesting season or prior to project initiation in accordance with the Swainson's Hawk Technical Advisory Committee's *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley*, the "Pre-Activity Survey" portion of **Mitigation Measure BIO-8** (Swainson's Hawk) has been updated to include focused surveys for Swainson's hawk, as indicated in Chapter 3 below.

In response to the comment's recommendation that a preconstruction survey for active nests be conducted by a qualified biologist no more than 10 days prior to the start of construction, the second bullet of **Mitigation Measure BIO-8** (Swainson's Hawk) states that a preconstruction survey during the nesting season will be conducted no more than seven days prior to the start of construction.

In response to the comment's request for nest tree mitigation and take avoidance, **Mitigation Measure BIO-8** (Swainson's Hawk) was revised as indicated in Chapter 3 below. Additionally, DWR held an ITP pre-consultation meeting with CDFW on February 13, 2026, to discuss potential temporary and indirect impacts to previously occupied SWHA breeding habitat. DWR has initiated SWHA pre-ITP application consultation with CDFW for the proposed project.

Comment CDFW-7

COMMENT 3: Tricolored Blackbird (TRBL)

TRBL have been documented within and adjacent to the Project areas, and in the vicinity (CDFW 2025). Without appropriate avoidance and minimization measures for TRBL, potential significant impacts associated with subsequent development include nesting habitat loss, nest and/or colony abandonment, reduced reproductive success, and reduced health and vigor of eggs and/or young.

Recommended Mitigation Measure 8: TRBL Surveys

CDFW recommends that Project activities be timed to avoid the normal bird nesting season of February 1 through September 15. If Project activity must take place during that time, CDFW recommends that a qualified biologist conduct surveys for nesting TRBL no more than 10 days prior to the start of implementation to evaluate presence or absence of TRBL nesting colonies in proximity to Project activities and to evaluate potential Project-related impacts.

Recommended Mitigation Measure 9: TRBL Avoidance Buffer

If an active TRBL nesting colony is found during surveys, CDFW recommends implementation of a minimum 300-foot no-disturbance buffer in accordance with CDFW's (2015) Staff Guidance Regarding Avoidance of Impacts to Tricolored Blackbird Breeding Colonies on Agricultural Fields in 2015, until the breeding season has ended or until a qualified biologist has determined that nesting has ceased and the young have fledged and are no longer reliant upon the nest site for survival.

Recommended Mitigation Measure 10: TRBL Take Authorization

If the avoidance buffer around a TRBL nesting colony is infeasible, consultation with CDFW is warranted to discuss whether the Project can avoid take. If avoidance is not feasible, acquisition of an ITP for TRBL prior to ground-disturbing activities, pursuant to Fish and Game Code section 2081, subdivision (b) would be necessary to comply with CESA. An ITP could be either be issued for the combined projects or for each project separately.

Response to CDFW-7

Regarding potential impacts on tricolored blackbird (TRBL) (*Agelaius tricolor*) resulting from the proposed project, as stated on IS/MND Table 3-5 (IS/MND page 58), there is sparse, marginal nesting habitat for TRBL that results in a low potential for TRBL to be present within the project site. The project site lacks preferred TRBL nesting habitat: dense cattails, tules, willows, blackberry, wild rose, and other tall herbs near fresh water. Furthermore, focused TRBL surveys were conducted in 2024 and no tricolored blackbirds were observed.

The no-disturbance buffer distances and nesting season dates in **Mitigation Measure BIO-9** (Tricolored Blackbird) have been revised and a take authorization measure has been added as recommended by CDFW, as indicated in Chapter 3 below.

Because no impacts on nesting TRBL are expected, take authorization consultation for the species is not planned.

Comment CDFW-8

COMMENT 4: Western Burrowing Owl (BUOW)

The MNDs acknowledge that BUOW occur within both project areas and potentially significant direct impacts associated with project activities include habitat loss, burrow collapse, inadvertent entrapment, nest abandonment, reduced reproductive success, reduction in health and vigor of eggs and/or young, and direct mortality of individuals. The MNDs BUOW mitigation measures describe buffers that are recommended by the California Burrowing Owl Consortium's CDFW's Staff Report on Burrowing Owl Mitigation (CDFG 2012) for low level of disturbance activities. The sizes of buffers depend on type and intensity of disturbance, presence of visual buffers, and other variables that could affect susceptibility of the owls to disturbance. The MNDs analyses do not provide a basis of how the no-disturbance buffer is determined as adequate to avoid significant impacts, including but not limited to take of individuals, but DWR has initiated BUOW pre-ITP application consultation with

CDFW for both Projects. An ITP for BUOW could be either be issued for the combined projects or for each project separately.

Recommended Mitigation Measure 11: BUOW Surveys

Depending on the time between the initial survey efforts conducted in support of the MNDs and project construction, CDFW recommends that additional focused surveys, following the 2012 Staff Report on Burrowing Owl Mitigation (2012 Staff Report) (CDFG 2012), be conducted the survey season immediately prior to construction. Please note that the 2012 Staff Report necessitates multiple surveys prior to the initiation of construction.

Recommended Mitigation Measure 12: BUOW Avoidance

Should a BUOW or known BUOW den (active or inactive) be detected, either during pre-construction surveys or construction activities, CDFW recommends that no-disturbance buffers, as outlined in the 2012 Staff Report on Burrowing Owl Mitigation (CDFG 2012), be implemented prior to and during any ground-disturbing activities. CDFW also recommends that these buffers be implemented for both wintering and breeding BUOW.

Recommended Mitigation Measure 13: BUOW Take Authorization

DWR has initiated BUOW pre-ITP application consultation with CDFW for both Projects on how to implement the Project and avoid take. If avoidance is not feasible, acquisition of an ITP for BUOW prior to ground-disturbing activities, pursuant to Fish and Game Code section 2081, subdivision (b) would be necessary to comply with CESA. An ITP could be either be issued for the combined projects or for each project separately.

Response to CDFW-8

Regarding potential impacts on western burrowing owl (BUOW) (*Athene cunicularia hypugaea*), Mitigation Measure 11: BUOW Surveys, to re-conduct focused BUOW surveys if there are substantial delays to the project's construction that result in a gap between the 2025 BUOW surveys and the start of construction, is noted. BUOW surveys will be conducted again in 2026 prior to construction.

The no-disturbance buffers established in the 2012 *Staff Report on Burrowing Owl Mitigation*[2] (CDFG 2012), as noted in CDFW's Recommended Mitigation Measure 12: BUOW Avoidance, are already incorporated in the existing **Mitigation Measure BIO-6** (Burrowing Owl) in the IS/MND.

As noted in the CDFW comment, DWR is currently consulting with CDFW for an ITP for BUOW. The following take authorization heading has been added to **Mitigation Measure BIO-6** (Burrowing Owl), as indicated in Chapter 3 below.

[2] CDFW (California Department of Fish and Wildlife). 2012. *Staff Report on Burrowing Owl Mitigation*. March 7, 2012.

Comment CDFW-9

COMMENT 5: Crotch's Bumble Bee (CBB)

The MNDs acknowledge that both projects are within the known range for CBB, and a review of aerial imagery shows that both project areas support suitable habitat for the species (CDFW 2023a) such as grasslands and upland scrub. CBB primarily nest in late February through late October underground in abandoned small mammal burrows, but may also nest under perennial bunch grasses or thatched annual grasses, underneath brush piles, in old bird nests, and in dead trees or hollow logs (Williams et al. 2014, Hatfield et al. 2015). Overwintering sites for CBB mated queens include soft, disturbed soil (Goulson 2010) or leaf litter or other debris (Williams et al. 2014). Without appropriate avoidance and minimization measures for CBB, potentially significant impacts from ground- and vegetation-disturbing Project activities include direct mortality, loss of foraging plants, changes in foraging behavior, burrow collapse, nest abandonment, reduced nest success, and reduced health and vigor of eggs, young and/or queens. DWR has initiated CBB pre-ITP application consultation with CDFW for both Projects.

Recommended Mitigation Measure 14: CBB Surveys

CDFW recommends that a qualified biologist conduct a habitat assessment for CBB that documents foraging resources and potential nesting sites, including small mammal burrows, perennial bunch grasses, thatched annual grasses, brush piles, old bird nests, dead trees, and hollow logs. In areas of suitable habitat, CDFW recommends that qualified biologist conduct a bumble bee survey using a protocol developed according to the CDFW (2023b) Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species to identify bumble bees and potential nesting sites during the vegetation blooming period prior to initiating project activities.

Recommended Mitigation Measure 15: CBB Avoidance

If CBB is detected, CDFW recommends that all small mammal burrows and thatched/bunch grasses be avoided by a minimum of 50 feet to avoid take and potentially significant impacts. If ground-disturbing activities will occur during the overwintering period (October through February), consultation with CDFW is warranted to discuss how to implement Project activities and avoid take. Any detection of CBB prior to or during Project implementation warrants consultation with CDFW to discuss how to avoid take.

Recommended Mitigation Measure 16: CBB Take Authorization

DWR has initiated CBB pre-ITP application consultation with CDFW for both Projects on how to implement the Project and avoid take. If avoidance is not feasible, acquisition of an ITP for CBB prior to ground-disturbing activities, pursuant to Fish and Game Code section 2081, subdivision (b) would be necessary to comply with CESA. An ITP could be either be issued for the combined projects or for each project separately.

Response to CDFW-9

Regarding Crotch's bumble bee (CBB) (*Bombus crotchii*), the habitat assessment and focused surveys proposed in CDFW's Recommended Mitigation Measure 14: CBB Surveys were completed by DWR in 2025. No CBB were observed during these surveys. Additionally, the first and second bullets (Pre-Activity Survey and Pre-Activity Nesting Surveys) of the existing **Mitigation Measure BIO-12** (Crotch's Bumble Bee) include a habitat assessment and pre-activity nest surveys. As a result, the pre-activity surveys and pre-activity nest surveys in existing **Mitigation Measure BIO-12** (Crotch's Bumble Bee [CBB]) are sufficient to avoid take of the species.

The avoidance buffer proposed in existing **Mitigation Measure BIO-12** is larger than the 50-foot minimum buffer suggested in CDFW's Recommended Mitigation Measure 15: CBB Avoidance.

In case avoidance of CBB is not feasible, additional language regarding take authorization has been added to existing **Mitigation Measure BIO-12**, as indicated in Chapter 3 below.

Comment CDFW-10

COMMENT 6: Special-Status Bat Species

The MNDs acknowledge that Western mastiff bat, Yuma myotis, spotted bat, Brazilian free-tailed bat, silver-haired bat, and greater bonneted bat have been documented in the vicinity of both project areas and may utilize overhead bridges and nearby trees for roosting. Project activities have the potential to affect habitat upon which special-status bat species depend for successful breeding and have the potential to impact individuals and local populations. Without appropriate avoidance and minimization measures, potential significant impacts resulting from ground- and vegetation-disturbing activities associated with project activities include habitat loss, inadvertent entrapment, roost abandonment, reduced reproductive success, reduction in health and vigor of young, and direct mortality.

Recommended Mitigation Measure 17: Bat Roost Habitat Assessment

CDFW recommends that a qualified biologist conduct a habitat assessment in advance of project implementation to determine if the project areas or their immediate vicinities contain suitable roosting habitat for special-status bat species.

Recommended Mitigation Measure 18: Bat Surveys

If suitable habitat is present, CDFW recommends assessing presence or absence of special-status bat roosts by conducting surveys during the appropriate seasonal period of bat activity. CDFW recommends methods such as evening emergence surveys or bat detectors to determine whether bats are present.

Recommended Mitigation Measure 19: Bat Roost Disturbance Minimization and Avoidance

If bats are present, CDFW recommends that a 100-foot no-disturbance buffer be placed around the roost and that a qualified biologist who is experienced with bats monitor the roost for signs of disturbance to bats from Project activity. If a bat roost is identified and work is planned to occur

during the breeding season, CDFW recommends that no disturbance to maternity roosts occurs and that CDFW be consulted to determine measures to prevent breeding disruption or failure.

Response to CDFW-10

Regarding special-status bat species, additional language has been added to existing **Mitigation Measure BIO-11** (Special-Status Bats) to include the CDFW-recommended mitigation measures (17–19), as indicated in Chapter 3 below.

Comment CDFW-11

COMMENT 7: Western Spadefoot (WESP)

Western spadefoot (WESP) is known to occur in both project areas using ephemerally ponded water associated with seasonal flooding and rainfall to breed, as well as the associated upland habitats outside of the breeding season. WESP inhabit grassland habitats, breed in seasonal wetlands, and seek refuge in upland habitat where they occupy burrows outside of the breeding season (Thomson et al. 2016). Any depressional features in both project areas may support breeding WESP and the adjacent areas likely provide upland refugia for the species. In addition to the habitat features described above, WESP have also been documented within the San Joaquin Valley using upland areas that are under irrigated agriculture (both permanent and annual crops), and utilizing agricultural sumps and ditches as breeding habitat.

Recommended Mitigation Measure 20: WESP Surveys

CDFW recommends that a qualified biologist conduct focused pre-construction surveys for WESP and their requisite habitat features as described above utilizing appropriate survey periods and methods.

Recommended Mitigation Measure 21: WESP Minimization

CDFW recommends a minimum 50-foot no-disturbance buffer be implemented around burrows, cracks, loose soil areas or other refugia found to be used by WESP during focused surveys. CDFW also recommends a minimum 50-foot no-disturbance buffer all potential breeding habitat, even when dry. CDFW recommends that any observed individuals be allowed to leave the project areas of their own volition.

Response to CDFW-11

Regarding western spadefoot (WESP) (*Spea hammondii*), based on the habitat assessment described by the IS/MND, WESP lacks suitable upland and potential breeding habitat within staging and/or borrow areas. Furthermore, no WESP were detected during focused surveys in 2024 and 2025. Despite the low potential for WESP to occur, the species may be detected during pre-activity and breeding surveys with the addition of **Mitigation Measure BIO-14** (Western Spadefoot), in Chapter 3 below.

Comment CDFW-12

COMMENT 8: Other State Species of Special Concern

American badger, San Joaquin coachwhip, and loggerhead shrike are known to occur in the vicinity of both projects (CDFW 2025), which support habitats these species are known to use, including grassland and upland shrub areas with friable soils (Williams 1986, Thomson et al. 2016).

Without appropriate avoidance and minimization measures for these species, potentially significant impacts associated with ground disturbance include habitat loss, nest/den/burrow abandonment, which may result in reduced health or vigor of eggs and/or young, and direct mortality.

Recommended Mitigation Measure 22: Habitat Assessment

CDFW recommends that a qualified biologist conduct a habitat assessment in advance of project implementation, to determine if both project areas or their immediate vicinity contain suitable habitat for the species mentioned above.

Recommended Mitigation Measure 23: Surveys

If suitable habitat is present, CDFW recommends that a qualified biologist conduct focused surveys for the species and their requisite habitat features to evaluate potential impacts resulting from ground and vegetation disturbance.

Recommended Mitigation Measure 24: Avoidance

Avoidance whenever possible is encouraged via delineation and observance of a 50-foot no-disturbance buffer around dens of mammals like the American badger as well as the entrances of burrows that can provide refuge for small mammals, reptiles, and amphibians. CDFW also advises that any individuals observed be allowed to leave the Project area of their own volition.

Response to CDFW-12

Regarding other special-status species such as American badger, San Joaquin coachwhip, and loggerhead shrike mentioned in the comment, the habitat assessment described in the IS/MND has already established that suitable habitat is present. The IS/MND (page 59) stated that although suitable habitat is present within the proposed project site for American badger and this species has been observed north of the project, this species was not observed during surveys conducted for the species in 2024. The IS/MND (page 66) stated that **Mitigation Measure BIO-1** (Biological Monitor) would avoid or minimize construction-related impacts to special-status reptiles, including San Joaquin coachwhip. The IS/MND (page 71) stated that special-status non-listed bird species, such as loggerhead shrike, have the potential to occasionally forage within the open annual grassland and agricultural areas throughout the proposed project site and surrounding areas. Although suitable foraging habitat is present, direct temporary construction impacts would be confined to minimal and concentrated areas, primarily within previously disturbed portions of the Aqueduct and adjacent work areas and will be restored to its pre-existing condition following construction. Furthermore, ample foraging habitat would remain available in the areas surrounding the project both during and after

construction, minimizing the overall impact on the species. As such, impacts on special-status non-listed bird foraging habitat would be less than significant.

However, in response to the comment, **Mitigation Measure BIO-15** (Preconstruction Surveys) has been added to the IS/MND to detect potentially occurring special-status species prior to project activities, as indicated in Chapter 3 below.

These surveys are intended primarily to avoid impacts on ground-dwelling species such as San Joaquin coachwhip. For non-listed, special-status birds such as loggerhead shrike, the existing **Mitigation Measure BIO-10** (Nesting Birds) shall be implemented to avoid impacts.

Additionally, all special-status species will benefit from the implementation of existing **Mitigation Measures BIO-1 through BIO-4**, which include a biological monitor for ground-disturbing activities, a worker environmental awareness program training for on-site personnel, invasive-plant control measures, and general construction best management practices. The implementation of all these measures is expected to avoid impacts on other special-status species.

Comment CDFW-13

EDITORIAL COMMENTS AND/OR SUGGESTIONS

Western Spadefoot: Be advised the California Fish and Game Commission (Commission) posted a Notice of Receipt of CESA Petition for WESP to list the northern and southern populations of WESP as threatened or endangered. The Notice of Receipt of Petition was posted on October 6, 2025. https://fgc.ca.gov/CESA?utm_medium=email&utm_source=govdelivery#1088155-western-spadefoot.

If the Commission ultimately designates WESP as a Candidate species, which could occur in 2026, shortly after the time of designation it would receive the same legal protection afforded to an endangered or threatened species under CESA. Because the measures recommended above are minimization measures pursuant to CEQA as opposed to avoidance measures, additional or modified measures to avoid take would be necessary in the event WESP is designated by the Commission as a Candidate. If avoidance of take of WESP is not feasible, acquisition of an ITP with WESP as a covered species, pursuant to Fish and Game Code section 2081, subdivision (b) would be necessary to comply with CESA. An ITP could be either be issued for the combined projects or for each project separately.

Response to CDFW-13

The comment about the recent petition to list the northern and southern populations of WESP as threatened or endangered under the CESA and the resulting candidate listing of WESP is noted.

Comment CDFW-14

Nesting Birds: CDFW encourages that Project implementation occur during the bird non-nesting season; however, if project activities must occur during the breeding season (i.e., February through mid-September), the project applicant is responsible for ensuring that implementation of either

project does not result in violation of the Migratory Bird Treaty Act or relevant Fish and Game Codes as referenced above.

To evaluate project-related impacts on nesting birds, CDFW recommends that a qualified biologist conduct pre-activity surveys for active nests no more than 10 days prior to the start of ground disturbance to maximize the probability that nests that could potentially be impacted by both projects are detected. CDFW also recommends that surveys cover a sufficient area around all work sites to identify nests and determine their status. A sufficient area means any area potentially affected by both projects. In addition to direct impacts (i.e. nest destruction), noise, vibration, and movement of workers or equipment could also affect nests. Prior to initiation of construction activities, CDFW recommends that a qualified biologist conduct a survey to establish a behavioral baseline of all identified nests. Once construction begins, CDFW recommends that a qualified biologist continuously monitor nests to detect behavioral changes resulting from both project. If behavioral changes occur, CDFW recommends that the work causing that change cease and that CDFW be consulted for additional avoidance and minimization measures.

If continuous monitoring of identified nests by a qualified wildlife biologist is not feasible, CDFW recommends a minimum no-disturbance buffer of 250 feet around active nests of non-listed bird species and a 500-foot no-disturbance buffer around active nests of non-listed raptors. These buffers are advised to remain in place until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival. Variance from these no-disturbance buffers is possible when there is compelling biological or ecological reason to do so. CDFW recommends that a qualified biologist advise and support any variance from these buffers.

Response to CDFW-14

CDFW's recommendations that project activities occur outside of nesting season and the department's considerations to comply with the Migratory Bird Treaty Act and Fish and Game Code are noted. The existing **Mitigation Measure BIO-10** (Nesting Birds) covers appropriate avoidance and minimization measures for nesting bird compliance.

Comment CDFW-15

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database that may be used to make subsequent or supplemental environmental determinations (Pub. Resources Code, § 21003, subd. (e)). Accordingly, please report any special-status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDB). The CNDDB field survey form can be obtained at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data. The completed form can be mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov. The types of information reported to CNDDB can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

Response to CDFW-15

DWR acknowledges the comments from CDFW detailing the reporting of environmental data. Any special-status species and natural communities detected during project surveys would be reported to the California Natural Diversity Database pursuant to Public Resources Code Section 21003(e).

Comment CDFW-16

FILING FEES

The projects, as proposed, would have an impact on fish and/or wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089).

Response to CDFW-16

DWR acknowledges the comments from CDFW detailing filing fees. Applicable fees will be paid by DWR upon filing the Notice of Determination for the proposed project.

Comment CDFW-17

CONCLUSION

CDFW appreciates the opportunity to comment on the MNDs to assist DWR in identifying and mitigating Project impacts on biological resources. A Mitigation Monitoring and Reporting Program (Attachment 1) is included below to assist DWR with incorporating the recommended mitigation measures provided above. If you have questions regarding this letter, please contact Annette Tenneboe, Senior Environmental Scientist (Specialist), at (559) 580-3202 or by email at Annette.Tenneboe@wildlife.ca.gov.

Response to CDFW-17

CDFW's contact information is noted.

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3 REVISIONS TO THE IS/MND

In response to comments received, text changes were made to the Draft IS/MND. Under CEQA, recirculation of all or part of an MND may be required if significant new information is added after public review and prior to certification. According to CEQA Guidelines Section 15088.5(a), new information is not considered significant unless the MND is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative) that the project's proponents have declined to implement." More specifically, the CEQA Guidelines define significant new information as including:

- A new significant environmental impact resulting from the project or from a new mitigation measure proposed to be implemented.
- A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance.
- A feasible project alternative or mitigation measure considerably different from those others previously analyzed would clearly lessen the environmental impacts of the project, but the project proponents decline to adopt it.
- The MND was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded.

The text changes described below update, refine, clarify, and amplify the project information and analyses presented in the Draft IS/MND. No new significant impacts are identified, and no information is provided that would involve a substantial increase in the severity of a significant impact that would not be mitigated by measures agreed to by DWR. In addition, no new or considerably different DWR alternatives or mitigation measures have been identified. Finally, there are no changes or set of changes that would reflect fundamental inadequacies in the Draft IS/MND. Therefore, recirculation of any part of the Draft IS/MND is not required.

New text is indicated in double underline and text to be deleted is reflected by ~~strike through~~. Text changes are presented in the page order in which they appear in the Draft IS/MND.

Public Draft IS/MND page 54, Table 3-5, the following text is added to the last sentence of the Western spadefoot potential for occurrence description:

> Despite the low potential for Western spadefoot to occur, the species may be detected during pre-activity and breeding surveys associated with **Mitigation Measure BIO-14** (Western Spadefoot).

Public Draft IS/MND page 55, Table 3-5, the following text is added to the last sentence of the San Joaquin coachwhip potential for occurrence description:

> **Mitigation Measure BIO-15** (Preconstruction Surveys) has been added to the IS/MND to detect potentially occurring special-status species prior to project activities.

Public Draft IS/MND page 57, Table 3-5, the following text is added to the last sentence of the loggerhead shrike potential for occurrence description:

> **Mitigation Measure BIO-15** (Preconstruction Surveys) has been added to the IS/MND to detect potentially occurring special-status species prior to project activities.

Public Draft IS/MND page 59, Table 3-5, the following text is added to the last sentence of the American badger potential for occurrence description:

> **Mitigation Measure BIO-15** (Preconstruction Surveys) has been added to the IS/MND to detect potentially occurring special-status species prior to project activities.

Public Draft IS/MND page 79, the second to the last bullet is revised as follows:

- *Nighttime Work Requirements.* Construction activities shall not be conducted at night (i.e., between dusk and dawn) within 500 feet (152 meters) of sensitive biological resources or wildlife corridors. Any nighttime lighting needed (e.g., security lighting) shall be shielded and directed downwards to minimize light spillover or glare.

Public Draft IS/MND page 80, the last bullet is revised as follows:

- *Avoidance.* If burrowing owl is present within the 500-foot (152-meter) survey area, then avoidance shall be implemented to avoid impacts to burrowing owl individuals and active burrows. Avoidance of burrowing owls can be achieved through the implementation of the following measures, consistent with the CDFW Staff Report on Burrowing Owl Mitigation (2012), most recent guidelines, or consultation with CDFW:
    - A qualified biologist establishing a no-disturbance buffer (i.e., a minimum 165-foot (50-meter) no-disturbance buffer for low level disturbance activities during the non-breeding season [September 1 through January 31] and a minimum 500-foot (152-meter) no-disturbance buffer for low level disturbance activities during the breeding season [February 1 through August 31]) based on the project activities.
    - Regular monitoring of the active burrow by a qualified biologist with the authority to adjust the buffer size if the burrowing owl exhibits signs of disturbance (i.e., agitation or stress behavior).
    - Buffer distances may be reduced in specific locations where avoidance measures (such as noise attenuation buffers, visual screens, or speed-limit reductions) are placed between the occupied burrow and construction activities in coordination with CDFW.

- Construction avoidance will occur within the no-disturbance buffer until a qualified biologist determines the burrowing owl is no longer present or until a CDFW-approved Burrowing Owl Plan has been implemented.
- If active burrowing owl nests are identified during the pre-construction survey, project activities must not commence within 500 feet (152 meters) of the active nest until no sign is present that the burrows are being used by adult or juvenile owls or following CDFW approval of a Burrowing Owl Plan as described below.
- If owl presence is difficult to determine, a qualified biologist shall monitor the burrows with motion-activated trail cameras for at least 24 hours to evaluate burrow occupancy.

Public Draft IS/MND page 81, the last bullet is revised as follows:

- *Burrowing Owl Plan.* Prior to construction, if impacts to burrowing owl individuals or active burrows cannot be avoided, the qualified biologist and DWR shall coordinate with CDFW to develop a Burrowing Owl Plan to be approved by CDFW prior to commencement of project activities in the buffer zone. The Burrowing Owl Plan shall describe proposed avoidance, relocation, monitoring, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the number and location of occupied burrow sites and details on proposed buffers if avoiding the burrowing owls or information on the adjacent or nearby suitable habitat available to owls for relocation. DWR shall implement the Burrowing Owl Plan following CDFW review and approval.

  If burrowing owls are observed within the project site during project implementation and construction, CDFW shall be notified immediately in writing within 48 hours of detection. If avoidance is not feasible, a Burrowing Owl Plan shall be submitted to CDFW for review and approval within two weeks of detection and project activity shall be halted within a minimum of 165 feet (50 meters) for low level disturbance activities during the non-breeding season [September 1 through January 31] or a minimum 500 feet (152 meters) for low level disturbance activities during the breeding season [February 1 through August 31] of the burrowing owls without CDFW approval. DWR shall be responsible for implementing appropriate avoidance, minimization, and mitigation measures, including burrow avoidance, passive relocation, or other appropriate mitigation measures (i.e., noise attenuation, speed restrictions, biological monitoring, etc.) as identified in the Burrowing Owl Plan.

Public Draft IS/MND page 82, the following heading is added to the last paragraph of Mitigation Measure BIO-6:

- *Take Authorization.* If impacts cannot be feasibly avoided and construction could result in potential direct or indirect impacts on burrowing owl and/or occupied habitats, DWR shall consult with CDFW to ensure compliance with the California Endangered Species Act (CESA), which may include obtaining a “take” permit (e.g., CESA Section 2081 Incidental Take Permit) and mitigation for impacts on habitat (i.e., on-site restoration of temporarily

affected areas, on-site or off-site habitat preservation/restoration for permanently affected areas, or purchase of credits from an approved bank).

Public Draft IS/MND page 82, **Mitigation Measure BIO-7** is revised as follows:

Mitigation Measure BIO-7: Impacts on Federally and State-Listed Species Habitat. If direct impacts on federally or State-listed species habitat would be affected by the project, a compensatory mitigation plan shall be developed and implemented in coordination with USFWS and CDFW, as appropriate. Unavoidable effects would be compensated through a combination of creation, preservation, and restoration of habitat or purchase of credits at an approved mitigation bank at a minimum 1:1 ratio or equivalent. Temporary impacts shall be returned to similar conditions to those that existed prior to project-related activities (consistent with **Mitigation Measure BIO-5, Revegetation Plan**).

San Joaquin Kit Fox:

- *Pre-Construction Survey.* A qualified biologist will conduct a pre-construction survey for San Joaquin kit fox dens prior to the commencement of construction activities within the project area and within 500 feet (152 meters) of the project area.
- *Den Avoidance Buffer.* No-disturbance buffers around San Joaquin kit fox dens, as described in the USFWS *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance*,[3] will be implemented during project construction.
- *Take Authorization*. If the no-disturbance buffers outlined in the USFWS *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* is not feasible, consultation with CDFW will occur to discuss options to avoid take. If impacts cannot be feasibly avoided and construction could result in potential direct or indirect impacts on San Joaquin kit fox and/or occupied habitats, DWR shall consult with CDFW to ensure compliance with the California Endangered Species Act (CESA), which may include obtaining a “take” permit (e.g., CESA Section 2081 Incidental Take Permit) and mitigation for impacts on habitat (i.e., on-site restoration of temporarily affected areas, on-site or off-site habitat preservation/restoration for permanently affected areas, or purchase of credits from an approved bank).

Public Draft IS/MND page 82, **Mitigation Measure BIO-8** is revised as follows:

Mitigation Measure BIO-8: Swainson’s Hawk.

- *Focused ~~Pre-Activity~~ Surveys*. A qualified biologist will conduct ~~a pre-activity~~ focused surveys for Swainson’s hawk ~~when project activities will occur within suitable habitat~~ during the Swainson’s hawk nesting season or prior to project initiation in accordance

[3] United States Fish and Wildlife Service (USFWS). 2011. *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance.* Prepared by the Sacramento Fish and Wildlife Office. January 2011.

with the Swainson's Hawk Technical Advisory Committee's *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley*. The survey will determine if existing or potential nesting sites are present within 0.~~2~~5 mile (0.~~4~~ 8 kilometer) of work areas.

- *Pre-Activity Nesting Survey.* If suitable potential nesting sites are located within 0.~~2~~5 mile (0.~~4~~ 8 kilometer) of project activities, a qualified biologist will conduct a pre-activity nesting bird survey if work occurs during the nesting season (February 15 through August 31) prior to any work, site preparation, mowing, vegetation removal, and/or staging activities. Surveys will be conducted no more than 7 days prior to the initiation of project activities.
- *Active Nest Avoidance.* If active nests are identified within 0.~~2~~5 mile (0.~~4~~ 8 kilometer) of any project activities, a 0.~~2~~5-mile (0.~~4~~ 8-kilometer) temporary no-work buffer will be established around the active nest until the nest is vacated, young have fledged, and there is no evidence of a second nesting attempt. An approved biologist may temporarily reduce the no-work buffer distance if it can be determined that project activities will not negatively affect nesting behavior and a biological monitor is present. A qualified biologist will monitor the status of the nest throughout the season to determine when young have fledged or the nest is no longer active. If the biologist does not find any nests but suitable habitat would be removed, the biologist will conduct a final survey of such habitat and areas within 100 feet (30.5 meters) of the habitat within 48 hours of the activity to confirm the absence of nests.
- *Monitoring.* If project activities must occur within 0.~~2~~5 mile (0.~~4~~ 8 kilometer) of an identified active Swainson's hawk nest, a qualified biologist must be on site daily to monitor the nests for signs of agitated behavior. The biological monitor will hold stop-work authority.
- *Nest Tree Mitigation.* In addition to avoiding occupied Swainson's hawk nest trees, if impacts on unoccupied Swainson's hawk nest trees result from project activities, trees will be replaced at a 3:1 ratio in an area that will be protected in perpetuity.
- *Take Authorization.* If impacts cannot be feasibly avoided and construction could result in potential direct or indirect impacts on Swainson's hawk and/or occupied habitats, DWR shall consult with CDFW to ensure compliance with the California Endangered Species Act (CESA), which may include obtaining a "take" permit (e.g., CESA Section 2081 Incidental Take Permit) and mitigation for impacts on habitat (i.e., on-site restoration of temporarily affected areas, on-site or off-site habitat preservation/restoration for permanently affected areas, or purchase of credits from an approved bank).

Public Draft IS/MND page 83, **Mitigation Measure BIO-9** is revised as follows:

Mitigation Measure BIO-9: Tricolored Blackbird (TRBL).

- *Pre-Activity Survey.* A qualified biologist will conduct a pre-activity survey for tricolored blackbirds when activities will occur within suitable habitat. The survey will determine if

existing or potential nesting sites are present within ~~250~~ 300 feet (~~76~~ approximately 92 meters) of the work area.

- *Pre-Activity Nesting Survey.* If suitable potential nesting sites are located within ~~250~~ 300 feet (~~76~~ approximately 92 meters), a qualified biologist will conduct a pre-activity nesting bird survey if work occurs during the nesting season (~~February 15 through August 31~~ February 1 through September 15) prior to any work, site preparation, mowing, vegetation removal, and/or staging activities. Surveys will be conducted no more than 7 days prior to the initiation of project activities.
- *Active Nest Avoidance and Monitoring.* If active nests are identified within ~~250~~ 300 feet (~~76~~ approximately 92 meters) of any project activities, a ~~250~~ 300-foot (~~76~~ approximately 92-meter~~s~~) temporary no-work buffer will be established around the active nest until the young have fledged, following *Staff Guidance Regarding Avoidance of Impacts to Tricolored Blackbird Breeding Colonies on Agricultural Fields in 2015.*[4] A qualified biologist may reduce the no-work buffer distance if it can be determined that project activities will not negatively affect nesting behavior and a biological monitor is present to monitor nesting behavior during project activities. No work buffers will remain established until the nest is vacated, juveniles have fledged, and there is no evidence of a second nesting attempt.
- *Take Authorization*. No impacts on TRBL are expected, but if the avoidance buffer around a TRBL nesting colony is infeasible, consultation with CDFW is warranted to discuss whether the project can avoid take. If avoidance is not feasible, acquisition of an incidental take permit (ITP) for TRBL prior to ground-disturbing activities, pursuant to Fish and Game Code Section 2081(b), would be necessary to comply with CESA. An ITP could be issued either for the combined projects or for each project separately.

Public Draft IS/MND page 84, **Mitigation Measure BIO-11** is revised as follows:

Mitigation Measure BIO-11: Special-Status Bats. Prior to commencement of construction activities, within or outside of the maternity roosting season, a qualified biologist shall conduct ~~a pre-construction clearance survey throughout the project site in areas that have the potential to provide suitable bat roosting habitat to determine if any special-status bat species are roosting on-site. If bats are determined to be using trees specifically for roosting, the biologist will determine whether a day roost (non-breeding) or maternity roost (lactating females and dependent young) is present.~~ the following activities:

- *Bat Roost Habitat Assessment*: A habitat assessment for bat roosts to identify areas of potentially suitable roosting habitat for special-status bat species within 100 feet (30.5 meters) of proposed work.
- *Bat Surveys:* If suitable roosting habitat for these species is present, an emergence survey or other feasible survey method to identify to species (e.g., bat detector, guano

[4] CDFW (California Department of Fish and Wildlife). 2015. *Staff Guidance Regarding Avoidance of Impacts to Tricolored Blackbird Breeding Colonies on Agricultural Fields in 2015.* March 19, 2015.

DNA analysis) shall be completed during the appropriate seasonal period for bat activity to determine whether potential roosts are used by special-status bat species.

- *Bat Roost Disturbance Minimization and Avoidance:* If special-status bats are present in a day roost, a 100-foot (30.5-meter) no-disturbance buffer shall be established around the day roost by a qualified biologist. The qualified biologist may adjust the no-disturbance buffer as determined based on observed bat behavior and disturbance of project activities. If no-disturbance buffers around special-status bat day roosts cannot be maintained or if special-status bats are present within a maternity roost, CDFW shall be consulted to determine measures to prevent disruptions or failure of breeding.
- ~~If a day roost is determined to be present, the biologist shall ensure that direct mortality to roosting individuals will not occur. In general, disturbances to day roosts as a result of noise or other indirect impact is not generally considered significant, as it would not cause direct mortality of individuals and would not be expected to reduce populations to below self-sustaining levels. If removal of any trees supporting a day roost would occur, the biologist shall ensure that all roosting individuals disperse from the location prior to removal of the vegetation to prevent direct mortality.~~
- ~~If a maternity roost is observed, the biologist will determine whether construction activities are likely to disturb breeding activities. If it is determined that the vegetation supporting the roost must be removed or activities are expected to disturb the breeding activities, a Bat Exclusion Plan shall be prepared in consultation with CDFW. At a minimum, the plan shall include avoidance and minimization measures to reduce potential impacts on breeding bats during construction activities and prescribed methods to safely and humanely evict bats from the roost to minimize any potential impacts.~~
    - ~~Exclusion devices may be installed to discourage bats from occupying the work areas outside of the maternity season in consultation with CDFW. Netting shall not be used as an exclusion material. If a roost is determined by a qualified biologist(s) to be used by a large number of bats (large hibernaculum), bat boxes shall be installed near the work areas prior to installing exclusion devices. The number of bat boxes installed will depend on the size of the hibernaculum and shall be determined through consultations with the CDFW. If a maternity colony has become established, all construction activities shall be postponed within a 500-foot buffer around the maternity colony until it is determined by a qualified biologist(s) that the young have dispersed. Once it has been determined that the roost is clear of bats, the roost shall be removed immediately.~~
    - ~~Any exclusion devices shall be designed to avoid entrapment of birds or bats and allow exit from, but not entry to, the exclusion area. Exclusion devices shall be installed between September 30 and February 1 and removed at the end of construction. A qualified bat biologist(s) shall be present upon exclusion installation and repair to survey for and ensure that birds and bats are not trapped behind exclusion devices.~~

- ~~Exclusion monitoring shall occur daily by a qualified biologist(s) to determine effectiveness of devices. Any exclusion repair must be completed within three days of observation under supervision of a qualified biologist(s) to ensure that bat entrapment does not occur.~~

Public Draft IS/MND page 85, **Mitigation Measure BIO-12** is revised as follows:

Mitigation Measure BIO-12: Crotch's Bumble Bee (CBB).

- *Pre-Activity Survey.* A pre-activity survey for Crotch's bumble bee will occur prior to initiation of ground-disturbing activities in suitable habitat. The pre-activity survey will include a habitat assessment that evaluates historical and current species occurrences and documents potential nesting habitat in the work area.
- *Seasonal Work Window and Avoidance.* Ground-disturbing activities will occur November 1 to January 31, outside of the nesting season within suitable habitat, or pre-activity nest surveys will be conducted and, if applicable, nest avoidance will be implemented.
- *Pre-Activity Nest Survey.* If ground-disturbing activities will occur during the nesting season (February 1 through October 31), a pre-activity nest survey will be conducted within 30 days of initiation of activities to evaluate whether an active nest is present within work areas. Bee identification will be documented using photos of bees on vegetation taken from multiple angles. Only approved biologists are allowed to handle, capture, or net bees if needed for identification, as described in the California Department of Fish and Wildlife's 2023 Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species, or most recent version.
- *Active and Potential Nest Avoidance.* If CBB is detected during pre-activity surveys, a 50-foot (15-meter) avoidance buffer will be established around all small mammal burrows and thatched/bunched grasses. If an active Crotch's bumble bee nest is detected within a work area, an avoidance buffer of 100 feet (30.5 meters) will be established. The buffer may be reduced if determined by a qualified biologist that, based on bee behavior, a reduced buffer will not affect nesting individuals. Ground-disturbing activities will avoid active nest resources during the Crotch's bumble bee nesting period (February 1 through October 31), to the maximum extent feasible, or until the nest is determined to no longer be active by a qualified biologist. If impacts cannot be feasibly avoided and construction could result in potential direct or indirect impacts to Crotch's bumble bee and/or occupied habitats, DWR shall consult with CDFW to ensure compliance with the California Endangered Species Act, which may include obtaining a "take" permit (e.g., CESA Section 2081 Incidental take Permit from CDFW) and mitigation for permanent impacts to habitat.
- *Take Authorization.* No impacts on CBB are expected, but if the avoidance buffer around a CBB nest is infeasible or if CBB is observed on-site and ground-disturbing activities occur during the overwintering period (November 1–January 31), consultation with CDFW is warranted to discuss whether the project can avoid take. If avoidance is not

feasible, acquisition of an ITP for CBB prior to ground-disturbing activities, pursuant to Fish and Game Code Section 2081(b), would be necessary to comply with CESA.

Public Draft IS/MND page 85 is revised as follows:

Mitigation Measure BIO-14: Western Spadefoot.

- *Pre-Activity Survey.* A pre-activity survey for western spadefoot within suitable breeding and upland habitat will be conducted prior to commencement of project activities.
- *Breeding Survey*: Monitor the National Weather Service 72-hour forecast for the site. If a 70 percent or greater chance of rainfall is predicted within 24 hours of work, the qualified biologist shall survey the site before activities begin each day rain is forecast in order to survey for western spadefoots. If precipitation begins during activities, the qualified biologist(s) shall remain at the site for the duration of the rain event in order for activities to continue. If rain exceeds ½ inch during a 24-hour period, all activities shall cease until it is no longer raining and no further rain is forecast.
- *Avoidance*. If western spadefoot are found during pre-activity and/or breeding surveys, a minimum 50-foot (15-meter) avoidance buffer will be implemented around suitable refugia (burrows, cracks, loose soil areas, etc.) and active or potential breeding habitat found to be used by the species, even when dry.

Public Draft IS/MND page 85 is revised as follows:

Mitigation Measure BIO-15: Pre-construction Surveys.

- Seven days prior to the initiation of ground-disturbing activities, a pre-construction survey shall be conducted in suitable habitat for special-status species such as western spadefoot, American badger, and San Joaquin coachwhip and/or their sign. If preconstruction surveys identify occupied burrows/dens or with burrows/dens with sign (e.g., American badger claw marks), a 50-foot (15-meter) no-disturbance buffer shall be established.

Public Draft IS/MND page 94, the first sentence of **Mitigation Measure CUL-1** is revised as follows:

Mitigation Measure CUL-1: Unanticipated Discovery Protocol for Archaeological Resources. If pre-contact or historic-era archaeological resources are encountered during project implementation, all activity within 100 feet (30.5 meters) of the find shall cease and a qualified archaeologist—defined as one who meets or is under supervision of one who meets the SOI Historic Preservation Professional Qualification Standards for Archeology (48 Federal Register 44738–44739) and has expertise in California archaeology—shall inspect the find within 24 hours of discovery and notify DWR of their initial assessment.

Public Draft IS/MND page 95, the first sentence of **Mitigation Measure CUL-2** is revised as follows:

> **Mitigation Measure CUL-2: Unanticipated Discovery Protocol for Human Remains.** If any suspected human remains are discovered during project construction, all project-related construction activities within 100 feet (30.5 meters) of the find shall cease and appropriate precautions shall be taken to protect the human remains and any associated funerary objects from further disturbance.

Public Draft IS/MND page 96, the first sentence of the last paragraph revised as follows:

> Upon discovery of any human remains, the location of the find with a 100-foot (30.5-meter) buffer shall be delineated in which project-related construction shall cease, and the construction foreman and Reclamation shall be informed of the find.

Public Draft IS/MND page 103, the first sentence of **Mitigation Measure GEO-1** is revised as follows:

> **Mitigation Measure GEO-1: Unanticipated Discoveries of Paleontological Resources.** In the event of the unanticipated discovery of paleontological resources, DWR or its contractor shall immediately cease all work activities in the area (within approximately 100 feet or 30.5 meters) of the discovery until it can be assessed for significance by the Qualified Paleontologist.

4 MITIGATION MONITORING AND REPORTING PROGRAM

CEQA Guidelines Section 15097 requires a public agency to adopt a program for monitoring or reporting on the changes it has required in the project or conditions of approval to substantially lessen significant environmental effects. This MMRP summarizes the mitigation commitments identified in the San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project Final IS/MND. Mitigation measures (provided in Table 4-1) are presented in the same order as they occur in the IS/MND.

The columns in the MMRP table provide the following information:

- **Mitigation Measure(s):** The action(s) to be taken to reduce the impact to less than significant.
- **Timing of Implementation:** The general schedule for implementing each mitigation measure, either prior to construction, during construction, and/or after construction.
- **Responsible Party:** The agency or private entity responsible for ensuring implementation of the mitigation measure. However, until the mitigation measures are completed, DWR, as the CEQA lead agency, remains responsible for ensuring that implementation of the mitigation measures occurs in accordance with the MMRP (CEQA Guidelines Section 15097[a]).
- **Verification Date:** The date that the mitigation measure is completed and signed off by the lead agency and/or responsible party.

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Table 4-1 Mitigation Monitoring and Reporting Program for the San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project

Mitigation Measure	Timing for Implementation	Responsible Party	Verification Date
IV. Biological Resources			
Mitigation Measure BIO-1: Biological Monitor. DWR shall retain a qualified biological monitor(s) with relevant experience with biological resources and regulations. The qualified biologist(s) shall be on-site during all ground-disturbing and vegetation removal activities. The qualified biologist(s) shall conduct daily clearance surveys of all equipment, vehicles, and stockpiled materials at the beginning of each day and regularly throughout the workday, and during ground-disturbing activities. The qualified biologist(s) shall also monitor any implemented exclusion buffers for work occurring near sensitive biological resources weekly or as needed, and check potential, atypical, and known burrows/burrow complexes/dens every two weeks while construction activities are occurring within suitable habitat for special-status species. The qualified biologist(s) shall recommend appropriate setback buffers for protection of sensitive biological resources, where necessary, and shall have the authority to temporarily stop work if special-status species are observed that may be impacted by construction activities.	During construction	DWR, qualified biologist, construction contractor	
Mitigation Measure BIO-2: Worker Environmental Awareness Program (WEAP). A qualified biologist shall conduct pre-construction WEAP training for all personnel working at the construction site. The training will include a review of environmental laws, regulations, and resource agency permit requirements that must be followed. Additional topics that will be covered include special-status species and protection measures, site contamination prevention, spill prevention, emergency response, best management practices (BMPs), and appropriate work practices. The WEAP training will be provided to all workers prior to construction and updated trainings will be provided as applicable. A list of employees who attend the training sessions will be maintained by DWR.	Prior to construction	DWR, qualified biologist, construction contractor	
Mitigation Measure BIO-3: Invasive Plant Species Control Measures. Construction activities shall be conducted in a manner that prevents the introduction, transfer, and spread of invasive species, including plants, animals, and microbes (e.g., algae, fungi, parasites, bacteria), from one work area to another. Prevention best practices and guidelines for controlling the spread of invasive plants can be found on the California Invasive Plant Council's website. DWR shall require construction contractors to ensure that equipment is free of invasive plant seeds, propagules, and any other material which may contain them (e.g., soil). For purposes of this mitigation measure, invasive plant species shall include all species with a Cal-IPC rating of moderate or high. Prior to entering the work areas, equipment shall be inspected to confirm it is free of mud, dirt, and debris. For larger work areas that would be accessed via non-paved roads, tire track stations shall be installed at the work area entrances and exits, where appropriate. Staging areas and access routes shall avoid weed infestations, and infestations within the work area(s) shall be flagged and avoided to the maximum extent feasible. Only certified weed-free materials (e.g., fiber rolls and straw) shall be used during construction.	During construction	DWR, construction contractor	

Mitigation Measure	Timing for Implementation	Responsible Party	Verification Date
Mitigation Measure BIO-4: General Construction Best Management Practices. DWR shall require construction contractors to adhere to the following general construction best management practices during construction of the proposed project: • *Speed Limits.* Vehicles travelling within the project site will not exceed a speed limit of 35 miles per hour on primary or paved roads, except on county roads and highways, and 20 miles per hour on gravel or unpaved roads. Emergency vehicles are exempt from these restrictions in emergency situations. • *Vehicle Parking, Equipment Staging, and Stockpile.* Vehicle parking, equipment staging, and stockpiling will be limited to established roads, paved areas, and previously disturbed areas to the extent practicable. BMPs, such as silt fences, erosion control mats, and biodegradable weed-and-rice-free wattles, will be implemented around staging and stockpile locations to reduce runoff into waterways and suitable habitat for special-status species. • *Off-Road Vehicles.* Off-road-vehicle travel may be necessary to access infrastructure in limited areas of the project site. Off-road-vehicle travel will be limited to the extent practicable. If necessary, vehicles will be inspected and dirt/mud will be cleaned prior to driving into off-road work locations to prevent the spread of noxious weeds. In addition, any vehicles traveling off-road will avoid wetlands and waterways. • *Erosion Control.* The project will be conducted in a manner to stabilize soils and minimize erosion to the greatest extent possible. Upland soils exposed by the project will be seeded and stabilized using erosion control fabric or hydroseeding. Erosion control measures and BMPs, such as silt fences, natural fiber mats, geotextile fabrics, jute, and biodegradable weed-and-rice-free wattles, will be implemented to reduce runoff from work areas into waterways and suitable habitats. No plastics or other non-porous material will be used for erosion control. If used, silt fencing will be removed upon completion of work activities. Non-entangling erosion control materials (e.g., fiber netting with mesh size less than 0.25 inches [0.64 centimeters] or similar, no monofilament) will be used when required. • *Firearms and Dogs.* All dogs, pets, firearms, open fires, and hunting will be prohibited at the project site, except for those firearms or dogs held by/associated with authorized security personnel or law enforcement officials. • *Trash Abatement.* All food items, trash, and debris will be secured in animal-proof containers and removed on a regular basis to avoid attracting opportunistic predators, such as ravens, coyotes, and feral dogs. Plastic water bottles and plastic bags will be picked up and removed daily.	During construction	DWR, construction contractor	

Mitigation Measure	Timing for Implementation	Responsible Party	Verification Date
• *Vehicle and Equipment Maintenance.* Vehicles and equipment will be kept clean to prevent excessive build-up of oil and grease and regularly inspected for leaks. Fueling, cleaning, and maintenance of vehicles and equipment will occur in designated upland locations and not within wetlands, streams, or waterways, or within any areas where an accidental discharge to these features may occur. Materials and heavy equipment will be stored outside of the active flow of creeks and other waterways. • *Storage and Hazardous Materials.* Hazardous and toxic materials will be stored at designated upland locations and in watertight containers to prevent contamination of waterways and suitable habitat. All equipment will be properly maintained and cleaned to prevent spills and leaks. If any spills or leaks of petroleum or other toxic materials are detected, work in the immediate area will stop, the issue will be reported, and the area will be cleaned up in accordance with applicable local, state, and federal regulations. For small spills on impervious surfaces, absorbent materials will be used to remove the spill instead of washing it down with water. Absorbent materials will be collected and disposed of properly. For small spills on previous surfaces, such as soil, the area will be excavated and the materials properly disposed of rather than burying the contaminated area. Significant spills, including oil, will be reported immediately to 911, local emergency response teams, and the Governor's Office of Emergency Services Warning Center at (800) 852-7550. • *Minimizing Work Area Footprint and Duration.* The project site footprints and the duration of the project will be minimized to the extent feasible to reduce the potential for take of special-status species. • *Temporary Ground Disturbance.* All temporary ground disturbance areas will be stabilized and allowed to naturally return to pre-activity conditions within 12 months of the disturbance. Erosion control measures (e.g., mulching, seeding, biodegradable weed-and-rice-free wattles) will be used in all disturbance areas where sedimentation has potential to enter waterways and suitable habitats. • *Equipment Clearance Survey.* All pipes, culverts, equipment, and similar structures that are stored at a work area for one or more overnight periods will be inspected for special-status species before the pipe, culvert, equipment, or structure is subsequently buried, capped, or otherwise used or moved. • *Excavations Inspections.* All pipes, culverts, open holes, sumps, trenches, and similar structures within each work area will be inspected at the beginning of each day to ensure wildlife are not trapped. All excavations with sidewalls steeper than a 1:1 slope will be covered when workers or equipment are not actively working in the excavation, or will have an escape ramp of earth or a non-slip material with a less than 1:3 slope. In addition, all installed fence posts will be capped to ensure birds do not enter and get trapped within posts.			

Mitigation Measure	Timing for Implementation	Responsible Party	Verification Date
• *Dust Control.* To reduce fugitive dust resulting from Covered Activities, DWR will employ dust control measures in accordance with applicable air pollution control districts that limit the amount of fugitive dust generated during work activities. Water will be added to the surface to soften the soil and control dust, where needed. • *Work Area Delineation.* The perimeter of work areas will be clearly delineated on work area maps, flagged, and/or fenced, as appropriate, to ensure work activities avoid adjacent riparian habitats, waterways, and suitable habitat outside of the work area. In situations where work activities are limited to developed, disturbed, or otherwise unsuitable habitat, flagging and fencing may not be necessary. However, in situations where work activities will occur in close proximity to waterways or suitable habitat, DWR will implement appropriate measures to ensure the avoidance and minimization of impacts to those resources and special-status species, such as on-site biological monitoring of activities or placement of exclusion fencing after biological clearance surveys. • *Wildlife Protection.* Any wildlife encountered during the project will be allowed to leave the area on their own without harm or will be moved out of harm's way by an approved biologist or as specified in the species-specific mitigation measures. • *Work Hours.* Access to the construction areas shall be limited to established work hours. • *Nighttime Work Requirements.* Construction activities shall not be conducted at night (i.e., between dusk and dawn) within 500 feet (152 meters) of sensitive biological resources or wildlife corridors. Any nighttime lighting needed (e.g., security lighting) shall be shielded and directed downwards to minimize light spillover or glare. • *Noise.* Construction contractors shall equip construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards to reduce construction equipment noise to the maximum extent possible. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive biological resources, and stage equipment in areas that will create the greatest distance between construction-related noise sources and sensitive biological resources. • *Species Injury/Mortality Reporting.* Any worker who inadvertently injures or kills a special-status species or finds one dead, injured, or entrapped shall immediately report the incident to the construction supervisor. The construction supervisor shall immediately notify DWR personnel or the DWR inspector, who then shall immediately inform CDFW.			

Mitigation Measure	Timing for Implementation	Responsible Party	Verification Date
Mitigation Measure BIO-5: Revegetation Plan. For temporary impacts on natural communities, a Revegetation Plan shall be prepared by a qualified biologist(s) prior to starting construction and shall be implemented by DWR following completion of construction. The Revegetation Plan shall guide and ensure successful restoration to pre-project conditions and shall include, at a minimum, the following: • A native planting palette appropriate for each vegetation type being restored and appropriate to local conditions.	Prior to and after construction	DWR, qualified biologist, construction contractor	

Mitigation Measure BIO-6: Burrowing Owl.
• *Pre-Activity Survey.* To avoid project-related impacts to burrowing owls potentially occurring on or in the vicinity of the project site, a pre-construction presence/absence survey for burrowing owls shall be conducted by a qualified biologist within suitable burrowing owl habitat in accordance with current CDFW guidelines (e.g., the 2012 CDFG Staff Report on Burrowing Owl Mitigation). The survey shall be conducted within 30 days prior to the commencement of any ground disturbing activities, including vegetation clearing, grubbing, or grading. The survey shall identify occupied breeding and nonbreeding burrowing owl burrows within 500 feet (152 meters) of project activities. In addition, a final pre-construction survey to avoid active burrowing owl individuals and burrows shall be conducted within three (3) days prior to the initiation of project activities, with the findings immediately reported to CDFW. Additionally, if ground-disturbing activities have previously occurred, but the site is left undisturbed for more than 30 days, a new pre-construction survey shall be conducted to minimize the possibility of burrowing owls having colonized the site since it was last disturbed. If burrowing owls are not present during the survey(s), site preparation and construction activities may begin. A final report shall be prepared by a qualified biologist and submitted to CDFW within 30 days of completion of the survey documenting the results of the burrowing owl surveys and detailing avoidance, minimization, and mitigation measures.
• *Avoidance.* If burrowing owl is present within the 500-foot (152-meter) survey area, then avoidance shall be implemented to avoid impacts to burrowing owl individuals and active burrows. Avoidance of burrowing owls can be achieved through the implementation of the following measures, consistent with the CDFW Staff Report on Burrowing Owl Mitigation (2012), most recent guidelines, or consultation with CDFW:
  ○ A qualified biologist establishing a no-disturbance buffer (i.e., a minimum 165-foot (50-meter) no-disturbance buffer for low level disturbance activities during the non-breeding season [September 1 through January 31] and a minimum 500-foot (152-meter) no-disturbance buffer for low level disturbance activities during the breeding season [February 1 through August 31]) based on the project activities.
  ○ Regular monitoring of the active burrow by a qualified biologist with the authority to adjust the buffer size if the burrowing owl exhibits signs of disturbance (i.e., agitation or stress behavior).
	Prior to and during construction	DWR, qualified biologist, construction contractor	

Mitigation Measure	Timing for Implementation	Responsible Party	Verification Date
○ Buffer distances may be reduced in specific locations where avoidance measures (such as noise attenuation buffers, visual screens, or speed-limit reductions) are placed between the occupied burrow and construction activities in coordination with CDFW. ○ Construction avoidance will occur within the no-disturbance buffer until a qualified biologist determines the burrowing owl is no longer present or until a CDFW-approved Burrowing Owl Plan has been implemented. ○ If active burrowing owl nests are identified during the pre-construction survey, project activities must not commence within 500 feet (152 meters) of the active nest until no sign is present that the burrows are being used by adult or juvenile owls or following CDFW approval of a Burrowing Owl Plan as described below. ○ If owl presence is difficult to determine, a qualified biologist shall monitor the burrows with motion-activated trail cameras for at least 24 hours to evaluate burrow occupancy. • *Burrowing Owl Plan.* Prior to construction, if impacts to burrowing owl individuals or active burrows cannot be avoided, the qualified biologist and DWR shall coordinate with CDFW to develop a Burrowing Owl Plan to be approved by CDFW prior to commencement of project activities in the buffer zone. The Burrowing Owl Plan shall describe proposed avoidance, relocation, monitoring, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the number and location of occupied burrow sites and details on proposed buffers if avoiding the burrowing owls or information on the adjacent or nearby suitable habitat available to owls for relocation. DWR shall implement the Burrowing Owl Plan following CDFW review and approval. If burrowing owls are observed within the project site during project implementation and construction, CDFW shall be notified immediately in writing within 48 hours of detection. If avoidance is not feasible, a Burrowing Owl Plan shall be submitted to CDFW for review and approval within two weeks of detection and project activity shall be halted within a minimum of 165 feet (50 meters) for low level disturbance activities during the non-breeding season [September 1 through January 31] or a minimum 500 feet (152 meters) for low level disturbance activities during the breeding season [February 1 through August 31] of the burrowing owls without CDFW approval. DWR shall be responsible for implementing appropriate avoidance, minimization, and mitigation measures, including burrow avoidance, passive relocation, or other appropriate mitigation measures (i.e., noise attenuation, speed restrictions, biological monitoring, etc.) as identified in the Burrowing Owl Plan. • *Take Authorization*. If impacts cannot be feasibly avoided and construction could result in potential direct or indirect impacts to burrowing owl and/or occupied habitats, DWR shall consult with CDFW to ensure compliance with the California Endangered Species Act (CESA), which may include obtaining a “take” permit (e.g., CESA Section 2081 Incidental Take Permit) and mitigation for impacts to habitat (i.e., on-site restoration of temporarily impacted areas, on-site or off-site habitat preservation/ restoration for permanently impacted areas, or purchase of credits from an approved bank).			

Mitigation Measure	Timing for Implementation	Responsible Party	Verification Date
Mitigation Measure BIO-7: Impacts on Federally and State-Listed Species Habitat. If direct impacts on federally or State-listed species habitat would be affected by the project, a compensatory mitigation plan shall be developed and implemented in coordination with USFWS and CDFW, as appropriate. Unavoidable effects would be compensated through a combination of creation, preservation, and restoration of habitat or purchase of credits at an approved mitigation bank at a minimum 1:1 ratio or equivalent. Temporary impacts shall be returned to similar conditions to those that existed prior to project-related activities (consistent with **Mitigation Measure BIO-5, Revegetation Plan**). San Joaquin Kit Fox: • *Pre-Construction Survey.* A qualified biologist will conduct a pre-construction survey for San Joaquin kit fox dens prior to the commencement of construction activities within the project area and within 500 feet (152 meters) of the project area. • *Den Avoidance Buffer*. No-disturbance buffers around San Joaquin kit fox dens, as described in the USFWS *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance*,[5] will be implemented during project construction. • *Take Authorization.* If the no-disturbance buffers outlined in the USFWS Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance is not feasible, consultation with CDFW will occur to discuss options to avoid take. If impacts cannot be feasibly avoided and construction could result in potential direct or indirect impacts on San Joaquin kit fox and/or occupied habitats, DWR shall consult with CDFW to ensure compliance with the California Endangered Species Act (CESA), which may include obtaining a "take" permit (e.g., CESA Section 2081 Incidental Take Permit) and mitigation for impacts on habitat (i.e., on-site restoration of temporarily affected areas, on-site or off-site habitat preservation/restoration for permanently affected areas, or purchase of credits from an approved bank).	Prior to construction	DWR, qualified biologist, construction contractor	
Mitigation Measure BIO-8: Swainson's Hawk. • *Focused Surveys.* A qualified biologist will conduct focused surveys for Swainson's hawk during the Swainson's hawk nesting season or prior to project initiation in accordance with the Swainson's Hawk Technical Advisory Committee's *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley*. The survey will determine if existing or potential nesting sites are present within 0.5 mile (0.8 kilometer) of work areas.	Prior to and during construction	DWR, qualified biologist, construction contractor	

[5] United States Fish and Wildlife Service (USFWS). 2011. *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance.* Prepared by the Sacramento Fish and Wildlife Office. January 2011.

Mitigation Measure	Timing for Implementation	Responsible Party	Verification Date
• *Pre-Activity Nesting Survey.* If suitable potential nesting sites are located within 0.5 mile (0.8 kilometer) of project activities, a qualified biologist will conduct a pre-activity nesting bird survey if work occurs during the nesting season (February 15 through August 31) prior to any work, site preparation, mowing, vegetation removal, and/or staging activities. Surveys will be conducted no more than 7 days prior to the initiation of project activities. • *Active Nest Avoidance.* If active nests are identified within 0.5 mile (0.8 kilometer) of any project activities, a 0.5-mile (0.8-kilometer) temporary no-work buffer will be established around the active nest until the nest is vacated, young have fledged, and there is no evidence of a second nesting attempt. An approved biologist may temporarily reduce the no-work buffer distance if it can be determined that project activities will not negatively affect nesting behavior and a biological monitor is present. A qualified biologist will monitor the status of the nest throughout the season to determine when young have fledged or the nest is no longer active. If the biologist does not find any nests but suitable habitat would be removed, the biologist will conduct a final survey of such habitat and areas within 100 feet (30.5 meters) of the habitat within 48 hours of the activity to confirm the absence of nests. • *Monitoring.* If project activities must occur within 0.5 mile (0.8 kilometer) of an identified active Swainson's hawk nest, a qualified biologist must be on site daily to monitor the nests for signs of agitated behavior. The biological monitor will hold stop-work authority. • *Nest Tree Mitigation*. In addition to avoiding occupied Swainson's hawk nest trees, if impacts on unoccupied Swainson's hawk nest trees result from project activities, trees will be replaced at a 3:1 ratio in an area that will be protected in perpetuity. • *Take Authorization*. If impacts cannot be feasibly avoided and construction could result in potential direct or indirect impacts on Swainson's hawk and/or occupied habitats, DWR shall consult with CDFW to ensure compliance with the California Endangered Species Act (CESA), which may include obtaining a "take" permit (e.g., CESA Section 2081 Incidental Take Permit) and mitigation for impacts on habitat (i.e., on-site restoration of temporarily affected areas, on-site or off-site habitat preservation/restoration for permanently affected areas, or purchase of credits from an approved bank).			
Mitigation Measure BIO-9: Tricolored Blackbird (TRBL). • *Pre-Activity Survey.* A qualified biologist will conduct a pre-activity survey for tricolored blackbirds when activities will occur within suitable habitat. The survey will determine if existing or potential nesting sites are present within 300 feet (approximately 92 meters) of the work area.	Prior to and during construction	DWR, qualified biologist, construction contractor	

Mitigation Measure	Timing for Implementation	Responsible Party	Verification Date
• *Pre-Activity Nesting Survey.* If suitable potential nesting sites are located within 300 feet (approximately 92 meters), a qualified biologist will conduct a pre-activity nesting bird survey if work occurs during the nesting season (February 1 through September 15) prior to any work, site preparation, mowing, vegetation removal, and/or staging activities. Surveys will be conducted no more than 7 days prior to the initiation of project activities. • *Active Nest Avoidance and Monitoring.* If active nests are identified within 300 feet (approximately 92 meters) of any project activities, a 300-foot (approximately 92-meter) temporary no-work buffer will be established around the active nest until the young have fledged, following *Staff Guidance Regarding Avoidance of Impacts to Tricolored Blackbird Breeding Colonies on Agricultural Fields in 2015.*[6] A qualified biologist may reduce the no-work buffer distance if it can be determined that project activities will not negatively affect nesting behavior and a biological monitor is present to monitor nesting behavior during project activities. No work buffers will remain established until the nest is vacated, juveniles have fledged, and there is no evidence of a second nesting attempt. • *Take Authorization*. No impacts on TRBL are expected, but if the avoidance buffer around a TRBL nesting colony is infeasible, consultation with CDFW is warranted to discuss whether the project can avoid take. If avoidance is not feasible, acquisition of an incidental take permit (ITP) for TRBL prior to ground-disturbing activities, pursuant to Fish and Game Code Section 2081(b), would be necessary to comply with CESA. An ITP could be issued either for the combined projects or for each project separately.			
Mitigation Measure BIO-10: Nesting Birds. To avoid and minimize impacts to nesting birds, a qualified biologist will conduct pre-activity surveys for nesting birds no more than 7 days prior to any vegetation removal (i.e., upland vegetation management, grading and scraping for new road work, grubbing and removal of ground vegetation, removal of trees or shrubs) that begins from February 15 to August 31, and as early as January 15 for raptors. A resurvey will be needed if there is a 7-day or more lapse in work activities during this period. Surveys will cover the work area footprint and suitable habitat within 100 feet (30.5 meters) for all birds, 250 feet (76 meters) for raptors and tricolored blackbirds, and 0.25 miles (0.4 kilometers) for Swainson's hawks. If nests are located during pre-activity surveys, impacts will be minimized by establishing an appropriate non-disturbance buffer zone around active nests or vegetation patches supporting nesting birds. The size of the buffer will be determined by the biologist based on the species' sensitivity to disturbance, time of year, and planned work activities in the area. A biologist will monitor the behavior of the nesting birds to verify that they are not displaying evidence of disturbance from the project. The buffer will remain in effect and monitored until the nest is no longer active. Buffers for Swainson's hawk nests will be based on the guidance in the Swainson's Hawk Technical Advisory Committee's Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley, published in 2000 or more recent version.	Prior to and during construction	DWR, qualified biologist, construction contractor	

[6] CDFW (California Department of Fish and Wildlife). 2015. *Staff Guidance Regarding Avoidance of Impacts to Tricolored Blackbird Breeding Colonies on Agricultural Fields in 2015*. March 19, 2015.

Mitigation Measure	Timing for Implementation	Responsible Party	Verification Date
Mitigation Measure BIO-11: Special-Status Bats. Prior to commencement of construction activities, within or outside of the maternity roosting season, a qualified biologist shall conduct the following activities: • *Bat Roost Habitat Assessment:* A habitat assessment for bat roosts to identify areas of potentially suitable roosting habitat for special-status bat species within 100 feet (30.5 meters) of proposed work. • *Bat Surveys:* If suitable roosting habitat for these species is present, an emergence survey or other feasible survey method to identify to species (e.g., bat detector, guano DNA analysis) shall be completed during the appropriate seasonal period for bat activity to determine whether potential roosts are used by special-status bat species. • *Bat Roost Disturbance Minimization and Avoidance:* If special-status bats are present in a day roost, a 100-foot (30.5-meter) no-disturbance buffer shall be established around the day roost by a qualified biologist. The qualified biologist may adjust the no-disturbance buffer as determined based on observed bat behavior and disturbance of project activities. If no-disturbance buffers around special-status bat day roosts cannot be maintained or if special-status bats are present within a maternity roost, CDFW shall be consulted to determine measures to prevent disruptions or failure of breeding.	Prior to and during construction	DWR, qualified biologist, construction contractor	
Mitigation Measure BIO-12: Crotch's Bumble Bee (CBB). • *Pre-Activity Survey.* A pre-activity survey for Crotch's bumble bee will occur prior to initiation of ground-disturbing activities in suitable habitat. The pre-activity survey will include a habitat assessment that evaluates historical and current species occurrences and documents potential nesting habitat in the work area. • *Seasonal Work Window and Avoidance.* Ground-disturbing activities will occur November 1 to January 31, outside of the nesting season within suitable habitat, or pre-activity nest surveys will be conducted and, if applicable, nest avoidance will be implemented. • *Pre-Activity Nest Survey.* If ground-disturbing activities will occur during the nesting season (February 1 through October 31), a pre-activity nest survey will be conducted within 30 days of initiation of activities to evaluate whether an active nest is present within work areas. Bee identification will be documented using photos of bees on vegetation taken from multiple angles. Only approved biologists are allowed to handle, capture, or net bees if needed for identification, as described in the California Department of Fish and Wildlife's 2023 Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species, or most recent version.	Prior to and during construction	DWR, qualified biologist, construction contractor	

Mitigation Measure	Timing for Implementation	Responsible Party	Verification Date
• *Active and Potential Nest Avoidance.* If CBB is detected during pre-activity surveys, a 50-foot (15-meter) avoidance buffer will be established around all small mammal burrows and thatched/ bunched grasses. If an active Crotch's bumble bee nest is detected within a work area, an avoidance buffer of 100 feet (30.5 meters) will be established. The buffer may be reduced if determined by a qualified biologist that, based on bee behavior, a reduced buffer will not affect nesting individuals. Ground-disturbing activities will avoid active nest resources during the Crotch's bumble bee nesting period (February 1 through October 31), to the maximum extent feasible, or until the nest is determined to no longer be active by a qualified biologist. If impacts cannot be feasibly avoided and construction could result in potential direct or indirect impacts to Crotch's bumble bee and/or occupied habitats, DWR shall consult with CDFW to ensure compliance with the California Endangered Species Act, which may include obtaining a "take" permit (e.g., CESA Section 2081 Incidental take Permit from CDFW) and mitigation for permanent impacts to habitat. • *Take Authorization.* No impacts on CBB are expected, but if the avoidance buffer around a CBB nest is infeasible or if CBB is observed on-site and ground-disturbing activities occur during the overwintering period (November 1–January 31), consultation with CDFW is warranted to discuss whether the project can avoid take. If avoidance is not feasible, acquisition of an ITP for CBB prior to ground-disturbing activities, pursuant to Fish and Game Code Section 2081(b), would be necessary to comply with CESA.			
Mitigation Measure BIO-13: Aquatic Resources. To avoid indirect impacts on potentially jurisdictional features, best management practices, such as the use of silt fences, fiber rolls, and/or gravel bags, shall be implemented. No equipment maintenance or fueling shall be performed within or near the drainage channels where petroleum products or other pollutants from the equipment may enter this area.	During construction	DWR, construction contractor	
Mitigation Measure BIO-14: Western Spadefoot. • *Pre-Activity Survey.* A pre-activity survey for western spadefoot within suitable breeding and upland habitat will be conducted prior to commencement of project activities. • *Breeding Survey*: Monitor the National Weather Service 72-hour forecast for the site. If a 70 percent or greater chance of rainfall is predicted within 24 hours of work, the qualified biologist shall survey the site before activities begin each day rain is forecast in order to survey for western spadefoots. If precipitation begins during activities, the qualified biologist(s) shall remain at the site for the duration of the rain event in order for activities to continue. If rain exceeds ½ inch during a 24-hour period, all activities shall cease until it is no longer raining and no further rain is forecast.	Prior to and during construction	DWR, qualified biologist, construction contractor	

Mitigation Measure	Timing for Implementation	Responsible Party	Verification Date
• *Avoidance*. If western spadefoot are found during pre-activity and/or breeding surveys, a minimum 50-foot (15-meter) avoidance buffer will be implemented around suitable refugia (burrows, cracks, loose soil areas, etc.) and active or potential breeding habitat found to be used by the species, even when dry.			
Mitigation Measure BIO-15: Pre-construction Surveys. • Seven days prior to the initiation of ground-disturbing activities, a pre-construction survey shall be conducted in suitable habitat for special-status species such as western spadefoot, American badger, and San Joaquin coachwhip and/or their sign. If preconstruction surveys identify occupied burrows/dens or with burrows/dens with sign (e.g., American badger claw marks), a 50-foot (15-meter) no-disturbance buffer shall be established.	Prior to construction	DWR, qualified biologist, construction contractor	
V. Cultural Resources			
Mitigation Measure CUL-1: Unanticipated Discovery Protocol for Archaeological Resources. If pre-contact or historic-era archaeological resources are encountered during project implementation, all activity within 100 feet (30.5 meters) of the find shall cease and a qualified archaeologist—defined as one who meets or is under supervision of one who meets the SOI Historic Preservation Professional Qualification Standards for Archeology (48 Federal Register 44738–44739) and has expertise in California archaeology—shall inspect the find within 24 hours of discovery and notify DWR of their initial assessment. Pre-contact archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (midden) containing heat-affected rocks, artifacts, or shellfish remains; ground-stone tools (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include building or structure footings and walls, and deposits of metal, glass, or ceramic refuse. If DWR determines, based on recommendations from the qualified archaeologist and Tribes (if the resource is indigenous) that the resource is potentially eligible for the California Register (i.e., qualifies as an historical resource, as defined by CEQA), the resource shall be avoided, if feasible. This may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If avoidance of the resource is not feasible, DWR shall continue to consult with Tribes (if the resource is indigenous) and other appropriate interested parties to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource. This shall include documentation of the resource and may include data recovery, if deemed appropriate, or other actions such as treating the resource with culturally appropriate dignity and protecting the cultural character and integrity of the resource. Any technical report developed to document the implementation of mitigation shall be submitted to CHRIS upon DWR approval, unless the document contains information that	During construction	DWR, qualified archaeologist, construction contractor	

Mitigation Measure	Timing for Implementation	Responsible Party	Verification Date
Tribes involved in the development of the mitigation deem should not be filed with CHRIS, in which case, the report shall be submitted to the NAHC.			
Mitigation Measure CUL-2: Unanticipated Discovery Protocol for Human Remains. If any suspected human remains are discovered during project construction, all project-related construction activities within 100 feet (30.5 meters) of the find shall cease and appropriate precautions shall be taken to protect the human remains and any associated funerary objects from further disturbance. All human remains and potential human remains shall be treated with respect and dignity at all times. This includes: • Avoidance of any unnecessary disturbance and handling of human remains and associated funerary objects; • Avoidance of separation of human remains from associated funerary objects; • Avoidance of physical modifications of human remains and associated funerary objects; and • No photographs of human remains and associated funerary objects shall be taken prior to agreement with consulting parties, except for evidentiary purposes by the U.S. Bureau of Reclamation (Reclamation) cultural resources professionals or law enforcement. The treatment of Native American human remains and associated and unassociated funerary objects discovered during any ground-disturbing activity shall comply with applicable State laws, including Section 7050.5 of the Health and Safety Code. If human remains are discovered during testing, the archeological consultant shall immediately notify the appropriate County Coroner. In the event of the Coroner's determination that the human remains are Native American remains, the Coroner will notify the California State Native American Heritage Commission (NAHC), which will appoint a Most Likely Descendant (MLD). The MLD shall complete their inspection of the remains and make recommendations or preferences for treatment within 48 hours of being granted access to the site (as specified in Public Resources Code [PRC] section 5097.98[a]). Requirements for responding to discoveries of Native American human remains and associated funerary objects on federal land are addressed under the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) (25 USC Sections 3001–3013) and its implementing regulations (43 CFR Part 10). If human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered on federal or tribal lands, the federal agency must determine and consult with the lineal descendants and culturally affiliated Indian Tribes and carry out appropriate treatment and disposition of the discovered remains, including transfer of custody. All discovered human remains shall be treated initially as a crime scene with cultural resources professionals and the appropriate law enforcement authorities being brought in to assist in the determination of antiquity and manner of death. Geospatial information about the discovery location shall be taken. If this is not possible, the location shall be marked on a topographic map with a photograph of the area around the discovery (but not of the remains), to help relocate the remains	During construction	DWR, construction contractor	

Mitigation Measure	Timing for Implementation	Responsible Party	Verification Date
later. Initial discovery information shall be recorded including: the name of the person who discovered the remains, the date of the discovery, how the discovery was made, and any other pertinent information about the circumstances surrounding the discovery. Upon discovery of any human remains, the location of the find with a 100-foot (30.5-meter) buffer shall be delineated in which project-related construction shall cease, and the construction foreman and Reclamation shall be informed of the find. Reclamation shall immediately notify the appropriate DWR Project Manager. Reclamation shall forward a brief written report describing the discovery to DWR within 24 hours. The Reclamation Mid-Pacific Regional Archaeologist shall also be notified with a description of the nature and extent of the find.			
VII. Geology and Soils			
Mitigation Measure GEO-1: Unanticipated Discoveries of Paleontological Resources. In the event of the unanticipated discovery of paleontological resources, DWR or its contractor shall immediately cease all work activities in the area (within approximately 100 feet or 30.5 meters) of the discovery until it can be assessed for significance by the Qualified Paleontologist. The Qualified Paleontologist shall assess the find, implement recovery and reporting measures, if necessary, and determine if paleontological monitoring is warranted once work resumes.	During construction	DWR, qualified paleontologist, construction contractor	

Source: Data compiled by ESA in 2025

APPENDIX A

Public Review Draft IS/MND Comment Letters

California
Department of Conservation
Geologic Energy Management Division

Gavin Newsom, Governor
Jennifer Lucchesi, Director

November 21, 2025

VIA ELECTRONIC MAIL

Department of Water Resources
Marea Bell
31770 Gonzaga Road
Gustine, CA 95332

CASP@water.ca.gov

Assessor Parcel Number(s): Multiple
Project Location Address: W Clarkson Avenue & Mount Whitney Avenue

PROJECT TITLE: Senior Environmental Scientist, Specialist

Public Resources Code (PRC) section 3208.1 establishes re-abandonment responsibility when previously plugged and abandoned oil, gas or geothermal wells will be impacted by planned property development or construction activities. Local permitting agencies, property owners, and/or developers should be aware of, and fully understand, that significant and potentially dangerous issues may be associated with development near previously abandoned oil, gas, and geothermal wells. CalGEM-1

The California Geologic Energy Management Division (CalGEM) has received the above-referenced project dated November 10, 2025. To assist local permitting agencies, property owners, and developers in making safe and practical land use decisions regarding potential development near oil, gas, or geothermal wells, CalGEM provides a table in the attached enclosure of the wells within the parcel boundary or in its vicinity, based on CalGEM's Well Finder database (https://maps.conservation.ca.gov/doggr/wellfinder/).

CalGEM categorically advises against building over, or in any way impeding access to, oil, gas, or geothermal wells. Impeding access to a well could result in the need to remove any structure or obstacle that prevents or impedes access including, but not limited to, buildings, housing, fencing, landscaping, trees, pools, patios, sidewalks, roadways, and decking at the landowner's expense if there is a need to access a well. Maintaining sufficient access is considered the ability for a well servicing unit and associated necessary equipment (consisting of well servicing rig, pumping equipment, pipe trailer) to reach a well from a public street or access way, solely over the parcel on which the well is located. A well servicing unit, and any necessary equipment, should be able to pass unimpeded along and over the route, and should be able to access the well without disturbing the integrity of surrounding infrastructure. Impermeable barriers such as asphalt, concrete, and plastic may trap hazardous gases and liquids CalGEM-2

underneath and could create a safety hazard if built over a well that later develops a leak.

CalGEM-2 cont.

CalGEM recommends that any well for which access is impeded or built over, against CalGEM's advice, should be evaluated by a qualified petroleum professional for compliance with the statutory objectives of isolating all hydrocarbon-bearing strata; protecting underground and surface waters; prevention of subsequent damage to life, health, property, and other resources; and prevention of loss of oil, gas, or reservoir energy. CalGEM recommends that wells that do not meet these standards are abandoned or re-abandoned prior to construction. The well information can be accessed through CalGEM's Well Finder database mentioned above. PRC section 3208, subdivision (a), provides the primary statutory authority for CalGEM to oversee adequate abandonment of wells. Additionally, CalGEM has developed the regulatory guidance for operators to be followed during well abandonment, which are listed within California Code of Regulation, title 14 (CCR) section 1723 and associated sub-sections (for onshore wells), and section 1745 and associated sub-sections (for offshore wells).

CalGEM-3

There is no guarantee that a well abandoned in compliance with current Division requirements as prescribed by law will not start leaking in the future. Due to the inability to predict all subsurface conditions or changes, it always remains a possibility that any well may start to leak oil, gas, and/or water after abandonment, no matter how thoroughly the well was plugged and abandoned. CalGEM acknowledges wells plugged and abandoned to the most current Division requirements as prescribed by law have a lower probability of leaking in the future, however there is no guarantee that such abandoned wells will not leak.

CalGEM advises that all wells identified on the development parcel prior to, or during, development activities be tested for liquid and gas leakage. Surveyed locations in Latitude and Longitude, NAD 83 decimal format, and leak testing results should be provided to CalGEM. CalGEM expects any wells found leaking to be reported to CalGEM immediately.

CalGEM-4

PRC section 3208.1 gives CalGEM the authority to order or permit the re-abandonment of any well where it has reason to question the integrity of the previous abandonment. Responsibility for re-abandonment costs may be affected by the choices made by the local permitting agency, property owner, and/or developer in considering the general advice set forth in this letter. The PRC continues to define the person or entity responsible for re-abandonment as:

1. The property owner - If the well was plugged and abandoned in conformance with Division requirements at the time of abandonment, and in its current condition does not pose an immediate danger to life, health, and property, but requires additional work solely because the owner of the property on which the well is located proposes construction on the property that would prevent or impede access to the well for purposes of remedying a currently perceived future problem, then the owner of the property on which the well is located shall obtain

all rights necessary to re-abandon the well and be responsible for the re-abandonment. CalGEM-4 cont.

2. The person or entity causing construction over or near the well - If the well was plugged and abandoned in conformance with Division requirements at the time of plugging and abandonment, and the property owner, developer, or local agency permitting the construction failed either to obtain an opinion from the supervisor or district deputy as to whether the previously abandoned well is required to be re-abandoned, or to follow the advice of the supervisor or district deputy not to undertake construction that impedes access, then the person or entity causing the construction over or near the well shall obtain all rights necessary to re-abandon the well and be responsible for the re-abandonment.

3. The party or parties responsible for disturbing the integrity of the abandonment - If the well was plugged and abandoned in conformance with Division requirements at the time of plugging and abandonment, and after that time someone other than the operator or an affiliate of the operator disturbed the integrity of the abandonment in the course of developing the property, then the party or parties responsible for disturbing the integrity of the abandonment shall be responsible for the re-abandonment.

Should any wells require abandonment or re-abandonment, the responsible party must submit a Notice of Intention (NOI) to CalGEM through WellSTAR. The NOI form can be accessed in the 'Plugging and Abandonment' section of the following link: https://www.conservation.ca.gov/calgem/for_operators. CalGEM-5

No well work may be performed on any oil, gas, or geothermal well without written approval from CalGEM. Well work requiring approval includes, but is not limited to, mitigating leaking gas or other fluids from abandoned wells, modifications to well casings, and/or any other re-abandonment work. CalGEM also regulates the top of a plugged and abandoned well's minimum and maximum depth below final grade. CCR section1723.5 states well casings shall be cut off at least 5 feet but no more than 10 feet below the surface of the ground. If any well needs to be lowered or raised (i.e. casing cut down or casing riser added) to meet this regulation, a permit from CalGEM is required before work can start.

CalGEM makes the following additional recommendations to the local permitting agency, property owner, and developer: CalGEM-6

1. To ensure that present and future property owners are aware of (a) the existence of all wells located on the property, and (b) potentially significant issues associated with any improvements near oil or gas wells, CalGEM recommends that information regarding the below identified well(s), and any other pertinent information obtained after the issuance of this letter, be communicated to the appropriate county recorder for inclusion in the title information of the subject real property.

2. CalGEM recommends that any soil containing hydrocarbons be disposed of in accordance with local, state, and federal laws. Please notify the appropriate authorities if soil containing significant amounts of hydrocarbons is discovered during development. CalGEM-6 cont.

As indicated in PRC section 3106, CalGEM has statutory authority over the drilling, operation, maintenance, and abandonment of oil, gas, and geothermal wells, and attendant facilities, to prevent, as far as possible, damage to life, health, property, and natural resources; damage to underground oil, gas, and geothermal deposits; and damage to underground and surface waters suitable for irrigation or domestic purposes. In addition to CalGEM's authority to order work on wells pursuant to PRC sections 3208.1 and 3224, it has authority to issue civil and criminal penalties under PRC sections 3236, 3236.5, and 3359 for violations within CalGEM's jurisdictional authority. CalGEM does not regulate grading, excavations, or other land use issues. CalGEM-7

Should you have any questions, or if any wells are encountered that were not part of this letter, contact CalGEM at (661) 322-4031 or via email at CalGEMCentralCSWR@conservation.ca.gov. CalGEM-8

Sincerely,

Jeff Kimber

Jeff Kimber
Supervising Oil and Gas Engineer

Enclosure

Enclosure: The wells listed below are reported to be located within and nearby the parcel boundary and may have future access impeded. CalGEM-9

Township, Range, Section	API No.	Well Name
T17S, R15E, Section 14	0401900183	Richfield Cantua Land Co. 1
T17S, R15E, Section 14	0401900181	Denlinger 1
T17S, R15E, Section 14	0401922087	Brawley 1
T17S, R15E, Section 14	0401900182	Myers 1
T17S, R15E, Section 14	0401920258	Giffen, Inc., et al 67

Docusign Envelope ID: 9015403F-F76E-4194-AC31-2C77BCF66E9B

Commenter 2

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Central Region
1234 East Shaw Avenue
Fresno, California 93710
(559) 243-4005
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

December 19, 2025

Marea Bell
Department of Water Resources
31770 Gonzaga Road
Gustine, California 95332
CASP@water.ca.gov

Subject: San Luis Canal (California Aqueduct Pools 17, 18, 20 and 21) Liner Raise Projects (Project or Projects)
Mitigated Negative Declarations (MNDs)
State Clearinghouse Nos. 2025110364 & 2025110365

Dear Marea Bell:

The California Department of Fish and Wildlife (CDFW) received two Notice of Intent to Adopt an MND from the California Department of Water Resources (DWR) for the above-referenced Projects pursuant the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1] The above Projects are similar in scope and located adjacent to each other. Therefore, CDFW is providing a single comment letter for both MNDs. CDFW-1

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in these Projects that may affect California fish and wildlife. Likewise, CDFW appreciates the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code. While the CEQA comment period may have ended, CDFW respectfully requests that the DWR still consider our comments.

CDFW ROLE CDFW-2

CDFW is California's **Trustee Agency** for fish and wildlife resources and holds those resources in trust by statute for all the people of the State (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a)). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (*Id.*, § 1802). Similarly, for purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public

[1] CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

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agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

CDFW-2 cont.

CDFW is also submitting comments as a **Responsible Agency** under CEQA (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381). CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's lake and streambed alteration regulatory authority (Fish & G. Code, § 1600 et seq.). Likewise, to the extent implementation of the Project as proposed may result in take as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), related authorization as provided by the Fish and Game Code will be required.

Other Special Status Species: Species of plants and animals need not be officially listed as Endangered, Rare, or Threatened on any State or federal list pursuant to CESA and/or the federal Endangered Species Act (ESA) to be considered Endangered, Rare, or Threatened under CEQA. If a species can be shown to meet the criteria specified in the CEQA Guidelines (Cal. Code Regs., tit. 14, Chapter 3, § 15380), it should be fully considered in the environmental analysis for the Project.

Bird Protection: CDFW has jurisdiction over actions that may result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Fish and Game Code sections that protect birds, their eggs, and nests include section 3503 (regarding unlawful take, possession, or needless destruction of the nest or eggs of any bird), section 3503.5 (regarding the take, possession, or destruction of any birds-of-prey or their nests or eggs), and section 3513 (regarding unlawful take of any migratory nongame bird).

PROJECT DESCRIPTION SUMMARY

CDFW-3

Project Proponent: DWR.

SCH No. 2025110364. San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project:

This project would raise portions of the concrete liner of the California Aqueduct's Pools 17 and 18 between Milepost (MP) 128.4 and MP 135.6 to maintain functionality in Pools 17 and 18 to enable DWR to avoid future disruptions of water deliveries, thereby maintaining operational flexibility and improving safety and reliability. The existing concrete liner would be raised approximately 1 foot 9 inches over a total length of approximately 8.9 miles on both sides of Pools 17 and 18. Construction activities would be performed above the waterline and would not require dewatering of the California Aqueduct. Work would include excavation and use of on-site borrow material, road drain

rerouting, and the removal and reinstallation of guardrails, road delineators and other existing features.

CDFW-3 cont.

SCH No. 2025110365. San Luis Canal (California Aqueduct Pools 20 and 21) Liner Raise Project:

This project would raise portions of the concrete liner of the California Aqueduct's Pools 20 and 21 between MP 158.7 and MP 170.3 to maintain functionality in Pools 20 and 21 to enable DWR to avoid future disruptions of water deliveries, thereby maintaining operational flexibility and improving safety and reliability. The existing concrete liner would be raised over approximately 18 miles, with varying raise heights: up to 1.5 feet over 5 miles, up to 2.5 feet over 3.5 miles, and up to 3 feet over 9.5 miles. Construction activities would be performed above the waterline and would not require dewatering of the California Aqueduct. Work would include excavation and use of on-site borrow material, road drain rerouting, and the removal and reinstallation of guardrails, road delineators, and other existing features to accommodate the liner raise.

Locations: The proposed project alignment for Pools 17 and 18 is located between MP 128.4 and MP 135.6, in unincorporated Fresno County, near Cantua Creek and Three Rocks. The proposed project alignment for Pools 20 and 21 is located between MP 158.7 and MP 170.3, south of the Community of Huron in Fresno and Kings Counties.

Timeframe: Construction for both projects is anticipated to begin in 2027, and each project would occur over nine months.

COMMENTS AND RECOMMENDATIONS

CDFW-4

CDFW offers the comments and recommendations below to assist DWR in adequately identifying and/or mitigating the significant, or potentially significant, direct and indirect impacts on fish and wildlife (i.e., biological) resources from both projects. Based on a review of both project descriptions, a review of California Natural Diversity Database (CNDDB) records, our familiarity with the project areas, and a review of aerial photographs of the projects and surrounding habitat, several special status species could potentially be impacted by project activities of both projects.

CDFW is concerned regarding potential impacts for the following special status wildlife species and habitats known to occupy both project areas: the State threatened and federally endangered San Joaquin kit fox (*Vulpes macrotis mutica*); the State threatened Swainson's hawk (*Buteo swainsoni*) and tricolored blackbird (*Agelaius tricolor*); the State candidate for listing western burrowing owl (*Athene cunicularia hypugaea*) and Crotch's bumble bee (*Bombus crotchii*); and the State species of special concern American badger (*Taxidea taxus*), western mastiff bat (*Eumops Perotis* ssp. *californicus*), Yuma myotis (*Myotis yumanensis*), spotted bat (*Euderma maculatum*), Brazilian free-tailed bat (*Tadarida brasiliensis*), silver-haired bat (*Lasionycteris*

noctivagans), greater bonneted bat (*Eumops perotis californicus*), loggerhead shrike (*Lanius ludovicianus*), San Joaquin coachwhip (*Masticophis flagellum ruddocki*), and western spadefoot (*Spea hammondii*). Cliff swallows (*Petrochelidon pyrrhonota*) are known to nest on bridges and check structures along aqueduct. Other species of birds, amphibians, reptiles, mammals, fish, invertebrates, and plants also compose the local ecosystem within the Project boundary. Vegetation communities and habitat types documented along the Project area include annual grassland, Alkali desert scrub (Russian thistle and quailbush scrub), Valley foothill riparian (Goodding's willow riparian), and fresh emergent wetland (cattail marshes, mulefat thickets). CDFW-4 cont.

CDFW recommends that the following modifications and/or edits be incorporated into both MNDs, including proposed avoidance, minimization, and compensatory measures, prior to their adoption by DWR.

COMMENT 1: San Joaquin kit fox (SJKF) CDFW-5

The MNDs determined that SJKF have no potential to occur in the project areas based on desktop review, field site visits, and lack of data collection at camera/track stations. However, SJKF are known to occur along the California Aqueduct within both project areas (CDFW 2025) and likely utilize the California Aqueduct as a wildlife movement corridor. Specifically, several SJKF observations are documented in the CNDDB along the California Aqueduct in the project areas (CDFW 2025). The project areas provide medium suitability SJKF habitat (Cypher et al. 2013). As a result, SJKF should be assumed to be present in all suitable habitat within the boundaries of both projects and surrounding areas. Without appropriate avoidance and minimization measures for SJKF, potential significant impacts associated with construction and elements of implementation of both projects include habitat loss, loss of connectivity, den collapse, inadvertent entrapment, reduced reproductive success, reduction in health and vigor of young, and direct mortality of individuals.

Recommended Mitigation Measure 1: SJKF Preconstruction Surveys
CDFW recommends assuming presence of SJKF in both project areas and assessing presence of SJKF dens by having qualified biologists conducting surveys of Project areas and a 500-foot buffer of Project areas to detect SJKF and their sign.

Recommended Mitigation Measure 2: SJKF Avoidance Buffer
CDFW recommends implementing no-disturbance buffers, as described in the United States Fish and Wildlife Service (USFWS) (2011) *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* during Project implementation.

Recommended Mitigation Measure 3: SJKF Take Authorization
If the no-disturbance buffers outlined in the USFWS Protocol for SJKF is not feasible, consultation with CDFW is warranted to discuss how to avoid take. If

avoidance is not feasible, acquisition of an Incidental Take Permit (ITP) for SJKF prior to ground-disturbing activities, pursuant to Fish and Game Code section 2081, subdivision (b) would be necessary to comply with CESA. An ITP could be either be issued for the combined projects or for each project separately. CDFW-5 cont.

COMMENT 2: Swainson's Hawk (SWHA) CDFW-6

The MNDs and Biological Assessments determined SWHA have a high potential to occur within both project areas. SWHA nests were observed in 2021 in a mesquite tree located immediately adjacent to the aqueduct at MP 133.60, and a cottonwood tree at MP 138.40. An active SWHA nest was observed in 2024 at the same cottonwood tree at MP 138.40. An active nest was identified in 2021 at MP 169.8 and another active nest identified in 2024 at MP 169.0. Other nesting and foraging SWHA observations are documented within a ½ mile of the Project (CDFW 2025). Suitable foraging habitat for this species exists within the vicinity of both project areas, including annual grassland. Construction of both projects and habitat conversion may result in degradation or loss of nesting habitat, nest abandonment, and reduced reproductive success, including mortality of young and reduced health and vigor of eggs and/or young. In the San Joaquin Valley, suitable nest trees may be a limiting factor for SWHA productivity. The loss of suitable nest trees, particularly in proximity to foraging habitat, has the potential to significantly impact local SWHA (CDFW 2016). CDFW considers removal of known bird-of-prey nest trees, even outside of the nesting season, a potentially significant impact under CEQA.

The MNDs state that a qualified biologist will conduct pre-activity surveys of potential SWHA within ¼-mile of the work areas. Pre-activity nesting surveys will be conducted during the nesting season (February 15 through August 31) if work areas are within ¼-mile of potential nest trees. If an active SWHA nest is identified within ¼-mile of work activities then the biologist will establish a temporary no-work buffer until the nest is vacated, young have fledged, and there is no evidence of a second nesting attempt. Pre-activity nesting surveys will be conducted no more than 7 days prior to the initiation of Project activities.

The MND analysis does not provide a biological basis of how a no-disturbance buffer will be determined as adequate to avoid significant impacts, including but not limited to avoiding take of individuals through nest failure or other means, as a result of implementation of both projects.

Recommended Mitigation Measure 4: SWHA Nest Tree Mitigation
In addition to avoiding occupied nest trees, CDFW recommends that impacts to known nest trees be avoided at all times of year, or that compensatory mitigation occurs for these impacts. Regardless of nesting status, if potential or known SWHA nesting trees are removed, CDFW recommends that they be replaced with an appropriate native tree species, planted at a ratio of 3:1 (replaced to removed), in an

area that will be protected in perpetuity. This mitigation would offset potential impacts of the loss of nesting habitat.

CDFW-6 cont.

Recommended Mitigation Measure 5: Focused SWHA Surveys
To reduce potential Project-related impacts to SWHA, CDFW recommends that a qualified biologist conduct surveys for nesting birds of prey, including SWHA, following the survey methodology developed by the SWHA Technical Advisory Committee (SWHA TAC 2000) during the nesting season of or prior to Project initiation, within each Project area and a ½-mile buffer around each Project area. In addition, if Project activities will take place during the species nesting season (i.e., March 1 through September 15), CDFW recommends that additional preconstruction surveys for active nests be conducted by a qualified biologist no more than 10 days prior to the start of construction.

Recommended Mitigation Measure 6: SWHA Avoidance Buffers
If an active SWHA nest is found during preconstruction surveys, CDFW recommends implementing a minimum ½-mile no-disturbance buffer around the nest until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest site or parental care for survival.

Recommended Mitigation Measure 7: SWHA Take Authorization
If a ½-mile no-disturbance nest buffer is not feasible, consultation with CDFW is warranted. If avoidance is not feasible, acquisition of an ITP for SWHA prior to ground-disturbing activities, pursuant to Fish and Game Code section 2081, subdivision (b) would be necessary to comply with CESA. An ITP could be either be issued for the combined projects or for each project separately.

COMMENT 3: Tricolored Blackbird (TRBL)

CDFW-7

TRBL have been documented within and adjacent to the Project areas, and in the vicinity (CDFW 2025). Without appropriate avoidance and minimization measures for TRBL, potential significant impacts associated with subsequent development include nesting habitat loss, nest and/or colony abandonment, reduced reproductive success, and reduced health and vigor of eggs and/or young.

Recommended Mitigation Measure 8: TRBL Surveys
CDFW recommends that Project activities be timed to avoid the normal bird nesting season of February 1 through September 15. If Project activity must take place during that time, CDFW recommends that a qualified biologist conduct surveys for nesting TRBL no more than 10 days prior to the start of implementation to evaluate presence or absence of TRBL nesting colonies in proximity to Project activities and to evaluate potential Project-related impacts.

Recommended Mitigation Measure 9: TRBL Avoidance Buffer
If an active TRBL nesting colony is found during surveys, CDFW recommends implementation of a minimum 300-foot no-disturbance buffer in accordance with CDFW's (2015) *Staff Guidance Regarding Avoidance of Impacts to Tricolored Blackbird Breeding Colonies on Agricultural Fields in 2015*, until the breeding season has ended or until a qualified biologist has determined that nesting has ceased and the young have fledged and are no longer reliant upon the nest site for survival.

Recommended Mitigation Measure 10: TRBL Take Authorization
If the avoidance buffer around a TRBL nesting colony is infeasible, consultation with CDFW is warranted to discuss whether the Project can avoid take.
If avoidance is not feasible, acquisition of an ITP for TRBL prior to ground-disturbing activities, pursuant to Fish and Game Code section 2081, subdivision (b) would be necessary to comply with CESA. An ITP could be either be issued for the combined projects or for each project separately.

CDFW-7 cont.

COMMENT 4: Western Burrowing Owl (BUOW)

CDFW-8

The MNDs acknowledge that BUOW occur within both project areas and potentially significant direct impacts associated with project activities include habitat loss, burrow collapse, inadvertent entrapment, nest abandonment, reduced reproductive success, reduction in health and vigor of eggs and/or young, and direct mortality of individuals. The MNDs BUOW mitigation measures describe buffers that are recommended by the California Burrowing Owl Consortium's CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFG 2012) for low level of disturbance activities. The sizes of buffers depend on type and intensity of disturbance, presence of visual buffers, and other variables that could affect susceptibility of the owls to disturbance. The MNDs analyses do not provide a basis of how the no-disturbance buffer is determined as adequate to avoid significant impacts, including but not limited to take of individuals, but DWR has initiated BUOW pre-ITP application consultation with CDFW for both Projects. An ITP for BUOW could be either be issued for the combined projects or for each project separately.

Recommended Mitigation Measure 11: BUOW Surveys
Depending on the time between the initial survey efforts conducted in support of the MNDs and project construction, CDFW recommends that additional focused surveys, following the 2012 Staff Report on Burrowing Owl Mitigation (2012 Staff Report) (CDFG 2012), be conducted the survey season immediately prior to construction. Please note that the 2012 Staff Report necessitates multiple surveys prior to the initiation of construction.

Recommended Mitigation Measure 12: BUOW Avoidance
Should a BUOW or known BUOW den (active or inactive) be detected, either during pre-construction surveys or construction activities, CDFW recommends that no-

disturbance buffers, as outlined in the 2012 Staff Report on Burrowing Owl Mitigation (CDFG 2012), be implemented prior to and during any ground-disturbing activities. CDFW also recommends that these buffers be implemented for both wintering and breeding BUOW. CDFW-8 cont.

Recommended Mitigation Measure 13: BUOW Take Authorization
DWR has initiated BUOW pre-ITP application consultation with CDFW for both Projects on how to implement the Project and avoid take. If avoidance is not feasible, acquisition of an ITP for BUOW prior to ground-disturbing activities, pursuant to Fish and Game Code section 2081, subdivision (b) would be necessary to comply with CESA. An ITP could be either be issued for the combined projects or for each project separately.

COMMENT 5: Crotch's Bumble Bee (CBB) CDFW-9

The MNDs acknowledge that both projects are within the known range for CBB, and a review of aerial imagery shows that both project areas support suitable habitat for the species (CDFW 2023a) such as grasslands and upland scrub. CBB primarily nest in late February through late October underground in abandoned small mammal burrows, but may also nest under perennial bunch grasses or thatched annual grasses, underneath brush piles, in old bird nests, and in dead trees or hollow logs (Williams et al. 2014, Hatfield et al. 2015). Overwintering sites for CBB mated queens include soft, disturbed soil (Goulson 2010) or leaf litter or other debris (Williams et al. 2014). Without appropriate avoidance and minimization measures for CBB, potentially significant impacts from ground- and vegetation-disturbing Project activities include direct mortality, loss of foraging plants, changes in foraging behavior, burrow collapse, nest abandonment, reduced nest success, and reduced health and vigor of eggs, young and/or queens. DWR has initiated CBB pre-ITP application consultation with CDFW for both Projects.

Recommended Mitigation Measure 14: CBB Surveys
CDFW recommends that a qualified biologist conduct a habitat assessment for CBB that documents foraging resources and potential nesting sites, including small mammal burrows, perennial bunch grasses, thatched annual grasses, brush piles, old bird nests, dead trees, and hollow logs. In areas of suitable habitat, CDFW recommends that qualified biologist conduct a bumble bee survey using a protocol developed according to the CDFW (2023b) *Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species* to identify bumble bees and potential nesting sites during the vegetation blooming period prior to initiating project activities.

Recommended Mitigation Measure 15: CBB Avoidance
If CBB is detected, CDFW recommends that all small mammal burrows and thatched/bunch grasses be avoided by a minimum of 50 feet to avoid take and

potentially significant impacts. If ground-disturbing activities will occur during the overwintering period (October through February), consultation with CDFW is warranted to discuss how to implement Project activities and avoid take. Any detection of CBB prior to or during Project implementation warrants consultation with CDFW to discuss how to avoid take. CDFW-9 cont.

Recommended Mitigation Measure 16: CBB Take Authorization
DWR has initiated CBB pre-ITP application consultation with CDFW for both Projects on how to implement the Project and avoid take.
If avoidance is not feasible, acquisition of an ITP for CBB prior to ground-disturbing activities, pursuant to Fish and Game Code section 2081, subdivision (b) would be necessary to comply with CESA. An ITP could be either be issued for the combined projects or for each project separately.

COMMENT 6: Special-Status Bat Species CDFW-10

The MNDs acknowledge that Western mastiff bat, Yuma myotis, spotted bat, Brazilian free-tailed bat, silver-haired bat, and greater bonneted bat have been documented in the vicinity of both project areas and may utilize overhead bridges and nearby trees for roosting. Project activities have the potential to affect habitat upon which special-status bat species depend for successful breeding and have the potential to impact individuals and local populations. Without appropriate avoidance and minimization measures, potential significant impacts resulting from ground- and vegetation-disturbing activities associated with project activities include habitat loss, inadvertent entrapment, roost abandonment, reduced reproductive success, reduction in health and vigor of young, and direct mortality.

Recommended Mitigation Measure 17: Bat Roost Habitat Assessment
CDFW recommends that a qualified biologist conduct a habitat assessment in advance of project implementation to determine if the project areas or their immediate vicinities contain suitable roosting habitat for special-status bat species.

Recommended Mitigation Measure 18: Bat Surveys
If suitable habitat is present, CDFW recommends assessing presence or absence of special-status bat roosts by conducting surveys during the appropriate seasonal period of bat activity. CDFW recommends methods such as evening emergence surveys or bat detectors to determine whether bats are present.

Recommended Mitigation Measure 19: Bat Roost Disturbance Minimization and Avoidance
If bats are present, CDFW recommends that a 100-foot no-disturbance buffer be placed around the roost and that a qualified biologist who is experienced with bats monitor the roost for signs of disturbance to bats from Project activity. If a bat roost is identified and work is planned to occur during the breeding season, CDFW

recommends that no disturbance to maternity roosts occurs and that CDFW be consulted to determine measures to prevent breeding disruption or failure. CDFW-10 cont.

COMMENT 7: Western Spadefoot (WESP) CDFW-11

Western spadefoot (WESP) is known to occur in both project areas using ephemerally ponded water associated with seasonal flooding and rainfall to breed, as well as the associated upland habitats outside of the breeding season. WESP inhabit grassland habitats, breed in seasonal wetlands, and seek refuge in upland habitat where they occupy burrows outside of the breeding season (Thomson et al. 2016). Any depressional features in both project areas may support breeding WESP and the adjacent areas likely provide upland refugia for the species. In addition to the habitat features described above, WESP have also been documented within the San Joaquin Valley using upland areas that are under irrigated agriculture (both permanent and annual crops), and utilizing agricultural sumps and ditches as breeding habitat.

Recommended Mitigation Measure 20: WESP Surveys
CDFW recommends that a qualified biologist conduct focused pre-construction surveys for WESP and their requisite habitat features as described above utilizing appropriate survey periods and methods.

Recommended Mitigation Measure 21: WESP Minimization
CDFW recommends a minimum 50-foot no-disturbance buffer be implemented around burrows, cracks, loose soil areas or other refugia found to be used by WESP during focused surveys. CDFW also recommends a minimum 50-foot no-disturbance buffer all potential breeding habitat, even when dry. CDFW recommends that any observed individuals be allowed to leave the project areas of their own volition.

COMMENT 8: Other State Species of Special Concern CDFW-12

American badger, San Joaquin coachwhip, and loggerhead shrike are known to occur in the vicinity of both projects (CDFW 2025), which support habitats these species are known to use, including grassland and upland shrub areas with friable soils (Williams 1986, Thomson et al. 2016).

Without appropriate avoidance and minimization measures for these species, potentially significant impacts associated with ground disturbance include habitat loss, nest/den/burrow abandonment, which may result in reduced health or vigor of eggs and/or young, and direct mortality.

Recommended Mitigation Measure 22: Habitat Assessment
CDFW recommends that a qualified biologist conduct a habitat assessment in advance of project implementation, to determine if both project areas or their immediate vicinity contain suitable habitat for the species mentioned above.

Recommended Mitigation Measure 23: Surveys
If suitable habitat is present, CDFW recommends that a qualified biologist conduct focused surveys for the species and their requisite habitat features to evaluate potential impacts resulting from ground and vegetation disturbance.

Recommended Mitigation Measure 24: Avoidance
Avoidance whenever possible is encouraged via delineation and observance of a 50-foot no-disturbance buffer around dens of mammals like the American badger as well as the entrances of burrows that can provide refuge for small mammals, reptiles, and amphibians. CDFW also advises that any individuals observed be allowed to leave the Project area of their own volition. CDFW-12 cont.

EDITORIAL COMMENTS AND/OR SUGGESTIONS CDFW-13

Western Spadefoot: Be advised the California Fish and Game Commission (Commission) posted a Notice of Receipt of CESA Petition for WESP to list the northern and southern populations of WESP as threatened or endangered. The Notice of Receipt of Petition was posted on October 6, 2025.
https://fgc.ca.gov/CESA?utm_medium=email&utm_source=govdelivery#1088155-western-spadefoot

If the Commission ultimately designates WESP as a Candidate species, which could occur in 2026, shortly after the time of designation it would receive the same legal protection afforded to an endangered or threatened species under CESA. Because the measures recommended above are minimization measures pursuant to CEQA as opposed to avoidance measures, additional or modified measures to avoid take would be necessary in the event WESP is designated by the Commission as a Candidate. If avoidance of take of WESP is not feasible, acquisition of an ITP with WESP as a covered species, pursuant to Fish and Game Code section 2081, subdivision (b) would be necessary to comply with CESA. An ITP could be either be issued for the combined projects or for each project separately.

Nesting Birds: CDFW encourages that Project implementation occur during the bird non-nesting season; however, if project activities must occur during the breeding season (i.e., February through mid-September), the project applicant is responsible for ensuring that implementation of either project does not result in violation of the Migratory Bird Treaty Act or relevant Fish and Game Codes as referenced above. CDFW-14

To evaluate project-related impacts on nesting birds, CDFW recommends that a qualified biologist conduct pre-activity surveys for active nests no more than 10 days prior to the start of ground disturbance to maximize the probability that nests that could potentially be impacted by both projects are detected. CDFW also recommends that surveys cover a sufficient area around all work sites to identify nests and determine their status. A sufficient area means any area potentially affected by both projects. In addition to direct impacts (i.e. nest destruction), noise, vibration, and movement of workers or equipment could also affect nests. Prior to initiation of construction activities, CDFW recommends that a qualified biologist conduct a survey to establish a behavioral baseline of all identified nests. Once construction begins, CDFW recommends that a qualified biologist continuously monitor nests to detect behavioral changes resulting from both project. If behavioral changes occur, CDFW recommends that the work causing that change cease and that CDFW be consulted for additional avoidance and minimization measures. CDFW-14 cont.

If continuous monitoring of identified nests by a qualified wildlife biologist is not feasible, CDFW recommends a minimum no-disturbance buffer of 250 feet around active nests of non-listed bird species and a 500-foot no-disturbance buffer around active nests of non-listed raptors. These buffers are advised to remain in place until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival. Variance from these no-disturbance buffers is possible when there is compelling biological or ecological reason to do so. CDFW recommends that a qualified biologist advise and support any variance from these buffers.

ENVIRONMENTAL DATA CDFW-15

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database that may be used to make subsequent or supplemental environmental determinations (Pub. Resources Code, § 21003, subd. (e)). Accordingly, please report any special-status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDB). The CNDDB field survey form can be obtained at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data. The completed form can be mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov. The types of information reported to CNDDB can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

FILING FEES CDFW-16

The projects, as proposed, would have an impact on fish and/or wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project

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approval to be operative, vested, and final (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089). CDFW-16 cont.

CONCLUSION CDFW-17

CDFW appreciates the opportunity to comment on the MNDs to assist DWR in identifying and mitigating Project impacts on biological resources. A Mitigation Monitoring and Reporting Program (Attachment 1) is included below to assist DWR with incorporating the recommended mitigation measures provided above. If you have questions regarding this letter, please contact Annette Tenneboe, Senior Environmental Scientist (Specialist), at (559) 580-3202 or by email at Annette.Tenneboe@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Julie Vance
FA83F09FE08945A...
Julie A. Vance
Regional Manager

ATTACHMENT 1: Mitigation Monitoring and Reporting Program

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REFERENCES

California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation. California Department of Fish and Game. March 7, 2012.

California Department of Fish and Wildlife (CDFW). 2015. Staff Guidance Regarding Avoidance of Impacts to Tricolored Blackbird Breeding Colonies on Agricultural Fields in 2015. March 19, 2015.

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CDFW. 2023b. Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species. California Department of Fish and Wildlife. June 6, 2023. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=213150&inline

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Attachment 1

Attachment 1
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
RECOMMENDED MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)

PROJECTS
San Luis Canal (California Aqueduct Pools 17 & 18, and 20 & 21) Liner Raise Projects
Mitigated Negative Declarations (MNDs)
SCH Nos.: 2025110364 & 2025110365

RECOMMENDED MITIGATION MEASURE	STATUS/DATE/INITIALS
Before Disturbing Soil or Vegetation	
San Joaquin Kit Fox (SJKF)	
Recommended Mitigation Measure 1: SJKF preconstruction surveys	
Recommended Mitigation Measure 3: SJKF Take Authorization	
Swainson's Hawk (SWHA)	
Recommended Mitigation Measure 5: Focused SWHA Surveys	
Recommended Mitigation Measure 7: SWHA Take Authorization	
Tricolored Blackbird (TRBL)	
Recommended Mitigation Measure 8: TRBL Surveys	
Recommended Mitigation Measure 10: TRBL Take Authorization	
Western Burrowing Owl (BUOW)	
Recommended Mitigation Measure 11: BUOW Surveys	
Recommended Mitigation Measure 13: BUOW Take Authorization	
Crotch's Bumble Bee (CBB)	
Recommended Mitigation Measure 14: CBB Surveys	
Recommended Mitigation Measure 16: CBB Take Authorization	
Special-Status Bat Species	
Recommended Mitigation Measure 17: Bat Roost Habitat Assessment	

Recommended Mitigation Measure 18: Bat Surveys	
Western Spadefoot (WESP)	
Recommended Mitigation Measure 20: WESP Surveys	
State Species of Special Concern (SSSC)	
Recommended Mitigation Measure 22: SSSC Habitat Assessment	
Recommended Mitigation Measure 23: SSSC Surveys	
During Construction	
San Joaquin Kit Fox (SJKF)	
Recommended Mitigation Measure 2: SJKF Avoidance Buffer	
Swainson's Hawk (SWHA)	
Recommended Mitigation Measure 4: SWHA Nest Tree Mitigation	
Recommended Mitigation Measure 6: SWHA Avoidance Buffer	
Tricolored Blackbird (TRBL)	
Recommended Mitigation Measure 9: TRBL Avoidance Buffer	
Western Burrowing Owl (BUOW)	
Recommended Mitigation Measure 12: BUOW Avoidance Buffer	
Crotch's Bumble Bee (CBB)	
Recommended Mitigation Measure 15: CBB Avoidance	
Special-Status Bat Species	
Recommended Mitigation Measure 19: Bat Roost Disturbance Minimization and Avoidance	
Western Spadefoot (WESP)	
Recommended Mitigation Measure 20: WESP Avoidance	

State Species of Special Concern (SSSC)	
Recommended Mitigation Measure 24: SSSC Avoidance	

APPENDIX B

San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project Final IS/MND

San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project

Initial Study/Mitigated Negative Declaration

March 2026

SAN LUIS CANAL (CALIFORNIA AQUEDUCT POOLS 17 AND 18) LINER RAISE PROJECT

Initial Study/Mitigated Negative Declaration

March 2026

Prepared for:
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1 INTRODUCTION

As lead agency under the California Environmental Quality Act (CEQA), the California Department of Water Resources (DWR) has prepared this Initial Study (IS) and Notice of Intent to Adopt a Mitigated Negative Declaration (MND) to address the environmental consequences of the proposed San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project (proposed project). The proposed project is located at Pools 17 and 18 of the California Aqueduct (Aqueduct) in Fresno County. The proposed project involves modification to the Aqueduct's concrete liner which would be raised over a total length of approximately 8.9 miles on both sides of Pools 17 and 18. The liner raise would require rerouting up to seven road drainage pipes, removing and replacing eight road drains at a higher elevation, and removing one drain inlet pipe that is no longer in service. The proposed project is described in more detail in Chapter 2, "Project Description."

1.1 Document Organization

Chapter 1: Introduction. This chapter provides an introduction to the proposed project, organization of this document, purpose of the IS/MND, and summary of findings.

Chapter 2: Project Description. This chapter describes the proposed project, including project location, project objectives, activities to be conducted under the proposed project, and potential permits and approvals that may be required prior to implementation of the proposed project.

Chapter 3: Initial Study Environmental Checklist. This chapter presents an analysis of potential environmental impacts that may result from implementation of the proposed project for the resource topics included in the CEQA Environmental Checklist (CEQA Guidelines Appendix G). For each resource topic question, the following are provided: (1) environmental setting, (2) discussion of the potential effects of implementing the proposed project, (3) finding of significance, and (4) any mitigation measures to be recommended for incorporation into the proposed project to reduce any identified significant impacts to a less-than-significant level. The references used in preparation of this IS/MND are provided for each resource area.

Following completion of the required 30-day public comment period and before approving the proposed project, DWR will consider the IS/MND together with any comments provided during the public comment period and will adopt the IS/MND if, based on the whole of the record, (1) there is no substantial evidence that the proposed project will have a significant effect on the environment, and (2) it represents DWR's independent judgement and analysis. DWR will also prepare and adopt a Mitigation Reporting and Monitoring Program as part of the approval process as required under Public Resources Code Section 21081.6(c) for mitigation measures identified in the IS/MND.

1.2 Purpose of the IS/MND

This IS/MND was prepared in accordance with Public Resources Code Section 21000 et seq. and California Code of Regulations Title 14, Section 15000 et seq. (CEQA Guidelines). The purposes of this IS/MND are to (1) determine whether project implementation would result in potentially significant or significant effects to the environment, and (2) incorporate mitigation measures into the proposed project design, as necessary, to eliminate potentially significant or significant project effects or reduce them to a less-than-significant level.

1.3 Summary of Findings

Based on the analysis included in Chapter 3, implementation of the proposed project would result in:

- No impact on the following resource topics:
  - Agriculture and Forestry Resources
  - Land Use and Planning
  - Mineral Resources
  - Population and Housing
- Less-than-significant impacts on the following resource topics:
  - Aesthetics
  - Air Quality
  - Energy
  - Greenhouse Gas Emissions
  - Hazards and Hazardous Materials
  - Hydrology and Water Quality
  - Noise
  - Public Services
  - Recreation
  - Transportation
  - Utilities and Service Systems
- Less-than-significant impacts following incorporation of mitigation measures into the proposed project on the following resource topics:
  - Biological Resources
  - Cultural Resources
  - Geology and Soils
  - Tribal Cultural Resources
  - Wildfire
  - Mandatory Findings of Significance

2 PROJECT DESCRIPTION

2.1 Background and Need for Project

2.1.1 Background

Owned, operated, and managed by the California Department of Water Resources (DWR), the State Water Project (SWP) is a complex system of reservoirs, dams, power plants, pumping plants, pipelines, and aqueducts that conveys water from natural stream channels to the Sacramento-San Joaquin Delta and pumps water into the 444-mile-long Aqueduct, supplying water agencies and districts in portions of the San Francisco Bay Area, the San Joaquin Valley, the Central Coast, and Southern California. Water supplies conveyed through the Dos Amigos Pumping Plant and on through the San Luis Canal (SLC) and Aqueduct serve over 1.5 million acres of farmland and approximately 24 million people (California Department of Water Resources 2025). DWR contracts with 29 Public Water Agencies throughout California for the delivery of SWP water. The Public Water Agencies receive water service from the SWP in exchange for paying all costs that are associated with the storage and transportation of the water and with planning, constructing, operating, and maintaining the SWP facilities.

Pools 17 and 18 are segments of the Aqueduct located within the SWP's San Luis Field Division (SLFD) and part of the joint-use conveyance portion of the Aqueduct known as the SLC. The SLC is a federal–State joint-use facility. It was designed and is owned by the U.S. Bureau of Reclamation (Reclamation) but is operated and maintained by the SWP's SLFD. In addition to conveying SWP supplies, the joint-use SLC also delivers Central Valley Project (CVP) water to federal service areas along its route. Reclamation relies on the available hydraulic conveyance capacity of the Aqueduct to convey water supplies for delivery to CVP Cross Valley Canal contractors and to wildlife refuges. The section of the SLC that this project encompasses is approximately 21.2 miles of the concrete-lined canal from the downstream side of Check 16 to the upstream side of Check 18.

There are no turnouts in the SLC for SWP water delivery, but turnouts are provided for the federal service area to deliver CVP irrigation water for approximately one million acres of prime farmland in the San Joaquin Valley. The Aqueduct design capacity in the SLC ranges from 13,100 cubic feet per second (cfs) [6,000 cfs federal and 7,100 cfs State] leaving O'Neill Forebay to 8,350 cfs [1,300 cfs federal and 7,050 cfs State] at Kettleman City.

2.1.2 Need for the Project

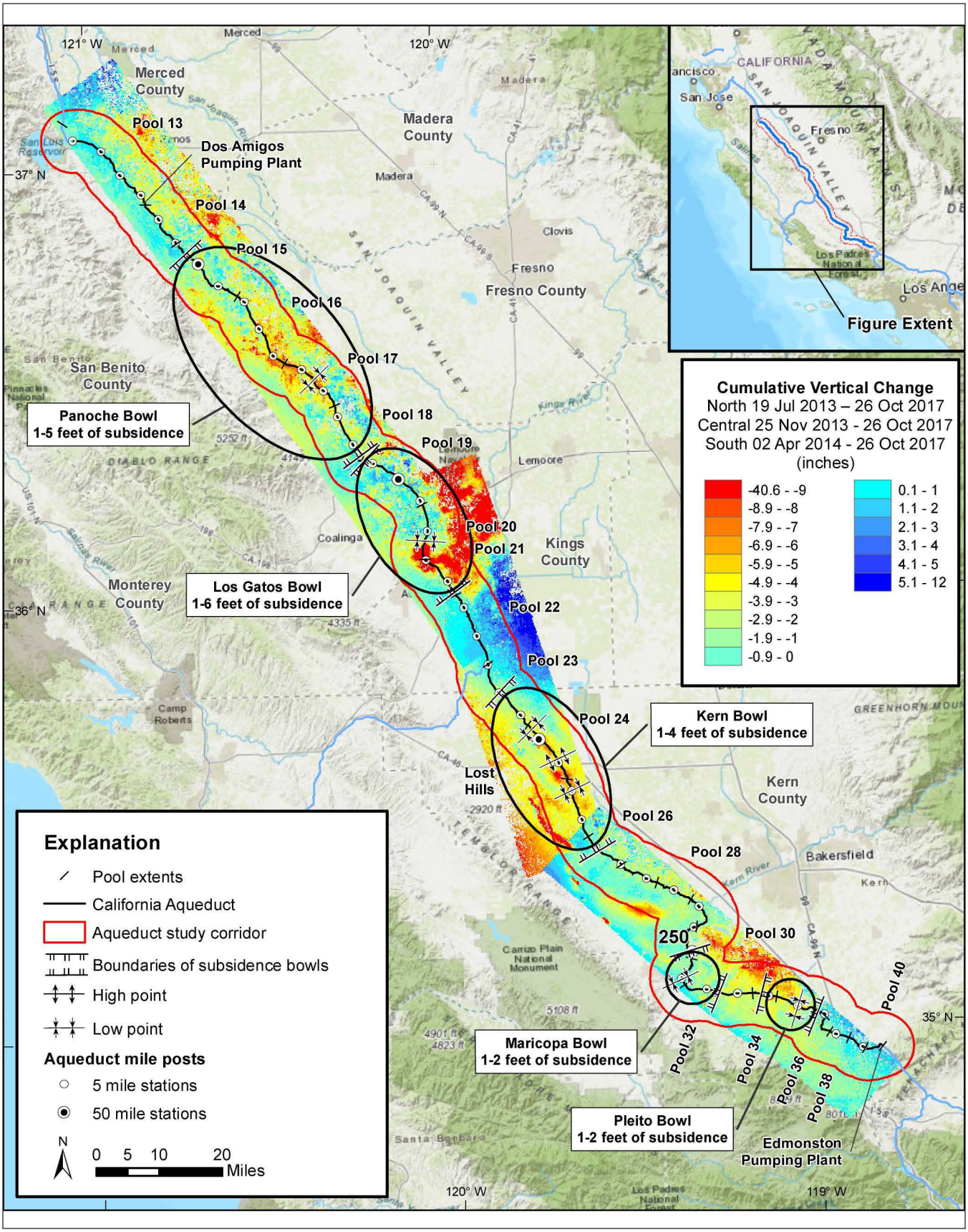
The concrete-lined Aqueduct was constructed as a series of interconnected pools that are operated in coordination to convey water primarily by gravity from one pool to the next through check structures and pumping plants. The Aqueduct traverses the San Joaquin Valley, which has experienced *subsidence*, defined as a local or regional drop in ground surface elevation.

Land subsidence in the San Joaquin Valley was first noted near the Delano area in 1935. Since that time, the San Joaquin Valley has undergone several periods of regional aquifer compaction as a result of groundwater extraction, which has been largely for agricultural uses. In the late 1960s and early 1970s, surface water was imported via canals, and the Aqueduct began importing water to the subsiding areas, reducing groundwater pumping and reducing new land subsidence in the western and southern portions of the San Joaquin Valley Groundwater Basin, a subregion of the Central Valley Aquifer System that underlies the proposed project site (Ireland 1986). By 1981, however, subsidence in the San Joaquin Valley reached nearly 30 feet, the greatest subsidence recorded in the United States (Bertoldi et al. 1991). Reduced surface-water availability during 1976 and 1977, 1986 through 1992, 2007 through 2009, and 2012 through 2015 caused groundwater pumping increases in the San Joaquin Valley, declines in groundwater levels to near or beyond historic lows, and renewed aquifer compaction.

The resulting land subsidence has reduced the freeboard and flow capacity of the Aqueduct and other canals that transport floodwater and deliver irrigation water (U.S. Geological Survey 2018). Freeboard refers to the vertical distance between the design water surface and the top of the concrete canal lining. In the SLC, the Aqueduct was designed with a minimum of 3 feet of freeboard on top of 3 feet of lined and 3 feet of unlined embankment above the water surface elevation. The decrease in lined freeboard has decreased or eliminated the potential to store additional water in some pools. The Aqueduct freeboard is used as a reservoir, storing water during low-cost high-pumping periods (nighttime) and drafting water for downstream delivery during high-cost low-pumping periods (daytime). The reduced storage forces more pumping during more expensive periods to meet direct downstream demand (California Department of Water Resources 2017).

Since 1970, due to continued land subsidence, DWR has implemented numerous liner raises and other rehabilitation projects to maintain adequate freeboard in the Aqueduct (California Department of Water Resources 2017). However, due to ongoing subsidence, the liner needed to be raised in the 1980s and again in the 1990s to maintain adequate freeboard and delivery capacity. In June 2017, DWR prepared the California Aqueduct Subsidence Study, which summarized the magnitude, location, and effects of pre-Aqueduct subsidence, historic-Aqueduct subsidence, and current subsidence on the Aqueduct. The study identified five significant “bowls” of subsidence along the alignment of the Aqueduct (**Figure 2-1**). The largest bowl, Panoche, is located in Pool 15 through Pool 18 in the SLC, where the proposed project is located. A second subsidence bowl, Los Gatos, is located in Pool 19 through Pool 21. Kern, a third bowl, is located in Pool 23 through Pool 25. The 2017 study reported that recent drought has exacerbated the current subsidence of the Aqueduct, reducing available freeboard to 1 foot or less, thereby further reducing the Aqueduct’s storage and conveyance capacity. While subsidence has reduced the amount of freeboard and flow capacity at specific locations, contracted deliveries have not yet been curtailed. To maintain delivery capacity, pumping has increased during high-cost daytime periods. The reduced freeboard has also become a safety and maintenance issue as the water surface reaches the limits of the concrete liner and encroaches on the earthen embankments.

To maintain the Aqueduct’s storage and conveyance capacity and maintain deliveries, those portions of the Aqueduct that have experienced subsidence require retrofit to extend the concrete liner.



SOURCE: DWR, 2019

CASP Enviro Support

Figure 2-1
California Aqueduct Subsidence "Bowls" in the San Joaquin Valley

ESA

2.2 Project Objectives

The objective of the proposed project is to maintain functionality in Pools 17 and 18 to enable DWR to avoid future disruptions of water deliveries to the Public Water Agencies, thereby maintaining operational flexibility and improving safety and reliability.

2.3 Project Location

The proposed project would raise portions of the concrete liner of Pools 17 and 18 in Fresno County, California. The area of the liner raise in Pools 17 and 18 is located along the Aqueduct between Aqueduct Milepost (MP) 128.4 to MP 135.6. The northernmost pool, Pool 17 at MP 128.4, is approximately 1.4 miles west of the town of Cantua Creek. The southernmost pool, Pool 18 at MP 135.6, is approximately 6.5 miles southeast of Cantua Creek. The proposed project site includes the two Aqueduct liner raise sites, borrow and staging areas, and road drain replacement sites (Figure 2-1 through **Figure 2-6**).

2.4 Description of the Proposed Project

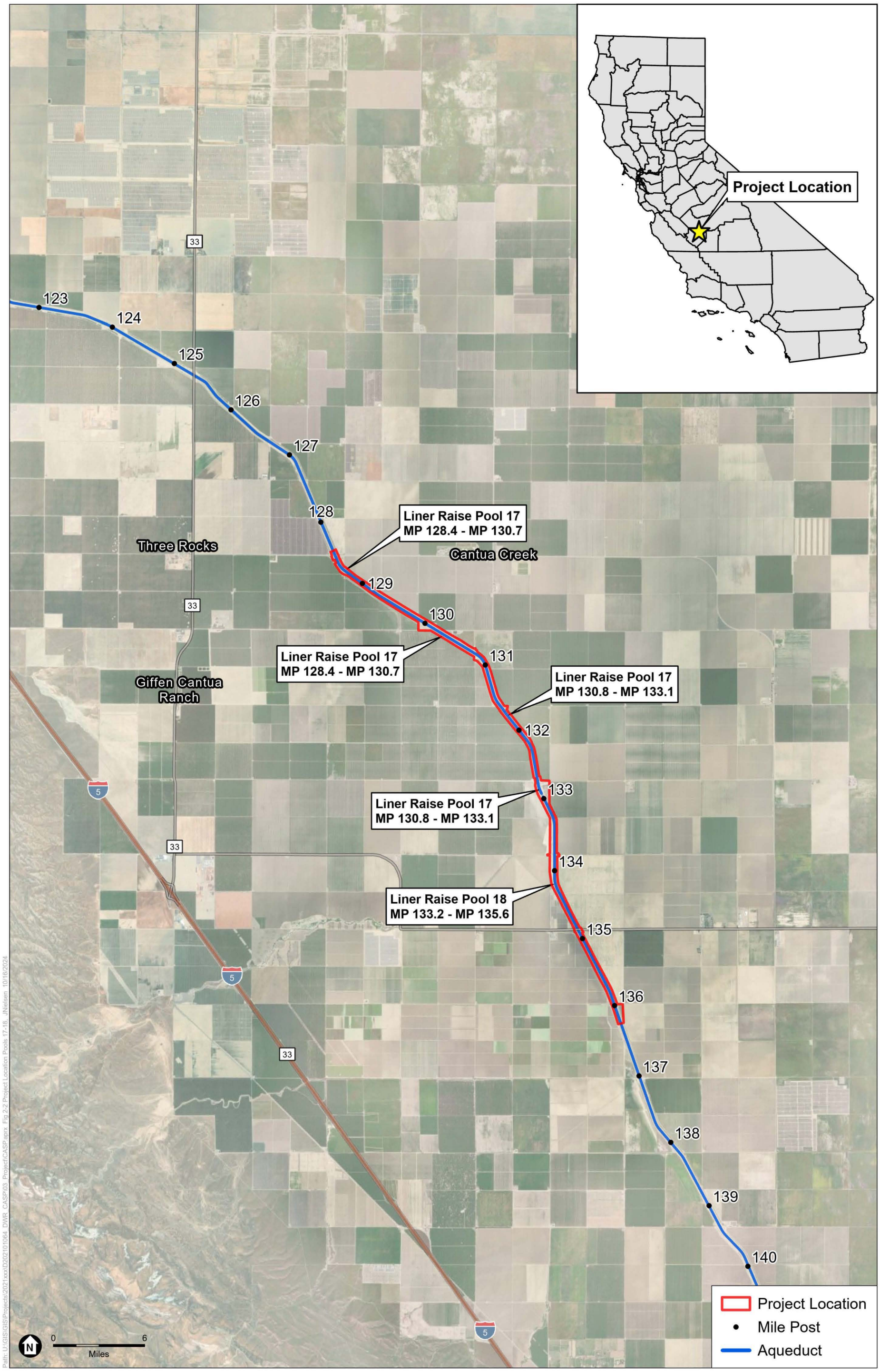
2.4.1 Concrete Liner Raise

The Aqueduct's concrete liner would be raised approximately 1 foot and 9 inches over a total length of approximately 8.9 miles on both sides of Pools 17 and 18. Refer to **Figure 2-3** illustrating a typical cross-section of an Aqueduct liner raise footprint and **Figure 2-4** through Figure 2-6 for the specific locations of the liner raise.

To accommodate the placement of the additional concrete, existing guardrails, road delineators, hand railings, and other features would be removed and salvaged for reuse on-site, if possible. All liner raise construction activities would be completed above the aqueduct water level at the waterside embankment; no in-water work would occur and the Aqueduct would not be dewatered for construction work.

Anticipated ground-disturbing activities would include:

- Vegetation clearing and grubbing of the staging and access areas to a depth of approximately 0.25 feet.
- Excavation of borrow areas up to a depth of approximately 20 feet for use as fill in the canal embankment. This would include vegetation clearing and grubbing of borrow areas prior to excavation.
- Excavation up to a depth of approximately 2.5 feet, placement of fill, and re-compaction at locations where the new liner raise would be installed. This work would take place between the top of the existing liner and the edge of the access road (waterside), within a width of approximately 4 to 6 feet.
- Excavation up to a depth of approximately 12 feet and re-compaction of flood berms (west side) and waste berms (east side) to reroute existing road drainage pipes.



SOURCE: ESRI; DWR, 2024.

CASP Enviro Support

Figure 2-2
Project Location - Pools 17/18

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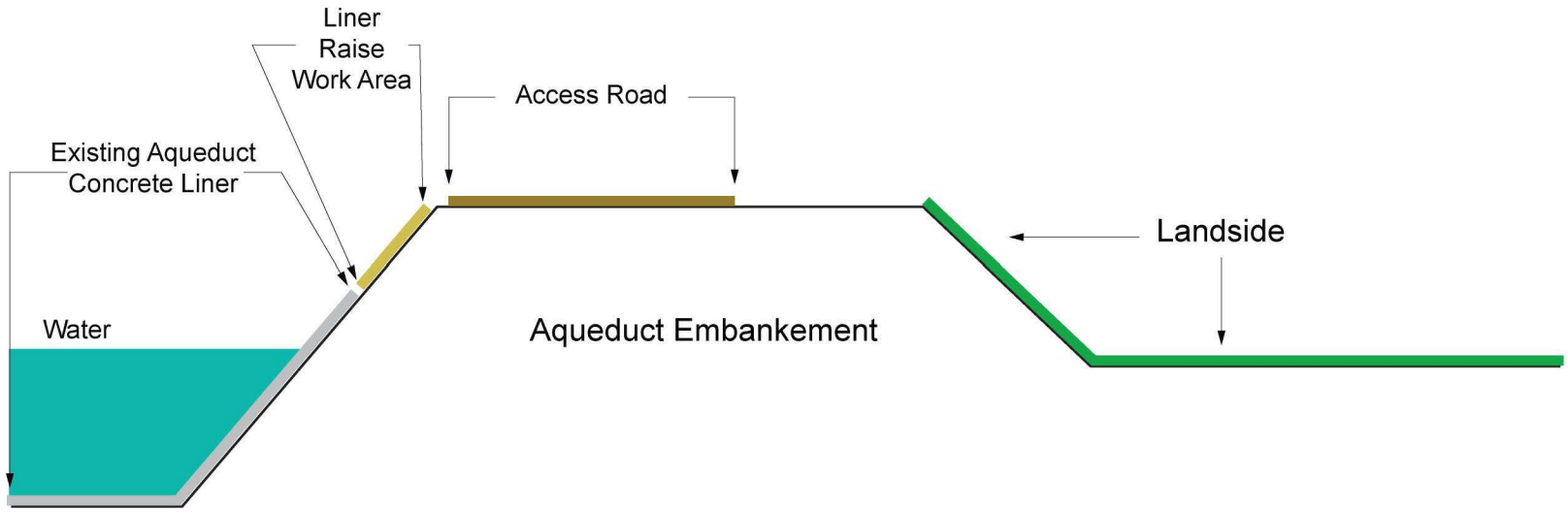

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SOURCE: ESA, 2024

CASP Enviro Support

Figure 2-3
Liner Raise Typical Cross Section

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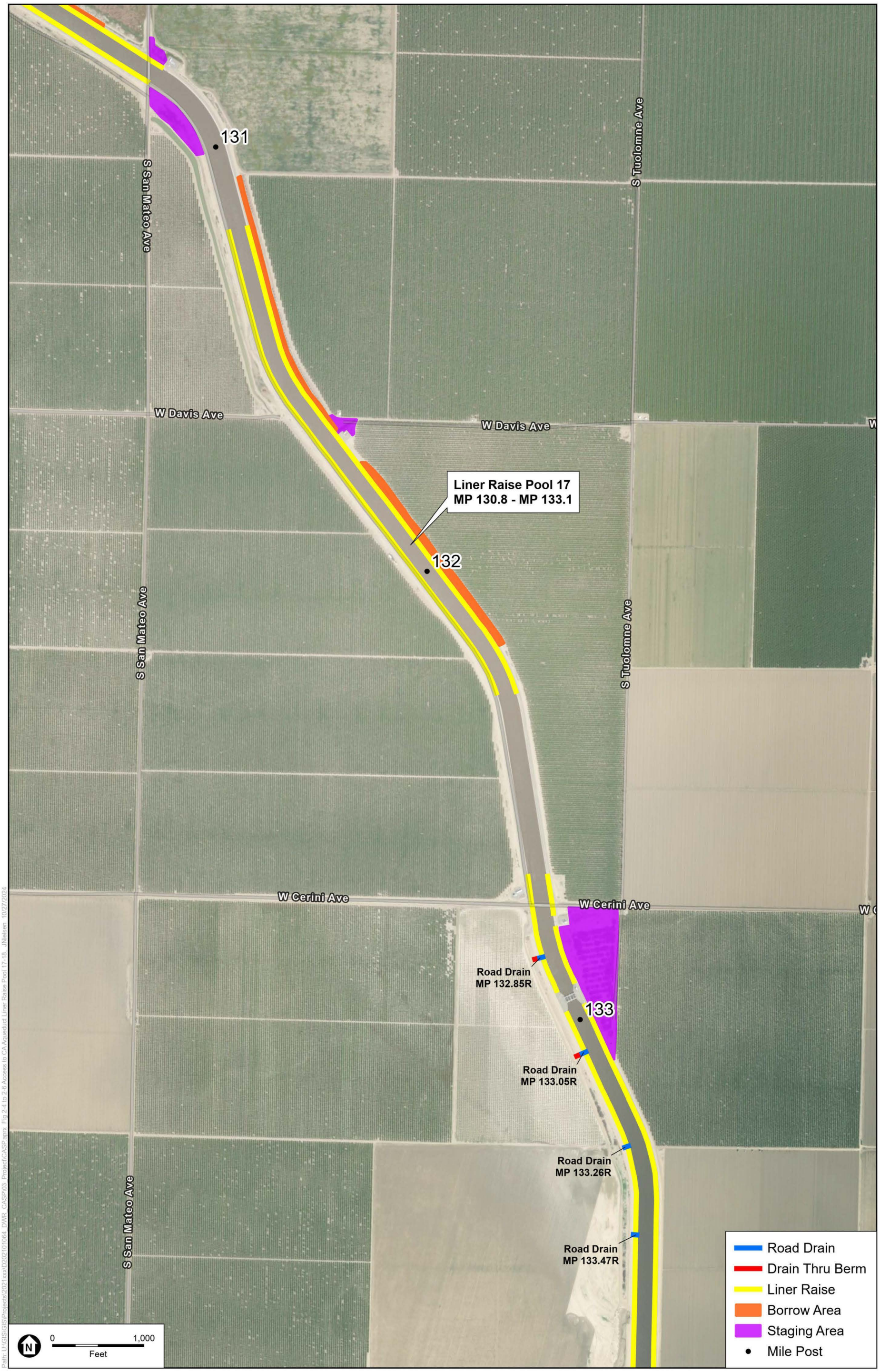
SOURCE: ESRI; DWR, 2024

CASP Enviro Support

Figure 2-4
Access to CA Aqueduct MP 128.4 – 130.7 Liner Raise Pool 17

ESA

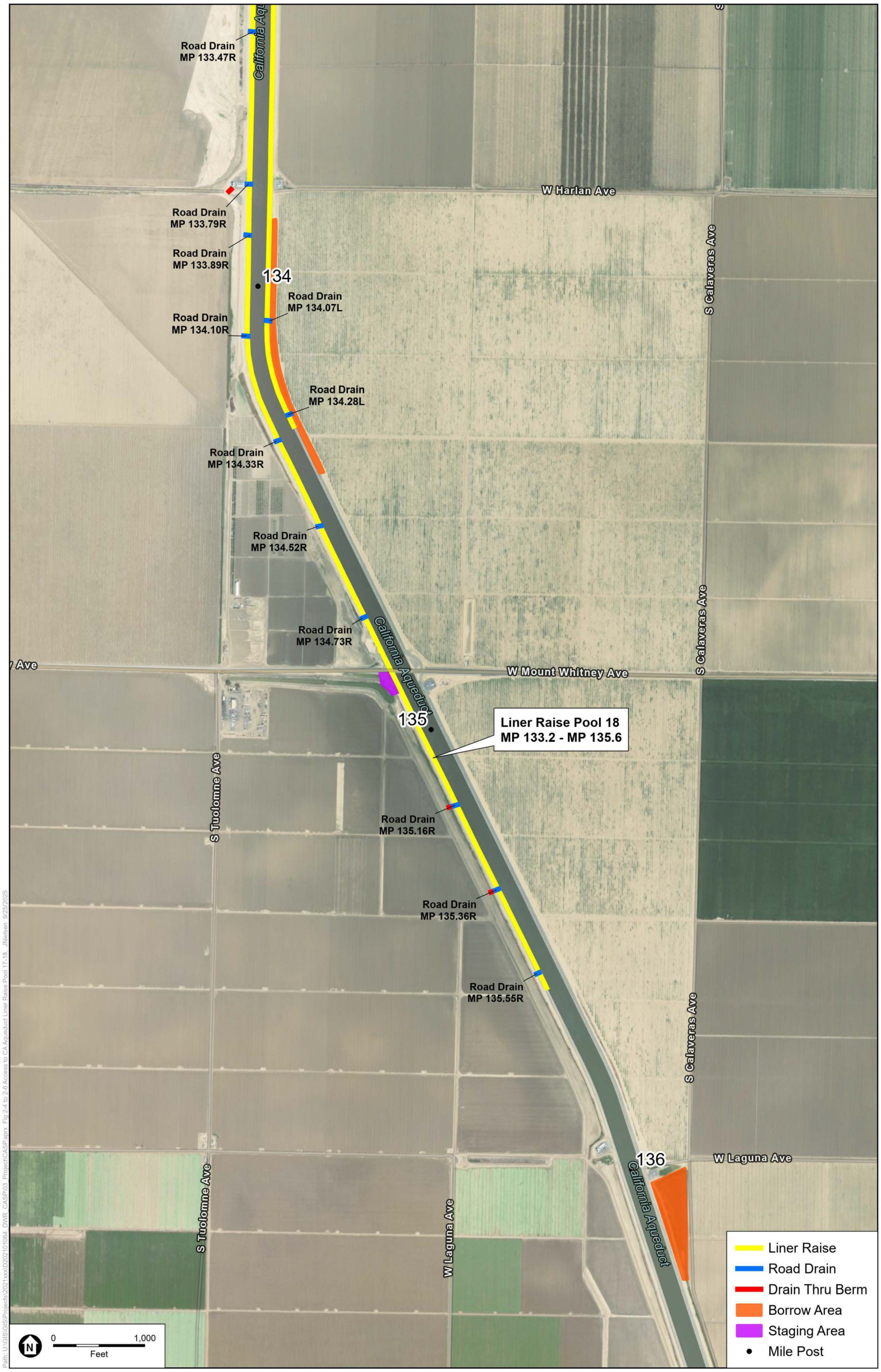


SOURCE: ESRI; DWR, 2024

CASP Enviro Support

Figure 2-5
Access to CA Aqueduct MP 130.8 – 133.1 Liner Raise Pool 17

ESA



SOURCE: ESRI; DWR, 2024

CASP Enviro Support

Figure 2-6
Access to CA Aqueduct MP 133.2 – 135.6 Liner Raise Pool 18

ESA

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Borrow sources are identified at six locations along the east side of the Aqueduct in Figure 2-4 through Figure 2-6. All of the material needed for the liner raises would come from these on-site borrow locations. The proposed borrow areas consist of soils excavated during construction of the Aqueduct and serve as spoil stockpiles. These stockpiles are approximately 20 feet higher than the original surface elevation.

Seven existing road drains that drain stormwater that collects between the flood/waste berms and the access road back into the Aqueduct would be rerouted to carry stormwater to the opposite side of the berms (away from the Aqueduct); this includes road drains at MP 132.85, 133.05, 133.79, 134.07, 134.28, 135.16, and 135.36 as shown in Figure 2-5 and Figure 2-6. Eight existing road drains would be removed and replaced at a higher elevation, including at MP 133.26, 133.47, 133.89, 134.10, 134.33, 134.52, 134.73, and 135.55 as shown in Figure 2-5 and Figure 2-6. One 36-inch drain inlet pipe that is approximately 125 feet long at a depth of about 6.5 feet below the access road at MP 134.87 would be removed; this drain is no longer in service, and it would not be replaced as drainage is now conveyed by the Salt Creek Weir, just downstream of the location.

The waterside embankment would be prepared by excavating approximately 2.5 feet behind the existing liner. The void would then be backfilled with the excavated material combined with borrow material to achieve a uniform and compact embankment slope at a maximum ratio of 2H:1V.

Polyvinyl chloride waterstop material would be installed at expansion and contraction joints, and strip waterstop material would be installed at longitudinal contraction joints prior to concrete placement. Contraction joints, which are small grooves cut into the concrete while it is drying to force the concrete to crack in those locations when it shrinks, would be hand tooled in new liner panels. Concrete curing compound would be applied on the fresh concrete surface using a spray nozzle, per manufacturer recommendations, and allowed to cure for approximately two days. After curing, joints would be cleaned by sandblasting to remove all mortar, scale, soil, foreign materials, and curing compound. Sealant primer and polyurethane-type joint sealant would be hand placed in all joints. Joint sealant would be approximately 0.25 to 0.5 inches thick, applied to ensure full contact with the joint walls and to remove air entrapment.

2.4.2 Schedule

Construction of the proposed project is anticipated to begin in 2027 and conclude within nine months. Construction activities would generally be limited to the hours of 6:00 a.m. to 6:00 p.m., Monday through Friday, to the greatest extent possible. Work on the liner raises in Pools 17 and 18 would run concurrently. Construction activities would last approximately 8 weeks per linear mile. The work would be completed in a single phase and would consist of the following activities:

- Mobilization/Stormwater Pollution Prevention Plan (SWPPP) installation.
- Staging and borrow area preparations/fence preparation.
- Earthwork (embankment preparation).
- Concrete liner.
- Drainage work.

- Miscellaneous installations (e.g., replacing existing fencing in kind along the left side of the Clarkson Avenue bridge ramps, left side of MP 128.6, and both sides downstream of Check 17; safety ladders; delineators; AB windrows).
- Closeout/punch list.

2.4.3 Construction Considerations

During all work, the Aqueduct flow and water levels would be operated normally or temporarily reduced to accommodate construction. All work would be completed above water and operational flexibility within the system would allow water deliveries to be made without disruption.

Specific to the concrete liner raise, which is the activity that would require the most construction workers and vehicle trips per day, up to 30 construction workers are anticipated to be required for the concrete liner raise and approximately four truck trips per day for 29 weeks would be needed to deliver concrete to the site. Anticipated labor force and truck trips for all project activities are listed below in **Table 2-1** and **Table 2-2**, respectively.

The north (upstream) access road to enter/exit the proposed project site would be Clarkson Avenue at approximately MP 128.5. The south (downstream) access road to enter/exit the proposed project site would be Mt. Whitney Avenue at approximately MP 134.9. Access to the construction areas would occur on existing roadways and service roads, including access roads on top of both sides of the Aqueduct embankments as indicated in Figure 2-4 through Figure 2-6, and would stay within DWR's right-of-way. No new roads would be required to access the construction areas; however, toe and embankment access roads that have not been maintained or have been encroached on may need work to make them usable.

Table 2-1 Anticipated Labor Force Required for Construction

Activity	Duration (weeks)	Labor Force (worker/day)	Vehicle Trips per Day	Origin Location
Mobilization/Stormwater Pollution Prevention Plan	3	10	5	Fresno
Borrow/Fence Preparation	3	10	5	Fresno
Earthwork (embankment)	22	15	8	Fresno
Concrete Liner	29	30	15	Fresno
Drainage Work	6	10	5	Fresno
Miscellaneous Installations	5	5	3	Fresno
Closeout/Punch List	2	10	5	Fresno

Source: Data compiled by the California Department of Water Resources in 2024

Table 2-2 Anticipated Truck Trips Required for Construction

Activity	Duration (weeks)	Truck Trips per Day*	Approximate Miles per Day per Trip	Origin Location
Mobilization/Stormwater Pollution Prevention Plan	3	2	100	Fresno
Borrow/Fence Preparation	3	0	--	--
Earthwork (embankment)	22	0	--	--
Concrete Liner	29	4	70	Coalinga
Drainage Work	6	1	100	Fresno
Miscellaneous Installations	5	3	70	Coalinga
Closeout/Punch List	2	1	100	Fresno

Source: Data compiled by the California Department of Water Resources in 2024

Note: *Trucks per day includes off-site material deliveries (on-site hauling is captured in Equipment section below).

The liner raise would occur on the waterside of the Aqueduct embankments. Staging of equipment and temporary stockpiling of materials would occur adjacent to the Aqueduct along the access road and road aprons (Figure 2-4 through Figure 2-6). Upon completion of the proposed project, all construction areas, including access roads, would be regraded to match pre-project conditions. Any remaining stockpiles or materials would be removed from the site and would be disposed of in an approved location according to contractor specifications.

Approximately 3,530 cubic yards of concrete would be used for the liner raise, sourced from a local supplier. Anticipated construction materials and equipment are listed in **Table 2-3** and **Table 2-4**, respectively.

Table 2-3 Anticipated Materials Required for Construction

Construction Materials	Approximate Volume
Aggregate Base	1,340 tons
Concrete	3,530 cubic yards
Soil (On-site Borrow)	3,305 cubic yards

Source: Data compiled by the California Department of Water Resources in 2024

Table 2-4 Anticipated Equipment Required for Construction

Construction Equipment	Maximum Number per Activity	Duration (hours) per Day
CAT Excavator 311C	2	6
Pickup Truck, F250	4	3
CAT Gradall Forklift	2	4
CAT 259 D Skid Steer Loader	2	4
Dump Truck, Transfer	3	8
Dump Truck, Haul	2	8
Concrete Mixer Truck	2	8
Mini Roller Compacter	2	6
Mobile Generator	2	6

Source: Data compiled by the California Department of Water Resources in 2024

2.4.4 Operation and Maintenance

Short-term maintenance activities (e.g., mowing, vegetation management) in the area of construction would be temporarily postponed during construction. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules.

2.5 Project Approvals

Table 2-5 presents a preliminary list of the agencies in addition to DWR that would use this IS/MND in their consideration during permit submittals and other approvals that may apply to the proposed project. This IS/MND is intended to provide these agencies with information to support their decision-making processes.

Table 2-5 Anticipated Regulatory Permits and Approvals

Agency	Permits and Authorizations Potentially Required
Bureau of Reclamation	National Environmental Policy Act (NEPA) Compliance
California Office of Historic Preservation	National Historic Preservation Act Section 106 Consultation
California Department of Fish and Wildlife	Incidental Take Permit
Regional Water Quality Control Board	Construction General Permit, National Pollutant Discharge Elimination System (NPDES) Permit SWPPP

2.6 References

Bertoldi, GL, RH Johnston, and KD Evenson

1991 *Ground Water in the Central Valley, California: A Summary Report*. U.S. Geological Survey Professional Paper 1401-A. Viewed online at: https://doi.org/10.3133/pp1401A. Accessed: September 20, 2024.

California Department of Water Resources

2017 *California Aqueduct Subsidence Study*. Viewed online at: https://cawaterlibrary.net/document/california-aqueduct-subsidence-study/. Accessed: September 20, 2024.

2025 *California Aqueduct Subsidence Program: Draft San Luis Canal Extraordinary Maintenance Planning Report*. May 2025.

Ireland, RL.

1986 *Land Subsidence in the San Joaquin Valley, California, as of 1983*. U.S. Geological Survey Water Resources Investigations Report 85-4196. Viewed online at: https://doi.org/10.3133/wri854196. Accessed: September 20, 2024.

U.S. Geological Survey

2018 Land Subsidence in the San Joaquin Valley. Viewed online at: https://www.usgs.gov/centers/land-subsidence-in-california/science/land-subsidence-san-joaquin-valley. Accessed: September 20, 2024.

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3 INITIAL STUDY AND ENVIRONMENTAL CHECKLIST

1. **Project Title:** San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project
2. **Lead Agency Name and Address:** California Department of Water Resources 715 P Street, Sacramento, CA, 95814
3. **Contact Person and Phone Number:** Marea Bell, (916) 882-2945
4. **Project Location:** Pools 17 and 18 of the California Aqueduct, Fresno County
5. **Project Sponsor's Name and Address:** Same as Lead Agency
6. **General Plan Designation(s):** Agriculture
7. **Zoning:** Exclusive Agriculture (AE-20)
8. **Description of Project** (describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation; attach additional sheets if necessary)**:**

The proposed project would raise portions of the Aqueduct's concrete liner on both sides of Pools 17 and 18 over a total length of approximately 8.9 miles. No new roads would be required to access the construction areas. Liner raise construction would occur on the waterside of the Aqueduct embankments and all work would be completed above water. Borrow sources are identified at six locations along the east side of the Aqueduct. All of the material needed for the liner raises would come from these on-site borrow locations. Staging of equipment and temporary stockpiling of materials would occur adjacent to the Aqueduct along the access road and road aprons.

9. **Surrounding Land Uses and Setting** (briefly describe the project's surroundings)**:**

The surrounding vicinity is largely rural and undeveloped except for agricultural uses.

10. **Other public agencies whose approval is required** (e.g., permits, financing approval, or participation agreement)**:**

- U.S. Bureau of Reclamation - NEPA Compliance
- California Office of Historic Preservation - National Historic Preservation Act Section 106 Consultation
- California Department of Fish and Wildlife - Incidental Take Permit
- Regional Water Quality Control Board – Construction General Permit; NPDES Permit SWPPP

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code Section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

See Section 3.2.18, “Tribal Cultural Resources,” for details on Tribal consultation.

3.1 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages:

- ☐ Aesthetics
- ☒ Biological Resources
- ☒ Geology/Soils
- ☐ Hydrology/Water Quality
- ☐ Noise
- ☐ Recreation
- ☐ Utilities/Service Systems
- ☐ Agriculture and Forestry Resources
- ☒ Cultural Resources
- ☐ Greenhouse Gas Emissions
- ☐ Land Use/Planning
- ☐ Population/Housing
- ☐ Transportation
- ☒ Wildfire
- ☐ Air Quality
- ☐ Energy
- ☐ Hazards & Hazardous Materials
- ☐ Mineral Resources
- ☐ Public Services
- ☒ Tribal Cultural Resources
- ☒ Mandatory Findings of Significance

Determination (to be completed by the Lead Agency):

On the basis of this initial study:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an environmental impact report is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature _____ Date _____

Signature _____ Date _____

3.2 Environmental Checklist

3.2.1 Aesthetics

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
I. AESTHETICS — Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	☐	☐	☒	☐

Environmental Setting

Pools 17 and 18 of the Aqueduct are located in Fresno County. The proposed project site is characterized by the concrete-lined Aqueduct canal, the Aqueduct embankments, compacted soils that serve as access roads, road aprons, and vacant lands within the DWR right-of-way adjacent to the Aqueduct. The area of proposed project site is largely uninhabited and surrounded by agricultural crop fields. Agricultural uses near the proposed project site include limited associated infrastructure, such as barns, warehouses, equipment, and storage areas. The primary roadways providing access to the proposed project site include Interstate 5 (I-5) located approximately 2.7 miles west of the proposed project and State Route 33 (SR 33) located approximately 1 mile west of the proposed project.

A highway is officially designated as a State Scenic Highway when a local jurisdiction adopts a scenic corridor protection program, applies to Caltrans for scenic highway approval, and receives notification from the California Department of Transportation (Caltrans) that the highway has been designated as an official State Scenic Highway. While portions of I-5 are designated as a State scenic highway by Caltrans, the nearest segment is located approximately 50 miles to the north.

The nearest highway eligible for State Scenic Highway designation is a collocated segment of SR 33 and SR 198, approximately 10 miles southwest of the proposed project site (California Department of Transportation 2024).

The topography of the proposed project site and surrounding vicinity is relatively flat. The Coastal Foothills, which are gentle rolling hills with scattered oak trees, are visible to the west on the other side of I-5 (County of Fresno 2024).

Discussion

Issue I.a

The construction site would be accessed using existing roadways and service roads, including along both sides of the Aqueduct embankments. All liner raise construction would occur on the waterside of the Aqueduct embankments. Staging of equipment and temporary stockpiling of materials would occur adjacent to the Aqueduct along the access road and road aprons (Figure 2-4 through Figure 2-6).

Short-term maintenance activities (e.g., mowing, vegetation management) in the area of construction would be temporarily postponed during construction. Once construction is complete, there would be no additional operation and maintenance activities as part of the project, and normal operations and maintenance would resume, similar to existing conditions. Therefore, due to the limited presence of construction equipment and the short-term temporary nature of project activities, project implementation would not significantly impact surrounding scenic vistas or resources. Impacts on scenic vistas would be considered **less than significant**.

Issue I.b

Scenic vistas are defined as expansive views of distant landforms and aesthetic features from public vantage points, including areas designated as official scenic vistas along roadway corridors or otherwise designated by local jurisdictions. The proposed project site is not located in the vicinity of an officially designated scenic vista as determined by Fresno County (County of Fresno 2023). However, the proposed project site is adjacent to agricultural lands, which are considered scenic to the County of Fresno. Further, natural landforms such as surrounding hillsides and mountains may be seen in the far-off distance surrounding the proposed project site.

Based on a review of the local General Plans and Caltrans List of Scenic Highways, the proposed project site is not located along a State Scenic Highway (California Department of Transportation 2024; County of Fresno 2024). Construction activities associated with the proposed project would not be visible to motorists traveling along the eligible portion of SR 33 and 198 due to the distance and intervening topography. Therefore, the proposed project would not impact scenic resources, which include rock outcroppings, trees, or historic buildings within a designated State Scenic Highway corridor, and **no impact** would occur.

Issue I.c

The surrounding vicinity is largely uninhabited and rural. Public views of the area are provided very briefly to motorists traveling along local roadways and to visitors who may fish in the area. Construction activities associated with the proposed project include vegetation clearing and grubbing of the staging and access areas, excavation of borrow areas, excavation, placement of fill, and re-compaction at locations where the new liner raise would be installed; excavation and re-compaction of flood berms and waste berms to reroute existing road drainage pipes; and equipment staging and temporary material stockpiling adjacent to the Aqueduct along the access road and road aprons by Pools 17 and 18. Excavated areas, stockpiled soils, and other materials generated during construction could temporarily change the visual character of the surrounding environment. These changes would be temporary, occurring over the nine-month construction period, and would not permanently affect the existing visual character of the Aqueduct or surrounding area. Once construction is completed, all construction areas would be re-graded to match pre-project conditions. Further, operation activities would not change with the proposed project and would continue to be conducted in accordance with existing water delivery schedules. Therefore, impacts to the visual character and quality of public views in the proposed project site would be **less than significant**.

Issue I.d

The proposed project site is located within a rural setting where primary sources of nighttime light and daytime glare are limited to agricultural structures, agricultural activities, and passing vehicles. The proposed project would not install or add new permanent sources of light or glare to the project vicinity. Furthermore, construction activities would generally be limited to the daylight hours of 6:00 a.m. to 6:00 p.m., Monday through Friday, to the greatest extent possible. Therefore, no nighttime lighting is anticipated and impacts related to light and glare would be **less than significant**.

References

California Department of Transportation

2024 California Scenic Highway System Map. Viewed online at: https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa. Accessed: July 9, 2024.

County of Fresno

2023 *Fresno County General Plan Background Report*. Viewed online at: https://www.fresnocountyca.gov/files/sharedassets/county/v/2/public-works-and-planning/development-services/planning-and-land-use/general-plan/fcgpr-background-report-2023-05-10.pdf. Accessed: September 12, 2024.

2024 *The 2024 Fresno County General Plan*. Open Space and Conservation Element. Viewed online at: https://www.fresnocountyca.gov/files/sharedassets/county/v/1/public-works-and-planning/development-services/planning-and-land-use/general-plan/fcgpr_general-plan_county_final_2024_02.pdf Accessed: September 23, 2024.

3.2.2 Agriculture and Forestry Resources

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
II. AGRICULTURE AND FORESTRY RESOURCES—In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Environmental Setting

The proposed project site is within the Aqueduct right-of-way and the area is dominated by the concrete-lined Aqueduct, Aqueduct levees, gravel access roads, and vacant lands adjacent to the Aqueduct; surrounding land uses include agricultural lands. There are no agricultural or forestry lands within the proposed project site; however, there are vacant lands adjacent to the Aqueduct within the DWR right-of-way that would be used for borrow and staging. Surrounding areas consist of land designated as Prime and Unique Farmland (California Department of Conservation 2022). There are also multiple parcels of land that are enrolled in Williamson Act contracts adjacent to the proposed project site (California Department of Conservation 2023). The proposed project site is zoned entirely as Exclusive Agriculture (AE-20) with the nearby towns of Three Rocks and Cantua

Creek located approximately 2 miles to the west and 1.4 miles to the east zoned as Residential, Trailer Park Residential, Agriculture, and Agricultural Commercial Center (County of Fresno 2024).

Discussion

Issue II.a, b

Construction of the proposed project would occur within the Aqueduct right-of-way; staging would occur along the access road and road aprons in previously disturbed areas; borrow sites are located along road aprons within previously disturbed areas and vacant lands within the DWR right-of-way adjacent to the Aqueduct; and road drain sites are located within and run through the existing Aqueduct embankment, access roads, and road aprons. The proposed project site does not include lands designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance or lands enrolled under a Wiliamson Act contract in the proposed project site (California Department of Conservation 2022, 2023). Therefore, the proposed project would not result in the conversion of farmland to a non-agricultural use or conflict with existing zoning for agricultural use or a Williamson Act contract. Thus, **no impact** would occur.

Issue II.c, d

There are no forestry resources within the proposed project site; therefore, there would be no conflict with existing zoning of forest land and the proposed project would not cause rezoning of forest land, timberland, or timberland zoned for Timberland Production or result in the conversion of forest land to a non-forest use. Thus, **no impact** would occur.

Issue II.e

As described in Issue II.a,b, the proposed project site does not include agricultural lands; therefore, the proposed project would have no impact on land zoned as farmland. Furthermore, the proposed project site is not located in or near land zoned as forest land. The proposed project would not permanently alter the environment in such a way that would result in the conversion of farmland to non-agricultural use or conversion of forest land to non-forest use. Given that there would be no indirect conversion of land zoned as forestland or farmland to other land uses due to the proposed project, **no impact** would occur.

References

California Department of Conservation

2022 California Important Farmland Finder. Viewed online at: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed: July 10, 2024.

2023 California Williamson Act Enrollment Finder. Viewed online at: https://maps.conservation.ca.gov/dlrp/WilliamsonAct/. Accessed: July 10, 2024.

County of Fresno

2024 Zoning. Viewed online at: https://gisportal.co.fresno.ca.us/portal/apps/webappviewer/index.html?id=b921843d343d4df998b5b3c6a301756a Accessed: July 11, 2024.

3.2.3 Air Quality

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
III. AIR QUALITY—Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	☒

Environmental Setting

The proposed project site is located along the Aqueduct in Fresno County within the San Joaquin Valley Air Basin (SJVAB), which is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The topography and meteorology of the SJVAB provide ideal conditions for trapping air pollution for long periods of time and producing harmful levels of air pollutants. Low precipitation levels, cloudless days, high temperatures, and light winds during the summer in the SJVAB are conducive to high ozone levels resulting from the photochemical reaction of ozone precursors nitrogen oxides (NO_x) and volatile organic compounds in the presence of sunlight.

The federal Clean Air Act (CAA) requires that the U.S. Environmental Protection Agency set ambient air quality standards for the following seven criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter with a diameter of up to ten microns (PM_{10}), particulate matter with a diameter of up to 2.5 microns ($PM_{2.5}$), and lead (Pb). Standards are set at levels of air quality deemed necessary, with an adequate margin of safety, to protect public health. In addition, the California Air Resources Board has established ambient air quality standards for these and other pollutants, which are typically more stringent than the federal standards.

Under amendments to the federal CAA, the U.S. Environmental Protection Agency has classified air basins or portions thereof as either “attainment” or “non-attainment” for each criteria air pollutant, based on whether or not the national standards have been achieved. The California CAA, which is patterned after the federal CAA, also requires areas to be designated as “attainment” or “non-attainment” for the State standards. Thus, areas in California have two sets of attainment/non-

attainment designations: one set with respect to the national standards and one set with respect to the State standards. The SJVAB is currently designated as a non-attainment area for State and national ozone standards, State and national $PM_{2.5}$ standards, and the State PM_{10} standard. SJVAB is designated as "attainment" or "unclassified" with respect to all other criteria air pollutant standards (San Joaquin Valley Air Pollution Control District 2019).

Discussion

Issue III.a

As discussed above, the SJVAB is currently designated as a non-attainment area for federal and State standards with regard to $PM_{2.5}$ and ozone, and the State PM_{10} standard. The SJVAPCD is responsible for implementing programs and regulations required by the federal CAA and the California CAA within the SJVAB. In this capacity, the SJVAPCD has prepared plans to attain federal and State ambient air quality standards for which it has been designated as non-attainment. Current air quality plans for the SJVAB include:

- 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ standards;
- 2022 Plan for the 2015 ozone 8-hour standard; and
- 2014 Reasonably Available Control Technology demonstration for the 8-Hour Ozone State Implementation Plan.

The air quality plans include emissions inventories that identify sources of air pollutants, evaluations for feasibility of implementing potential opportunities to reduce emissions, sophisticated computer modeling to estimate future levels of pollution, and a strategy for how air pollution will be further reduced. In addition, the SJVAPCD has adopted a guidance document, *Guidance for Assessing and Mitigating Air Quality Impacts*, to assist in the evaluation of air quality impacts of projects proposed within its jurisdiction (San Joaquin Valley Air Pollution Control District 2015). This guidance document provides recommended procedures for evaluating potential air quality impacts during the environmental review process consistent with CEQA requirements and includes recommended thresholds of significance, mitigation measures, and background air quality information. It also includes recommended assessment methodologies for air toxins, odors, and greenhouse gas (GHG) emissions.

Based on the SJVAPCD's guidance document, a project's air quality impacts during construction would be considered significant if emissions generated exceed any of the following:

- 100 tons per year of CO;
- 10 tons per year of reactive organic gases or NO_x;
- 27 tons per year of SO_x ; or
- 15 tons per year of PM_{10} or $PM_{2.5}$.

These thresholds of significance are based on the SJVAPCD's New Source Review (NSR) offset requirements and are applied to evaluate regional impacts of project-specific emissions of air pollutants and their impact on the region's ability to reach attainment (San Joaquin Valley Air

Pollution Control District 2015). The NSR is also known as District Rule 2201 and contains requirements for best available air pollution control technology and emission offsets. The purpose of NSR is to review new and/or modified stationary sources and modifications and to provide no net increase in emissions above specified thresholds for nonattainment pollutants and their precursors (San Joaquin Valley Air Pollution Control District 2023). The SJVAPCD's attainment plans demonstrate that project-specific emissions below the offset thresholds would have a less-than-significant impact on air quality (San Joaquin Valley Air Pollution Control District 2015). Thus, the SJVAPCD concludes that use of NSR offset thresholds as its thresholds of significance for criteria pollutants is an appropriate and effective means of promoting consistency in significance determinations within the environmental review process. Therefore, projects with emissions below the thresholds of significance for criteria pollutants would be determined to not conflict or obstruct implementation of SJVAPCD's air quality plans.

Construction

Construction of the proposed project would include mobilization, staging and borrow area preparations, canal embankment earthwork and concrete liner raise, drainage work, replacing existing fencing in kind, and other miscellaneous installations described in Chapter 2, "Project Description." Proposed project construction activities would result in emissions of ozone precursors (reactive organic gases and NO_x) and PM in the form of dust (fugitive dust) and exhaust (e.g., vehicle tailpipe emissions). Emissions of ozone precursors and PM are primarily a result of the combustion of fuel from on-road vehicles and off-road construction equipment. Pollutant emissions would be generated from the following construction activities: (1) material import from borrow sources; (2) vehicle trips from workers traveling to and from the construction areas; (3) trips associated with delivery of construction supplies to and from the construction areas; and (4) fuel combustion by on-site construction equipment. These activities would temporarily generate air pollutant emissions in addition to dust and fumes. The amount of construction-related emissions generated on a daily basis would vary depending on the intensity and types of construction activities occurring simultaneously. Overall, proposed project construction activities are expected to last nine months.

PM is among the pollutants of greatest localized concern with respect to construction activities. Construction emissions of PM can vary greatly depending on the level of activity, the specific operations taking place, the number and types of equipment operated, local soil conditions, weather conditions, and the amount of earth disturbance. Fugitive dust emissions from construction activities would be regulated by SJVAPCD's Rule VIII, which limits fugitive dust emissions from construction, demolition, excavation, extraction, and other earthmoving activities. The project would be required to comply with these limits.

Construction emissions for the proposed project were estimated using the California Emissions Estimator Model (CalEEMod), version 2022.1.1, and are presented in **Table 3-1**. Project-specific information was used for model inputs for construction schedule, phase durations, off-road equipment types and numbers, imported material quantities, and trip numbers for worker and contractor trips per phase. Where project-specific data was unavailable, CalEEMod defaults were used as inputs, which provide assumed values consistent with standard practice. CalEEMod

assumptions and a detailed output can be found in **Appendix A**. The table shows the project's estimated construction emissions by year and compares them to the SJVAPCD significance thresholds for construction emissions.

Table 3-1 Project Construction Emissions

Construction Year	Estimated Annual Construction Emissions (tons/year)					
	ROG	NOx	CO	SOx	PM_{10}	$Pm_{2.5}$
2027	0.29	2.14	1.94	0.01	0.13	0.08
2028	0.16	1.13	0.93	>0.01	0.07	0.05
SJVAPCD Significance Threshold	10	10	100	27	15	15
Exceeds Threshold?	No	No	No	No	No	No

Source: Data compiled by ESA in 2025

Notes: ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter with a diameter of up to ten microns; $PM_{2.5}$ = particulate matter with a diameter of up to 2.5 microns

As shown in Table 3-1, annual construction emissions of ROG, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ would not exceed the SJVAPCD significance thresholds for construction emissions. In addition, proposed project construction would be required to comply with the requirements of SJVAPCD Rule VIII, which aims to limit fugitive dust emissions from construction, demolition, excavation, extraction, and other earthmoving activities (San Joaquin Valley Air Pollution Control District 2004). Control measures required and enforced by the SJVAPCD under Regulation VIII would further reduce the PM emissions shown in Table 3-1.

Based on the SJVAPCD's approach to air quality planning, proposed project construction emissions would be below applicable SJVAPCD thresholds for construction and the proposed project would be consistent with the region's air quality plans.

Operation

Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing water delivery schedules. The liner raise project would not have any operational activities associated with it. Once the proposed liner raise is completed, the proposed project would not create any new sources of air pollutant emissions associated with operation and maintenance activities. No new diesel-powered equipment would be required for project operations. Therefore, no new emissions would be generated as a result of project operation, and project operation would not conflict with or obstruct implementation of the regional air quality plan.

Construction and operation of the proposed project would result in a **less-than-significant impact**.

Issue III.b

CEQA defines cumulative impacts as two or more individual impacts which, when considered together, are either significant or "cumulatively considerable," meaning they add considerably to a significant environmental impact. An adequate cumulative impact analysis considers a project over time and in conjunction with other past, present, and reasonably foreseeable future projects whose impacts might compound those of the project being assessed.

By its very nature, air pollution is largely a cumulative impact. No single project would likely be sufficient in size, by itself, to result in non-attainment of the regional air quality standards. Instead, a project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development within the SJVAB. The non-attainment status of the SJVAB with respect to regional pollutants is a result of past and present development. Future attainment of State and federal ambient air quality standards is a function of successful implementation of SJVAPCD's attainment plans. Consequently, the SJVAPCD's application of thresholds of significance for criteria pollutants is a relevant way to determine whether a project's individual emissions would have a cumulatively significant impact on air quality.

Per CEQA Guidelines Section 15064(h)(3), a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program, including but not limited to an air quality attainment or maintenance plan that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located (San Joaquin Valley Air Pollution Control District 2015). The SJVAPCD has established thresholds of significance for criteria pollutant emissions which are based on New Source Review offset requirements for stationary sources. Emissions reductions achieved through implementation of offset requirements are a major component of the SJVAPCD's air quality plans. Thus, projects with emissions below the thresholds of significance for criteria pollutants would be determined to comply with the SJVAPCD's air quality plans and would not contribute a cumulatively considerable increase for these criteria pollutants (San Joaquin Valley Air Pollution Control District 2015).

As shown in Table 3-1, proposed project emissions would be less than the SJVAPCD-recommended thresholds of significance for construction emissions, and proposed project operations would not generate new air emissions. Therefore, the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or State ambient air quality standard. The impact with respect to criteria air pollutant emissions would be **less than significant**.

Issue III.c

Sensitive receptors are defined as facilities and land uses that include members of the population who are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of facilities and land uses are schools, hospitals, and daycare centers. Residential areas are also considered sensitive to poor air quality because people usually stay home for extended periods of time, which results in greater exposure to ambient air quality.

The section of Aqueduct in which the proposed project is located primarily runs through agricultural fields and undeveloped land (Figure 2-2). The area is rural and predominately uninhabited, and there are no sensitive receptors within 1,000 feet of the proposed project site. Additionally, construction activities would occur alongside the linear alignment of the Aqueduct and therefore would not be anticipated to occur at any one area for an extended period of time. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing water delivery schedules. The liner raise project does not have any operational activities associated with it; therefore, the proposed project would not result in any new emissions from operations. As a result, the proposed project would not expose sensitive receptors to substantial criteria pollutants due to the lack of receptors near the proposed project site and the short-term nature of construction activity. Therefore, impacts would be **less than significant**.

Issue III.d

Diesel-powered construction equipment can generate short-term, non-persistent odors due to engine exhaust, but these dissipate quickly and would likely not be noticeable beyond the work site. Additionally, as discussed above, the area surrounding the proposed project site is largely uninhabited and rural. Operation of the Aqueduct after the proposed project is complete would be similar to existing conditions and would not introduce any new sources that would generate odorous emissions. Therefore, the proposed project would not create odors that could impact a substantial number of people, and **no impact** would occur.

References

San Joaquin Valley Air Pollution Control District

2004 Regulation VIII: Fugitive PM10 Prohibition. Viewed online at: http://www.valleyair.org/rules/1ruleslist.htm#reg8. Accessed: October 2024.

2015 Guidance for Assessing and Mitigating Air Quality Impacts. March 19, 2015. Viewed online at: https://ww2.valleyair.org/media/g4nl3p0g/gamaqi.pdf. Accessed: October 2024.

2019 Ambient Air Quality Standards & Valley Attainment Status. Viewed online at: https://www.valleyair.org/aqinfo/attainment.htm. Accessed: October 2024.

2023 Rule 2210 New and Modified Stationary Source Review Rule. Viewed online at: https://ww2.valleyair.org/media/zzslqswt/rule-2201.pdf. Accessed: July 2025.

3.2.4 Biological Resources

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES—Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on state or federally protected wetlands (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Environmental Setting

The following discussion of the environmental setting is based on the Pool 17 and Pool 18 Liner Raise Project Biological Resources Technical Report prepared in 2025 (**Appendix B**). The proposed project site is located entirely within DWR's right-of-way. The habitats and land types on the site consist of existing paved and unpaved road surfaces as well as previously disturbed land with sparse vegetation. There are native and non-native vegetation communities immediately adjacent to the Aqueduct between the access road and agricultural fields within DWR's right-of-way.

The information provided in this section was obtained from both a desktop-level review and field surveys for biological resources (**Table 3-2**). Sensitive biological resources, including special-status plant and animal species, sensitive natural communities, and aquatic resources that may occur within the proposed project site were determined, in part, by reviewing natural resource agency databases, relevant literature, and historic survey data. DWR biologists have conducted countless surveys over the past several decades that have contributed to the body of knowledge regarding the protection and distribution of species and habitat presence in the proposed project site (Table 3-2).

Table 3-2 Surveys Conducted Near Pools 17 and 18 from 2015 to 2024

Pools 17 and 18 Project/Activity	Year(s)	Survey Type
Erosion Repair and Aqueduct Maintenance	2015−2024	Biological Resources Assessment
Access Road Maintenance, Mowing, and Grading	2015−2024	Biological Resources Assessment
Cantua Stream Group Improvements Project	2016	Habitat Assessment
Cantua Stream Group Improvements Project	2016	Protocol Level Burrowing Owl Survey
Cantua Stream Group Improvements Project	2016−2017	Burrowing Owl Construction Monitoring
Irrigation Crossing Pipe Inspections and Repair Project	2019	Reconnaissance Den and Burrow Survey
Irrigation Crossing Pipe Inspections and Repair Project	2019	Pre-construction Survey and Monitoring
California Aqueduct Subsidence Program	2020	Vegetation Mapping
California Aqueduct Subsidence Program	2020	Land Use Ground-truthing Surveys
California Aqueduct Subsidence Program	2020	Small Mammal Habitat Survey
California Aqueduct Subsidence Program	2020	Reconnaissance Den and Burrow Survey
California Aqueduct Subsidence Program Geotechnical Explorations	2021	Pre-construction Surveys and Monitoring
California Aqueduct Subsidence Program	2023−2024	Survey Known Sensitive Resources
California Aqueduct Subsidence Program	2024	Western Spadefoot Habitat Assessment
California Aqueduct Subsidence Program	2025	Crotch's Bumble Bee Habitat Assessment and Survey
California Aqueduct Subsidence Program	2025	Western Spadefoot Biological Assessment
California Aqueduct Subsidence Program	2025	Burrowing Owl Biological Assessment

Source: Data compiled by Environmental Science Associates in 2025

Note: This table does not include discrete maintenance projects in which special-status species observations may have been made but were not detected during a focused survey. However, any species observations collected during other projects not shown in this table have been included in this report.

A review of this information allowed for initial determinations of the distribution of sensitive resources and the probability of their occurrence within the proposed project site (Appendix B and California Department of Water Resources 2025a, 2025b, and 2025c).

Vegetation Communities and Land Cover Types

"Sensitive" natural communities and habitats are defined by the California Department of Fish and Wildlife (CDFW) as those natural communities that have a reduced range or are imperiled because of various forms of development and other anthropogenic stressors, including residential and commercial expansion, various forms of agriculture, energy production, and mining. The ecological status of these communities is determined using the NatureServe Heritage Methodology, which considers the range, distribution, and ecological integrity of vegetation types at global (G) rank and California State (S) rank levels (ranks 1−5, critically imperiled to demonstrably secure) (Faber-Langendoen et al. 2012). According to CFDW, communities with a State rank of S1 through S3 are classified as sensitive natural communities and may require review when evaluating environmental impacts.

The proposed project site contains seven vegetation communities, as defined by the *Manual of California Vegetation* (Manual) (Sawyer et al. 2009), or as characterized by dominant species present, including fiddleneck-filaree fields, wild oats and annual brome grassland, quailbush scrub, allscale scrub, mesquite thickets, tamarisk thickets, as well as bare land (disturbed). As defined by the California Wildlife Habitat Relationships, these vegetation alliances can be categorized into four habitat types: annual grassland, alkali desert scrub, desert riparian, and barren. A description of each of these vegetation communities/land cover types and associated California Wildlife Habitat Relationships habitat types is included in **Table 3-3**, as well as the total acreage of each habitat type present in the proposed project site. Locations of each habitat type within the proposed project site are shown in **Figure 3-1** through **Figure 3-7**.

None of the vegetation communities or land cover types present within the proposed project site are listed as sensitive or rare natural communities.

Table 3-3 Vegetation Communities/Land Cover Types and Habitat Types within the Proposed Project Site and Study Area

Vegetation Community/ Land Cover Type (State Rank) [a]	California Wildlife Habitat Relationships Habitat Type [b]	Description	Proposed Project Site Acreage					Study Area Acreage [c]
				Road Drain Replacement Sites				
			Liner Raise	Drain Thru Berms	Road Drains	Staging Areas	Borrow Areas	
Fiddleneck-filaree fields (S5)	Annual grassland	Characterized by open grasslands composed of annual grasses and forbs. Often occur as an understory to other habitats. Species diversity and structure depends largely on weather patterns and grazing. Great physical differences are observed between seasons.	0.03	0.04	0.02	2.22	2.80	44.49
Wild oats and annual brome grassland (SNA)			--	--	0.01	0.57	11.52	29.86
Atriplex scrub [d]	Alkali desert scrub	Characterized by open stands of very low to moderately high (0.25–2.0 m; 0.8–6.6 ft) grayish, spinescent, eptophyllous to microphyllous subshrubs and shrubs, which are physically uniform, widely spaced, and occur on relatively dry soils.	--	--	--	0.08	--	4.56
Mesquite thickets	Desert riparian	Characterized as dense groves of low shrublike trees. These habitats are found adjacent to permanent surface water (e.g., streams, springs) or in naturally subirrigated areas. Usually, an abrupt transition occurs between this and adjacent shorter and more open desert habitats.	--	--	--	8.30	0.23	23.12
Tamarisk thickets*			--	--	--	--	--	1.63
Bare land (Disturbed)	Barren	Characterized by the absence of vegetation. Any habitat with <2% total vegetation cover by herbaceous, desert, or non-wildland species and <10% cover by tree or shrub species is defined this way. May consist of sparse growth, rock, gravel, and soil.	0.25	0.02	0.03	14.37	10.17	140.80
Developed			10.77	--	0.04	--	--	60.55
		Total	**11.04**	**0.06**	**0.09**	**25.55**	**24.72**	**305.02**

Source: Data compiled by the California Department of Water Resources in 2024

Notes:

* Alliances that have sufficient data to propose the vegetation type, but not enough research and regional information to be confident about its status in California's vegetation.

a. State Rank (Faber-Langendoen et al. 2012)
   SNA = Semi-natural Alliances − strongly dominated by non-native plants that have become naturalized in the State.
   S1 = Critically Imperiled – At very high risk of extirpation due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.
   S2 = Imperiled – At high risk of extirpation due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
   S3 = Vulnerable – At moderate risk of extirpation due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
   S4 = Apparently Secure – At a fairly low risk of extirpation due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
   S5 = Secure – At very low or no risk of extirpation due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.
b. California Department of Fish and Game 1988
c. The study area is the Aqueduct right-of-way in the vicinity of Pools 17 and 18, including the proposed project site components, minus the open water portion of the Aqueduct.
d. The Atriplex scrub community consists of quailbush scrub (*Atriplex lentiformis*) and/or allscale scrub (*Atriplex polycarpa*).

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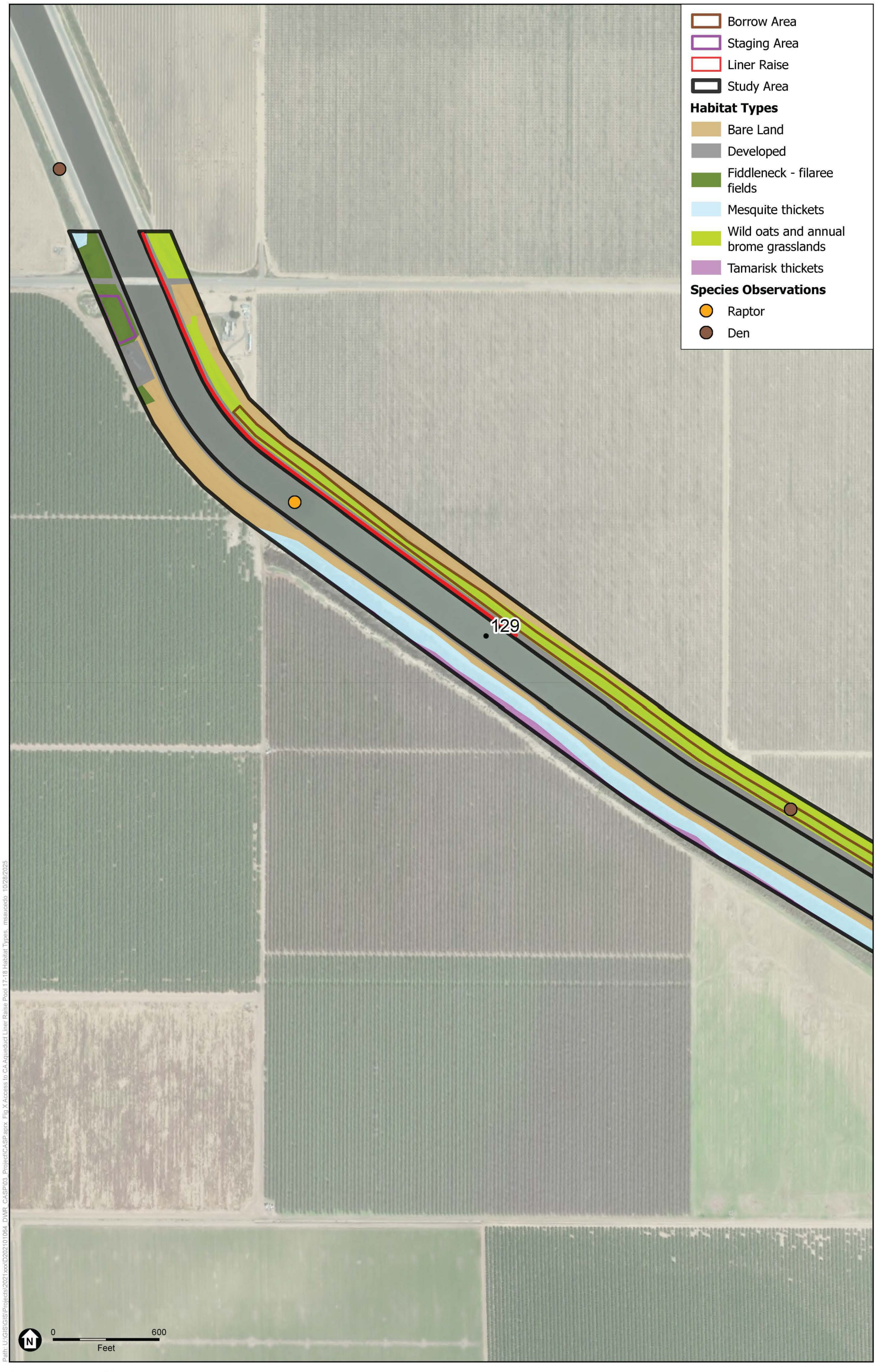

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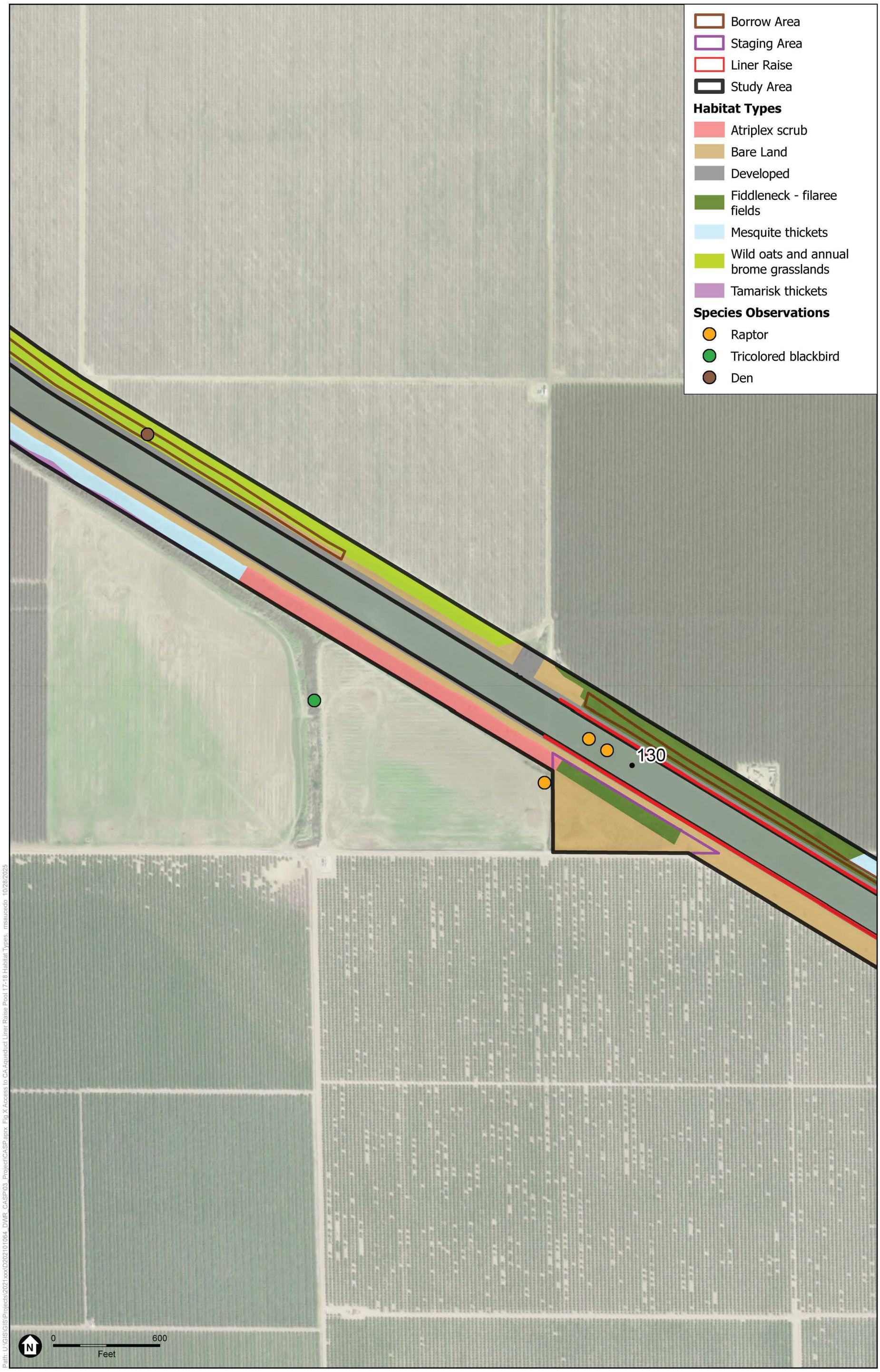
SOURCE: ESRI; DWR, 2025

CASP Enviro Support

Figure 3-1
Habitat Types

ESA



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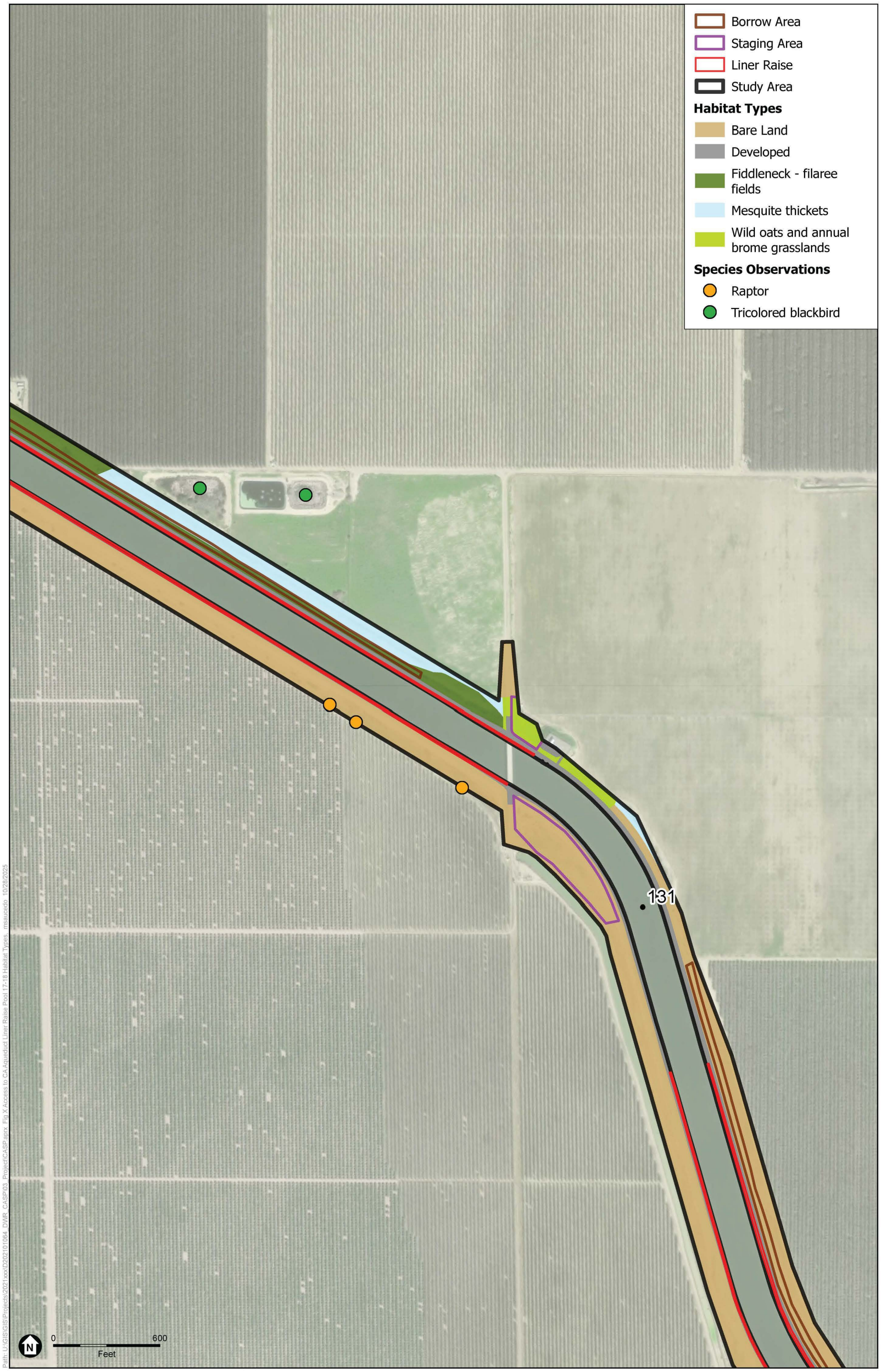
SOURCE: ESRI; DWR, 2025

CASP Enviro Support

Figure 3-2
Habitat Types

ESA



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SOURCE: ESRI; DWR, 2025

CASP Enviro Support

Figure 3-3
Habitat Types

ESA

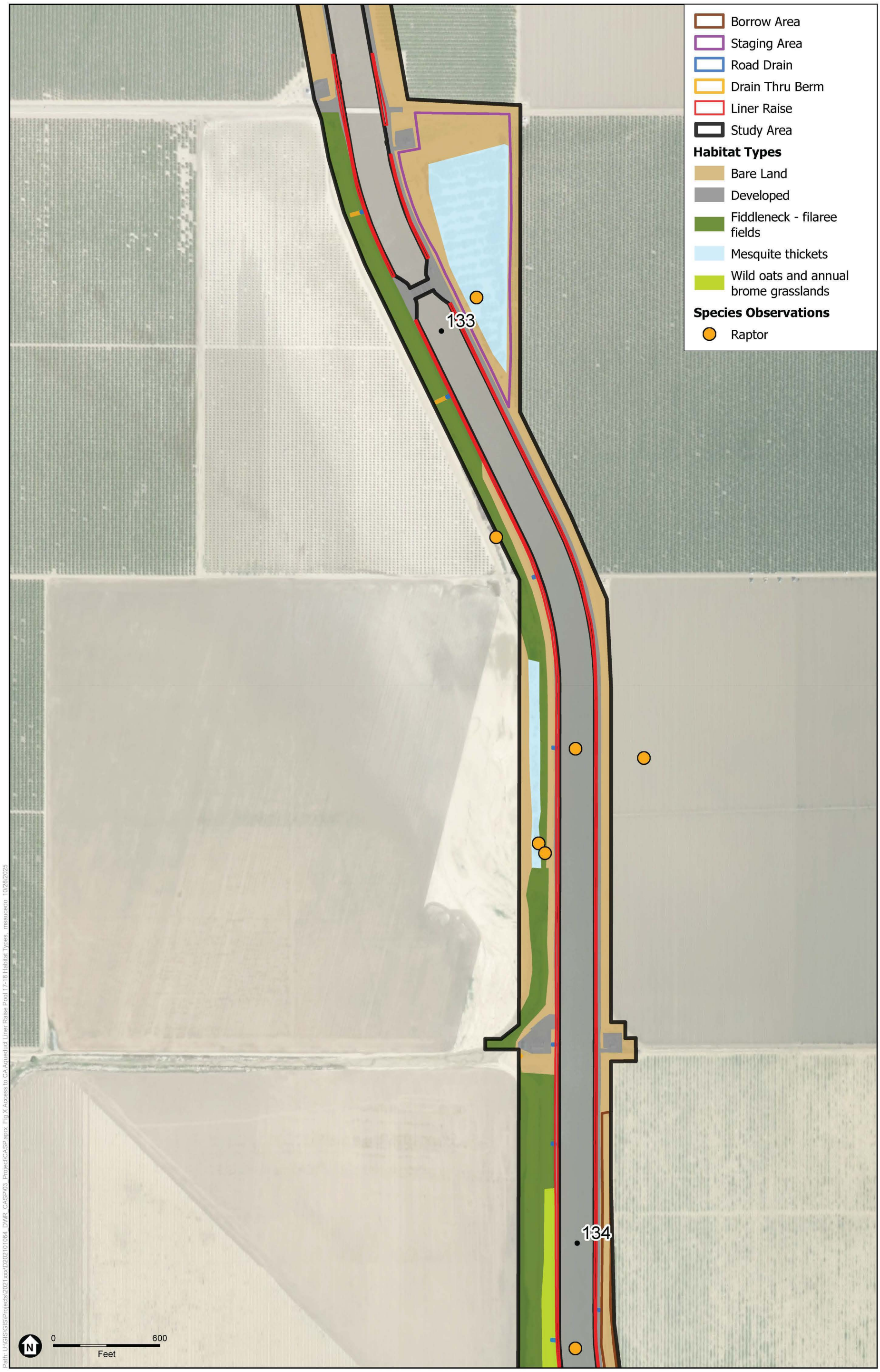
Path: U:\GIS\GIS\Projects\2021xxx\D202101064_DWR_CASP\03_Project\CASP.aprx Fig X Access to CA Aqueduct Liner Raise Pool 17-18 Habitat Types, msaucedo 10/28/2025

SOURCE: ESRI; DWR, 2025

CASP Enviro Support

Figure 3-4
Habitat Types

ESA



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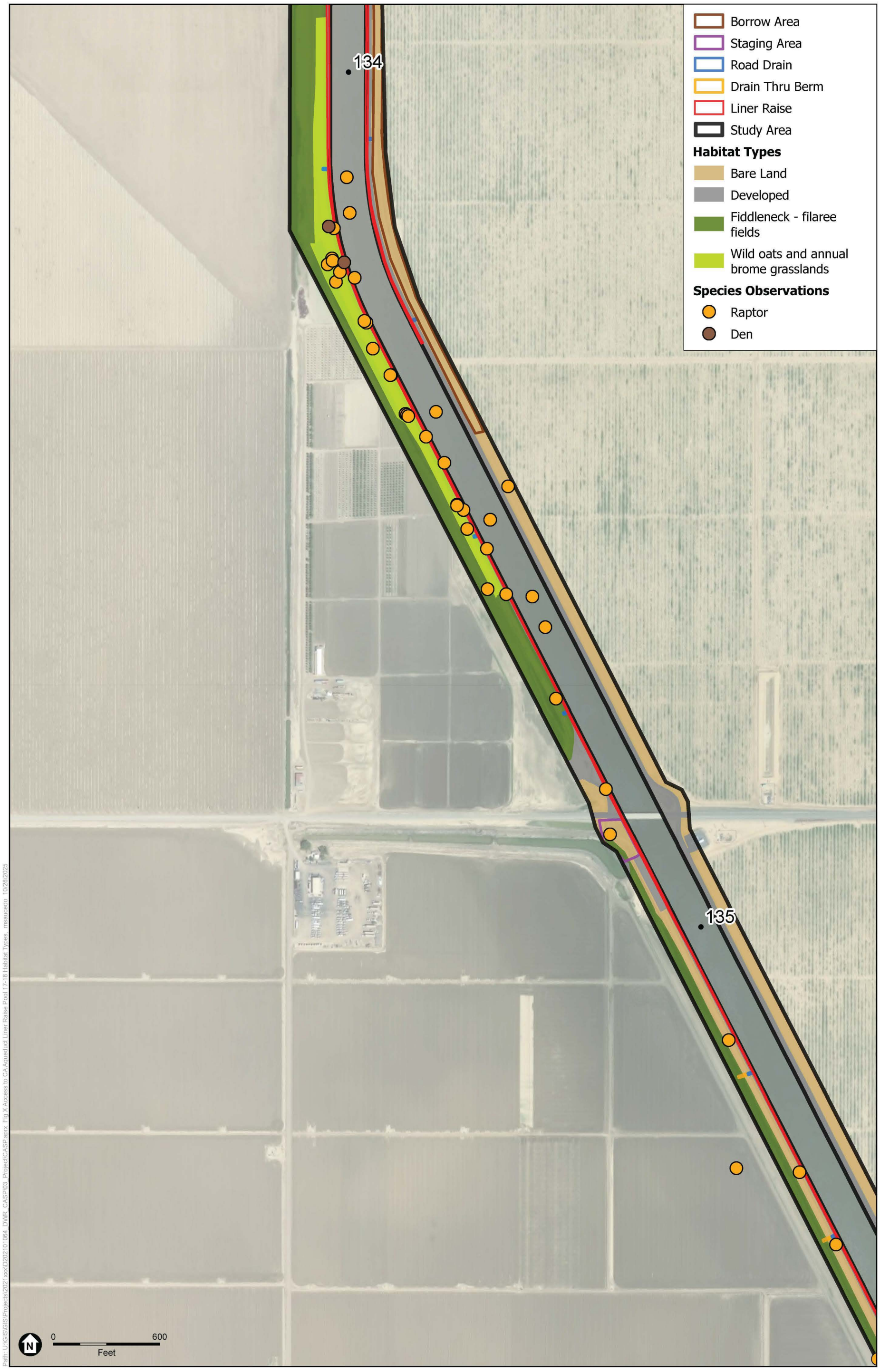
SOURCE: ESRI; DWR, 2025

CASP Enviro Support

Figure 3-5
Habitat Types

ESA



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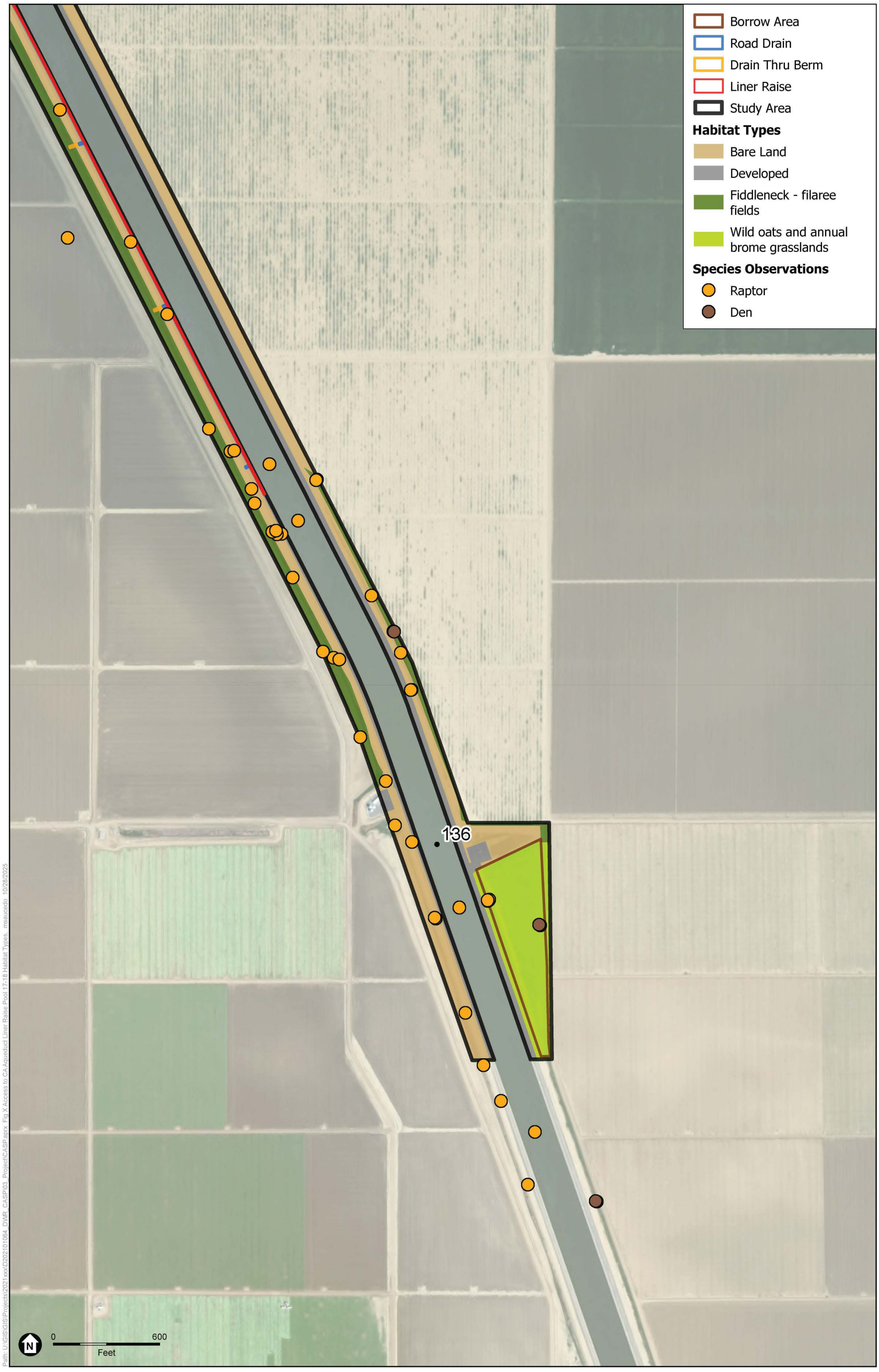
SOURCE: ESRI; DWR, 2025

CASP Enviro Support

Figure 3-6
Habitat Types

ESA



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SOURCE: ESRI; DWR, 2025

CASP Enviro Support

Figure 3-7
Habitat Types

ESA

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Special-Status Species

The term *special-status species* refers to plant and wildlife species that are considered sufficiently rare that they require special consideration and/or protection and should be, or currently are, listed as rare, threatened, or endangered by the federal and/or State governments. Such species are legally protected under FESA, the California Endangered Species Act (CESA), or other regulations, or are species that are considered sufficiently rare by the regulatory and scientific community to qualify for protection.

Special-status plant species include plants that are (1) listed or proposed for listing as threatened or endangered, or are candidates for possible future listing as threatened or endangered, under CESA or FESA; (2) meet the definitions of rare or endangered under CEQA Guidelines Section 15380; (3) considered by the CNPS and CDFW to be rare, threatened, or endangered (California Rare Plant Rank [CNPR] 1A, 1B, 2A, and 2B plants) in California; and (4) listed as rare under the California Native Plant Protection Act (Fish and Game Code 1900 et seq.), defined as:

- California Rare Plant Rank 1A: Plants presumed extirpated in California and either rare or extinct elsewhere.
- California Rare Plant Rank 1B: Plants rare, threatened, or endangered in California and elsewhere.
- California Rare Plant Rank 2A: Plants presumed extirpated in California but common elsewhere.
- California Rare Plant Rank 2B: Plants rare, threatened, or endangered in California but common elsewhere.
- California Rare Plant Rank 3: Plants about which more information is needed, a review list.
- California Rare Plant Rank 4: Plants of limited distribution, a watch list.

In addition to the above rankings, the California Rare Plant Rank extensions are:

- .1 – Seriously threatened in California (greater than 80 percent of occurrences are threatened and/or have a high degree and immediacy of threat).
- .2 – Moderately threatened in California (20 to 80 percent of occurrences are threatened and/or have a moderate degree and immediacy of threat).
- .3 – Not very threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known).

Special-status wildlife species include species that are (1) listed as threatened or endangered under CESA or FESA; (2) proposed for federal listing as threatened or endangered; (3) State or federal candidate species; and (4) identified by CDFW as species of special concern (SSC) or fully protected (FP) species.

A comprehensive list of special-status plant and wildlife species that could occur within the proposed project site was compiled based on a database search and literature review to assess the likelihood

of species occurrence. The potential for a special-status species to occur within the proposed project site is based on the following criteria:

- **High:** The species has been recently (since 2015) documented in the vicinity of the proposed project site, and suitable habitat for the species is present.
- **Moderate:** The proposed project site is located within the current range of the species, or there are nearby documented occurrences, and suitable habitat for the species is present.
- **Low:** The proposed project site is located within the current range of the species, and low-quality (marginal) habitat is present.
- **None:** The proposed project site is located outside of the species' current range or suitable habitat to support the species is not present.

Special-Status Plant Species

Special-status plant species as reported in the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (iPaC) Online System (U.S. Fish and Wildlife Service 2024), CDFW's California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife 2024), and CNPS's Rare Plant Inventory (California Native Plant Society 2024) were evaluated for their potential to occur within the proposed project site and are listed in **Table 3-4**, which includes listing statuses, brief descriptions of habitat requirements, and a determination of the potential for the species to occur within the proposed project site.

Table 3-4 Special-Status Plant Species Potential to Occur

Common Name *Scientific Name*	Listing Status and California Rare Plant Rank	Flowering Period	Habitat Requirements	Potential for Occurrence
Asteraceae (Sunflower Family)				
Hall's tarplant *Deinandra halliana*	1B.2	Apr.–May	Chenopod scrub, cismontane woodland, and valley and foothill grassland. Elevation range extends from 260 to 950 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2017 more than 9 miles west of the proposed project site.
Pale-yellow layia *Layia heterotricha*	1B.1	Mar.–Jun.	Cismontane woodland, coastal scrub, pinyon and juniper woodland, and valley and foothill grassland. Elevation range extends from 300 to 1,705 meters amsl.	Low. Marginal habitat is present in the right-of-way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1994 more than 8 miles west of the proposed project site.

Table 3-4 Special-Status Plant Species Potential to Occur

Common Name *Scientific Name*	Listing Status and California Rare Plant Rank	Flowering Period	Habitat Requirements	Potential for Occurrence
Munz's tidy-tips *Layia munzii*	1B.2	Mar.–Apr.	Chenopod scrub, valley and foothill grassland (alkaline clay). Elevation range extends from 150 to 700 meters amsl.	Low. Marginal habitat is present in the right-of-way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1940 more than 6 miles west of the proposed project site.
Showy golden madia *Madia radiata*	1B.1	Mar.–May	Cismontane woodland and valley and foothill grassland. Elevation range extends from 25 to 1,215 meters amsl.	Low. Marginal habitat is present in the right-of-way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1935 more than 3 miles west of the proposed project site.
Sylvan microseris *Microseris sylvatica*	4.2	Mar.–Jun.	Chaparral, cismontane woodland, Great Basin scrub, pinyon and juniper woodland, valley and foothill grassland. Elevation range extends from 45 to 1,500 meters amsl.	Low. Marginal habitat is present within the right-of-way; however, the only nearby occurrence was last confirmed in the adjacent Joaquin Rocks quad in 1996.
San Joaquin woollythreads *Monolopia congdonii*	Federally Endangered 1B.2	Feb.–May	Chenopod scrub and valley and foothill grassland (sandy). Elevation range extends from 60 to 800 meters amsl.	Low. Marginal habitat is present in the right-of-way, however, the species has not been observed within 3 miles of the proposed project site since the 1940's. A revisit in 1988 by CDFW did not observe the species and noted no native habitat remained at the site.

Table 3-4 Special-Status Plant Species Potential to Occur

Common Name *Scientific Name*	Listing Status and California Rare Plant Rank	Flowering Period	Habitat Requirements	Potential for Occurrence
Boraginaceae (Forget-Me-Not Family)				
Forked fiddleneck *Amsinckia furcata*	4.2	Feb.–May	Cismontane woodland, valley and foothill grassland. Elevation range extends from 50 to 1,000 meters amsl.	Low. Marginal habitat is present in the right-of-way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1937 more than 2 miles west of the proposed project site.
Brassicaceae (Cabbage Family)				
Panoche pepper-grass *Lepidium jaredii* ssp. *album*	1B.2	Feb.–Jun.	Valley and foothill grassland with clay, steep slopes, and sometimes alkaline soils. Elevation range extends from 185 to 745 meters amsl.	Low. Marginal habitat is present in the right-of-way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 2023 more than 8 miles west of the proposed project site.
Chenopodiaceae (Goosefoot Family)				
Lost Hills crownscale *Atriplex coronata* var. *vallicola*	1B.2	Apr.–Sep.	Chenopod scrub, valley and foothill grassland, and vernal pools. Elevation range extends from 50 to 635 meters amsl.	Low. Marginal habitat is present within the proposed project site but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation from 2016 occurred more than 7 miles west of the proposed project site.
Crownscale *Atriplex coronata* var. *coronata*	4.2	Mar.–Oct.	Chenopod scrub, valley and foothill grassland, and vernal pools. Elevation range extends from 1 to 590 meters amsl.	Low. Marginal habitat is present in the right-of-way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 2005 more than 9 miles west of the proposed project site.

Table 3-4 Special-Status Plant Species Potential to Occur

Common Name *Scientific Name*	Listing Status and California Rare Plant Rank	Flowering Period	Habitat Requirements	Potential for Occurrence
Lamiaceae (Mint Family)				
San Benito thorn-mint *Acanthomintha obovata* ssp. *obovata*	4.2	Apr.–Jul.	Chaparral, cismontane woodland, valley and foothill grassland. Elevation range extends from 395 to 1,500 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2015 more than 15 miles west of the proposed project site.
San Benito monardella *Monardella antonina* ssp. *benitensis*	4.3	Apr.–Sep.	Chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Elevation range extends from 500 to 1,570 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2004 more than 11 miles west of the proposed project site.
San Joaquin bluecurls *Trichostema ovatum*	4.2	Jul.–Oct.	Chenopod scrub, valley and foothill grassland. Elevation range extends from 65 to 320 meters amsl.	Low. Marginal habitat is present in the right-of-way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1937 more than 10 miles northeast of the proposed project site.
Liliaceae (Lily Family)				
Stinkbells *Fritillaria agrestis*	4.2	Mar.–Jun.	Chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland. Elevation range extends from 10 to 1,555 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2015 more than 15 miles west of the proposed project site.

Table 3-4 Special-Status Plant Species Potential to Occur

Common Name *Scientific Name*	Listing Status and California Rare Plant Rank	Flowering Period	Habitat Requirements	Potential for Occurrence
Papaveraceae (Poppy Family)				
San Benito poppy *Eschscholzia hypecoides*	4.3	Mar.–Jun.	Chaparral, cismontane woodland, valley and foothill grassland. Elevation range extends from 200 to 1,500 meters amsl.	Low. Marginal habitat is present in the right-of-way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1988 more than 5 miles west of the proposed project site.
Polemoniaceae (Phlox Family)				
Panoche navarretia *Navarretia panochensis*	1B.3	Apr.–Aug.	Chenopod scrub, valley and foothill grassland. Elevation range extends from 330 to 860 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2019 more than 10 miles west of the proposed project site.
Prostrate vernal pool navarretia *Navarretia prostrata*	1B.2	Apr.–Jul.	Coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), vernal pools. Elevation range extends from 3 to 1,210 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2004 more than 12 miles west of the proposed project site.
Polygonaceae (Buckwheat Family)				
Cottony buckwheat *Eriogonum gossypinum*	4.2	Mar.–Sep.	Chenopod scrub and valley and foothill grassland. Elevation range extends from 100 to 550 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2003 more than 7 miles west of the proposed project site.

Table 3-4 Special-Status Plant Species Potential to Occur

Common Name *Scientific Name*	Listing Status and California Rare Plant Rank	Flowering Period	Habitat Requirements	Potential for Occurrence
Protruding buckwheat *Eriogonum nudum var. indictum*	4.2	May–Oct.	Chaparral, chenopod scrub, and cismontane woodland. Elevation range extends from 150 to 1,463 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2020 more than 8 miles west of the proposed project site.
Idria buckwheat *Eriogonum vestitum*	4.3	Apr.–Aug.	Valley and foothill grassland. Elevation range extends from 235 to 900 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 1995 more than 10 miles north of the proposed project site.
Primulaceae (Primrose Family)				
California androsace *Androsace elongata* ssp. *acuta*	4.2	Mar.–Jun.	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley and foothill grassland. Elevation range extends from 150 to 1,305 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2010 more than 7 miles west of the proposed project site.

Source: Data compiled by the California Department of Water Resources in 2024

Notes:

amsl = above mean sea level

CRPR = California Rare Plant Rank

1B = Plants Rare, Threatened, or Endangered in California and Elsewhere

2B = Plants Rare, Threatened, or Endangered in California and Elsewhere but Are More Common Elsewhere

4B = Watch List: Plants of Limited Distribution

0.1 = Seriously Threatened in California (over 80 percent of occurrences threatened/high degree and immediacy of threat)

0.2 = Moderately Threatened in California (20-80 percent occurrences threatened/moderate degree and immediacy of threat)

0.3 = Not Very Threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known)

As shown in Table 3-4, all special-status plant species were determined to have low potential to occur within the proposed project site due to lack of suitable habitat or other considerations and are not discussed further. Species with no potential to occur are also not discussed in this document.

Special-Status Wildlife Species

Special-status wildlife species as reported in the USFWS's iPaC and CDFW's CNDDB are listed in **Table 3-5**, which includes listing statuses, brief descriptions of habitat requirements, and a determination of the potential for the species to occur within the proposed project site.

Table 3-5 Special-Status Wildlife Species Potential to Occur

Common Name ***Scientific Name***	**Listing Status**	**Habitat Requirements**	**Potential for Occurrence**
AMPHIBIANS			
Spadefoot Toads (Scaphiopodidae)			
Western spadefoot *Spea hammondii*	FPT, CDFW SSC	Mixed woodland, grasslands, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Prefers washes and other sandy areas with patches of brush and rocks. Rain pools or shallow temporary pools, which do not contain bullfrogs, fish, or crayfish are necessary for breeding. Perennial plants are a major food source.	Low. Marginal suitable aquatic habitat and suitable upland habitat is present within and surrounding the proposed project site. This species has been observed in two areas near but outside of the proposed project site. Beyond these locations, presence is unlikely, as surveys conducted in 2024 and 2025 did not detect spadefoot within the proposed project site (California Department of Water Resources 2025b). Additionally, spadefoot has not been incidentally recorded along this section of the Aqueduct during any of the numerous past surveys conducted in the region. Furthermore, there is no habitat mapped as suitable upland, occupied habitat, suitable breeding, or potential breeding located in any staging areas or borrow areas so the possible risks to western spadefoot are low. Despite the low potential for western spadefoot to occur, the species may be detected during pre-activity and breeding surveys associated with **Mitigation Measure BIO-14** (Western Spadefoot).

Table 3-5 Special-Status Wildlife Species Potential to Occur

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
REPTILES			
Legless Lizards (Anniellidae)			
Northern California legless lizard *Aniella pulchra*	CDFW SSC	Found in the San Joaquin Valley in loose sandy soils with moisture. Often found in coastal areas with sandy soils.	Low. Sparse marginal habitat is present within the project. The species has not been detected during surveys conducted from 2015 to 2024 (Table 3-2). One recorded occurrence has been documented in CNDDB within 3 miles of the proposed project site.
Egg-Laying Snakes (Colubridae)			
California glossy snake *Arizona elegans occidentalis*	CDFW SSC	Inhabits arid scrub, rocky washes, grasslands, and chaparral habitats. Appears to prefer microhabitats of open areas with friable soils for burrowing.	Low. Marginal habitat is present within the proposed project site. No occurrence has been recorded within the 3-mile search radius of the proposed project site.
San Joaquin coachwhip *Masticophis flagellum ruddocki*	CDFW SSC	Inhabits open, dry, treeless areas with little or no cover, including valley grassland and saltbush scrub. Takes refuge in rodent burrows, under shaded vegetation, and under surface objects.	High. Suitable habitat is present within the proposed project site. The species has been detected north and south of the proposed project site during surveys. There are no recorded occurrences within 3 miles of the proposed project site in CNDDB. **Mitigation Measure BIO-15** (Preconstruction Surveys) has been added to the IS/MND to detect potentially occurring special-status species prior to project activities.
Freshwater Turtles (Emydidae)			
Western pond turtle *Actinemys marmorata*	FPT, CDFW SSC	Permanent and intermittent waterways. Terrestrial habitat is also important for basking and egg-laying.	Low. Marginal habitat is present within the proposed project site. This species uses aquatic habitats primarily for foraging, thermoregulation, and avoidance of predators. Turtles prefer habitats with large areas for cover (logs, algae, vegetation) and basking sites (boulders or other substrates) and have been observed to avoid areas of open water lacking these habitat features. The SLC does not offer these features because it is a concrete-lined canal, it is open with

Table 3-5 Special-Status Wildlife Species Potential to Occur

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
			zero cover, and little to no foraging habitat is available. Marginal habitat may be present in the form of drainage basins and canals on the adjacent properties. No CNDDB occurrence has been recorded within the 3-mile search radius of the proposed project site.
BIRDS			
Hawks, Kites, Harriers, & Eagles (Accipitridae)			
Golden eagle *Aquila chrysaetos*	CDFW FP, CDFW WL	Found in a variety of habitats including shrublands, grasslands, farmland, and areas along rivers and streams. Prefer partially or completely open country, especially around mountains, hills, and cliffs.	Low. Only foraging habitat is present in the proposed project site. No occurrence has been recorded within the 3-mile search radius of the proposed project site.
Swainson's hawk *Buteo swainsoni*	ST	Found in Great Basin grassland, riparian forest, riparian woodland, valley and foothill grassland. Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannas, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, alfalfa, or grain fields supporting rodent populations.	High. Foraging, breeding, and nesting habitat are present within the proposed project site. This species has been observed during past surveys and documented within 3 miles of the proposed project site in CNDDB.
Northern harrier *Circus hudsonius*	CDFW SSC, USFWS BCC	Nests and forages in meadows, marshes, and grasslands.	High. Foraging and breeding habitat are present within the proposed project site. This species has been observed during past surveys and documented within 3 miles of the proposed project site in CNDDB.
White-tailed kite *Elanus leucurus*	CDFW FP	Found year-round in coastal and valley lowlands; rarely found away from agricultural areas. Inhabits herbaceous and open stages of most habitats mostly in cismontane California.	High. Suitable habitat is present within the proposed project site. The species has been historically observed foraging in the vicinity of the project; however, there are no recorded occurrences of nesting within 3 miles of the proposed project site on CNDDB.

Table 3-5 Special-Status Wildlife Species Potential to Occur

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
Falcons (Falconidae)			
Prairie falcon *Falco mexicanus*	CDFW WL	Found from annual grasslands to alpine meadows, but is associated primarily with perennial grasslands, savannahs, rangeland, agricultural fields, and desert scrub areas.	High. Suitable habitat is present within the proposed project site. Historic detections have been made during surveys; however, there are no recorded occurrences within 3 miles of the proposed project site on CNDDB.
True Owls (Strigidae)			
Burrowing owl *Athene cunicularia*	SC, CDFW SSC, USFWS BCC	Found in open grasslands with low vegetation, golf courses, and disturbed and ruderal habitat in urban areas. Usually nests in old burrows of ground squirrels or other small mammals.	High. Marginal habitat for the species is present along portions of the embankments bordering the Aqueduct roads of the proposed project site. However, nine occupied burrows have been recorded in our dataset, two of which are typically active each year (California Department of Water Resources 2025a).
Short-eared owl *Asio flammeus*	CDFW SSC, USFWS BCC	Found in prairies, grasslands, meadows, and agricultural areas. Prefers large, open areas with low vegetation.	Moderate. Suitable habitat is present in the proposed project site, but no detections have been made during surveys. One recorded occurrence was documented in CNDDB approximately 3 miles from the northern end of the proposed project site.
Shrikes (Laniidae)			
Loggerhead shrike *Lanius ludovicianus*	CDFW SSC	Found in broken woodlands, savanna, pinyon-juniper, Joshua tree, riparian forests, desert oases, scrub, and washes. Prefers open country for hunting, with perches for scanning and dense shrubs and brush for nesting.	High. Suitable habitat is present within the project site. Detections have been made during surveys and there are recorded occurrences in CNDDB within 3 miles of the proposed project site. **Mitigation Measure BIO-15** (Preconstruction Surveys) has been added to the IS/MND to detect potentially occurring special-status species prior to project activities.

Table 3-5 Special-Status Wildlife Species Potential to Occur

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
Larks (Alaudidae)			
California horned lark *Eremophila alpestris actia*	CDFW WL	Found in prairies and heavily grazed pastures. Prefers bare, dry ground and areas of short, sparse vegetation.	High. Suitable habitat is present within the proposed project site. This species has been observed north and south of the proposed project site, but not within; there are recorded occurrences in CNDDB within 3 miles of the proposed project site.
Blackbirds (Icteridae)			
Tricolored blackbird *Agelaius tricolor*	ST, CDFW SSC, USFWS BCC	Largely endemic to California; most numerous in the Central Valley and nearby vicinity. Typically requires open water, protected nesting substrate, and foraging grounds within vicinity of the nesting colony. Nests in dense thickets of cattails, tules, willow, blackberry, wild rose, and other tall herbs near fresh water. Also nests in agricultural crops (e.g., silage), where colonies may be threatened during harvest.	Low (Nesting), Moderate (Foraging). Although sparse marginal nesting habitat for the species occurs on site, this species has been observed foraging north of the proposed project site and recorded observations are documented in CNDDB within 3 miles of the proposed project site. This species was not observed during focused surveys conducted for the species in 2024. Although this species is unlikely to nest on site, it could be observed foraging in the area on occasion.
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	CDFW SSC	Breeds almost exclusively in marshes with tall emergent vegetation, such as tule or cattail stands, generally in open areas and edges over relatively deep water. During migration and winter, prefers open cultivated lands, fields, and pastures.	Moderate. Suitable nesting habitat is sparse in the proposed project site. However, historic detections have been made during surveys and recorded observations are documented in CNDDB within 3 miles of the proposed project site. This species is unlikely to nest on-site but could forage in the area on occasion.
Sandpipers and Allies (Scolopacidae)			
Long-billed curlew *Numenius americanus*	CDFW WL	Found in lowland areas near agriculture in the interior of California. The Central and Imperial Valleys are important areas for wintering and migrating.	Low. Although suitable habitat is present within the proposed project site, there are no recent recorded occurrences within 3 miles of the proposed project site in CNDDB.

Table 3-5 Special-Status Wildlife Species Potential to Occur

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
MAMMALS			
Kangaroo Rats, Pocket Mice, & Kangaroo Mice (Heteromyidae)			
Giant kangaroo rat *Dipodomys ingens*	FE, SE	Inhabits fine sandy loam soils supporting sparse annual grass/ forb vegetation and marginally found in low-density alkali desert scrub.	Low. Suitable habitat is not present within the proposed project site. However, the species has recorded occurrences documented 3 miles west of the proposed project site.
Foxes, Wolves, Coyotes (Canidae)			
San Joaquin kit fox *Vulpes macrotis mutica*	FE, ST	Grassland or grassy open stages with scattered shrubby vegetation; requires loose textured sandy soils for burrowing; requires suitable prey base of small rodents.	Low. Suitable habitat is present within the proposed project site. Detections have not been made during surveys, but the area has been documented as a corridor for the species in the past. There are no recorded occurrences within 3 miles of the proposed project site in CNDDB.
Weasels & Relatives (Mustelidae)			
American badger *Taxidea taxus*	CDFW SSC	Found in dry, open grasslands, fields, and pastures. Most abundant in drier open stages of most shrub, forest, and herbaceous habitats with friable soils.	Low. Although suitable habitat is present within the proposed project site and this species has been observed north of the project, this species was not observed during surveys conducted for the species in 2024. **Mitigation Measure BIO-15** (Preconstruction Surveys) has been added to the IS/MND to detect potentially occurring special-status species prior to project activities.
Free-Tailed Bats (Molossidae)			
Western mastiff bat *Eumops perotis californicus*	CDFW SSC	Known to occur in habitat consisting of extensive open areas within dry desert washes, flood plains, chaparral, cismontane oak woodland, coastal scrub, open ponderosa pine forest, and grasslands. Roosts primarily in crevices in rock outcrops and buildings.	Moderate. Suitable roosting a foraging habitat is present within the proposed project site. The Aqueduct may provide a corridor for bats, facilitating movement of various species that roost and/or hibernate in surrounding areas. This species was detected at MP 132.95 during acoustic monitoring. Given the time of night that this species was recorded, approximately two hours past sunset, and the scarcity of detection on any other audio files at this site, it is likely that this species was using the Aqueduct for movement.

Table 3-5 Special-Status Wildlife Species Potential to Occur

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
Evening Bats (Vespertilionidae)			
Pallid bat *Antrozous pallidus*	CDFW SSC	Occurs in a wide variety of habitats including chaparral, coastal scrub, desert wash, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, riparian woodland, Sonoran desert scrub, upper montane coniferous forest, valley and foothill grasslands. Most common in open, dry habitats with rocky areas for roosting. For roosting, prefers rocky outcrops, cliffs and crevices with access to open habitats for foraging. Roosts must protect species from high temperatures. Very sensitive to disturbance of roosting sites.	Moderate. Suitable roosting a foraging habitat is present within the proposed project site. The Aqueduct may provide a corridor for bats, facilitating movement of various species that roost and/or hibernate in surrounding areas. This species was detected at MP 139.35 during acoustic monitoring. Given the time of night that this species was recorded, approximately two hours past sunset, and the scarcity of detection on any other audio files at this site, it is likely that this species was using the Aqueduct for movement.
Western red bat *Lasiurus frantzii*	CDFW SSC	Prefers edges or habitat mosaics that have trees for roosting and open areas for foraging. Requires nearby water source. Roosting habitat includes forests and woodlands from sea level up through mixed conifer forests. Feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands. Not found in desert areas.	Moderate. Suitable roosting a foraging habitat is present within the proposed project site. The Aqueduct may provide a corridor for bats, facilitating movement of various species that roost and/or hibernate in surrounding areas. This species was detected at MP 132.95 during acoustic monitoring. Given the time of night that this species was recorded, approximately two hours past sunset, and the scarcity of detection on any other audio files at this site, it is likely that this species was using the Aqueduct for movement.
INSECTS			
Bumble Bees (Bombus)			
Crotch's bumble bee *Bombus crotchii*	SC	Occurs primarily in California. Prefers grassland and scrub area within drier climates. Overwinters in leaf litter and soft soil.	Moderate. The 2025 habitat assessment and surveys resulted in the identification of suitable nesting and foraging habitat (California Department of Water Resources 2025c).

Source: Data compiled by the California Department of Water Resources in 2024

Notes: CDFW FP= California Fully Protected; CDFW SSC = California Species of Special Concern; FE = Federally Endangered; FPT = Federally Proposed Threatened; FT = Federally Threatened; SE = Federally Endangered; ST = State Threatened; SC = State Candidate for Listing; USFWS BCC = Birds of Conservation Concern.

As shown in Table 3-5, eight special-status wildlife species were determined to have a high potential to occur within the proposed project site: San Joaquin coachwhip (*Masticophis flagellum ruddocki*), burrowing owl (*Athene cunicularia*), California horned lark (*Eremophila alpestris actia*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus hudsonius*), prairie falcon (*Falco mexicanus*), Swainson's hawk (*Buteo swainsoni*), and white-tailed kite (*Elanus leucurus*). Seven special-status wildlife species were determined to have a moderate potential to occur on the proposed project site: pallid bat (*Antrozous pallidus*), western mastiff bat (*Eumops perotis californicus*), western red bat (*Lasiurus frantzii*), short-eared owl (*Asio flammeus*), yellow-headed blackbird (*Xanthocephalus xanthocephalus*), tricolored blackbird (*Agelaius tricolor*), and Crotch's bumble bee (*Bombus crotchii*).

All other special-status wildlife species were determined to have low potential to occur within the proposed project site due to lack of suitable habitat or other considerations and are not discussed further. Species with no potential to occur are also not discussed.

Critical Habitat for Plant and Wildlife Species

The USFWS defines the term *critical habitat* as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection.

There is no critical habitat present within or adjacent to the proposed project site, and there is no critical habitat within 10 miles of the proposed project site.

Jurisdictional Resources

An aquatic resources delineation and mapping was conducted on June 22, 23, and 24 and September 28, 2021 (Appendix C within Appendix B). The delineation and mapping were completed following the protocols described in the *1987 Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (U.S. Army Corps of Engineers 2008). Aquatic habitats in the proposed project site were classified using the *Classification of Wetlands and Deepwater Habitats of the United States* ("Cowardin Classification") (Federal Geographic Data Committee 2013). All aquatic features were analyzed in the field to determine whether they may be considered jurisdictional.

Under the Revised Definition of waters of the U.S., there are five categories that are considered jurisdictional waters of the U.S. These categories include (a)(1) territorial seas and waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters which are subject to the ebb and flow of the tide, and interstate waters, including interstate wetlands; (a)(2) impoundments of waters of the U.S; (a)(3) tributaries of waters of the U.S that meet the relatively permanent standard; (a)(4) wetlands adjacent to certain waters that meet the relatively permanent standard; and (a)(5) intrastate lakes and ponds that meet the relatively permanent standard.

Aquatic resources identified within the proposed project site include Cantua Creek at MP 133.67 and Salt Creek at MP 137.06. Ephemeral drainage channels were identified along both Cantua Creek and Salt Creek; however, these ephemeral drainage channels do not meet the relatively permanent standard or otherwise do not meet definitions of one of the (a)(1) through (a)(5) waters categories. The aquatic resources delineation identified approximately 4.53 acres of aquatic resources within the proposed project site, including seasonal wetland and ephemeral drainage, described further below.

Seasonal Wetland

Seasonal wetlands in California are temporary water bodies that hold water long enough during the growing season to promote anaerobic soil conditions and support hydrophytic vegetation. These wetlands are distinguished by their predictable seasonal drying, typically occurring within the same year.

Seasonal wetland SW-1 is hydrologically connected to Cantua Creek; this wetland totals 0.45 acre in the proposed project site and is at MP 133.8 right (**Table 3-6**, Figure 4-2 in Appendix B). In the proposed project site, vegetation included Bermuda grass (*Cynodon dactylon*) (FACU), California sunflower (*Helianthus californicus*) (OBL), Italian rye grass (*Lolium multiflorum*) (FAC), tall flatsedge (*Cyperus eragrostis*) (FACW), perennial pepperweed (*Lepidium latifolium*) (FAC), sheep sorrel (*Rumex acetosella*) (FAC), curly dock (*Rumex crispus*) (FAC), and Baltic rush (*Juncus balticus*) (FACW).[1] The wetland contains a rock gabion that serves as a sediment screening device surrounding a concrete drain inlet structure. A small patch of broadleaf cattail (*Typha latifolia*) (OBL) and Mexican fan palm (*Washingtonia robusta*) (FACW) saplings too small to warrant a separate wetland type was observed immediately adjacent to the drain inlet structure at the lowest point of seasonal wetland SW-1.

Table 3-6 Aquatic Resources in the Proposed Project Site

Aquatic Resources (Map ID)	Rapanos Waters Type	Waters of the U.S. (acres)	Isolated (acres)	Rationale
Seasonal Wetland (SW-1)	Isolated waters	--	0.448	Seasonal wetlands are isolated from any downstream connection to jurisdictional waters.
Waters				
Channels (ED-1 – ED-4) (Cantua Creek)	Isolated waters	--	3.716	Ephemeral drainages are isolated from any downstream connection to jurisdictional waters.
Channels (ED-5 – ED-9) (Salt Creek)	Isolated waters	--	0.370	

Source: Data compiled by the California Department of Water Resources in 2024

[1] Virtually all plants in the United States are given an indicator status reflecting how likely they are to be found in wetlands; these classifications were taken from the Arid West supplement. “FACU” refers to facultative upland species, which are more likely to be found in uplands; “FAC” refers to facultative species, which are equally likely to be found in wetlands and uplands; “FACW” refers to facultative wetland species, which are more likely to be found in wetlands; and “OBL” refers to obligate wetland species, which are always found in wetlands.

Ephemeral Drainage

Ephemeral drainages have flowing water immediately following precipitation when rainfall or groundwater provides water for channel flow. During dry periods, ephemeral drainages do not have flowing water. Within the proposed project site, ephemeral drainages periodically flow following precipitation during the winter season and are dry during other times of the year.

Four ephemeral drainage segments (ED-1 through ED-4), totaling approximately 3.72 acres, were identified in the proposed project site along Cantua Creek near MP 133.8 right (Table 3-6 and Figure 4-1 and Figure 4-2 in Appendix B). In addition, five ephemeral drainage segments (ED-5 through ED-9), totaling 0.37 acres, were identified along Salt Creek at MP 136.0 right and MP 137.0 right (Table 3-6 and Figure 4-3 and Figure 4-4 in Appendix B). All ephemeral drainages have been realigned to varying degrees within the proposed project site and convey substantial sediment from upstream reaches. Due to extensive historic and ongoing disturbances from the surrounding agricultural activities, the ordinary high-water mark in these drainage segments is primarily identified by physical indicators such as shelving and scour, occasional water staining, changes in the plant community, and/or drift deposits. Vegetation is sparse or absent within the drainage segments.

Due to the high degree of historic and ongoing disturbance in much of the surrounding uplands by ongoing agricultural activities, the ordinary high-water mark is primarily marked by areas of shelving and scour, occasional water staining, a change in the plant community, and/or drift deposits. Very little vegetation is supported in these drainage segments.

The ephemeral drainage channels in the proposed project site are isolated and are not tributary to jurisdictional waters and are therefore not expected to be waters of the U.S. pursuant to the Supreme Court's decision in the consolidated cases of *Rapanos v. United States* and *Carabell v. United States* (referred to hereafter as *Rapanos*).

Raptors and Migratory and Nesting Birds

The proposed project site supports a diversity of raptors and migratory birds. Power poles and trees, as well as exposed I-beams on bridges and check structures, provide cavities or ledges for birds to build nests. Approximately 26 active nest sites of migratory birds have been detected over the past five years in the area of the proposed project site.

Wildlife Corridors

Wildlife corridors or habitat corridors are natural or semi-natural lands (e.g., rural, agricultural, ruderal, or barren) that connect populations of wildlife and larger habitat areas across the landscape. While resources such as a dry culvert under a roadway or bridge may be used strictly for travel purposes, a corridor such as a creek can also contain natural vegetation and habitats that support foraging, roosting, and breeding activities as well.

Wildlife movement corridors are critical for the long-term health of ecological systems for several reasons. Corridors are connections that provide wildlife with access to water, food, and cover sources, spatially linking these three resources with wildlife in different areas. In addition, wildlife

movement between habitat areas provides for genetic exchange between populations of wildlife in otherwise separated natural areas. This is especially critical for small populations that are subject to loss of variability and effects of inbreeding.

Habitat connectivity in relation to the Aqueduct in the SLC can be considered in three main aspects—north to south along the Aqueduct, east to west across the Aqueduct, and the open water environment within the Aqueduct:

- **North to South.** The Aqueduct runs generally north to south along California's Central Valley and can be considered a link between habitats dispersed throughout the Central Valley. The north to south connection along both sides of the Aqueduct is open and can provide temporary habitat for traveling wildlife.
- **East to West.** The habitat connectivity from east to west is less open due to the aquatic nature of the Aqueduct. Periodic bridges, overchutes, and utility crossings over the canal provide terrestrial passage from one side to the other. Structures and crossings may also be used for bird or bat nesting and roosting.
- **Open Water.** Waterfowl and coastal bird species often use the Aqueduct as a resting area during the spring and fall migratory periods. Bats and birds forage for insects over the open water.

Discussion

Issue IV.a

Construction

Construction activities associated with the proposed project could result in permanent and temporary direct impacts to suitable habitat for special-status species as outlined in **Table 3-7** and detailed below.

Table 3-7 Potential Direct Impacts to Special-Status Species Habitat

Impact Type	Atriplex Scrub (acres)	Fiddleneck-Filaree Fields (acres)	Mesquite Thickets (acres)	Wild Oats and Annual Brome Grassland (acres)	Disturbed (acres)	Total (acres)
San Joaquin Coachwhip						
Temporary	0.08	5.11	--	12.10	--	17.29
Burrowing Owl						
Temporary (burrows and burrow habitat)	--	--	--	--	24.84	24.84
Temporary (foraging)	--	5.11	--	12.10	--	17.29

Table 3-7 Potential Direct Impacts to Special-Status Species Habitat

Impact Type	Atriplex Scrub (acres)	Fiddleneck-Filaree Fields (acres)	Mesquite Thickets (acres)	Wild Oats and Annual Brome Grassland (acres)	Disturbed (acres)	Total (acres)
Swainson's Hawk						
Temporary (nesting)	--	--	8.53	--	--	8.53
Temporary (foraging)	--	5.11	--	12.10	24.84	42.05
White-Tailed Kite						
Temporary (foraging)	--	5.11	--	12.10	24.84	42.05
Tricolored Blackbird						
Temporary (foraging)	0.08	5.11	--	12.10	24.84	42.13
Bats (Pallid Bat, Western Mastiff Bat, and Western Red Bat)						
Temporary (foraging)	0.08	5.11	--	12.10	24.84	42.13
Crotch's Bumble Bee						
Temporary (foraging)	0.08	5.11	8.53	12.10	24.84	50.66
Total Project Impacts	***0.08***	***5.11***	***8.53***	***12.10***	***24.84***	***50.66***
Total Surrounding Study Area [a]	***4.48***	***39.38***	***14.59***	***17.76***	***115.96***	***192.17***

Source: Data compiled by Environmental Science Associates in 2025

Note: Several species share the same habitat requirements. Therefore, impact acreages per habitat type may match for multiple species.

a. The total surrounding study area is the Aqueduct right-of-way in the vicinity of Pools 17 and 18, excluding the proposed project site components and the open water portion of the Aqueduct.

Special-Status Plants

As described above, there are no special-status plants with a moderate to high potential to occur or that have been observed within the proposed project site. Therefore, construction of the proposed project would have **no impact** on any special-status plants identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.

Special-Status Amphibians

No special-status amphibians were determined to have a moderate or high potential to occur or were identified within the proposed project site. Therefore, construction of the proposed project would have **no impact** on any special-status amphibians identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.

Special-Status Reptiles

One special-status reptile, San Joaquin coachwhip (CDFW SSC), has a high potential to occur within the proposed project site. Although this species has not been documented within the proposed project site, ancillary observations of this species have been documented along the Aqueduct right-of-way and suitable habitat for this species (i.e., upland annual grassland and alkali desert scrub habitats) is present within the proposed project site.

Construction activities associated with the proposed project could result in direct injury or mortality to San Joaquin coachwhip, if present within the proposed project site. The project may also result in temporary removal of suitable habitat for this species including Atriplex scrub, fiddleneck-filaree fields, and wild oats and annual brome grassland (Table 3-7). In addition, increased noise, artificial light, increased human presence, or introduction of invasive non-native weed species during construction activities may result in temporary indirect impacts to San Joaquin coachwhip within the proposed project site. Therefore, impacts to San Joaquin coachwhip from construction of the proposed project would be potentially significant.

To avoid or minimize construction-related impacts to special-status reptiles, DWR would implement **Mitigation Measure BIO-1** (Biological Monitor), requiring that a qualified biologist be on-site to conduct clearance surveys and monitor ground-disturbing activities and exclusion buffers to help minimize and fully mitigate or avoid the incidental take of individual special-status animals through relocation and to minimize disturbance of special-status species habitat. **Mitigation Measure BIO-2** (Worker Environmental Awareness Program [WEAP]), would require that all personnel undergo WEAP training prior to the start of construction activities to reduce potential impacts by informing crews about of the biology and general behavior of special-status species with potential to occur on-site; providing information about the distribution and habitat needs of the special-status species; describing the sensitivity of the special-status species to human activities; and providing the species' status pursuant to CESA, including legal protection, recovery efforts, penalties for violations and project-specific protective measures. Furthermore, implementation of **Mitigation Measure BIO-3** (Invasive Plant Species Control Measures), providing measures that must be implemented to control the spread of invasive plants to reduce impacts to native plants; **Mitigation Measure BIO-4** (General Construction Best Management Practices), providing general measures to reduce vehicle speeds, avoid potential wildlife entrapment, trash abatement, minimize and delineate work areas, reduce dust, nighttime work requirements, and noise limitations; and **Mitigation Measure BIO-5** (Revegetation Plan), requiring the preparation of a revegetation plan to ensure that temporary impacts are restored to pre-construction conditions, would minimize potential direct and/or indirect impacts to San Joaquin coachwhip. With implementation of these mitigation measures, impacts to special-status reptiles would be reduced to **less than significant with mitigation incorporated**.

Special-Status Birds

Ten special-status bird species have a moderate or high potential to occur within the proposed project site: burrowing owl (SC, CDFW SSC, USFWS BCC), California horned lark (CDFW WL), loggerhead shrike (CDFW SSC), northern harrier (CDFW SSC, USFWS BCC), prairie falcon (CDFW WL), short-eared owl (CDFW SSC, USFWS BCC), Swainson's hawk (ST), tricolored blackbird (ST, CDFW SSC, USFWS BCC), white-tailed kite (CDFW FP), and yellow-headed blackbird (CDFW SSC). Four of these special-status bird species (burrowing owl, Swainson's hawk, tricolored blackbird, and white-tailed kite) are State listed and are discussed in detail below.

Burrowing Owl

Habitat for this species is present along portions of the embankments bordering the Aqueduct roads along the proposed project site, and a total of nine active burrows have been recorded within the proposed project site, with an average of two active burrows documented in a given year. Only one active burrowing owl burrow was observed at MP 134.17 in 2024. No burrowing owl pairs were identified during the 2025 surveys and individual burrowing owls were only observed in the vicinity of the proposed project site from January 2025 to March 2025 (California Department of Water Resources 2025a). After March 2025, no burrowing owls were observed during burrowing owl surveys or site visits to the area for other projects (not related to the proposed project). DWR biologists theorize that burrowing owls may use sections of the Aqueduct as overwintering sites and disperse to their breeding sites by spring. Thus, this species has a high potential to occur within the upland annual grassland and disturbed habitats throughout the proposed project site. Construction activities have the potential to result in direct mortality to burrowing owls, including potential vehicle strikes, if the species is present breeding or foraging within the proposed work areas during project activities. The proposed project may result in the temporary removal of suitable burrows and burrow habitat along the Aqueduct embankments and may result in temporary removal of suitable foraging habitat for the species, including fiddleneck-filaree fields and wild oats and annual brome grassland. Additionally, construction activities, which would last approximately 8 weeks per linear mile, may result in indirect impacts or the temporary loss of suitable habitat for burrowing owl within the proposed project site due to increased noise, artificial light, increased human presence, ground vibration, or introduction of non-native weed species. Therefore, impacts to burrowing owl from construction of the proposed project would be potentially significant.

The implementation of **Mitigation Measure BIO-6** (Burrowing Owl), requiring focused pre-construction burrowing owl surveys and the implementation of avoidance buffers, agency consultation, exclusion plans, and consultation for unavoidable impacts would reduce potential impacts to burrowing owl. Additionally, implementation of **Mitigation Measure BIO-1** (Biological Monitor), **Mitigation Measure BIO-2** (WEAP), **Mitigation Measure BIO-3** (Invasive Plant Species Control Measures), and **Mitigation Measure BIO-4** (General Construction Best Management Practices), would further reduce direct and/or indirect impacts to burrowing owl by requiring a biological monitor during ground-disturbing activities and periodic checks, providing environmental training to all personnel, implementing invasive plant species control measures, and using best management practices to control vehicle speeds, manage trash, prevent wildlife entrapment,

delineate work areas, noise and artificial lighting requirements, restrict nighttime activities. The implementation of **Mitigation Measure BIO-5** (Revegetation Plan) and **Mitigation Measure BIO-7** (Impacts to Federally and State-Listed Species Habitat) would reduce impacts to species habitat in the proposed project site by requiring the restoration of temporarily impacted areas to pre-construction conditions and/or compensatory habitat replacement for permanent impacts to federally and State-listed species habitat. With implementation of these mitigation measures, impacts to burrowing owl would be reduced to **less than significant with mitigation incorporated**.

Swainson's Hawk

Active Swainson's hawk nests were observed in 2021 and 2024 during protocol-level surveys conducted in accordance with the Swainson's Hawk Technical Advisory Committee's *Recommended Timing and Methodology* (2000), and the proposed project site provides suitable habitat for this species to nest and forage. Two active Swainson's hawk nest sites were identified in 2021; a Swainson's hawk nest was located in a mesquite tree on the right side of the Aqueduct at MP 133.60, and an active nest was observed in a cottonwood tree on the right side of the Aqueduct at MP 138.40. The Swainson's hawk nest in the cottonwood tree at MP 138.40 was also confirmed to be active in 2024. Thus, Swainson's hawk nesting is known to occur within 0.25 mile of the proposed project site and potential impacts to the species may occur.

The annual grassland and scattered trees throughout the proposed project site provide suitable nesting and foraging habitat for this species. The project may result in temporary direct impacts to suitable nesting habitat within mesquite thickets. Construction activities have the potential to result in the loss of nesting success, take of individuals due to vehicle strikes, and the temporary removal of foraging habitat within the proposed work areas (i.e., staging and borrow areas). The project may result in temporary direct impacts to suitable foraging habitat including bare land (disturbed), fiddleneck-filaree fields, and wild oats and annual brome grassland. In addition, increased noise, human presence, altered hydrology, and the introduction of non-native weed species during construction activities may temporarily result in indirect impacts to Swainson's hawk due to the proposed project. Therefore, impacts to Swainson's hawk from construction of the proposed project would be potentially significant.

The implementation of **Mitigation Measure BIO-8** (Swainson's Hawk), requiring focused presence/absence Swainson's hawk surveys prior to construction during the nesting season and the implementation of avoidance buffers and consultation for unavoidable impacts, would reduce potential impacts to Swainson's hawk. Additionally, implementation of **Mitigation Measure BIO-1** (Biological Monitor), **Mitigation Measure BIO-2** (WEAP), **Mitigation Measure BIO-3** (Invasive Plant Species Control Measures), and **Mitigation Measure BIO-4** (General Construction Best Management Practices), would further reduce direct and/or indirect impacts to Swainson's hawk by requiring a biological monitor during ground-disturbing activities and periodic checks, providing WEAP training to all personnel, implementing invasive plant species control measures, and using best management practices to control vehicle speeds, manage trash, prevent wildlife entrapment, delineate work areas, reduce noise, and avoid impacts to drainage features. The implementation of **Mitigation Measure BIO-5** (Revegetation Plan) and **Mitigation Measure BIO-7** (Impacts to

Federally and State-Listed Species Habitat) would reduce impacts to species habitat in the proposed project site by requiring the restoration of temporarily impacted areas to pre-construction conditions and/or compensatory habitat replacement for permanent impacts to federally and State-listed species habitat. With implementation of these mitigation measures, impacts to Swainson's hawk would be reduced to **less than significant with mitigation incorporated**.

White-Tailed Kite

While suitable foraging habitat for white-tailed kite is present throughout the proposed project site, the species has only been historically observed foraging in the vicinity. Given the limited presence of dense-canopied trees and the absence of dense broadleaf deciduous groves typically used for nesting and roosting, nesting by white-tailed kite is not likely to occur within the proposed project site. White-tailed kite has the potential to occasionally forage within the open annual grassland and agricultural areas throughout the proposed project site and surrounding areas. The project may result in temporary direct impacts to suitable foraging habitat including bare land (disturbed), fiddleneck-filaree fields, and wild oats and annual brome grassland. Although suitable foraging habitat is present, direct construction impacts would be confined to minimal and concentrated areas, primarily within previously disturbed portions of the Aqueduct and adjacent work areas. Furthermore, ample foraging habitat would remain available in the areas surrounding the project both during and after construction, minimizing the overall impact on the species. Despite these minimization efforts, indirect impacts such as increased noise, human presence, altered hydrology, and the introduction of non-native weed species during construction could still affect foraging white-tailed kites. Consequently, impacts to white-tailed kite foraging habitat from the proposed project are considered potentially significant.

Impacts to suitable white-tailed kite foraging habitat would be reduced with the implementation of **Mitigation Measure BIO-1** (Biological Monitor), requiring a biological monitor during ground-disturbing activities and periodic checks; **Mitigation Measure BIO-2** (WEAP), providing environmental training about how to avoid and minimize impacts to special-status resources to all personnel; **Mitigation Measure BIO-3** (Invasive Plant Species Control Measures), implementing invasive plant species control measures; and **Mitigation Measure BIO-4** (General Construction Best Management Practices), using best management practices to control vehicle speeds, manage trash, reduce noise, delineate work areas, and avoid impacts to drainage features. In addition, the implementation of **Mitigation Measure BIO-5** (Revegetation Plan) would reduce impacts to habitat in the proposed project site by requiring the restoration of temporarily impacted areas to pre-construction conditions. With implementation of these mitigation measures, impacts to white-tailed kite foraging habitat would be reduced to **less than significant with mitigation incorporated**.

Tricolored Blackbird

Tricolored blackbirds typically nest near open fresh water in dense, tall vegetation like cattails (*Typha* spp.), tule (*Schoenoplectus* sp.), willows (*Salix* spp.), blackberry (*Rubus* spp.), and wild rose (*Rosa* spp.); however, they will also use crops like grain or silage for nesting. Potentially suitable nesting habitat, identified through data analysis and field verification in May 2021, was present in

areas partially or fully meeting these requirements. In 2021, tricolored blackbirds were observed on the proposed project site at MP 141.90 right in an agricultural canal and a single calling individual at MP 126.70 right in a wheat field. However, a 2024 survey found no tricolored blackbirds, and only sparse, marginal nesting habitat was observed within the proposed project site. Consequently, the potential for nesting within the proposed project site is low, but there is a moderate potential for this species to occasionally forage or occur onsite.

Suitable nesting habitat for tricolored blackbird is limited within the proposed project site. Therefore, direct impacts to the species resulting from construction are expected to be less than significant. Temporary direct impacts to the species foraging habitat could result from removal of the habitat within the proposed work areas (i.e., staging and borrow areas). The proposed project may result in temporary direct impacts to suitable foraging habitat including Atriplex scrub, bare land (disturbed), fiddleneck-filaree fields, and wild oats and annual brome grassland. Additionally, indirect impacts such as increased noise, human presence, altered hydrology, artificial lighting, and the introduction of non-native weed species during construction activities may temporarily affect tricolored blackbirds. Therefore, impacts to tricolored blackbird foraging habitat from construction of the proposed project would be potentially significant.

Impacts to foraging tricolored blackbird would be reduced with the implementation of several mitigation measures. Incorporation of **Mitigation Measure BIO-9** (Tricolored Blackbird), requiring protocol surveys and the implementation of avoidance buffers, exclusion plans, and consultation for unavoidable impacts would reduce potential impacts to tricolored blackbird. Additionally, incorporation of **Mitigation Measure BIO-1** (Biological Monitor), requiring a biological monitor during ground-disturbing activities and periodic checks; **Mitigation Measure BIO-2** (WEAP), providing environmental training to all personnel; **Mitigation Measure BIO-3** (Invasive Plant Species Control Measures), implementing invasive plant species control measures; and **Mitigation Measure BIO-4** (General Construction Best Management Practices), using best management practices to control vehicle speeds, manage trash, delineate work areas, reduce noise, restrict nighttime work, nighttime lighting restrictions, and avoid impacts to drainage features, which would reduce potential direct and/or indirect impacts due to project activities. Furthermore, the implementation of **Mitigation Measure BIO-5** (Revegetation Plan) and **Mitigation Measure BIO-7** (Impacts to Federally and State-Listed Species Habitat) would reduce impacts to species habitat in the proposed project site by requiring the restoration of temporarily impacted areas to pre-construction conditions and/or compensatory habitat replacement for permanent impacts to federally and State-listed species habitat. With implementation of these mitigation measures, impacts to tricolored blackbird would be reduced to **less than significant with mitigation incorporated**.

Other Migratory Birds and Raptors

In addition to the special-status bird species discussed previously, the proposed project site supports a diversity of other migratory birds, including special-status non-listed bird species, protected under the federal Migratory Bird Treaty Act of 1918 and Sections 3503.5, 3505, and 3511 of the California Fish and Game Code. Surveys have identified active nests, primarily in available trees (such as eucalyptus and large mesquite stands) and on power poles along the right-of-way. Commonly

observed bird species include common raven (*Corvus corax*), northern mockingbird (*Mimus polyglottos*), mourning dove (*Zenaida macroura*), western kingbird (*Tyrannus verticalis*), and cliff swallow (*Petrochelidon pyrrhonota*). Special-status non-listed birds with potential to nest on site include California horned lark, loggerhead shrike, northern harrier, and short-eared owl. Nesting migratory birds and raptors have the potential to nest on bridges, structures, power poles, and vegetation (i.e., trees, shrubs, and on the ground) throughout the proposed project site. Potential impacts to nesting birds may occur if project activities are conducted during the active nesting season (February 15 through August 31 for songbirds, and as early as January 15 for raptors).

Construction activities associated with the proposed project could result in direct injury or mortality to special-status birds, if present within the proposed project site. These activities could cause direct mortality to adults sitting on the nests, direct mortality of eggs or young, adult abandonment of nests, and/or reproductive failure. In addition, increased noise, artificial light, increased human presence, or introduction of non-native weed species during construction activities may temporarily result in a loss of suitable habitat for special-status birds within the proposed project site. Therefore, impacts to nesting migratory birds and raptors from construction of the proposed project would be potentially significant.

The implementation of **Mitigation Measure BIO-10** (Nesting Birds), requiring a nesting bird survey prior to construction during the nesting season, along with the implementation of avoidance buffers and agency consultation, would reduce potential impacts to protected nesting birds. Additionally, impacts to nesting birds would be reduced with the implementation of several mitigation measures. These include **Mitigation Measure BIO-1** (Biological Monitor), requiring a biological monitor during ground-disturbing activities and periodic checks; **Mitigation Measure BIO-2** (WEAP), providing environmental training to all personnel; **Mitigation Measure BIO-3** (Invasive Plant Species Control Measures), implementing invasive plant species control measures; and **Mitigation Measure BIO-4** (General Construction Best Management Practices), using best management practices to control vehicle speeds, manage trash, delineate work areas, reduce noise, restrict nighttime activities, and avoid impacts to drainage features, which would reduce potential direct and/or indirect impacts due to project activities. With implementation of these mitigation measures, impacts on nesting birds and raptors and special-status birds would be reduced to **less than significant with mitigation incorporated**.

Special-status non-listed bird species, such as California horned lark, loggerhead shrike, prairie falcon, short-eared owl, and yellow-headed blackbird have the potential to occasionally forage within the open annual grassland and agricultural areas throughout the proposed project site and surrounding areas. Although suitable foraging habitat is present, direct temporary construction impacts would be confined to minimal and concentrated areas, primarily within previously disturbed portions of the Aqueduct and adjacent work areas and will be restored to its pre-existing condition following construction. Furthermore, ample foraging habitat would remain available in the areas surrounding the project both during and after construction, minimizing the overall impact on the species. As such, impacts on special-status non-listed bird foraging habitat would be **less than significant**.

Special-Status Mammals

Three special-status bat species—pallid bat, western mastiff bat, and western red bat—were detected during bat surveys in 2024. However, no visual evidence of roosting was observed such as urine stains or piles of guano. Therefore, these special-status bats are determined to have a moderate potential to occur within the proposed project site.

Construction activities associated with the proposed project could result in direct injury or mortality to special-status mammal species, if present within the proposed project site. However, no impacts to potentially suitable roosting habitat would result from this project. The proposed project may result in the temporary loss of suitable foraging habitat including Atriplex scrub, bare land (disturbed), fiddleneck-filaree fields, and wild oats and annual brome grassland. In addition, increased noise, artificial light, increased human presence, or introduction of non-native weed species during construction activities may temporarily result in a loss of suitable habitat for special-status mammals within the proposed project site. Therefore, impacts on special-status mammals from construction of the proposed project could be potentially significant.

The implementations of **Mitigation Measure BIO-11** (Special-Status Bats), requiring a bat roosting habitat assessment prior to construction, along with preparation of a Bat Exclusion Plan if roosting special-status bat species are identified, would reduce potential impacts to special-status bat species. Additionally, impacts on roosting and foraging bats would be reduced with the implementation of several mitigation measures. These include **Mitigation Measure BIO-1** (Biological Monitor), requiring a biological monitor during ground disturbing activities and periodic checks; **Mitigation Measure BIO-2** (WEAP), providing environmental training to all personnel; **Mitigation Measure BIO-3** (Invasive Plant Species Control Measures), implementing invasive plant species control measures; and **Mitigation Measure BIO-4** (General Construction Best Management Practices), using best management practices to control vehicle speeds, manage trash, delineate work areas, reduce noise, restrict nighttime activities, nighttime lighting restrictions, and avoid impacts to drainage features, which would reduce potential direct and/or indirect impacts due to project activities. With implantation of these mitigation measures, impacts on special-status mammals would be reduced to **less than significant with mitigation incorporated**.

Special-Status Invertebrates

One special-status invertebrate species, Crotch's bumble bee, was determined to have a moderate potential to occur within the proposed project site following the 2025 habitat assessment and surveys for the species within and surrounding the proposed project site (California Department of Water Resources 2025c). The 2025 habitat assessment and surveys resulted in the identification of suitable habitat for nesting and foraging. The site either contains continual coverage of flowers throughout the active period or there are flowers that are continuously in bloom in the lands directly adjacent to the site. There is the potential for flowers to bloom continuously within 3 miles of the site. However, no visual evidence of the species resulted from the 2025 habitat assessment and surveys. Therefore, Crotch's bumble bee is determined to have a moderate potential to occur within the proposed project site.

Construction activities associated with the proposed project could result in direct injury or mortality to Crotch's bumble bee, if present within the proposed project site. The proposed project may result in the temporary loss of suitable foraging habitat including Atriplex scrub, bare land (disturbed), fiddleneck-filaree fields, mesquite thickets, and wild oats and annual brome grassland. In addition, during construction activities increased noise, increased dust, increased human presence, and/or introduction of nonnative weed species may temporarily result in a loss of suitable habitat for Crotch's bumble bee within the proposed project site. Therefore, impacts on Crotch's bumble bee from construction of the proposed project could be potentially significant.

The implementation of **Mitigation Measure BIO-12** (Crotch's Bumble Bee), requiring pre-activity surveys prior to ground-disturbing activities, seasonal work window avoidance, pre-activity nesting surveys if ground disturbing activities will occur during the nesting season, nest avoidance, and consultation for unavoidable impacts would reduce potential impacts to the species. Additionally, impacts on Crotch's bumble bee would be reduced with the implementation of several mitigation measures. These include **Mitigation Measure BIO-1** (Biological Monitor), requiring a biological monitor during ground disturbing activities and periodic checks; **Mitigation Measure BIO-2** (WEAP), providing environmental training to all personnel; **Mitigation Measure BIO-3** (Invasive Plant Species Control Measures), implementing invasive plant species control measures; and **Mitigation Measure BIO-4** (General Construction Best Management Practices), using best management practices to control vehicle speeds, delineate work areas, reduce noise, hazardous material storage requirements, reduce dust, and reduce trash, which would reduce potential direct and indirect impacts due to project activities. With implantation of these mitigation measures, impacts on Crotch's bumble bee would be reduced to **less than significant with mitigation incorporated**.

Operation

Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. Therefore, operation of the proposed project would have a **less-than-significant impact** on special-status plants and wildlife species, and no mitigation would be required.

Impact Conclusion

As discussed above, **Mitigation Measures BIO-1 through BIO-5** would reduce impacts to special-status species by requiring biological monitors, implementation of a WEAP program, invasive species control measures, construction BMPs, and a post-construction revegetation plan, thereby reducing impacts from construction activities. In addition, **Mitigation Measure BIO-7** would protect State and federally endangered species through compensatory mitigation, in coordination with CDFW and USFWS, should impacts occur.

Additionally, implementation of **Mitigation Measures BIO-6 and BIO-8 through BIO-10** would reduce impacts on special-status birds through specific measures for burrowing owl, Swainson's hawk, tricolored blackbird, and nesting birds by requiring pre-construction surveys, establishment of species-specific no-disturbance buffers, and coordination with wildlife agencies to avoid or minimize impacts during critical breeding or nesting periods. Further, impacts to special-status mammals would

be reduced to a less-than-significant level through implementation of **Mitigation Measure BIO-11**, which protects special-status bat species by requiring pre-construction surveys by a qualified biologist to identify active day or maternity roosts and implementing appropriate measures to avoid direct mortality or disturbances. Finally, impacts to special-status invertebrates would be reduced to a less-than-significant level through implementation of **Mitigation Measure BIO-12**, which protects Crotch's bumble bee by requiring pre-activity surveys prior to ground-disturbing activities, seasonal work window avoidance, pre-activity nesting surveys if ground disturbing activities will occur during the nesting season, nest avoidance, and consultation for unavoidable impacts.

These mitigation measures reduce impacts to less than significant by ensuring that sensitive species and habitats are identified, avoided, or protected through surveys, monitoring, and buffers. Coordination with biologists and agencies ensures proper implementation and compliance with environmental regulations. Therefore, impacts to candidate, sensitive, or special-status species would be **less than significant with mitigation incorporated**.

Issue IV.b

As described above, none of the vegetation communities/land cover types present on the proposed project site are listed as sensitive or rare natural communities. Therefore, construction and operation of the proposed project would have **no impact** on riparian habitat, or other sensitive or rare natural communities identified in local or regional plans, policies, or regulations, or by CDFW or USFWS.

Issue IV.c

As described above, none of the aquatic resources identified within the proposed project site are considered to be waters of the U.S. Furthermore, the proposed project is not proposed to impact waters of the State or CDFW jurisdiction. To reduce potential indirect impacts to aquatic resources, the proposed project would implement **Mitigation Measure BIO-1** (Biological Monitor), which would require that a biological monitor be on-site during all ground-disturbing activities. In addition to implementation of **Mitigation Measure BIO-4** (General Construction Best Management Practices) and **Mitigation Measure BIO-2** (WEAP) and incorporation of **Mitigation Measure BIO-13** (Aquatic Resources), indirect impacts to potentially jurisdictional features would be reduced with implementation of best management practices, such as the use of silt fences, fiber rolls, and/or gravel bags. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. Therefore, the construction and operation of the proposed project would have a **less-than-significant impact with mitigation incorporated** on State protected aquatic resources.

Issue IV.d

Wildlife Movement

Terrestrial wildlife species or migratory birds may temporarily avoid foraging or wading in the Aqueduct immediately adjacent to the proposed project site during construction activities due to increased noise, artificial light, and increased human presence. However, construction activities

associated with the proposed project would not prevent terrestrial or avian species from using other portions of the Aqueduct for these purposes. Construction of the proposed project would not impede wildlife movement throughout the region, nor would it prevent terrestrial wildlife or migratory birds from using the Aqueduct. Following construction, operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. Implementation of **Mitigation Measure BIO-4** (General Construction Best Management Practices) requires speed limits, off-road vehicle limitations, trash abatement, minimizing the work area footprint and duration, dush control, wildlife protection, nighttime lighting restrictions, noise restrictions, and species injury/mortality reporting, would reduce potential indirect impacts due to project activities. Therefore, construction and operation of the proposed project would have a **less-than-significant impact** on local or regional wildlife movement.

Nesting Birds and Native Wildlife Nursery Sites

Construction

Native resident and migratory bird species protected under the Migratory Bird Treaty Act and the California Fish and Game Code Section 3500 may nest within and near the proposed work areas. Cliff swallows are known to nest on the bridges and check structures in the area of the proposed project site, while common ravens often nest on power poles, bridges, and structures in the area of the proposed project site. Other migratory birds and raptors, including northern harrier, loggerhead shrike, California horned lark, and prairie falcon have been observed and may also nest within the proposed project site.

Potential impacts on nesting birds may occur during construction that overlaps with the general avian nesting season (i.e., from February 15 to September 1 for songbirds, January 15 to August 31 for raptors). Impacts may include direct and indirect impacts to individuals, eggs, or nests due to disturbance from human activities and construction noise and vibration, as well as habitat loss. Impacts to nesting birds would be potentially significant. Therefore, implementation of **Mitigation Measure BIO-10** (Nesting Birds), requiring a nesting bird survey prior to construction during the nesting season and the implementation of avoidance buffers and agency consultation, would reduce potential impacts to protected nesting birds. Additionally, implementation of **Mitigation Measure BIO-4** (General Construction Best Management Practices), requiring speed limits, off-road vehicle limitations, trash abatement, minimizing the work area footprint and duration, dush control, wildlife protection, nighttime lighting restrictions, noise restrictions, and species injury/mortality reporting,, would reduce potential indirect impacts due to project activities. With implementation of this mitigation measure, impacts to nesting birds during construction would be reduced to **less than significant with mitigation incorporated**.

Operation

Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. Therefore, operation of the proposed project would have a **less-than-significant impact** on migratory birds.

Impact Conclusion

Although construction activities may cause temporary avoidance of the immediate project area by terrestrial wildlife and migratory birds due to increased noise, lighting, and human presence, these impacts would be short-term and localized and would not impede regional wildlife movement or use of the Aqueduct. Potentially significant impacts to nesting birds during the breeding season would be avoided or minimized through pre-construction surveys, establishment of protective buffers, and coordination with regulatory agencies as required by **Mitigation Measure BIO-10**. Additionally, limiting construction to daylight hours and minimizing light spillover through shielding and directional lighting under **Mitigation Measure BIO-4** would further reduce indirect effects. Therefore, the project would not substantially interfere with wildlife movement or nesting activities, and overall impacts would be **less than significant with mitigation incorporated**.

Issue IV.e

To the extent feasible, implementation of the proposed project would comply with applicable adopted county ordinances protecting biological resources; however, State agencies such as DWR are not subject to local biological ordinances. Therefore, **no impact** would occur.

Issue IV.f

The proposed project site is located within the proposed Plan Area for the Southwest San Joaquin Valley Habitat Conservation Plan and Natural Community Conservation Plan in preparation. These documents have not yet been adopted and are not applicable to the proposed project. No other proposed or existing Habitat Conservation Plan or Natural Community Conservation Plan is applicable to the proposed project site; therefore, the proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan and there would be **no impact**.

Mitigation Measures

Mitigation Measure BIO-1: Biological Monitor. DWR shall retain a qualified biological monitor(s) with relevant experience with biological resources and regulations. The qualified biologist(s) shall be on-site during all ground-disturbing and vegetation removal activities. The qualified biologist(s) shall conduct daily clearance surveys of all equipment, vehicles, and stockpiled materials at the beginning of each day and regularly throughout the workday, and during ground-disturbing activities. The qualified biologist(s) shall also monitor any implemented exclusion buffers for work occurring near sensitive biological resources weekly or as needed, and check potential, atypical, and known burrows/burrow complexes/dens every two weeks while construction activities are occurring within suitable habitat for special-status species. The qualified biologist(s) shall recommend appropriate setback buffers for protection of sensitive biological resources, where necessary, and shall have the authority to temporarily stop work if special-status species are observed that may be impacted by construction activities.

Mitigation Measure BIO-2: Worker Environmental Awareness Program (WEAP). A qualified biologist shall conduct pre-construction WEAP training for all personnel working at the construction site. The training will include a review of environmental laws, regulations, and resource agency permit requirements that must be followed. Additional topics that will be covered include special-status species and protection measures, site contamination prevention, spill prevention, emergency response, best management practices (BMPs), and appropriate work practices. The WEAP training will be provided to all workers prior to construction and updated trainings will be provided as applicable. A list of employees who attend the training sessions will be maintained by DWR.

Mitigation Measure BIO-3: Invasive Plant Species Control Measures. Construction activities shall be conducted in a manner that prevents the introduction, transfer, and spread of invasive species, including plants, animals, and microbes (e.g., algae, fungi, parasites, bacteria), from one work area to another. Prevention best practices and guidelines for controlling the spread of invasive plants can be found on the California Invasive Plant Council's website. DWR shall require construction contractors to ensure that equipment is free of invasive plant seeds, propagules, and any other material which may contain them (e.g., soil). For purposes of this mitigation measure, invasive plant species shall include all species with a Cal-IPC rating of moderate or high. Prior to entering the work areas, equipment shall be inspected to confirm it is free of mud, dirt, and debris. For larger work areas that would be accessed via non-paved roads, tire track stations shall be installed at the work area entrances and exits, where appropriate. Staging areas and access routes shall avoid weed infestations, and infestations within the work area(s) shall be flagged and avoided to the maximum extent feasible. Only certified weed-free materials (e.g., fiber rolls and straw) shall be used during construction.

Mitigation Measure BIO-4: General Construction Best Management Practices. DWR shall require construction contractors to adhere to the following general construction best management practices during construction of the proposed project:

- *Speed Limits.* Vehicles travelling within the project site will not exceed a speed limit of 35 miles per hour on primary or paved roads, except on county roads and highways, and 20 miles per hour on gravel or unpaved roads. Emergency vehicles are exempt from these restrictions in emergency situations.
- *Vehicle Parking, Equipment Staging, and Stockpile.* Vehicle parking, equipment staging, and stockpiling will be limited to established roads, paved areas, and previously disturbed areas to the extent practicable. BMPs, such as silt fences, erosion control mats, and biodegradable weed-and-rice-free wattles, will be implemented around staging and stockpile locations to reduce runoff into waterways and suitable habitat for special-status species.
- *Off-Road Vehicles.* Off-road-vehicle travel may be necessary to access infrastructure in limited areas of the project site. Off-road-vehicle travel will be limited to the extent practicable. If necessary, vehicles will be inspected and dirt/mud will be cleaned prior to

driving into off-road work locations to prevent the spread of noxious weeds. In addition, any vehicles traveling off-road will avoid wetlands and waterways.

- *Erosion Control.* The project will be conducted in a manner to stabilize soils and minimize erosion to the greatest extent possible. Upland soils exposed by the project will be seeded and stabilized using erosion control fabric or hydroseeding. Erosion control measures and BMPs, such as silt fences, natural fiber mats, geotextile fabrics, jute, and biodegradable weed-and-rice-free wattles, will be implemented to reduce runoff from work areas into waterways and suitable habitats. No plastics or other non-porous material will be used for erosion control. If used, silt fencing will be removed upon completion of work activities. Non-entangling erosion control materials (e.g., fiber netting with mesh size less than 0.25 inches [0.64 centimeters] or similar, no monofilament) will be used when required.
- *Firearms and Dogs.* All dogs, pets, firearms, open fires, and hunting will be prohibited at the project site, except for those firearms or dogs held by/associated with authorized security personnel or law enforcement officials.
- *Trash Abatement.* All food items, trash, and debris will be secured in animal-proof containers and removed on a regular basis to avoid attracting opportunistic predators, such as ravens, coyotes, and feral dogs. Plastic water bottles and plastic bags will be picked up and removed daily.
- *Vehicle and Equipment Maintenance.* Vehicles and equipment will be kept clean to prevent excessive build-up of oil and grease and regularly inspected for leaks. Fueling, cleaning, and maintenance of vehicles and equipment will occur in designated upland locations and not within wetlands, streams, or waterways, or within any areas where an accidental discharge to these features may occur. Materials and heavy equipment will be stored outside of the active flow of creeks and other waterways.
- *Storage and Hazardous Materials.* Hazardous and toxic materials will be stored at designated upland locations and in watertight containers to prevent contamination of waterways and suitable habitat. All equipment will be properly maintained and cleaned to prevent spills and leaks. If any spills or leaks of petroleum or other toxic materials are detected, work in the immediate area will stop, the issue will be reported, and the area will be cleaned up in accordance with applicable local, state, and federal regulations. For small spills on impervious surfaces, absorbent materials will be used to remove the spill instead of washing it down with water. Absorbent materials will be collected and disposed of properly. For small spills on previous surfaces, such as soil, the area will be excavated and the materials properly disposed of rather than burying the contaminated area. Significant spills, including oil, will be reported immediately to 911, local emergency response teams, and the Governor's Office of Emergency Services Warning Center at (800) 852-7550.
- *Minimizing Work Area Footprint and Duration.* The project site footprints and the duration of the project will be minimized to the extent feasible to reduce the potential for take of special-status species.

- *Temporary Ground Disturbance.* All temporary ground disturbance areas will be stabilized and allowed to naturally return to pre-activity conditions within 12 months of the disturbance. Erosion control measures (e.g., mulching, seeding, biodegradable weed-and-rice-free wattles) will be used in all disturbance areas where sedimentation has potential to enter waterways and suitable habitats.
- *Equipment Clearance Survey.* All pipes, culverts, equipment, and similar structures that are stored at a work area for one or more overnight periods will be inspected for special-status species before the pipe, culvert, equipment, or structure is subsequently buried, capped, or otherwise used or moved.
- *Excavations Inspections.* All pipes, culverts, open holes, sumps, trenches, and similar structures within each work area will be inspected at the beginning of each day to ensure wildlife are not trapped. All excavations with sidewalls steeper than a 1:1 slope will be covered when workers or equipment are not actively working in the excavation, or will have an escape ramp of earth or a non-slip material with a 1:3 slope. In addition, all installed fence posts will be capped to ensure birds do not enter and get trapped within posts.
- *Dust Control.* To reduce fugitive dust resulting from Covered Activities, DWR will employ dust control measures in accordance with applicable air pollution control districts that limit the amount of fugitive dust generated during work activities. Water will be added to the surface to soften the soil and control dust, where needed.
- *Work Area Delineation.* The perimeter of work areas will be clearly delineated on work area maps, flagged, and/or fenced, as appropriate, to ensure work activities avoid adjacent riparian habitats, waterways, and suitable habitat outside of the work area. In situations where work activities are limited to developed, disturbed, or otherwise unsuitable habitat, flagging and fencing may not be necessary. However, in situations where work activities will occur in close proximity to waterways or suitable habitat, DWR will implement appropriate measures to ensure the avoidance and minimization of impacts to those resources and special-status species, such as on-site biological monitoring of activities or placement of exclusion fencing after biological clearance surveys.
- *Wildlife Protection.* Any wildlife encountered during the project will be allowed to leave the area on their own without harm or will be moved out of harm's way by an approved biologist or as specified in the species-specific mitigation measures.
- *Work Hours.* Access to the construction areas shall be limited to established work hours.
- *Nighttime Work Requirements.* Construction activities shall not be conducted at night (i.e., between dusk and dawn) within 500 feet (152 meters) of sensitive biological resources or wildlife corridors. Any nighttime lighting needed (e.g., security lighting) shall be shielded and directed downwards to minimize light spillover or glare.
- *Noise.* Construction contractors shall equip construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards to reduce construction equipment noise to the maximum extent possible. The construction

contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive biological resources, and stage equipment in areas that will create the greatest distance between construction-related noise sources and sensitive biological resources.

- *Species Injury/Mortality Reporting.* Any worker who inadvertently injures or kills a special-status species or finds one dead, injured, or entrapped shall immediately report the incident to the construction supervisor. The construction supervisor shall immediately notify DWR personnel or the DWR inspector, who then shall immediately inform CDFW.

Mitigation Measure BIO-5: Revegetation Plan. For temporary impacts on natural communities, a Revegetation Plan shall be prepared by a qualified biologist(s) prior to starting construction and shall be implemented by DWR following completion of construction. The Revegetation Plan shall guide and ensure successful restoration to pre-project conditions and shall include, at a minimum, the following:

- A native planting palette appropriate for each vegetation type being restored and appropriate to local conditions.

Mitigation Measure BIO-6: Burrowing Owl.

- *Pre-Activity Survey.* To avoid project-related impacts to burrowing owls potentially occurring on or in the vicinity of the project site, a pre-construction presence/absence survey for burrowing owls shall be conducted by a qualified biologist within suitable burrowing owl habitat in accordance with current CDFW guidelines (e.g., the 2012 CDFG Staff Report on Burrowing Owl Mitigation). The survey shall be conducted within 30 days prior to the commencement of any ground disturbing activities, including vegetation clearing, grubbing, or grading. The survey shall identify occupied breeding and non-breeding burrowing owl burrows within 500 feet (152 meters) of project activities. In addition, a final pre-construction survey to avoid active burrowing owl individuals and burrows shall be conducted within three (3) days prior to the initiation of project activities, with the findings immediately reported to CDFW. Additionally, if ground-disturbing activities have previously occurred, but the site is left undisturbed for more than 30 days, a new pre-construction survey shall be conducted to minimize the possibility of burrowing owls having colonized the site since it was last disturbed. If burrowing owls are not present during the survey(s), site preparation and construction activities may begin. A final report shall be prepared by a qualified biologist and submitted to CDFW within 30 days of completion of the survey documenting the results of the burrowing owl surveys and detailing avoidance, minimization, and mitigation measures.
- *Avoidance.* If burrowing owl is present within the 500-foot (152-meter) survey area, then avoidance shall be implemented to avoid impacts to burrowing owl individuals and active burrows. Avoidance of burrowing owls can be achieved through the implementation of

the following measures, consistent with the CDFW Staff Report on Burrowing Owl Mitigation (2012), most recent guidelines, or consultation with CDFW:

- A qualified biologist establishing a no-disturbance buffer (i.e., a minimum 165-foot (50-meter) no-disturbance buffer for low level disturbance activities during the non-breeding season [September 1 through January 31] and a minimum 500-foot (152-meter) no-disturbance buffer for low level disturbance activities during the breeding season [February 1 through August 31]) based on the project activities.
- Regular monitoring of the active burrow by a qualified biologist with the authority to adjust the buffer size if the burrowing owl exhibits signs of disturbance (i.e., agitation or stress behavior).
- Buffer distances may be reduced in specific locations where avoidance measures (such as noise attenuation buffers, visual screens, or speed-limit reductions) are placed between the occupied burrow and construction activities in coordination with CDFW.
- Construction avoidance will occur within the no-disturbance buffer until a qualified biologist determines the burrowing owl is no longer present or until a CDFW-approved Burrowing Owl Plan has been implemented.
- If active burrowing owl nests are identified during the pre-construction survey, project activities must not commence within 500 feet (152 meters) of the active nest until no sign is present that the burrows are being used by adult or juvenile owls or following CDFW approval of a Burrowing Owl Plan as described below.
- If owl presence is difficult to determine, a qualified biologist shall monitor the burrows with motion-activated trail cameras for at least 24 hours to evaluate burrow occupancy.

- *Burrowing Owl Plan.* Prior to construction, if impacts to burrowing owl individuals or active burrows cannot be avoided, the qualified biologist and DWR shall coordinate with CDFW to develop a Burrowing Owl Plan to be approved by CDFW prior to commencement of project activities in the buffer zone. The Burrowing Owl Plan shall describe proposed avoidance, relocation, monitoring, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the number and location of occupied burrow sites and details on proposed buffers if avoiding the burrowing owls or information on the adjacent or nearby suitable habitat available to owls for relocation. DWR shall implement the Burrowing Owl Plan following CDFW review and approval.

  If burrowing owls are observed within the project site during project implementation and construction, CDFW shall be notified immediately in writing within 48 hours of detection. If avoidance is not feasible, a Burrowing Owl Plan shall be submitted to CDFW for review and approval within two weeks of detection and project activity shall be halted within a minimum of 165 feet (50 meters) for low level disturbance activities during the non-breeding season [September 1 through January 31] or a minimum 500 feet (152 meters) for low level disturbance activities during the breeding season [February 1 through

August 31] of the burrowing owls without CDFW approval. DWR shall be responsible for implementing appropriate avoidance, minimization, and mitigation measures, including burrow avoidance, passive relocation, or other appropriate mitigation measures (i.e., noise attenuation, speed restrictions, biological monitoring, etc.) as identified in the Burrowing Owl Plan.

- *Take Authorization.* If impacts cannot be feasibly avoided and construction could result in potential direct or indirect impacts to burrowing owl and/or occupied habitats, DWR shall consult with CDFW to ensure compliance with the California Endangered Species Act (CESA), which may include obtaining a "take" permit (e.g., CESA Section 2081 Incidental Take Permit) and mitigation for impacts to habitat (i.e., on-site restoration of temporarily impacted areas, on-site or off-site habitat preservation/restoration for permanently impacted areas, or purchase of credits from an approved bank).

Mitigation Measure BIO-7: Impacts on Federally and State-Listed Species Habitat. If direct impacts on federally or State-listed species habitat would be affected by the project, a compensatory mitigation plan shall be developed and implemented in coordination with USFWS and CDFW, as appropriate. Unavoidable effects would be compensated through a combination of creation, preservation, and restoration of habitat or purchase of credits at an approved mitigation bank at a minimum 1:1 ratio or equivalent. Temporary impacts shall be returned to similar conditions to those that existed prior to project-related activities (consistent with **Mitigation Measure BIO-5, Revegetation Plan**).

San Joaquin Kit Fox:

- *Pre-Construction Survey.* A qualified biologist will conduct a pre-construction survey for San Joaquin kit fox dens prior to the commencement of construction activities within the project area and within 500 feet (152 meters) of the project area.

- *Den Avoidance Buffer.* No-disturbance buffers around San Joaquin kit fox dens, as described in the USFWS *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance,*[2] will be implemented during project construction.

- *Take Authorization*. If the no-disturbance buffers outlined in the USFWS *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* is not feasible, consultation with CDFW will occur to discuss options to avoid take. If impacts cannot be feasibly avoided and construction could result in potential direct or indirect impacts on San Joaquin kit fox and/or occupied habitats, DWR shall consult with CDFW to ensure compliance with the California Endangered Species Act (CESA), which may include obtaining a "take" permit (e.g., CESA Section 2081 Incidental Take Permit) and mitigation for impacts

[2] United States Fish and Wildlife Service (USFWS). 2011. *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance.* Prepared by the Sacramento Fish and Wildlife Office. January 2011.

on habitat (i.e., on-site restoration of temporarily affected areas, on-site or off-site habitat preservation/restoration for permanently affected areas, or purchase of credits from an approved bank).

Mitigation Measure BIO-8: Swainson's Hawk.

- *Focused ~~Pre-Activity~~ Surveys*. A qualified biologist will conduct ~~a pre-activity~~ focused surveys for Swainson's hawk ~~when project activities will occur within suitable habitat~~ during the Swainson's hawk nesting season or prior to project initiation in accordance with the Swainson's Hawk Technical Advisory Committee's *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley*. The survey will determine if existing or potential nesting sites are present within 0.~~2~~5 mile (0.~~4~~ 8 kilometer) of work areas.
- *Pre-Activity Nesting Survey.* If suitable potential nesting sites are located within 0.~~2~~5 mile (0.~~4~~ 8 kilometer) of project activities, a qualified biologist will conduct a pre-activity nesting bird survey if work occurs during the nesting season (February 15 through August 31) prior to any work, site preparation, mowing, vegetation removal, and/or staging activities. Surveys will be conducted no more than 7 days prior to the initiation of project activities.
- *Active Nest Avoidance.* If active nests are identified within 0.~~2~~5 mile (0.~~4~~ 8 kilometer) of any project activities, a 0.~~2~~5 mile (0.~~4~~ 8 kilometer) temporary no-work buffer will be established around the active nest until the nest is vacated, young have fledged, and there is no evidence of a second nesting attempt. An approved biologist may temporarily reduce the no-work buffer distance if it can be determined that project activities will not negatively affect nesting behavior and a biological monitor is present. A qualified biologist will monitor the status of the nest throughout the season to determine when young have fledged or the nest is no longer active. If the biologist does not find any nests but suitable habitat would be removed, the biologist will conduct a final survey of such habitat and areas within 100 feet (30.5 meters) of the habitat within 48 hours of the activity to confirm the absence of nests.
- *Monitoring.* If project activities must occur within 0.~~2~~5 mile (0.~~4~~ 8 kilometer) of an identified active Swainson's hawk nest, a qualified biologist must be on site daily to monitor the nests for signs of agitated behavior. The biological monitor will hold stop-work authority.
- *Nest Tree Mitigation*. In addition to avoiding occupied Swainson's hawk nest trees, if impacts on unoccupied Swainson's hawk nest trees result from project activities, trees will be replaced at a 3:1 ratio in an area that will be protected in perpetuity.
- *Take Authorization*. If impacts cannot be feasibly avoided and construction could result in potential direct or indirect impacts on Swainson's hawk and/or occupied habitats, DWR shall consult with CDFW to ensure compliance with the California Endangered Species Act (CESA), which may include obtaining a "take" permit (e.g., CESA Section 2081 Incidental Take Permit) and mitigation for impacts on habitat (i.e., on-site restoration of

temporarily affected areas, on-site or off-site habitat preservation/restoration for permanently affected areas, or purchase of credits from an approved bank).

Mitigation Measure BIO-9: Tricolored Blackbird.

- *Pre-Activity Survey.* A qualified biologist will conduct a pre-activity survey for tricolored blackbirds when activities will occur within suitable habitat. The survey will determine if existing or potential nesting sites are present within ~~250~~ 300 feet (~~76~~ approximately 92 meters) of the work area.
- *Pre-Activity Nesting Survey.* If suitable potential nesting sites are located within ~~250~~ 300 feet (~~76~~ approximately 92 meters), a qualified biologist will conduct a pre-activity nesting bird survey if work occurs during the nesting season (~~February 15 through August 31~~February 1 through September 15) prior to any work, site preparation, mowing, vegetation removal, and/or staging activities. Surveys will be conducted no more than 7 days prior to the initiation of project activities.
- *Active Nest Avoidance and Monitoring.* If active nests are identified within ~~250~~ 300 feet (~~76~~ approximately 92 meters) of any project activities, a ~~250~~ 300-foot (~~76~~ approximately 92-meter~~s~~) temporary no-work buffer will be established around the active nest until the young have fledged, following *Staff Guidance Regarding Avoidance of Impacts to Tricolored Blackbird Breeding Colonies on Agricultural Fields in 2015.*[3] A qualified biologist may reduce the no-work buffer distance if it can be determined that project activities will not negatively affect nesting behavior and a biological monitor is present to monitor nesting behavior during project activities. No work buffers will remain established until the nest is vacated, juveniles have fledged, and there is no evidence of a second nesting attempt.
- *Take Authorization.* No impacts on TRBL are expected, but if the avoidance buffer around a TRBL nesting colony is infeasible, consultation with CDFW is warranted to discuss whether the project can avoid take. If avoidance is not feasible, acquisition of an incidental take permit (ITP) for TRBL prior to ground-disturbing activities, pursuant to Fish and Game Code Section 2081(b), would be necessary to comply with CESA. An ITP could be issued either for the combined projects or for each project separately.

Mitigation Measure BIO-10: Nesting Birds. To avoid and minimize impacts to nesting birds, a qualified biologist will conduct pre-activity surveys for nesting birds no more than 7 days prior to any vegetation removal (i.e., upland vegetation management, grading and scraping for new road work, grubbing and removal of ground vegetation, removal of trees or shrubs) that begins from February 15 to August 31, and as early as January 15 for raptors. A resurvey will be needed if there is a 7-day or more lapse in work activities during this period. Surveys will cover the work area footprint and suitable habitat within 100 feet (30.5 meters) for all birds, 250 feet (76 meters) for raptors and tricolored blackbirds, and 0.25 mile (0.4 kilometer) for Swainson's hawks. If nests are located during pre-activity

[3] CDFW (California Department of Fish and Wildlife). 2015. *Staff Guidance Regarding Avoidance of Impacts to Tricolored Blackbird Breeding Colonies on Agricultural Fields in 2015.* March 19, 2015.

surveys, impacts will be minimized by establishing an appropriate non-disturbance buffer zone around active nests or vegetation patches supporting nesting birds. The size of the buffer will be determined by the biologist based on the species' sensitivity to disturbance, time of year, and planned work activities in the area. A biologist will monitor the behavior of the nesting birds to verify that they are not displaying evidence of disturbance from the project. The buffer will remain in effect and monitored until the nest is no longer active. Buffers for Swainson's hawk nests will be based on the guidance in the Swainson's Hawk Technical Advisory Committee's Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley, published in 2000 or more recent version.

Mitigation Measure BIO-11: Special-Status Bats. Prior to commencement of construction activities, within or outside of the maternity roosting season, a qualified biologist shall conduct the following activities:

- *Bat Roost Habitat Assessment:* A habitat assessment for bat roosts to identify areas of potentially suitable roosting habitat for special-status bat species within 100 feet (30.5 meters) of proposed work.
- *Bat Surveys:* If suitable roosting habitat for these species is present, an emergence survey or other feasible survey method to identify to species (e.g., bat detector, guano DNA analysis) shall be completed during the appropriate seasonal period for bat activity to determine whether potential roosts are used by special-status bat species.
- *Bat Roost Disturbance Minimization and Avoidance:* If special-status bats are present in a day roost, a 100-foot (30.5-meter) no-disturbance buffer shall be established around the day roost by a qualified biologist. The qualified biologist may adjust the no-disturbance buffer as determined based on observed bat behavior and disturbance of project activities. If no-disturbance buffers around special-status bat day roosts cannot be maintained or if special-status bats are present within a maternity roost, CDFW shall be consulted to determine measures to prevent disruptions or failure of breeding.

~~a pre-construction clearance survey throughout the project site in areas that have the potential to provide suitable bat roosting habitat to determine if any special-status bat species are roosting on-site. If bats are determined to be using trees specifically for roosting, the biologist will determine whether a day roost (non-breeding) or maternity roost (lactating females and dependent young) is present.~~

- ~~If a day roost is determined to be present, the biologist shall ensure that direct mortality to roosting individuals will not occur. In general, disturbances to day roosts as a result of noise or other indirect impact is not generally considered significant, as it would not cause direct mortality of individuals and would not be expected to reduce populations to below self-sustaining levels. If removal of any trees supporting a day roost would occur, the biologist shall ensure that all roosting individuals disperse from the location prior to removal of the vegetation to prevent direct mortality.~~

- ~~If a maternity roost is observed, the biologist will determine whether construction activities are likely to disturb breeding activities. If it is determined that the vegetation supporting the roost must be removed or activities are expected to disturb the breeding activities, a Bat Exclusion Plan shall be prepared in consultation with CDFW. At a minimum, the plan shall include avoidance and minimization measures to reduce potential impacts on breeding bats during construction activities and prescribed methods to safely and humanely evict bats from the roost to minimize any potential impacts.~~
  - ~~Exclusion devices may be installed to discourage bats from occupying the work areas outside of the maternity season in consultation with CDFW. Netting shall not be used as an exclusion material. If a roost is determined by a qualified biologist(s) to be used by a large number of bats (large hibernaculum), bat boxes shall be installed near the work areas prior to installing exclusion devices. The number of bat boxes installed will depend on the size of the hibernaculum and shall be determined through consultations with the CDFW. If a maternity colony has become established, all construction activities shall be postponed within a 500-foot buffer around the maternity colony until it is determined by a qualified biologist(s) that the young have dispersed. Once it has been determined that the roost is clear of bats, the roost shall be removed immediately.~~
  - ~~Any exclusion devices shall be designed to avoid entrapment of birds or bats and allow exit from, but not entry to, the exclusion area. Exclusion devices shall be installed between September 30 and February 1 and removed at the end of construction. A qualified bat biologist(s) shall be present upon exclusion installation and repair to survey for and ensure that birds and bats are not trapped behind exclusion devices.~~
  - ~~Exclusion monitoring shall occur daily by a qualified biologist(s) to determine effectiveness of devices. Any exclusion repair must be completed within three days of observation under supervision of a qualified biologist(s) to ensure that bat entrapment does not occur.~~

Mitigation Measure BIO-12: Crotch's Bumble Bee.

- *Pre-Activity Survey.* A pre-activity survey for Crotch's bumble bee will occur prior to initiation of ground-disturbing activities in suitable habitat. The pre-activity survey will include a habitat assessment that evaluates historical and current species occurrences and documents potential nesting habitat in the work area.
- *Seasonal Work Window and Avoidance.* Ground-disturbing activities will occur November 1 to January 31, outside of the nesting season within suitable habitat, or pre-activity nest surveys will be conducted and, if applicable, nest avoidance will be implemented.
- *Pre-Activity Nest Survey.* If ground-disturbing activities will occur during the nesting season (February 1 through October 31), a pre-activity nest survey will be conducted within 30 days of initiation of activities to evaluate whether an active nest is present

within work areas. Bee identification will be documented using photos of bees on vegetation taken from multiple angles. Only approved biologists are allowed to handle, capture, or net bees if needed for identification, as described in the California Department of Fish and Wildlife's 2023 Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species, or most recent version.

- *Active and Potential Nest Avoidance.* If CBB is detected during pre-activity surveys, a 50-foot (15-meter) avoidance buffer will be established around all small mammal burrows and thatched/bunched grasses. If an active Crotch's bumble bee nest is detected within a work area, an avoidance buffer of 100 feet (30.5 meters) will be established. The buffer may be reduced if determined by a qualified biologist that, based on bee behavior, a reduced buffer will not affect nesting individuals. Ground-disturbing activities will avoid active nest resources during the Crotch's bumble bee nesting period (February 1 through October 31), to the maximum extent feasible, or until the nest is determined to no longer be active by a qualified biologist. If impacts cannot be feasibly avoided and construction could result in potential direct or indirect impacts to Crotch's bumble bee and/or occupied habitats, DWR shall consult with CDFW to ensure compliance with the California Endangered Species Act, which may include obtaining a "take" permit (e.g., CESA Section 2081 Incidental take Permit from CDFW) and mitigation for permanent impacts to habitat.

- *Take Authorization.* No impacts on CBB are expected, but if the avoidance buffer around a CBB nest is infeasible or if CBB is observed on-site and ground-disturbing activities occur during the overwintering period (November 1–January 31), consultation with CDFW is warranted to discuss whether the project can avoid take. If avoidance is not feasible, acquisition of an ITP for CBB prior to ground-disturbing activities, pursuant to Fish and Game Code Section 2081(b), would be necessary to comply with CESA.

Mitigation Measure BIO-13: Aquatic Resources. To avoid indirect impacts on potentially jurisdictional features, best management practices, such as the use of silt fences, fiber rolls, and/or gravel bags, shall be implemented. No equipment maintenance or fueling shall be performed within or near the drainage channels where petroleum products or other pollutants from the equipment may enter this area.

Mitigation Measure BIO-14: Western Spadefoot.

- *Pre-Activity Survey.* A pre-activity survey for western spadefoot within suitable breeding and upland habitat will be conducted prior to commencement of project activities.

- *Breeding Survey*: Monitor the National Weather Service 72-hour forecast for the site. If a 70 percent or greater chance of rainfall is predicted within 24 hours of work, the qualified biologist shall survey the site before activities begin each day rain is forecast in order to survey for western spadefoots. If precipitation begins during activities, the qualified biologist(s) shall remain at the site for the duration of the rain event in order for activities

to continue. If rain exceeds ½ inch during a 24-hour period, all activities shall cease until it is no longer raining and no further rain is forecast.

- *Avoidance*. If western spadefoot are found during pre-activity and/or breeding surveys, a minimum 50-foot (15-meter) avoidance buffer will be implemented around suitable refugia (burrows, cracks, loose soil areas, etc.) and active or potential breeding habitat found to be used by the species, even when dry.

Mitigation Measure BIO-15: Pre-construction Surveys.

- Seven days prior to the initiation of ground-disturbing activities, a pre-construction survey shall be conducted in suitable habitat for special-status species such as western spadefoot, American badger, and San Joaquin coachwhip and/or their sign. If preconstruction surveys identify occupied burrows/dens or with burrows/dens with sign (e.g., American badger claw marks), a 50-foot (15-meter) no-disturbance buffer shall be established.

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3.2.5 Cultural Resources

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
V. CULTURAL RESOURCES—Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☐	☒	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

This section relies on the information and findings presented in the cultural resources technical report prepared for the proposed project:

California Aqueduct Subsidence Program (CASP) Pools 17–18 Liner Raise Project, San Luis Field Division, Fresno County, California: Cultural Resources Inventory Report (Hoffman et al. 2025).

The technical report included an overview of the environmental, ethnographic, and historic background of the proposed project site, with an emphasis on aspects related to human occupation. More detailed information regarding the results of the cultural resources study can be found in the technical report (Confidential **Appendix C**).

Environmental Setting

California Historical Resources Information System Records Search

A records search covering the proposed project site and areas within 0.25-mile was conducted on May 1, 2024, by staff at California Historical Resources Information System's (CHRIS's) Southern San Joaquin Valley Information Center (SSJVIC), housed at California State University, Bakersfield. The SSJVIC records search included a review of all recorded cultural resources and previous studies.

The SSJVIC records search indicates that six cultural resources, all historic-era built environment resources, have been previously recorded within the proposed project site. One of these, P-10-006207/P-15-015820/P-16-000266 (California Aqueduct [Aqueduct]), runs the length of the entire proposed project site. The others consist of four bridges (P-10-006209, P-10-006246, P-10-007343, P-10-007349) and one road (P-10-006345). No previously recorded cultural resources are present outside but within 0.25-mile of the proposed project site. The SSJVIC has record of two previous cultural resources studies that have been conducted in or within 0.25 mile of the proposed project site. Cumulatively, these reports covered approximately 99 percent of the proposed project site.

Archaeological Sensitivity Analysis

While geoarchaeological modeling indicates that the portion of the proposed project site from MP 133.5 to 134.5 has moderate sensitivity for buried pre-contact resources, previous disturbances associated with construction of the Aqueduct have likely removed any intact land surfaces within the proposed project site that had the potential to contain archaeological deposits. The proposed project would consist of excavation within the Aqueduct embankments (engineered fill sediment) and a vacant field (southernmost borrow area); the borrow areas all consist of stockpiled sediment previously excavated as part of the original Aqueduct construction with heights of 20 feet above the original ground surface and the proposed project would only excavate to a maximum of 20 feet below the top of these stockpiles, thus not disturbing any non-stockpiled sediment. These areas have low archaeological sensitivity, further limiting the potential for project implementation to affect any archaeological resources. Therefore, the overall potential for the proposed project to encounter intact significant pre-contact archaeological resources is considered low. Also, the proposed project site's sensitivity for historic-era archaeological resources is low, as any historic-era archaeological resources in the proposed project site would likely be associated with the Aqueduct and would probably not qualify as contributors to the Aqueduct, as existing engineering plans would likely provide any information potential on the resources.

Ethnographic Literature Research

There are no clearly documented ethnographic village sites in the vicinity of the proposed project site. The nearest such village sites are the *Pitkachi* (Northern Valley Yokut) village *Gewachiu*, approximately 18 miles north-northeast of the proposed project site along the south side of the San Joaquin River, and the *Apiachi* (Southern Valley Yokut) village *Wohui*, approximately 20 miles east of the proposed project site along the north side of Murphy Slough (Kroeber 1976 [1925]; Wallace 1978).

Native American Correspondence

The California Native American Heritage Commission (NAHC) maintains a confidential Sacred Lands File (SLF), which contains sites of traditional, cultural, or religious value to the Native American community. The NAHC was contacted on July 19, 2024, to request a search of the SLF for the proposed project site and vicinity. The NAHC replied on July 23, 2024, stating that the SLF has no record of any resources in or near the proposed project site. The response also provided contact information for 14 individuals representing seven California Native American Tribes (Tribes) that may be traditionally and culturally affiliated with the proposed project site.

In support of required Native American consultation for the proposed project pursuant to Public Resources Code Section 21080.3.1, as well as in accordance with the California Natural Resources Agency's *Final Tribal Consultation Policy* and DWR's *Tribal Engagement Policy*, on October 10, 2024, DWR sent a letter via certified mail to the Santa Rosa Rancheria Tachi Yokut Tribe providing information on the proposed project and requesting that the Tribe notify DWR if they would like to consult pursuant to Public Resources Code Section 21080.3.1. On October 11, 2024, DWR sent an email with attachments to the Santa Rosa Rancheria Tachi Yokut Tribe with the same project-related

information and request as the letter. DWR sent a follow-up email to the Tribe regarding the proposed project on November 13, 2024, and left a voicemail message on May 5, 2025. To date, the Santa Rosa Rancheria Tachi Yokut Tribe has not provided any response to this outreach.

In accordance with the California Natural Resources Agency's *Final Tribal Consultation Policy* and DWR's *Tribal Engagement Policy*, on October 10, 2024, DWR sent letters via certified mail to the other Tribes identified by the NAHC besides the Santa Rosa Rancheria Tachi Yokut Tribe:

- Amah Mutsun Tribal Band.
- Big Sandy Rancheria of Western Mono Indians.
- Cold Springs Rancheria of Mono Indians.
- Dumna Wo-Wah Tribal Government.
- Dunlap Band of Mono Indians.
- Kitanemuk & Yowlumne Tejon Indians.
- Northern Valley Yokut/Ohlone Tribe.
- Salinan Tribe of Monterey, San Luis Obispo Counties.
- Sierra Foothill Wuksachi Yokuts Tribe.
- Table Mountain Rancheria.
- Traditional Choinumni Tribe.
- Tule River Indian Tribe.
- Wuksachi Indian Tribe/Eshom Valley Band.
- Xolon-Salinan Tribe.

The letters provided information on the proposed project and requested that the recipients provide information on cultural resources that may be impacted by the proposed project, if they would like to do so. On October 11, 2024, DWR sent emails with attachments to these same Tribes with the same project-related information and request as the letters. On October 16, 2024, the Chairperson of the Traditional Choinumni Tribe contacted DWR by telephone stating that his Tribe did not wish to consult on the proposed project. Upon receipt of updated contact information, on November 6, 2024, DWR sent a follow-up letter, via certified mail, to the Tule River Indian Tribe. DWR sent a follow-up email with attachments to the Amah Mutsun Tribal Band on November 13, 2024, receiving a reply, via email, on November 15, 2024, stating that the Tribe did not wish to consult on the proposed project. To date, no other communications with Tribes regarding the proposed project have occurred. Documentation of the project correspondence with Tribes to date is included in **Appendix D**.

Field Survey

In June 2024, ESA conducted a cultural resources field survey of the entire proposed project site. The surveys consisted of an intensive-level archaeological pedestrian survey and a reconnaissance-level historic-era built environment survey. For the archaeological pedestrian survey, flat areas with

visible ground surface were subject to a systematic intensive pedestrian survey with transects spaced at intervals no more than 15 meters apart. Areas with limited ground visibility, such as densely vegetated or inundated areas, were subject to an opportunistic survey, wherein areas with some ground visibility were targeted. Paved areas, such as Aqueduct access roads, were not surveyed. Berms were visually inspected during the survey. Pre-contact resources were documented in metric units while historic-era resources were documented in imperial units, per industry conventions. Pre-contact archaeological sites were defined as three or more artifacts within a 30-by-30-meter area, or the presence of at least one feature. Historic-era archaeological sites were defined as three or more artifacts with at least one diagnostic item more than 45 years in age within an approximately 100-by-100-foot area. Pre-contact archaeological isolates were defined as fewer than three artifacts within a 30-by-30-meter area and would be recorded. Historic-era archaeological isolates consisting of fewer than three artifacts, unless considered exceptional, and non-diagnostic historic-era artifacts, would not be recorded. The historic-era built environment survey consisted of inspecting any historic-era built environment resources 45 years or older in the proposed project site identified through archival research, engineering plans, and historic and modern maps and aerial photographs. In addition, contextual photos were taken at MP markers to document the present condition of the Aqueduct (P-10-006207/P-15-015820/P-16-000266).

No archaeological resources were identified in the proposed project site during the survey. During the archaeological survey, ground visibility for the majority of the proposed project site was good, ranging from 70 to 100 percent, though portions of the embankments and borrow areas presented poor ground visibility, ranging from 0 to 25 percent. Six historic-era built environment resources, all previously recorded, were identified in the proposed project site during the survey. One of these, P-10-006207/P-15-015820/P-16-000266 (Aqueduct), runs the extent of the proposed project site. The other resources consist of four bridges (P-10-006209, P-10-006246, P-10-007343, P-10-007349), and one road segment (P-10-006345).

Summary of Cultural Resources Identified

As a result of background research and previous survey efforts, six cultural resources, all of which were historic-era built environment resources, were identified in the proposed project site: the Aqueduct (P-10-006207/P-15-015820/P-16-000266), four bridges (P-10-006209, P-10-006246, P-10-007343, P-10-007349), and one road segment (P-10-006345). During the field survey conducted for the proposed project, all six of these historic-era built environment resources were observed within the proposed project site. No archaeological resources or previously unrecorded built environment resources were identified as a result of this study.

P-10-006207/P-15-015820/P-16-000266 (Aqueduct) is listed in the California Register of Historical Resources (California Register) under Criteria 1 and 3. P-10-006209 (Clarkson Avenue Bridge) and P-10-006246 (Mount Whitney Avenue Bridge) are listed in the California Register under Criteria 1 and 3 as contributors to the Aqueduct. P-10-007343 (Cerini Avenue Bridge) and P-10-007349 (San Mateo Avenue Bridge) were both previously evaluated and recommended as California Register-eligible under Criteria 1 and 3 as contributors to the Aqueduct (Ehringer et al. 2023). P-10-006345

(West Clarkson Avenue) was previously evaluated and recommended not eligible for the California Register (Anderson 2013).

DWR agrees with the previous determinations of eligibility and recommendations of eligibility, concluding that five of the cultural resources identified in the proposed project site (P-10-006207/P-15-015820/P-16-000266, P-10-006209, P-10-006246, P-10-007343, P-10-007349) qualify as historical resources for CEQA purposes, and that one (P-10-006345) does not qualify as an historical resource for CEQA purposes.

Discussion

The following analysis describes archaeological resources, both as historical resources (according to CEQA Guidelines Section 15064.5) and as unique archaeological resources (as defined in Public Resources Code Section 21083.2[g]) under Issue V.b.

Issue V.a

Under CEQA, a significant impact could occur if the proposed project results in a substantial adverse change in the significance of an historical resource, as defined in CEQA Guidelines Section 15064.5, or a unique archaeological resource, as defined in Public Resources Code Section 21083.2. A “substantial adverse change in the significance” of an historical resource means “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of [the] historical resource would be materially impaired” (CEQA Guidelines Section 15064.5[b][1]). An historical resource or unique archaeological resource is materially impaired through the demolition or alteration of the resource’s physical characteristics that convey its historical significance and that justify its inclusion in (or eligibility for inclusion in) the California Register or a qualified local register (CEQA Guidelines Section 15064.5[b][2]). Therefore, material impairment of historical resources and unique archaeological resources constitutes a significant impact.

The proposed project would not alter the Aqueduct’s alignment, nor its open trapezoidal design, which facilitates the conveyance of higher volumes of water. Upon project completion, the modifications to backfill the embankment in preparation for new concrete liners would further reinforce the Aqueduct’s open trapezoidal design and would not involve its demolition or removal. The concrete lining is a character-defining feature of the Aqueduct, and the proposed project does not propose removing the existing concrete liners, nor does the project propose to damage or destroy any parts of the Aqueduct. Instead, new material would be added above the existing liners, and this new material would match the original liner portions in design, unreinforced concrete material, texture, thickness, height, and color.

The proposed project has the potential to cause alterations to the Aqueduct that are not consistent with the Secretary of the Interior’s *Standards for the Treatment of Historic Properties* (SOI Standards) (Code of Federal Regulations Title 36 Part 68) due to modifications to the Aqueduct’s character-defining features, including limited excavation and backfill at existing concrete liners, and the introduction of new concrete liner panels atop existing concrete liner panels. The SOI Standards Rehabilitation treatment allows for alterations and construction of new additions, if necessary, for the

continuation or new use of a built environment resource. This treatment allows for greater flexibility to ensure the continued use of an historical resource. Under CEQA, a project that may impact an historical resource but that follows the SOI Standards is considered to have a less-than-significant impact on the historical resource. Due to damage of ongoing subsidence on the existing concrete panels, the proposed alterations to the Aqueduct are necessary for the continued function of the resource. The proposed new panels would match the original design, size, scale, massing, and materials of the original panels.

The proposed project would allow for the continuous use of the Aqueduct by maintaining functionality in Pools 17 and 18, which would maintain operational flexibility and result in improvements to safety and reliability. While there would be limited changes to select contributing features of the resource, these modifications would not alter the resource's use as an aqueduct, alignment, location, setting, or association with the SWP, which are the character-defining features of the Aqueduct under California Register Criterion 1. Under California Register Criterion 3, the alterations proposed by the proposed project would maintain the Aqueduct's functionality. The access roads along the embankment that are currently used by maintenance and service vehicles would be used for the movement of heavy equipment during construction of the proposed project and would not be altered or destroyed as a part of the proposed project; the access roads would continue to operate for their intended purpose during and after project completion. Additionally, even with implementation of the proposed project, the Aqueduct would continue to exhibit most construction methods, materials, and engineering details associated with its period of significance.

The Aqueduct would not be removed from its historic location. There would be no introduction of visual, atmospheric, or audible elements that diminish the integrity of the resource. The proposed project would not result in the neglect of the Aqueduct, nor would the proposed project result in the transfer, lease, or sale of the Aqueduct. The proposed project would not remove or otherwise alter any of the other character-defining features or contributing elements of the Aqueduct, including the planned and engineered route or ancillary infrastructure. Any alterations to the immediate surroundings of the Aqueduct resulting from the proposed project would be temporary, or short-term, since the proposed project does not include the construction of any new structures, facilities, or infrastructure.

Therefore, the proposed project would not materially impair the Aqueduct (P-10-006207/P-15-015820/P-16-000266) such that it would no longer convey its historical significance for its eligibility for inclusion in the California Register. Upon project completion, the Aqueduct (P-10-006207/P-15-015820/P-16-000266) would still retain its integrity.

The proposed project would occur adjacent to the bridges along the Aqueduct embankment, but would not modify, destroy, or otherwise alter any bridges, including P-10-006209, P-10-006246, P-10-007343, and P-10-007349. The modifications to prepare the proposed project site for the panel installation and the installation and curing of the panels would not involve work on these bridges as part of the proposed project.

Because no physical alteration of these bridges would occur as a result of the proposed project, the resources' significance would not be materially impaired, and they would continue to be able to convey the significance that justifies their inclusion, or eligibility for inclusion, in the California Register. The proposed project would not result in a change of setting to the bridges due to the minimal visual changes that are proposed (i.e., liner raise of the Aqueduct). There would be no introduction of visual, atmospheric, or audible elements that would diminish the integrity of the resources. Therefore, the proposed project would not materially impair any of the four bridges identified in the proposed project site that qualify as historical resources (P-10-006209, P-10-006246, P-10-007343, P-10-007349) such that they would lose their ability to convey their historical significance for their eligibility for inclusion in the California Register. The proposed project would not affect or otherwise modify any aspect of these bridges.

In summary, for CEQA purposes, the proposed project would result in a **less-than-significant impact** on historical resources.

Issue V.b

Through a records search, background research, field survey, and Native American outreach, no archaeological resources, including any that may qualify as historical resources (as defined in CEQA Guidelines Section 15064.5) or as unique archaeological resources (as defined in Public Resources Code Section 21083.2[g]) were identified in or adjacent to the proposed project site. As such, the proposed project is not anticipated to impact any archaeological resources.

Although there is no substantial evidence that any archaeological resources are present in the proposed project site, the proposed project would involve ground-disturbing activities that may extend into undisturbed soil and it is possible that such activities could unearth, expose, or disturb subsurface archaeological resources that have not been identified on the surface. If such resources were found to qualify as archaeological resources pursuant to CEQA Guidelines Section 15064.5, impacts of the proposed project on archaeological resources could be potentially significant. Such potentially significant impacts would be reduced to **less than significant with mitigation incorporated** by implementing **Mitigation Measure CUL-1**.

Implementing **Mitigation Measure CUL-1** would reduce impacts to less than significant by ensuring that any unanticipated archaeological discoveries are promptly evaluated and appropriately protected or treated by qualified professionals and Tribes, thereby preventing inadvertent damage to potentially significant cultural resources.

Issue V.c

No human remains have been identified in the proposed project site through archival research, field surveys, or Native American outreach. Also, the land-use designations for the proposed project site do not include cemetery uses. Therefore, the proposed project is not anticipated to disturb any human remains.

However, because the proposed project would involve ground-disturbing activities, it is possible that such actions could unearth, expose, or disturb previously unknown human remains. In the event human remains were discovered during project construction activities, impacts on the human remains resulting from the proposed project would be significant if those remains were disturbed or damaged. Such potentially significant impacts would be reduced to **less than significant with mitigation incorporated** by implementing **Mitigation Measure CUL-2**.

Implementing **Mitigation Measure CUL-2** would reduce impacts to less than significant by halting construction should human remains be discovered and ensuring that any discovered human remains are respectfully evaluated by appropriate authorities, protected and documented.

Mitigation Measures

Mitigation Measure CUL-1: Unanticipated Discovery Protocol for Archaeological Resources. If pre-contact or historic-era archaeological resources are encountered during project implementation, all activity within 100 feet (30.5 meters) of the find shall cease and a qualified archaeologist—defined as one who meets or is under supervision of one who meets the SOI Historic Preservation Professional Qualification Standards for Archeology (48 Federal Register 44738–44739) and has expertise in California archaeology—shall inspect the find within 24 hours of discovery and notify DWR of their initial assessment. Pre-contact archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (midden) containing heat-affected rocks, artifacts, or shellfish remains; ground-stone tools (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include building or structure footings and walls, and deposits of metal, glass, or ceramic refuse.

If DWR determines, based on recommendations from the qualified archaeologist and Tribes (if the resource is indigenous) that the resource is potentially eligible for the California Register (i.e., qualifies as an historical resource, as defined by CEQA), the resource shall be avoided, if feasible. This may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If avoidance of the resource is not feasible, DWR shall continue to consult with Tribes (if the resource is indigenous) and other appropriate interested parties to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource. This shall include documentation of the resource and may include data recovery, if deemed appropriate, or other actions such as treating the resource with culturally appropriate dignity and protecting the cultural character and integrity of the resource. Any technical report developed to document the implementation of mitigation shall be submitted to CHRIS upon DWR approval, unless the document contains information that Tribes involved in the development of the mitigation deem should not be filed with CHRIS, in which case, the report shall be submitted to the NAHC.

Mitigation Measure CUL-2: Unanticipated Discovery Protocol for Human Remains. If any suspected human remains are discovered during project construction, all project-related construction activities within 100 feet (30.5 meters) of the find shall cease and appropriate precautions shall be taken to protect the human remains and any associated funerary objects from further disturbance. All human remains and potential human remains shall be treated with respect and dignity at all times. This includes:

- Avoidance of any unnecessary disturbance and handling of human remains and associated funerary objects;
- Avoidance of separation of human remains from associated funerary objects;
- Avoidance of physical modifications of human remains and associated funerary objects; and
- No photographs of human remains and associated funerary objects shall be taken prior to agreement with consulting parties, except for evidentiary purposes by the U.S. Bureau of Reclamation (Reclamation) cultural resources professionals or law enforcement.

The treatment of Native American human remains and associated and unassociated funerary objects discovered during any ground-disturbing activity shall comply with applicable State laws, including Section 7050.5 of the Health and Safety Code. If human remains are discovered during testing, the archeological consultant shall immediately notify the appropriate County Coroner. In the event of the Coroner's determination that the human remains are Native American remains, the Coroner will notify the California State Native American Heritage Commission (NAHC), which will appoint a Most Likely Descendant (MLD). The MLD shall complete their inspection of the remains and make recommendations or preferences for treatment within 48 hours of being granted access to the site (as specified in Public Resources Code [PRC] section 5097.98[a]).

Requirements for responding to discoveries of Native American human remains and associated funerary objects on federal land are addressed under the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) (25 USC Sections 3001–3013) and its implementing regulations (43 CFR Part 10). If human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered on federal or tribal lands, the federal agency must determine and consult with the lineal descendants and culturally affiliated Indian Tribes and carry out appropriate treatment and disposition of the discovered remains, including transfer of custody.

All discovered human remains shall be treated initially as a crime scene with cultural resources professionals and the appropriate law enforcement authorities being brought in to assist in the determination of antiquity and manner of death. Geospatial information about the discovery location shall be taken. If this is not possible, the location shall be marked on a topographic map with a photograph of the area around the discovery (but not of the remains), to help relocate the remains later. Initial discovery information shall be recorded including: the name of the person who discovered the remains, the date of the discovery,

how the discovery was made, and any other pertinent information about the circumstances surrounding the discovery.

Upon discovery of any human remains, the location of the find with a 100-foot (30.5-meter) buffer shall be delineated in which project-related construction shall cease, and the construction foreman and Reclamation shall be informed of the find. Reclamation shall immediately notify the appropriate DWR Project Manager. Reclamation shall forward a brief written report describing the discovery to DWR within 24 hours. The Reclamation Mid-Pacific Regional Archaeologist shall also be notified with a description of the nature and extent of the find.

References

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3.2.6 Energy

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
VI. ENERGY—Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

Environmental Setting

The State of California's Commercial Motor Vehicle Idling Regulation and Off-Road Regulation require that construction sites minimize idling and associated emissions, which also minimizes use of fuel. Specifically, during construction, idling of commercial vehicles and off-road equipment is limited to 5 minutes when not in use to comply with State requirements.

Additionally, DWR has adopted the DWR Climate Action Plan-Phase I: Greenhouse Gas Emissions Reduction Plan (GGERP), which details DWR's efforts to reduce its GHG emissions consistent with Executive Order S-3-05 and the Global Warming Solutions Act of 2006 (Assembly Bill 32) (California Department of Water Resources 2024) (refer to Checklist Section 3.2.8, "Greenhouse Gas Emissions"). Section 12 of the GGERP outlines the steps that each DWR project will take to demonstrate consistency with the GGERP. These steps include (1) analysis of GHG emissions from construction of the proposed project, (2) determination that the construction emissions from the project do not exceed the levels of construction emissions analyzed in the GGERP, (3) incorporation into the design of the project DWR's project-level GHG emissions-reduction strategies, (4) determination that the project does not conflict with DWR's ability to implement any of the "Specific Action" GHG emissions-reduction measures identified in the GGERP, and (5) determination that the project would not add electricity demands to the SWP system that could alter DWR's emissions-reduction trajectory in such a way as to impede its ability to meet its emissions-reduction goals.

Discussion

Issue VI.a

A full list of construction equipment anticipated to be used for the proposed project is included in Table 2-4. There would be a temporary increase in fuel demand (gasoline and diesel) that would result from the use of construction tools and equipment, truck trips to haul concrete and backfill to and from the site, and vehicle trips generated by construction workers commuting to and from the site. A GGERP Consistency Determination Checklist documenting that the proposed project has met each of the required elements is included in Appendix A. All best management practices (BMPs)

required by the GGERP for a project of this nature would be implemented as project design features (see Appendix A).

Project implementation would not include wasteful or unnecessary consumption of energy resources because it would be required to meet air quality and GHG emissions criteria that require the use of efficient equipment. In addition, project construction would be completed within the shortest period feasible, expected to be approximately nine months, depending on hydrologic conditions in the San Joaquin River.

Therefore, impacts associated with construction of the proposed project would be **less than significant**.

Once the project is constructed, existing staff would resume regular maintenance and operation of the Aqueduct in accordance with existing maintenance and water delivery schedules. Thus, operation of the proposed project would not result in the wasteful, inefficient, or unnecessary consumption of energy.

Issue VI.b

The proposed project is designed to maintain functionality in Pools 17 and 18. The proposed project would be consistent with applicable energy efficiency policies and standards. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules; therefore, the project would not result in wasteful, inefficient, or unnecessary consumption of energy. There would be **no impact**.

References

California Department of Water Resources

2024 *Climate Action Plan Phase 1 Greenhouse Gas Emissions Reduction Plan*. Updated 2023. Viewed online at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan/Files/Exhibit-C-CAP-Phase-1-Update-2023.pdf. Accessed: April 9, 2025.

3.2.7 Geology and Soils

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
VII. GEOLOGY AND SOILS—Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

Environmental Setting

The proposed project site is located in the portion of Fresno County that is within the Great Valley geomorphic province of California. The Great Valley is an alluvial plain about 50 miles wide and 400 miles long in the central part of California. Its northern part is the Sacramento Valley, which is drained by the Sacramento River, and its southern part is the San Joaquin Valley, which is drained by the San Joaquin River. The Great Valley is a trough in which sediments have been deposited almost continuously since the Jurassic (about 160 million years ago) (California Geological Survey 2002).

The proposed project site is not located in an Earthquake Zone of Required Investigation (California Geological Survey 2024a). The proposed project site is located approximately 6 miles east of the Great Valley thrust fault system, 30 miles east of the San Andreas Fault, and 30 miles south of the San Joaquin Fault (California Geological Survey 2024b). There are no landslides identified in or near the proposed project site. As discussed in Section 2.1.2, “Need for Project,” the proposed project site is located in an area of known land subsidence (U.S. Geological Survey 2025a and 2025b).

Paleontological resources generally would not be present at or immediately under the Aqueduct because these materials would have been excavated and disturbed during construction of the Aqueduct. Paleontological resources that were present at that time, if any, would likely have been removed or destroyed at that time. In addition, the farming activities that predate the construction of the Aqueduct would typically have destroyed any paleontological resources, if any, within the top 2 to 3 feet under the Aqueduct and in the surrounding farm area. Additionally, the proposed borrow areas consists of soils excavated during construction of the Aqueduct and serves as a spoil stockpile. These stockpiles are approximately 20 feet higher than the original surface elevation. As shown in Figure 2-2, Figure 2-4, Figure 2-5, and Figure 2-6, all of the borrow areas are located adjacent to the Aqueduct. The excavation proposed for the borrow areas may extend to as deep as 20 feet, and therefore, any undisturbed materials present would have been likely excavated or disturbed during construction of the Aqueduct and transport of the spoils to the proposed borrow areas at that time.

Geologic mapping of the proposed project site, including the borrow sites, indicates that the underlying deposits consist of Holocene alluvium (U.S. Geological Survey 1971 and 1993). Holocene time is from the present to 11,700 years ago. The Society of Vertebrate Paleontologists defines sedimentary units older than 5,000 years to have the potential to contain paleontological resources (Society of Vertebrate Paleontologists 2010). A search of paleontological records for the proposed project site indicated that paleontological resources have not been encountered in any of the areas of the proposed project site, including the borrow sites (Natural History Museum of Los Angeles County 2024). However, paleontological resources have been encountered from nearby localities and in the same sedimentary deposits that occur in the proposed project site, either at the surface or at depth. The paleontological resources include barnacles, echinoderms, fish, pack rats, eared seals, oysters, bivalves, gastropods, and other mollusks. The geologic mapping and Natural History Museum of Los Angeles County results were used to assign paleontological sensitivity to the geologic units present in the proposed project site following the guidelines of the Society of

Vertebrate Paleontologists (2010). The Quaternary Alluvium is considered to have a low potential at the surface but potential increases with depth.

Discussion

Issue VII.a.i–a.iv

The proposed project site is not located within an earthquake fault zone or a liquefaction- or landslide-prone area; therefore, no substantial impacts would occur as a result of rupture of a known earthquake fault. However, in general, Central California is seismically active, with most locations in proximity to active faults that can produce seismic ground shaking. The SLC would likely be subject to strong seismic ground shaking during a substantial seismic event that could result in the concrete canal liner cracking, which could lead to water supply disruptions. However, the liner raise would occur at the top of the existing concrete liner and would provide more lined freeboard that could offset the risk of overtopping in case of shaking, and the proposed project would not significantly affect water supply. Additionally, while the proposed project could be subject to strong seismic ground shaking, the risk would not be more than existing conditions. Further, the area of the proposed project site is largely uninhabited and rural so any localized flooding as a result of liner cracking from strong ground shaking would not result in a significant risk of loss, injury, or death. Impacts would be **less than significant**.

Issue VII.b

Existing soils along the Aqueduct levees and construction areas can be characterized as highly disturbed, compacted mixtures of sediment derived from on-site and off-site sources. Construction of the proposed project would require ground-disturbing activities such as grading and excavation to install the concrete liner and drainage pipes, which would involve the disturbance and exposure of surface soils. Given that the topography of the proposed project site and surrounding vicinity is relatively flat and soils are compacted, substantial soil erosion and loss of topsoil are not anticipated. Further, contractors would follow standard construction specifications to control the potential for any localized erosion from construction activities. There is potential for stormwater to transport sediment to the Aqueduct during construction. Since this project has more than 5 acres of ground disturbance, contractors would be required to comply with NPDES construction general permit with its required preparation and implementation of a SWPPP to control stormwater runoff through the implementation of erosion control BMPs such as installing a silt fence, creating a sediment/desilting basin, installing sediment traps, using fiber rolls, creating gravel bag berms, and creating sandbag or straw bale barriers (refer to Section 3.2.10, “Hydrology and Water Quality”). Upon completion of construction activities, all construction areas, including access roads, would be regraded to match pre-project conditions. Any remaining stockpiles or materials would be removed from the site. Therefore, impacts associated with erosion of soils would be **less than significant**.

Issue VII.c

The proposed project site is located in an area of known subsidence, which has been occurring at varying rates since before the Aqueduct was constructed. After water deliveries from the Aqueduct

began, subsidence rates decreased to an average of less than 0.1 inch per year during the average to wet hydrologic years, but during dry to critical hydrologic years, subsidence increased (California Department of Water Resources 2017). Because the Valley in general, and the area surrounding the proposed project in particular, are dominated by agricultural practices—one of the primary causes of subsidence—subsidence is expected to continue. The proposed project would not result in an increase in subsidence as it does not involve the injection or extraction of groundwater or oil. DWR and its contractors would be required to adhere to all California Division of Occupational Safety and Health requirements for working within active work sites that would ensure the safety of all workers on site. Therefore, relative to existing conditions, the proposed project would not expose people or structures to new potential substantial adverse effects related to unstable soils. Therefore, there would be **no impact** as a result of project implementation.

Issue VII.d

The proposed liner raises would occur on the waterside of the Aqueduct, within a sloped, human-made embankment system where soils consist of compacted mixtures of disturbed sediment, which is uncharacteristic of expansive soils that shrink and swell based on water content. The proposed project would not involve the construction of any structures that would be occupied during operation. Therefore, there would be **no impact** relative to expansive soils.

Issue VII.e

The proposed project would not include the construction or operation of any septic tanks or alternative water disposal system. Therefore, **no impact** would occur.

Issue VII.f

While there are no known fossil localities in the proposed project site, vertebrate and invertebrate fossils have been previously recorded in the regional area from the same sedimentary deposits that occur in the proposed project site. Many of these were encountered at shallow depths close to the ground surface, which suggests that paleontological resources may be encountered at depth. The Quaternary Alluvium deposits (Qa) within the proposed project site have a low paleontological sensitivity at the surface and shallow depths but the sensitivity increases with depth due to the increasing age of the deposits. Although the proposed project site is underlain by geologic units that could contain paleontological resources, the potential to encounter fossiliferous deposits is considered low given the past disturbances associated with construction of the Aqueduct. **Mitigation Measure GEO-1** would implement procedures to follow in the event of a discovery, and protocols for the inadvertent discovery of paleontological resources.

Implementing **Mitigation Measure GEO-1** would reduce impacts to less than significant by requiring work to stop near any unanticipated paleontological discovery so that a qualified paleontologist can assess its significance. This would allow for appropriate recovery or protection of the resource before construction resumes, avoiding potential damage or loss. Therefore, impacts would be **less than significant with mitigation incorporated**.

Mitigation Measures

Mitigation Measure GEO-1: Unanticipated Discoveries of Paleontological Resources. In the event of the unanticipated discovery of paleontological resources, DWR or its contractor shall immediately cease all work activities in the area (within approximately 100 feet or 30.5 meters) of the discovery until it can be assessed for significance by the Qualified Paleontologist. The Qualified Paleontologist shall assess the find, implement recovery and reporting measures, if necessary, and determine if paleontological monitoring is warranted once work resumes.

References

California Department of Water Resources

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California Geological Survey

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2023 *Geologic Interpretation Report Pools 17-18 & 20-21 Bridge Crossings Western San Joaquin Valley, California*. Project Geology Report No. 52-00-89.

Natural History Museum of Los Angeles County

2024 Paleontological resources for the California Aqueduct Subsidence Program SLFD Interim Projects Pools 17 & 18/ 20 & 21 (D202101064.03).

Society of Vertebrate Paleontologists

2010 *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*.

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2024b Areas of Land Subsidence in California. Viewed online at: https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html Accessed September 12, 2024.

3.2.8 Greenhouse Gas Emissions

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
VIII. GREENHOUSE GAS EMISSIONS—Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Environmental Setting

GHG emissions worldwide cumulatively contribute to the significant adverse environmental impacts of global climate change. No single project could generate sufficient GHG emissions on its own to noticeably change the global average temperature. The combination of GHG emissions from past, present, and future projects in the San Joaquin Valley; the entire State of California; across the nation; and around the world contribute cumulatively to the phenomenon of global climate change and its associated environmental impacts.

Discussion

Issue VIII.a

The SJVAPCD does not recommend quantitative significance thresholds for the analysis of the impact of a project's GHG emissions on the environment. Instead, the SJVAPCD's approach relies on the application of performance-based standards to assess project-specific GHG emissions impacts on global climate change. This is based on the principle that projects whose emissions have been reduced or mitigated consistent with Assembly Bill 32, the California Global Warming Solutions Act of 2006, should be considered to have a less-than-significant impact on global climate change (San Joaquin Valley Air Pollution Control District 2015). SJVAPCD's policy provides for the following tiered approach in assessing significance of project-specific GHG emissions increases:

> *Projects complying with an approved GHG emission reduction plan or GHG mitigation program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less-than-significant individual and cumulative impact for GHG emissions. Projects complying with an approved GHG emission reduction plan or GHG mitigation program would not be required to implement best performance standards (BPS).*

Projects implementing BPS would not require quantification of project-specific GHG emissions and would be determined to have a less-than-significant individual and cumulative impact for GHG emissions.

Projects not implementing BPS would require quantification of project-specific GHG emissions and demonstration that project-specific GHG emissions would be reduced or mitigated by at least 29 percent compared to business as usual (BAU), including GHG emission reductions achieved since the 2002–2004 baseline period, consistent with GHG emission reduction targets established in California Air Resources Board's Assembly Bill 32 Scoping Plan. Projects achieving at least a 29 percent GHG emission reduction compared to BAU would be determined to have a less-than-significant individual and cumulative impact for GHG emissions.

In January 2024, DWR adopted the updated GGERP, which details DWR's efforts to reduce its GHG emissions consistent with Executive Order S-3-05 and Assembly Bill 32 (California Department of Water Resources 2024). DWR also adopted the Initial Study/Negative Declaration prepared for the GGERP in accordance with the CEQA Guidelines review and public process. The GGERP provides estimates of historical (back to 1990), current, and future GHG emissions related to operations, construction, maintenance, and business practices (e.g., building-related energy use). The GGERP specifies aggressive 2020 and 2050 emissions-reduction goals and identifies a list of GHG-emissions-reduction measures to achieve these goals.

DWR specifically prepared its GGERP as a "Plan for the Reduction of Greenhouse Gas Emissions" for purposes of CEQA Guidelines Section 15183.5. That section provides that such a document, which must meet certain specified requirements, "may be used in the cumulative impacts analysis of later projects." Because global climate change, by its very nature, is a global cumulative impact, an individual project's compliance with a qualifying GHG Reduction Plan may suffice to mitigate the project's incremental contribution to that cumulative impact to a level that is not "cumulatively considerable." (See CEQA Guidelines, Section 15064[h][3].)

More specifically, "[l]ater project-specific environmental documents may tier from and/or incorporate by reference" the "programmatic review" conducted for the GHG emissions-reduction plan. "An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project" (CEQA Guidelines Section15183.5[b][2]).

Section 12 of the GGERP outlines the steps that each DWR project should take to demonstrate consistency with the GGERP. These steps include (1) analysis of GHG emissions from construction of the proposed project, (2) determination that the construction emissions from the project do not exceed the levels of construction emissions analyzed in the GGERP, (3) incorporation into the design of the project DWR's project level GHG emissions-reduction strategies, (4) determination that the project does not conflict with DWR's ability to implement any of the "Specific Action" GHG emissions-reduction measures identified in the GGERP, and (5) determination that the project would

not add electricity demands to the SWP system that could alter DWR's emissions-reduction trajectory in such a way as to impede its ability to meet its emissions-reduction goals.

Consistent with these requirements, a GGERP Consistency Determination Checklist documenting that the proposed project has met each of the required elements is included in Appendix A.

Based on the analysis provided in the GGERP and the demonstration that the proposed project is consistent with the GGERP (as shown in Appendix A), the project is compliant with the applicable GHG emissions-reduction plan, as is required by the SJVAPCD; therefore, the impact with respect to GHG emissions is **less than significant**.

Issue VIII.b

As discussed under Issue VIII.a, the proposed project would comply with the GGERP and would not conflict with the applicable GHG emissions-reduction plan, as demonstrated by the GGERP Consistency Determination Checklist in Appendix A.

Based on the analysis provided in the GGERP and the demonstration that the proposed project is consistent with the GGERP (as shown in Appendix A), the project is compliant with the applicable GHG emissions-reduction plan; therefore, the proposed project would not conflict with an applicable emissions reduction plan and the impact would be **less than significant**.

References

California Department of Water Resources

2024 *Climate Action Plan, Phase 1: Greenhouse Gas Emissions Reduction Plan Update 2023*. Viewed online at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan/Files/Exhibit-C-CAP-Phase-1-Update-2023.pdf. Accessed: October 2024.

San Joaquin Valley Air Pollution Control District

2015 *Guidance for Assessing and Mitigating Air Quality Impacts*. March 19, 2015. Viewed online at: https://ww2.valleyair.org/media/g4nl3p0g/gamaqi.pdf. Accessed: October 2024.

3.2.9 Hazards and Hazardous Materials

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
IX. HAZARDS AND HAZARDOUS MATERIALS—Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 miles of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☒	☐

Environmental Setting

In California, Government Code Section 65962.5 requires the State Water Resources Control Board (State Water Board) and the Department of Toxic Substance Control (DTSC) to maintain regulatory databases listing hazardous materials sites; the list is also referred to as the Cortese List. The Cortese List identifies sites with suspected and confirmed releases of hazardous materials to the subsurface soil and/or groundwater. The listed sites can be accessed through the State Water

Board's GeoTracker database and the DTSC EnviroStor database. The reporting and statuses of these sites change as identification, monitoring, and clean-up of hazardous materials sites progress.

A database search of both the EnviroStor and GeoTracker identified zero hazardous clean-up sites in the proposed project site (California Department of Toxic Substances Control 2024; State Water Resources Control Board 2024).

The proposed project site is located approximately 6 miles north of the Harris River Ranch Airport and 11 miles east of the San Joaquin Airport. Cantua Elementary School is located approximately 1 mile east of the proposed project site and Westside Elementary is located approximately 8 miles southeast of the proposed project site.

Within California, fire hazard severity zones are designated by the California Department of Forestry and Fire Protection (CAL FIRE). CAL FIRE uses a five-tiered ranking system to assess the threat to people based on fuel hazard, wildland fire potential, and housing density. The proposed project site is not located in a Fire Hazard Severity Zone in a State Responsibility Area; the closest hazard zone Is located in the Ciervo Hills 5.5 miles west across I-5 (California Department of Forestry and Fire Protection 2024).

Discussion

Issue IX.a, b

Construction activities associated with the proposed project would require the use of small qualities of hazardous materials such as diesel fuel, gasoline, oils, grease, equipment fluids, cleaning solutions and solvents, lubricant oils, and adhesives.

During construction, contractors handling, storing, or transporting hazardous materials or wastes would comply with hazardous materials regulations, such as implementation of a SWPPP and BMPs in compliance with the NPDES permitting requirements (refer to Section 3.2.9, "Hazards and Hazardous Materials," Issue X.a for BMP examples), which would reduce the risk of accidental release and provide protocols and notification requirements should an accidental release occur.

Any spills of these substances would be cleaned on-site according to the SWPPP and NPDES permitting requirements. The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction; describe spill prevention measures, equipment inspections, equipment, and fuel storage; describe protocols for responding immediately to spills; and describe BMPs for controlling site run-on and runoff. The SWPPP prepared for the proposed project would also identify BMPs to ensure the lawful transport, use, storage, and disposal of hazardous materials.

By complying with relevant federal, State, and local laws, the proposed project would not result in a significant hazard to the public or to the environment through the routine transport, use, or disposal of hazardous materials and would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials. Therefore, the impacts would be **less than significant**.

Issue IX.c

There are no schools located within 0.25 mile of the proposed project site. Furthermore, fuels, oils, and lubricants used during the proposed liner raise activities would be handled in accordance with DWR material safety storage and handling protocols and BMPs that would contain and prevent spills from occurring on the proposed project site. Therefore, **no impact** would occur.

Issue IX.d

There are no identified hazardous material sites located within the proposed project site (California Department of Toxic Substances Control 2024; State Water Resources Control Board 2024). The proposed project would not be located on a hazardous materials site, and **no impact** would occur.

Issue IX.e

The nearest public airport to the proposed project site is the Harris River Ranch Airport, located approximately 6 miles north of the proposed project. The proposed project is not located within an airport land-use plan or within 2 miles of a public airport or public use airport. **No impact** would occur.

Issue IX.f

During construction, there would be negligible numbers of workers (up to 30 employees) traveling to the proposed project site on a temporary basis. Operation activities would not change with the proposed project. No road closures would be required for the proposed project, and there would not be a permanent substantial increase in the number of people working or residing at or near the proposed project site. The proposed project would not impair implementation of or physically interfere with any adopted emergency response plan or emergency evacuation plan. Therefore, **no impact** would occur.

Issue IX.g

The proposed project site is located within the Aqueduct and DWR right-of-way. According to CAL FIRE, the proposed project is not located in a Fire Hazard Severity Zone in a State Responsibility Area (California Department of Forestry and Fire Protection 2024). No structures are proposed as part of the project and construction activities would occur within the waterside of the Aqueduct embankments and within existing access roads and road aprons. The surrounding vegetation and agricultural land-use types have a low potential for wildland fires. In addition, as a standard DWR safety practice, all vehicles and equipment would have fire prevention equipment on-site, including fire extinguishers and shovels. Therefore, the proposed project would not increase the exposure of people or structures to wildland fires and the impact would be **less than significant**.

References

California Department of Forestry and Fire Protection

2024 Fire Hazard Severity Zones. Viewed online at: https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones. Accessed: July 11, 2024.

California Department of Toxic Substances Control

2024 EnviroStor. Viewed online at: https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=Search Accessed: July 10, 2024.

State Water Resources Control Board

2024 GeoTracker. Viewed online at: https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=Search+GeoTracker. Accessed: July 10, 2024.

3.2.10 Hydrology and Water Quality

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
X. HYDROLOGY AND WATER QUALITY—Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would:				
i) Result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	☒	☐
iii) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv) Impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

Environmental Setting

The proposed project site is within the South Valley Floor Watershed within the Region 5 – Tulare Lake Hydrologic Basin (California Department of Water Resources 2024). Major cities in the Tulare Basin include Fresno, Bakersfield, and Visalia. Major geographic features include Tulare Lake Basin, Kettleman Hills, Kings River, Kern River, Tule River, Tulare Lake, Kern Lake, and Buena Vista Lake.

The Tulare Basin has mild winters and hot dry summers. Despite transient tule marsh areas, the area is predominantly dry and the valley summer heat is high. Less than 5 percent of the basin is urban in nature. The basin has been developed extensively for agriculture and petroleum extraction (U.S. Geological Survey 2024). The Regional Water Board publishes updates to the *Water Quality Control Plan for the Tulare Lake Basin* to improve water quality and maintain beneficial uses in the drainage area of the San Joaquin Valley south of the San Joaquin River. This basin plan describes water quality concerns for the area that include agriculture, forestry, urban land uses, and stormwater runoff (Central Valley Regional Water Quality Control Board 2018).

Portions of the proposed project site are in a 100-year flood zone. The Flood Hazard Zones (Zone A) are located to the east of the Aqueduct, directly adjacent to the entirety of the proposed project site, except for the Aqueduct between West Cerini Avenue and Davis Avenue (Federal Emergency Management Agency 2024).

Discussion

Issue X.a

The proposed project would include construction activities that would require earthwork activities such as site preparation, excavation, grading, and temporary stockpiling of soils, which would involve the disturbance and exposure of surface soils. In addition, construction activities would involve use of chemicals and solvents such as fuel and lubricating grease for motorized heavy equipment, which could accidentally spill and subsequently impact stormwater quality.

There is potential for stormwater to transport sediment or hazardous materials to the Aqueduct. Since project construction activities would disturb an area greater than 5 acres, the proposed project would be subject to a construction general permit under the NPDES permit program of the federal Clean Water Act. As required under the construction general permit, DWR or its contractor would prepare and implement a SWPPP. The objective of a SWPPP is to identify pollutant sources (such as sediment) that may affect the quality of stormwater discharge and to implement BMPs to reduce pollutants in stormwater.

In particular, erosion control BMPs would be used to prevent the degradation of water quality in the Aqueduct. Examples of erosion-control BMPs are installing a silt fence, creating a sediment/desilting basin, installing sediment traps, using fiber rolls, creating gravel bag berms, and creating sandbag or straw bale barriers. BMPs would also include practices for proper handling of chemicals, such as avoidance of fueling at the construction site, overtopping during fueling, and installation of containment pans. Implementation of the construction BMPs would begin with the commencement of construction and continue through to the completion of the project to reduce intrusion of foreign materials into the Aqueduct.

Implementation of the SWPPP and BMPs in compliance with the NPDES permitting requirements would avoid or reduce all erosion and sedimentation impacts to below a level of significance. As a result, impacts on water quality would be **less than significant**.

Issue X.b

The proposed project would not disrupt water deliveries, nor would it require the use of groundwater during construction activities. The Aqueduct is an existing concrete-lined canal; therefore, the proposed project would not change groundwater recharge, nor would it interfere with recharge compared to current conditions. In addition, the proposed project would not create impervious surfaces in the proposed project site that are not already impervious (i.e., the Aqueduct channel). Therefore, the proposed project would not decrease groundwater supplies or interfere with the recharge of groundwater. Therefore, there would be **no impact** on groundwater recharge.

Issue X.c.i

The proposed project would not introduce impervious surfaces or structures where existing impervious areas do not already exist. Temporary earthmoving activities would slightly alter the topography of the proposed project site to facilitate the liner raise activities, which could lead to areas of concentrated runoff or increased erosion. The proposed project also would include rerouting and replacing existing road drains in the proposed project site. Erosion-control measures and BMPs would be implemented during construction to reduce the potential for stormwater-induced erosion or sedimentation off-site during project activities. All construction areas would also be regraded to match pre-project conditions once construction activities are completed, as described in Chapter 2, “Project Description.” Thus, the proposed project would not substantially alter the existing drainage pattern of the proposed project site in a way such that substantial erosion or siltation would occur on-site or off-site. Impacts would be **less than significant**.

Issue X.c.ii

The proposed project would not substantially alter the local drainage pattern of the sites around Pools 17 and 18. Existing road drains in the proposed project site would be rerouted and replaced during project construction. The proposed project would not substantially change the rate or amount of surface runoff from the proposed project site. As such, the proposed project would not result in flooding on-site or off-site. Potential impacts would be **less than significant**.

Issue X.c.iii

An increase in runoff would not occur as a result of the project, considering the liner raise sites would conform to the existing liner surface. Existing road drains in the proposed project site would be rerouted and replaced during project construction. As such, the proposed project would not contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems.

The project would require implementation of a SWPPP, including BMPs for erosion control and for proper handling of chemicals. As such, the proposed project would not provide substantial additional sources of polluted runoff. Impacts would be **less than significant**.

Issue X.c.iv

The Federal Emergency Management Agency National Flood Hazard Layer for the proposed project site shows that the majority of the proposed project site is located within Zone A, or areas with a 1 percent chance of flooding each year (Federal Emergency Management Agency 2024). Therefore, the area is at low risk of experiencing flooding. Further, the proposed project would not involve the creation of large infrastructure or extensive construction activities that would impede or redirect flows. Impacts would be **less than significant**.

Issue X.d

The proposed project site is located far from the nearest ocean, the Pacific, and therefore is not located within the tsunami risk zone. Additionally, the proposed project site is not located near any sizeable bodies of water at risk of forming seiches and therefore is not located within a seiche zone. The proposed project site is in a 100-year flood zone; however, construction would be short-term and conclude within nine months and project equipment would not be stored in areas with potential floodwaters. The project would also involve the routine use of hazardous materials during construction, which could be at risk of release during a flood. However, construction contractors would be required to acquire coverage under the NPDES General Stormwater Permit, which requires the preparation and implementation of a SWPPP for construction activities. The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction; describe spill prevention measures, equipment inspections, equipment and fuel storage; describe protocols for responding immediately to spills; and describe BMPs for controlling site run-on and runoff. The SWPPP prepared for the proposed project would identify BMPs to ensure the lawful transport, use, storage, and disposal of hazardous materials. With the implementation of a SWPPP and the adherence to federal, State, and local regulations related to the handling of hazardous materials, the proposed project would have a **less-than-significant impact**.

Issue X.e

The proposed project would not involve pumping or extraction of groundwater. Erosion-control measures and BMPs would be implemented during construction to reduce the potential for erosion or sedimentation off-site during project activities. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. **No impact** on water quality control plans or sustainable groundwater management plans would occur.

References

California Department of Water Resources

2024 Water Management Planning Tool. Viewed online at: https://gis.water.ca.gov/app/boundaries/. Accessed July 10, 2024.

Central Valley Regional Water Quality Control Board

2018 Water Quality Control Plan for the Tulare Lake Basin Third Edition. Viewed online at: https://www.waterboards.ca.gov/rwqcb5//water_issues/basin_plans/tularelakebp_201805.pdf. Accessed: July 10, 2024.

Federal Emergency Management Agency

2024 FEMA's National Flood Hazard Layer (NFHL) Viewer. Viewed online at: https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd. Accessed: July 10, 2024.

U.S. Geological Survey

2024 The Central Valley: Tulare Basin. Viewed online at: https://ca.water.usgs.gov/projects/central-valley/tulare-basin.html Accessed: July 10, 2024.

3.2.11 Land Use and Planning

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XI. LAND USE AND PLANNING—Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Environmental Setting

The proposed project would raise portions of the concrete liner of Pools 17 and 18 in Fresno County. The liner raise in Pools 17 and 18 are located along the Aqueduct between MP 128.4 to MP 135.6. The northernmost site, Pool 17 at MP 128.4, is approximately 1.4 miles west of the town of Cantua Creek. The southernmost site, Pool 18 at MP 135.6, is approximately 6.5 miles southeast of Cantua Creek and 8.5 miles northwest of Westside. The surrounding land uses include agricultural fields and associated infrastructure and undeveloped land. The proposed project site is zoned entirely as Exclusive Agriculture (AE-20) with the nearby towns of Three Rocks and Cantua Creek located approximately 2 miles to the west and 1.4 miles to the east zoned as Residential, Trailer Park Residential, Agriculture, and Agricultural Commercial Center (County of Fresno 2024).

Discussion

Issue XI.a

Cantua Creek, the community nearest to the proposed project's construction areas, is located approximately 1.4 miles to the east of the northern portion of the proposed project site. The proposed project does not involve building any structures, such as roads or freeways, with the potential to physically divide a community. Therefore, **no impact** would occur.

Issue XI.b

The liner raises would occur on the waterside of the Aqueduct. Access to the construction areas would occur on existing roadways and service roads, including access roads on top of both sides of the Aqueduct embankments. The proposed project is consistent with surrounding land uses; therefore, project construction would not conflict with any land use plan, policy, or regulation. **No impact** would occur.

References

County of Fresno

2024 Zoning. Viewed online at: https://gisportal.co.fresno.ca.us/portal/apps/webappviewer/index.html?id=b921843d343d4df998b5b3c6a301756a Accessed: July 11, 2024.

3.2.12 Mineral Resources

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XII. MINERAL RESOURCES—Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

Environmental Setting

In accordance with the Surface Mining and Reclamation Act of 1975, the California Department of Conservation, Division of Mines and Geology, currently known as the California Geological Survey, has mapped nonfuel mineral resources of the State to show where economically significant mineral deposits are either present or likely to occur based on the best available scientific data. These resources have been mapped using the California Mineral Land Classification System, which includes the following six Mineral Resource Zones (MRZs):

- MRZ-1: An area where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- MRZ-2a: An area where adequate information indicates that significant measured or indicated mineral reserves are present.
- MRZ-2b: An area where geologic information indicates that significant inferred resources or demonstrated subeconomic resources are present.
- MRZ-3a: An area likely to contain undiscovered mineral deposits similar to known deposits in the same producing district or region (hypothetical resources).
- MRZ-3b: An area judged to be a favorable geologic environment for mineral resource occurrences, but where mineral discoveries have not been made in the region (speculative resources).
- MRZ-4: An area where geologic information does not rule out either the presence or absence of mineral resources.

The California Department of Conservation Geologic Energy Management Division oversees the drilling, operation, maintenance, and plugging and abandonment of oil, natural gas, and geothermal wells in California, and tracks all known oil and gas wells.

The proposed project site is not located in Mineral Land classification/Surface Mining and Reclamation Act−designated areas (California Department of Conservation 2024a). There are no existing mines in the area; the closest is Sierra Pacific Materials, a sand and gravel mine approximately 20 miles south of the proposed project site (California Department of Conservation 2024b).

Discussion

Issue XII.a, b

The proposed project site is not included on any California Geological Survey maps or reports identifying potentially important mineral resources. Fresno County land-use maps also do not identify any locally important mineral resources in the proposed project site. Therefore, **no impact** would occur.

References

California Department of Conservation

2024a CGS Information Warehouse: Mineral Land Classification. Viewed online at: https://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=mlc. Accessed July 11, 2024.

2024b "Mines Online" [Online mapping tool.] Viewed online at: https://maps.conservation.ca.gov/mol/index.html. Accessed Jul. 10, 2024.

3.2.13 Noise

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XIII.NOISE—Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

Environmental Setting

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude. Given that the typical human ear is not equally sensitive to all frequencies of the audible sound spectrum, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes low and extremely high frequencies, referred to as A-weighting, and is expressed in units of A-weighted decibels (dBA).

Noise Exposure and Community Noise

Noise levels rarely persist consistently over a long period. Rather, noise levels at any one location vary with time. Specifically, community noise is the result of many distant noise sources that constitute a relatively stable background noise exposure where the individual contributors are unidentifiable. Throughout the day, short duration single-event noise sources (e.g., aircraft flyovers, motor vehicles, sirens) that are readily identifiable to the individual add to the existing background noise level. The combination of the slowly changing background noise and single-event noises give rise to a constantly changing community noise environment.

To legitimately characterize a community noise environment and evaluate cumulative noise impacts, community noise levels must be measured over an extended time period. This time-varying characteristic of environmental noise is described using statistical noise descriptors, including the ones described below:

- **Leq:** The equivalent sound level is used to describe noise over a specified period of time, typically 1 hour, in terms of a single numerical value. The Leq is the constant sound level that would contain the same acoustic energy as the varying sound level during the same time period (i.e., the average noise exposure level for the given time period).
- **Lmax:** The instantaneous maximum noise level measured during the measurement period of interest.
- **Ldn:** The day-night average sound level (Ldn) is the energy average of the A-weighted sound levels occurring during a 24-hour period, accounting for the greater sensitivity of most people to nighttime noise by weighting ("penalizing") nighttime noise levels by adding 10 dBA to noise between 10:00 p.m. and 7:00 a.m.

In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise would be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10 dBA change is subjectively heard as approximately a doubling in loudness, and can cause adverse response.

These relationships occur in part because of the logarithmic nature of the decibel system. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Fresno County

The most prevalent individual traffic noise sources in the County are the two primary north-south freeways, I-5 and SR 99, and the many other major roadways within the County, including sections of SRs 33, 41, 43, 63,145, 168, 180, 198, and 269 and Herndon, Shaw, and Clovis Avenues within Fresno and Clovis city limits.

Other expressways and arterials within the unincorporated County also have substantial local influences on noise levels. The most intense traffic noise sources tend to be those with heavy truck traffic or high proportions of nighttime traffic.

The notable noise-generating industrial sources are agricultural processing operations and mining or building/landscaping materials processing, such as cement batch plants (County of Fresno 2023). The proposed project site is located approximately 6 miles north of the Harris River Ranch Airport, and the closest private airstrip is located approximately 1.4 miles west of the proposed project site.

Discussion

Issue XIII.a

The Fresno County General Plan and Noise Ordinance do not establish quantitative noise exposure standards that apply to construction activity. However, for the purposes of due diligence, resultant noise levels from simultaneous operations of the two noisiest pieces of construction equipment were estimated, consistent with the general assessment methodology of the Federal Transit Administration. Using this method and conservatively assuming simultaneous operation of the two nosiest pieces of equipment, concrete mixers and excavators, would result in a noise level of 88 dBA at a reference distance of 50 feet. Accounting for distance attenuation, noise levels at 1,000 feet would be 62 dBA. The closest sensitive receptor is located approximately 4,300 feet (0.8 mile) east of the proposed project site. At this distance, noise levels decrease to 49 dBA and would be virtually imperceptible and indistinguishable from the local noise environment. Therefore, the proposed project would not result in a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies. The proposed project would result in **less-than-significant impacts**.

Issue XIII.b

Groundborne vibration from construction activities in the proposed project site would produce negligible vibration. The types of construction equipment associated with the proposed project include excavators, dump trucks, pickup trucks, forklifts, skid steer loaders, compacters, concrete mixers, and generators (see Table 2-4). This type of equipment is identified by Caltrans (2020) and the Federal Transit Administration (2018) as associated with the generation of continuous vibration. However, construction would not take place near any residences or other noise-sensitive land uses. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. Therefore, vibration associated with proposed project would result in **less-than-significant impacts**.

Issue XIII.c

The proposed project would not establish new noise-sensitive land uses that could be exposed to noise from local airports. The proposed project site is located in a rural area that is distant from commercial or general aviation airports. The proposed project site is located approximately 6 miles north of the Harris River Ranch Airport, and the closest private airstrip is located approximately 1.4 miles to the west of the proposed project site. The proposed project would not result in any land use or operational changes that would expose people residing or working in the proposed project site to excessive noise levels in relation to airports. There would be a **less-than-significant impact**.

References

California Department of Transportation

2020 Transportation and Vibration Guidance Manual, April 2020; p. 37.

County of Fresno

2023 Fresno County General Plan Backup Report. Viewed online at: https://www.fresnocountyca.gov/files/sharedassets/county/v/2/public-works-and-planning/development-services/planning-and-land-use/general-plan/fcgpr-background-report-2023-05-10.pdf. Accessed: September 19, 2024.

U.S. Department of Transportation, Federal Transit Administration

2018 Transit Noise and Vibration Impact Assessment. September 2018.

3.2.14 Population and Housing

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XIV. POPULATION AND HOUSING—Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Environmental Setting

Fresno County has a population of 1,024,125 as of 2024, indicating a 1.5 percent growth rate when compared to the Fresno County population of 1,008,654 in 2020. As of 2023, Fresno County contained 347,957 housing units with an owner-occupied housing unit rate of 55.4 percent (U.S. Census Bureau 2024).

Discussion

Issue XIV.a

The proposed project would not involve the construction of new homes, businesses, extensions of roads, or other infrastructure that would directly or indirectly induce substantial unplanned population growth. Construction activities associated with the proposed project would generate a minimal number of workers (up to 30 employees) to the proposed project site on a temporary basis (approximately nine months). Construction workers employed for these activities are expected to come from the existing labor pool within the region. Implementation of the proposed project would not directly or indirectly induce substantial population growth. Therefore, **no impact** would occur.

Issue XIV.b

The proposed project would not displace any existing housing or people, and it does not involve the construction of new homes. Therefore, **no impact** would occur.

References

U.S. Census Bureau

2024 Quick Facts Fresno County, California. Viewed online at: https://www.census.gov/quickfacts/fact/table/fresnocountycalifornia/PST045223. Accessed July 11, 2024.

3.2.15 Public Services

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XV. PUBLIC SERVICES—				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:				
i) Fire protection?	☐	☐	☒	☐
ii) Police protection?	☐	☐	☒	☐
iii) Schools?	☐	☐	☐	☒
iv) Parks?	☐	☐	☐	☒
v) Other public facilities?	☐	☐	☐	☒

Environmental Setting

Police Services

The proposed project site is serviced by the Fresno County Sheriff's Office and is in an area designated by the County as Area 1. Area 1 is in the western part of Fresno County and encompasses 2,393 square miles of rural area. Area 1 is bounded by five different counties, contains six incorporated cities (Coalinga, Firebaugh, Huron, Kerman, Mendota, and San Joaquin) and is home to 63 miles of Interstate Highway 5 (Fresno County Sheriff's Office 2019).

Fire Services

The proposed project site is serviced by Battalion 14 of the Fresno-Kings Unit (also known as the Coalinga Battalion) and is one of the largest State Responsibility Areas (SRA) in the State of California.

The Battalion consists of over 1 million acres of State responsibility land under direct CAL FIRE protection. The Coalinga Battalion also includes 151,967 acres of Bureau of Land Management Direct Protection Area. CAL FIRE provides fire protection for most of the Bureau of Land Management land within the Coalinga Battalion. The Battalion is bordered by CAL FIRE units of San Luis Obispo, San Benito, Monterey, Mariposa, Madera, Merced, and Kern counties. The Coalinga Battalion is also boarded by Local Governments of Kings County, Fresno County Fire Protection District, and the City of Coalinga (Fresno County Fire Protection District 2024).

Other Public Services

The nearest school, Cantua Elementary School, is located approximately 1.4 miles east of the proposed project site. The nearest hospital, United Health Centers – Huron, is located approximately 17 miles south of the proposed project site. The nearest public park, Centennial Park, is located in Coalinga, approximately 17 miles southeast of the proposed project site.

Discussion

Issue XV.a.i, ii

In the event of a fire or other emergency within the proposed project site, it is anticipated that existing fire protection and police services in Fresno County would be able to sufficiently respond to emergencies with existing equipment and staffing capacities. The proposed project would be implemented within existing facilities and access roads, and operation activities would not change with the proposed project. As a result, relative to existing conditions, the proposed project would not introduce new facilities that would require additional emergency response services. Therefore, implementation of the proposed project would not require new fire or police facilities to maintain response ratios, service ratios, or other measures of performance. Impacts would be **less than significant**.

Issue XV.a.iii

The proposed project would not result in an increase in population. As a result, the proposed project would not lead to the construction of new housing, which could prompt a need for additional school services. Therefore, the proposed project would have **no impact** related to school services.

Issue XV.a.iv

The proposed project would not result in an increase in population and would not prompt the need for new parks. Therefore, the proposed project would have **no impact** related to parks.

Issue XV.a.v

The proposed project would not include new housing or bring new businesses to the area that would require any additional services or public facilities, including libraries. Therefore, the proposed project would have **no impact** related to other public facilities.

References

Fresno County Fire Protection District

2024 Fresno County Fire Battalion 14. Viewed online at: https://www.fresnocountyfire.org/fresno-county-fire-battalion-14. Accessed: July 11, 2024.

Fresno County Sheriff's Office

2019 2019 Fresno County Sheriff's Office Annual Review. Viewed online at: https://publicinfo.fresnosheriff.org/docs/DocView.aspx?id=6514&dbid=0&repo=SheriffPublic. Accessed: July 11, 2024.

3.2.16 Recreation

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XVI. RECREATION—				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☒	☐

Environmental Setting

There are no existing neighborhood or regional parks or other recreational facilities in the vicinity of the proposed project site. DWR does allow recreational fishing along segments of the Aqueduct. The closest designated Aqueduct fishing access site is located along the Aqueduct where it crosses West Clarkson Avenue at the northern end of the proposed project site (California Department of Water Resources 2020).

Discussion

Issue XVI.a, b

The proposed project site does include recreational facilities. Construction could temporarily limit access to fishing during construction of the proposed project; however, impacts would be temporary. Access to the fishing site would not be permanently impacted and access would be unchanged from existing conditions following the completion of construction activities. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. The proposed project would not result in substantial population growth, resulting in no increase in the use of recreational facilities and requiring no construction or expansion of recreational facilities. Therefore, **less-than-significant impacts** would occur.

References

California Department of Water Resources

2020 *Fishing along the SWP*. Viewed online at: https://calsport.org/news/wp-content/uploads/DWR_Fishing-Along-the-SWP.pdf. Accessed: September 19, 2024.

3.2.17 Transportation

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XVII. TRANSPORTATION—Would the project:				
a) Conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☒	☐
b) Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	☐	☐	☐	☒
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Result in inadequate emergency access?	☐	☐	☐	☒

Environmental Setting

Fresno County has comprehensive transportation systems that include State highways, local roads, rural highways and streets, bus transit services, freight rail, and airports (primarily private airstrips) (Fresno County Council of Governments 2022). The proposed project site is approximately 4.7 miles east of I-5 and approximately 1 mile east of State Route 33 at its closest point.

I-5 is the primary north-south route for interregional and interstate business, freight, tourist, and recreation travel, linking Southern and Northern California. The rural highway system accommodates not only people but is a particularly vital aspect of the freight-based economy. I-5 is one of the most important roadways in the area due to its connection to nearby counties and carries a significant portion of intra-county traffic (Fresno County Council of Governments 2022).

Discussion

Issue XVII.a

The proposed project would result in the temporary addition of project-related vehicles to local roadways over the nine-month construction period. All equipment and materials would be transported to the site on public highways, local roads, and private driveways, using standard transport vehicles.

Specific to the concrete liner raise, which is the activity that would require the most construction workers and vehicle trips per day, up to 30 construction workers are anticipated to be required for the concrete liner raise and approximately four truck trips per day for 29 weeks would be needed to

deliver concrete to the site. Anticipated labor force and truck trips for all project activities are listed in Chapter 2 in Table 2-1 and Table 2-2, respectively.

The majority of traffic would occur from the daily arrival and departure of workers. A maximum of up to 30 workers would be required at the site per day. The addition of 60 worker round trips along local roads would not substantially affect circulation capacity, and therefore, the trips would not substantially affect the capacity of the local roadways. Traffic control is not anticipated to be required along local roadways. DWR would coordinate with the appropriate property owners if private road access is required at any point. All worker parking would be accommodated at the staging area on-site; however, carpooling may be required if up to 30 workers are needed at any given time (which would reduce the number of overall trips). Project-generated traffic and operational maintenance would be temporary, and therefore, would not result in any long-term degradation in operating conditions on local roadways used for the project. Impacts on the local circulation system would be **less than significant**.

Further, the proposed project would not conflict with adopted policies, plans, or programs related to public transit or alternative modes of transportation. The proposed project would not decrease the performance or safety of these facilities, which are sparse within the largely rural proposed project site. Project activities would not disrupt services along local public transit, bicycle, or pedestrian routes.

Issue XVII.b

“Vehicle miles traveled” (VMT) refers to the amount and distance of automobile travel attributed to a project. A maximum of 30 workers and four truck trips would be required during the concrete liner raise, which would be the project activity that would require the most construction workers and vehicle trips per day. These trips would be temporary over the approximately nine-month construction period and would not result in any perceivable increase in vehicle miles traveled.

The CEQA Guidelines and the Governor’s Office of Planning and Research Technical Advisory note that CEQA provides a categorical exemption (Section 15303) for additions to existing structures of up to 10,000 square feet, so long as the project is in an area that is not environmentally sensitive and where public infrastructure is available. The Governor’s Office of Planning and Research determined that “typical project types for which trip generation increases relatively linearly with building footprint (i.e., general office building, single tenant office building, office park, and business park) generate or attract 110-124 trips per 10,000 square feet.” (Governor’s Office of Planning and Research 2018). They concluded that, absent substantial evidence otherwise, the addition of 110 or fewer daily trips could be presumed to have a less-than-significant VMT impact.

There are no new permanent vehicle trips associated with the proposed project. Because the proposed project’s trips would be below the 110-trip threshold in the Office of Planning and Research guidelines, the proposed project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3(b). **No impact** would occur.

Issue XVII.c

The proposed project would use existing roads for construction activities. The proposed project does not include the construction or design of any roadway infrastructure that would cause a safety risk to vehicle operations. The proposed project would not adversely alter the physical configuration of the existing roadway network serving the area and would not introduce unsafe design features associated with large equipment transport. In addition, the proposed project would not introduce uses (types of vehicles) that are incompatible with existing uses already served by the area's road system. **No impact** would occur.

Issue XVII.d

The proposed project would temporarily add vehicles to the local roadway and circulation system. However, no lane or road closures would be required. The proposed project would not interfere with emergency response access. **No impact** would occur.

References

Fresno County Council of Governments

2022 *Regional Transportation Plan and Sustainable Communities Strategy*. Viewed online at: https://www.planfresno.com/sustainable-communities-strategies-fall-outreach/. Accessed: Sept. 10, 2024. Adopted: Jul. 28, 2022.

Governor's Office of Planning and Research

2018 Technical Advisory On Evaluating Transportation Impacts In CEQA. Viewed online at: https://lci.ca.gov/ceqa/docs/20190122-743_Technical_Advisory.pdf. Accessed: March 27, 2025.

3.2.18 Tribal Cultural Resources

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XVIII. TRIBAL CULTURAL RESOURCES—				
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	☐	☒	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.	☐	☒	☐	☐

This section examines the potential impacts of the proposed project on Tribal cultural resources. Much of the background context and methods used for the analysis of potential impacts from the proposed project on Tribal cultural resources and cultural resources are the same. Therefore, to avoid redundancy, this information, which is presented in Section 3.2.5, “Cultural Resources,” is not repeated here.

Environmental Setting

California Historical Resources Information System Records Search

The methods for the CHRIS records searches are presented in Section 3.2.5, “Cultural Resources”; the following summarizes the results. The SSJVIC records search indicates that six cultural resources, all historic-era built environment resources, have been previously recorded within the proposed project site. No previously recorded cultural resources are present within 0.25 mile of the proposed project site. The SSJVIC has record of two previous cultural resources studies that have

been conducted in or within 0.25 mile of the proposed project site. Cumulatively, these reports covered approximately 99 percent of the proposed project site.

Ethnographic Literature Research

There are no clearly documented ethnographic village sites in the vicinity of the proposed project site. The nearest such village sites are the *Pitkachi* (Northern Valley Yokut) village *Gewachiu*, approximately 18 miles north-northeast of the proposed project site along the south side of the San Joaquin River, and the *Apiachi* (Southern Valley Yokut) village *Wohui*, approximately 20 miles east of the proposed project site along the north side of Murphy Slough (Kroeber 1976 [1925]; Wallace 1978).

Native American Correspondence

The NAHC maintains a confidential SLF, which contains sites of traditional, cultural, or religious value to the Native American community. The NAHC was contacted on July 19, 2024, to request a search of the SLF for the proposed project site and vicinity. The NAHC replied on July 23, 2024, stating that the SLF has no record of any resources in or near the proposed project site. The responses also provided contact information for 14 individuals representing seven California Native American Tribes (Tribes) that may be traditionally and culturally affiliated with the proposed project site.

In support of required Native American consultation for the proposed project pursuant to Public Resources Code Section 21080.3.1, as well as in accordance with the California Natural Resources Agency's *Final Tribal Consultation Policy* and DWR's *Tribal Engagement Policy*, on October 10, 2024, DWR sent a letter, via certified mail, to the Santa Rosa Rancheria Tachi Yokut Tribe, provided information on the proposed project and requesting that the Tribe notify DWR if they would like to consult pursuant to Public Resources Code Section 21080.3.1. On October 11, 2024, DWR sent an email with attachments to the Santa Rosa Rancheria Tachi Yokut Tribe with the same project-related information and request as the letter. DWR sent a follow-up email to the Tribe regarding the proposed project on November 13, 2024, and left a voicemail message on May 5, 2025. To date, the Santa Rosa Rancheria Tachi Yokut Tribe has not provided any response to this outreach.

In accordance with the California Natural Resources Agency's *Final Tribal Consultation Policy* and DWR's *Tribal Engagement Policy*, on October 10, 2024, DWR sent letters, via certified mail, to each Tribe provided in the NAHC reply for the Project other than the Santa Rosa Rancheria Tachi Yokut Tribe (who was also contacted in support of Public Resources Code Section 21080.3.1 [AB 52] as noted in the previous paragraph), as follows:

- Amah Mutsun Tribal Band.
- Big Sandy Rancheria of Western Mono Indians.
- Cold Springs Rancheria of Mono Indians.
- Dumna Wo-Wah Tribal Government.
- Dunlap Band of Mono Indians.
- Kitanemuk & Yowlumne Tejon Indians.

- Northern Valley Yokut/Ohlone Tribe.
- Salinan Tribe of Monterey, San Luis Obispo Counties.
- Sierra Foothill Wuksachi Yokuts Tribe.
- Table Mountain Rancheria.
- Traditional Choinumni Tribe.
- Tule River Indian Tribe.
- Wuksachi Indian Tribe/Eshom Valley Band.
- Xolon-Salinan Tribe.

The letters provided information on the proposed project and requested that the recipients provide information on cultural resources that may be impacted by the proposed project, if they would like to do so. On October 11, 2024, DWR sent emails with attachments to these same Tribes with the same project-related information and request as the letters. On October 16, 2024, the Chairperson of the Traditional Choinumni Tribe contacted DWR by telephone stating that his Tribe did not wish to consult on the proposed project. Upon receipt of updated contact information, on November 6, 2024, DWR sent a follow-up letter, via certified mail, to the Tule River Indian Tribe. DWR sent a follow-up email with attachments to the Amah Mutsun Tribal Band on November 13, 2024, receiving a reply via email on November 15, 2024, stating that the Tribe did not wish to consult on the proposed project. To date, no other communications with Tribes regarding the proposed project have occurred. Documentation of the project correspondence with Tribes to date is included in Appendix D.

Field Survey

The methods for the field survey are presented in Section 3.2.5; the following summarizes the results. No archaeological resources were identified in the proposed project site during the survey. During the archaeological survey, ground visibility for the majority of the proposed project site was good, ranging from 70 to 100 percent, though portions of the embankments and borrow areas presented poor ground-visibility, ranging from 0 to 25 percent.

Summary of Tribal Cultural Resources Identification Efforts

In summary, through background research, Native American consultation and correspondence, and field survey conducted for the proposed project, no Tribal cultural resources, including any indigenous archaeological resources or human remains that could qualify as Tribal cultural resources, were identified in the proposed project site.

Discussion

Issue XVIII.a.i, ii

No Tribal cultural resources, as defined in Public Resources Code Section 21074, have been identified in the proposed project site through archival research, a field survey, or Native American consultation. Therefore, there is no substantial evidence of the presence of any Tribal cultural

resources in the proposed project site and the proposed project is not expected to impact any Tribal cultural resources, as defined in Public Resources Code Section 21074.

Although there is no substantial evidence that any Tribal cultural resources are in the proposed project site, the proposed project would involve ground-disturbing activities that may extend into undisturbed soil. It is possible that such activities could unearth, expose, or disturb subsurface Tribal cultural resources, as defined in Public Resources Code Section 21074, that were not identified on the surface. Any impact of the proposed project on such Tribal cultural resources would be potentially significant. Such potentially significant impacts would be reduced to **less than significant with mitigation incorporated** by implementing **Mitigation Measures CUL-1 and CUL-2** (see Section 3.2.5).

Implementing **Mitigation Measure CUL-1** would reduce impacts to less than significant by ensuring that any unanticipated archaeological discoveries are promptly evaluated and appropriately protected or treated by qualified professionals and Tribes, thereby preventing inadvertent damage to potentially significant cultural resources. Implementing **Mitigation Measure CUL-2** would reduce impacts to less than significant by ensuring that any discovered human remains are respectfully protected, documented, and evaluated by appropriate authorities and halt construction to prevent further disturbance.

References

Kroeber AL.

1976 [1925] *Handbook of the Indians of California. Bureau of American Ethnology* Bulletin 78, Smithsonian Institution, Washington, DC. 1976 reprinted ed., Dover Publications, Inc., New York, NY.

Wallace W.

1978 “Southern Valley Yokuts.” In *California*, RF Heizer, editor. pp. 462–470. *Handbook of North American Indians*, vol. 8, WC Sturtevant, general editor. Smithsonian Institution, Washington, DC.

3.2.19 Utilities and Service Systems

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XIX. UTILITIES AND SERVICE SYSTEMS—Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☒
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

Environmental Setting

The Westlands Water District is the nearest water supplier in the vicinity of the proposed project site. Westlands Water District provides water to more than 1,000 square miles of prime farmland in western Fresno and Kings counties and serves Central Valley Project water to farms through 1,100 miles of underground pipe and more than 3,000 water meters (Westlands Water District 2024). Other local water districts provide municipal water to surrounding areas via pump stations, pipelines, and other water storage and conveyance facilities.

Solid waste that is generated by proposed construction activities along Pools 17 and 18 would likely be sent to American Avenue Disposal Site, which is located approximately 16 miles to the northeast of the proposed project site. The facility offers disposal services for construction/demolition wastes, industrial wastes, agricultural wastes, and other waste types that may be generated by the proposed project. According to the most recent updates in June of 2005, the American Avenue Disposal Site

has a remaining capacity of 29,358,535 cubic yards. (California Department of Resources Recycling and Recovery 2024).

Fresno County is serviced by Pacific Gas and Electric (Pacific Gas and Electric Company 2014a, 2014b) for both electricity and gas needs. Natural gas and electrical services are provided by Pacific Gas and Electric. A natural gas pipeline runs parallel to the Aqueduct, approximately 3 miles to the west of the Aqueduct (U.S. Department of Transportation 2024). There are also overhead electric power lines adjacent to the proposed project site (California Energy Commission 2024).

Discussion

Issue XIX.a

The proposed project would generate a minimal number of workers (up to approximately 30) to the proposed project site on a temporary basis during the approximately nine-month construction window. It is anticipated that these workers would come from the existing labor pool in the region and would not generate an increase in the population relative to the existing conditions. The proposed project may require limited use of potable water during construction activities. No water or wastewater treatment facilities would be installed as part of the proposed project and there are no proposed project activities that would require new electric power, natural gas, or telecommunications facilities. Therefore, the proposed project would not create a need to construct new or modified utilities and service systems.

The proposed project would not substantially alter the local drainage pattern of the proposed project site. The proposed project does not include the construction of new large structures or impervious surfaces that would substantially alter or change the rate or amount of surface runoff from the proposed project site. Therefore, the proposed project would not require the construction or expansion of new stormwater drainage facilities. Therefore, there would be no construction of utility infrastructure associated with the proposed project, and **no impact** would occur.

Issue XIX.b

Water may be needed temporarily during implementation of the proposed project. Water for dust suppression could be pumped from the Aqueduct. If that source of water is insufficient, and other sources cannot be used, the construction contractor would pay for water to be brought to the proposed project site from local water suppliers for dust suppression. Water demand for dust suppression would be temporary, and no new or expanded entitlements would be required. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. Therefore, potential impacts associated with availability of water supplies would be **less than significant**.

Issue XIX.c

The proposed project may result in the generation of wastewater associated with temporary use of portable toilets. During project implementation, DWR or the contractor may have portable toilet facilities available on-site temporarily for use by construction workers. Given the relatively small

construction workforce of a maximum of 30 workers on-site daily for the up to nine-month construction period, this amount of wastewater would be minimal and it would be properly handled and disposed of in accordance with all applicable laws and regulations. Once construction activities are concluded, any portable facilities would be removed. Therefore, the proposed project would not require a wastewater treatment provider to serve the proposed project site. **No impact** would occur.

Issue XIX.d

Implementation of the proposed project would result in nominal solid waste limited to trash and other construction-related materials. The proposed project would not demolish existing facilities on-site but would require materials for the liner raise.

The American Avenue Disposal Site, which is located within 16 miles of the proposed project site, has remaining capacity, should it need to be used (California Department of Resources Recycling and Recovery 2024). The proposed project would result in **less-than-significant impact** related to local infrastructure capacity and would not impair attainment of solid waste reduction goals.

Issue XIX.e

As stated above, implementation of the proposed project would result in nominal solid waste. Statewide policies regarding solid waste have become progressively more stringent, reflecting Assembly Bill 939, which requires local government to develop waste reduction and recycling policies and meet mandated solid waste reduction targets. For the minor amount of solid waste anticipated to be produced by the proposed project, DWR would comply with all laws and regulations related to the disposal and recycling of waste. There would be **no impact**.

References

California Energy Commission

2024 California Electric Transmission Lines. Viewed online at: https://cecgis-caenergy.opendata.arcgis.com/datasets/260b4513acdb4a3a8e4d64e69fc84fee_2/explore?location=36.098202%2C-119.930079%2C10.89. Accessed: July 11, 2024.

California Department of Resources Recycling and Recovery

2024 SWIS Facility/Site Activity Details: American Avenue Disposal Site (10-AA-0009). Viewed online at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/4535?siteID=352. Accessed: July 11, 2024.

Pacific Gas and Electric Company

2014a Electric Service Area Maps. Viewed online at: https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_MAPS_Service%20Area%20Map.pdf Accessed: July 11, 2024.

2014b Gas Service Area Maps. Viewed online at: https://www.pge.com/tariffs/assets/pdf/tariffbook/GAS_MAPS_Service_Area_Map.pdf Accessed: July 11, 2024.

U.S. Department of Transportation

2024 NPMS Public Viewer. Viewed online at: https://pvnpms.phmsa.dot.gov/PublicViewer/. Accessed: July 11, 2024.

Westlands Water District

2024 About Westlands. Viewed online at: https://wwd.ca.gov/about-westlands/. Accessed: July 11, 2024.

3.2.20 Wildfire

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XX. WILDFIRE—If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☒	☐	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

Environmental Setting

The proposed project site is not located in a State responsibility area or designated moderate, high, or very high Fire Hazard Severity Zone. The proposed project site is located in a Local Responsibility Area (California Department of Forestry and Fire Protection 2024).

Discussion

Issue XX.a

Implementation of the proposed project is not anticipated to substantially impair an adopted emergency response plan or evacuation plan or interfere with emergency response access to the project vicinity because there would be negligible numbers of workers (up to 30 employees) traveling to the proposed project site on a temporary basis. Operation activities would not change with the proposed project. No road closures would be required for the proposed project, and there would not be a permanent substantial increase in the number of people working or residing at or near the proposed project site. **No impact** would occur.

Issue XX.b

The proposed project site is located within a Local Responsibility Area and is not in a State fire hazard severity zone. The proposed project site does not include slopes that surround the Aqueduct that are susceptible to prevailing winds. No structures are proposed as part of the project and construction activities would occur within the waterside of the Aqueduct embankments and within existing access roads and road aprons. Further, the surrounding vegetation and land use types have a low potential for fires. As a standard DWR safety practice, all vehicles and equipment would have fire prevention equipment on-site, including fire extinguishers and shovels, if a fire were to occur. Therefore, construction of the proposed project is not expected to expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Further, the proposed project would not involve operation of facilities that would exacerbate fire conditions within the area or require permanent workers or occupants in the proposed project site. As a result, the impact would be **less than significant**.

Issue XX.c

The proposed project includes liner raise construction activities. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. The proposed project would not require the installation or maintenance of infrastructure that would exacerbate wildfire risks or that may result in temporary or ongoing impacts to the environment, as discussed in Section 3.2, “Environmental Checklist.”

All of the potential direct and indirect impacts of the proposed project were determined to be fully avoided or reduced to less than significant with incorporation of **Mitigation Measures BIO-1 through BIO-13**, **CUL-1 and CUL-2**, and **GEO-1**.

Implementing **Mitigation Measures BIO-1 through BIO-13** would require qualified biologists to monitor construction activities, conduct targeted surveys, and enforce protective buffers for sensitive species, while also incorporating comprehensive worker training, invasive plant species control measures, habitat revegetation, and construction BMPs to minimize impacts on biological resources. Implementing **Mitigation Measures CUL-1 and CUL-2** would prevent inadvertent damage to potentially significant cultural resources by ensuring that any unanticipated archaeological discoveries and discovered human remains are promptly evaluated and appropriately protected or treated by qualified professionals and Tribes. Implementing **Mitigation Measure GEO-1** would require work to stop near any unanticipated paleontological discovery so that a qualified paleontologist can assess its significance. This allows for appropriate recovery or protection of the resource before construction resumes, avoiding potential damage or loss. As a result, impacts would be **less than significant with mitigation incorporated**.

Issue XX.d

The proposed concrete liner raises would occur on the waterside of the Aqueduct, within a human-made concrete embankment system. The proposed project would not involve the construction of any structures that would be occupied during operation and operation activities would not change with

the proposed project. Therefore, post-fire, the proposed project would not expose people or structures to significant risks. **No impact** would occur.

References

California Department of Forestry and Fire Protection

2024 Fire Hazard Severity Zones. Viewed online at: https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones. Accessed: July 11, 2024.

3.2.21 Mandatory Findings of Significance

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XXI. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion

Issue XXI.a

Construction activities associated with the proposed project would be temporary in nature. Once constructed, the liner raise would maintain functionality in Pools 17 and 18 to enable DWR to avoid future disruptions of water deliveries to the Public Water Agencies, thereby maintaining operational flexibility and improving safety and reliability. The proposed project would not substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; reduce or restrict the range of rare or endangered plants or animals; or eliminate important examples of the major periods of California history or prehistory. As discussed in the analyses provided in this Initial Study, adherence to federal, State, and local regulations, and implementation of **Mitigation Measures BIO-1 through BIO-13**, **CUL-1 and CUL-2**, and **GEO-1** would reduce all potentially significant impacts to biological, cultural and geologic resources as well as to other issue areas analyzed, to **less-than-significant levels with mitigation incorporated**.

Implementing **Mitigation Measures BIO-1 through BIO-13** would require qualified biologists to monitor construction activities, conduct targeted surveys, and enforce protective buffers for sensitive species, while also incorporating comprehensive worker training, invasive plant species control measures, habitat revegetation, and construction BMPs to minimize impacts on biological resources. Implementing **Mitigation Measures CUL-1 and CUL-2** would prevent inadvertent damage to potentially significant cultural resources by ensuring that any unanticipated archaeological discoveries and discovered human remains are promptly evaluated and appropriately protected or treated by qualified professionals and Tribes. Implementing **Mitigation Measure GEO-1** would require work to stop near any unanticipated paleontological discovery so that a qualified paleontologist can assess its significance. This allows for appropriate recovery or protection of the resource before construction resumes, avoiding potential damage or loss.

Issue XXI.b

As noted throughout this document, the potential impacts of the proposed project are primarily temporary and short-term construction-related impacts and are site-specific. As noted above, all of the potential direct and indirect impacts of the proposed project were determined to be fully avoided or reduced to less than significant with incorporation of **Mitigation Measures BIO-1 through BIO-13**, **CUL-1 and CUL-2**, and **GEO-1**. As a result, the potential impacts of the proposed project are not considered cumulatively considerable, and impacts would be **less than significant with mitigation incorporated**.

Issue XXI.c

The potential impacts of the proposed project are temporary, short-term, and site-specific. These impacts are all localized to the proposed project site and include limited adverse effects on biological resources, cultural resources, geology and soils, Tribal cultural resources, and wildfire. However, the proposed project would not include any activities or uses that may cause substantial adverse effects on human beings, either directly or indirectly, or on the physical environment. As discussed above, compliance with applicable local, State, and federal standards, as well as incorporation of project mitigation measures, including **Mitigation Measures BIO-1 through BIO-13**, **CUL-1 and CUL-2**, and **GEO-1**, would result in **less-than-significant impacts with mitigation incorporated**.

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APPENDIX A

Air Quality Modeling Results and Greenhouse Gas Emissions Reduction Plan Consistency Determination Checklist

Greenhouse Gas Emissions Reduction Plan Consistency Determination

For Projects Using Contractors or Other Outside Labor

This form is to be used by DWR Project Managers to document a CEQA project's consistency with the DWR Greenhouse Gas Emissions Reduction Plan (GGERP). This form is to be used only when DWR is the Lead Agency and when contractors or outside labor and equipment are used to implement the project.

Additional Guidance on filling out this form can be found at:
https://cawater.sharepoint.com/teams/prog/icc/SitePages/ClimateActionPlan.aspx

The DWR Greenhouse Gas Emissions Reduction Plan can be accessed at:
https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan/Files/CAP-I-GGERP-Update-2020.pdf

Project Name:	San Luis Canal (CA Aqueduct) Pools 17&18 Liner Raise Project
Environmental Document Type:	Initial Study/Mitigated Negative Declaration
Project Manager's Name:	Bal Sah
Project Manager's E-mail:	Bal.Sah@water.ca.gov
Division:	Division of Engineering
Office, Branch, or Field Division:	Project Management and Coordination

Short Project Description:
The objective of the proposed project is to restore functionality and original design capacity in Pools 17 and 18 to enable DWR to complete water deliveries to public water agencies. The Aqueduct's concrete liner would be raised approximately 1 foot and 9 inches for a total length of approximately 8.9 miles on both sides of Pools 17 and 18. To accommodate the placement of the additional concrete, existing guardrails, road delineators, hand railings and other features would be removed and salvaged for reuse on-site, if possible.

Project Greenhouse Gas (GHG) Emissions Summary:		
Total Construction Emissions	904.3	$mtCO_2e$
Maximum Annual Construction Emissions	904.3	$mtCO_2e$ (For construction lasting 12 months or less the total and maximum annual construction emissions will be the same)

☒ All other emissions from the project not accounted for above will occur as ongoing operational, maintenance, or business activity emissions and therefore have already been accounted for and analyzed in the GGERP.

Extraordinary Construction Project Determination:

Do total project construction emissions exceed 25,000 $mtCO_2e$ for the entire construction phase or exceed 12,500 $mtCO_2e$ in any single year of construction?

☒ No – Additional analysis not required ☐ Yes – Project specific emissions mitigation measures have been included in the environmental analysis document for the project

Project GHG Reduction Plan Checklist:

☒ All Project Level GHG Emissions Reduction Measures have been incorporated into the design or implementation plan for the project. (Project Level GHG Emissions Reduction Measures)

Or

☐ All feasible Project Level GHG Emissions Reduction Measures have been incorporated into the design or implementation plan for the project and Measures not incorporated have been listed and determined not to apply to the proposed project (include as an attachment)

☒ Project does not conflict with any of the Specific Action GHG Emissions Reduction Measures (Specific Action GHG Emissions Reduction Measures)

Would implementation of the project result in additional energy demands on the SWP system of 15 GWh/yr or greater?

☐ Yes ☒ No

If you answered Yes, attach a letter documenting that the project has consulted with the DWR SWP Power and Risk Office regarding the additional power requirements of the project.

Is there substantial evidence that the effects of the proposed project may be cumulatively considerable notwithstanding the proposed project's compliance with the requirements of the DWR GHG Reduction Plan?

☐ Yes ☒ No

If you answered Yes, the project is not eligible for streamlined analysis of GHG emissions using the DWR GHG Emissions Reduction Plan. (See CEQA Guidelines, section 15183.5, subdivision (b)(2).)

Project Manager Signature: Bal Sahi Date: 8/25/2025

After the Project Manager has reviewed and signed above please use DocuSign to forward this form to the DWR Climate Change Program at ceqaclimatechange@water.ca.gov for final approval.

For DWR Climate Change Program Use Only:
Based on the information provided above and information provided in associated environmental documentation completed pursuant to the above referenced project, the DWR Climate Change Program has determined that:

☒ The entire proposed project is consistent with the DWR GGERP and the GHGs emitted by the project are covered by the plan's analysis.

☒ The operational and maintenance phase of the project is consistent with the DWR GGERP and the GHGs emitted by the project are covered by the plan's analysis. Emissions from the construction phase of the project are not covered by the DWR GGERP and will be mitigated as part of the project.

Climate Change Program Approval Signature: Tyler Anthony Date: 8/27/2025

Attachments:

☒ GHG Emissions Inventory ☐ List and Explanation of excluded Project level GHG Emissions Reduction Measures ☐ SWP Power and Risk Office Consultation Letter

Links:
https://cawater.sharepoint.com/teams/prog/icc/SitePages/HomePage.aspx
https://water.ca.gov/Programs/All-Programs/Climate-Change-Program

Pools 17 & 18 Detailed Report

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8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Pools 17 & 18
Construction Start Date	7/28/2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.50
Precipitation (days)	21.2
Location	36.45540167599968, -120.3029946145293
County	Fresno
City	Unincorporated
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2525
EDFZ	5
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.30

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Linear	8.90	Mile	350	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	15.0	12.4	90.1	59.8	0.21	3.31	1.60	4.27	3.05	0.41	3.30	—	19,405	19,405	0.73	0.65	9.50	19,576
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.85	5.70	41.5	36.9	0.12	1.48	1.12	2.49	1.37	0.29	1.62	—	12,556	12,556	0.46	0.44	0.16	12,685
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.95	1.63	11.8	10.7	0.03	0.42	0.30	0.72	0.39	0.08	0.46	—	3,696	3,696	0.13	0.12	0.75	3,735
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.36	0.30	2.15	1.96	0.01	0.08	0.05	0.13	0.07	0.01	0.08	—	612	612	0.02	0.02	0.12	618

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	9.12	7.63	53.4	54.2	0.18	1.88	1.60	3.49	1.74	0.41	2.15	—	19,345	19,345	0.69	0.65	9.50	19,564

2028	15.0	12.4	90.1	59.8	0.21	3.31	0.96	4.27	3.05	0.25	3.30	—	19,405	19,405	0.73	0.49	5.62	19,576
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	6.85	5.70	41.5	36.9	0.12	1.48	1.01	2.49	1.37	0.26	1.62	—	12,556	12,556	0.46	0.39	0.15	12,685
2028	6.75	5.61	40.1	36.6	0.12	1.42	1.12	2.43	1.31	0.29	1.57	—	12,503	12,503	0.46	0.44	0.16	12,632
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.95	1.63	11.8	10.7	0.03	0.42	0.30	0.72	0.39	0.08	0.46	—	3,696	3,696	0.13	0.12	0.75	3,735
2028	1.05	0.88	6.17	5.09	0.02	0.22	0.17	0.39	0.20	0.04	0.25	—	1,957	1,957	0.07	0.07	0.42	1,981
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.36	0.30	2.15	1.96	0.01	0.08	0.05	0.13	0.07	0.01	0.08	—	612	612	0.02	0.02	0.12	618
2028	0.19	0.16	1.13	0.93	< 0.005	0.04	0.03	0.07	0.04	0.01	0.05	—	324	324	0.01	0.01	0.07	328

3. Construction Emissions Details

3.1. Mobilization / SWPPP installation (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.92	0.77	4.32	5.85	0.02	0.16	—	0.16	0.15	—	0.15	—	2,313	2,313	0.09	0.02	—	2,321
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.18	0.24	< 0.005	0.01	—	0.01	0.01	—	0.01	—	95.1	95.1	< 0.005	< 0.005	—	95.4
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.03	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.7	15.7	< 0.005	< 0.005	—	15.8
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	0.04	0.63	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	116	116	< 0.005	< 0.005	0.37	118
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.04	0.01	1.34	0.21	0.01	0.03	0.37	0.40	0.03	0.10	0.13	—	1,311	1,311	0.02	0.20	2.95	1,375

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.39	4.39	< 0.005	< 0.005	0.01	4.47
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.06	0.01	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	53.9	53.9	< 0.005	0.01	0.05	56.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.73	0.73	< 0.005	< 0.005	< 0.005	0.74
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.92	8.92	< 0.005	< 0.005	0.01	9.34

3.3. Borrow area preparations / fence removal (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.13	0.95	6.26	9.48	0.03	0.22	—	0.22	0.20	—	0.20	—	2,874	2,874	0.12	0.02	—	2,884
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.26	0.39	< 0.005	0.01	—	0.01	0.01	—	0.01	—	118	118	< 0.005	< 0.005	—	119
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	19.6	19.6	< 0.005	< 0.005	—	19.6
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	0.04	0.63	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	116	116	< 0.005	< 0.005	0.37	118
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.39	4.39	< 0.005	< 0.005	0.01	4.47

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.73	0.73	< 0.005	< 0.005	< 0.005	0.74
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Misc. installations (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	5.46	4.52	32.8	21.0	0.07	1.22	—	1.22	1.12	—	1.12	—	6,027	6,027	0.24	0.05	—	6,048
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	5.46	4.52	32.8	21.0	0.07	1.22	—	1.22	1.12	—	1.12	—	6,027	6,027	0.24	0.05	—	6,048

Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.37	0.31	2.25	1.44	< 0.005	0.08	—	0.08	0.08	—	0.08	—	413	413	0.02	< 0.005	—	414
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.06	0.41	0.26	< 0.005	0.02	—	0.02	0.01	—	0.01	—	68.4	68.4	< 0.005	< 0.005	—	68.6
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.02	0.29	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	57.0	57.0	< 0.005	< 0.005	0.17	57.9
Vendor	0.03	0.02	1.02	0.21	0.01	0.02	0.35	0.37	0.02	0.10	0.12	—	1,189	1,189	0.02	0.18	2.45	1,244
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.24	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	50.6	50.6	< 0.005	< 0.005	< 0.005	51.5
Vendor	0.03	0.02	1.09	0.21	0.01	0.02	0.35	0.37	0.02	0.10	0.12	—	1,189	1,189	0.02	0.18	0.06	1,242
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.59	3.59	< 0.005	< 0.005	< 0.005	3.65
Vendor	< 0.005	< 0.005	0.07	0.01	< 0.005	< 0.005	0.02	0.03	< 0.005	0.01	0.01	—	81.4	81.4	< 0.005	0.01	0.07	85.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.59	0.59	< 0.005	< 0.005	< 0.005	0.60
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.5	13.5	< 0.005	< 0.005	0.01	14.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Closeout (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	8.35	6.91	51.1	30.9	0.10	1.90	—	1.90	1.75	—	1.75	—	8,424	8,424	0.34	0.07	—	8,453
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	0.19	1.40	0.85	< 0.005	0.05	—	0.05	0.05	—	0.05	—	231	231	0.01	< 0.005	—	232
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.26	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	38.2	38.2	< 0.005	< 0.005	—	38.3
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.03	0.59	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	114	114	< 0.005	< 0.005	0.33	116
Vendor	0.01	0.01	0.48	0.09	< 0.005	0.01	0.17	0.18	0.01	0.05	0.06	—	565	565	0.01	0.08	1.17	592
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.87	2.87	< 0.005	< 0.005	< 0.005	2.92
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.5	15.5	< 0.005	< 0.005	0.01	16.2
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.48	0.48	< 0.005	< 0.005	< 0.005	0.48
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.56	2.56	< 0.005	< 0.005	< 0.005	2.68
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Earthwork (embankment prep) (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.99	4.14	31.4	24.3	0.07	1.16	—	1.16	1.07	—	1.07	—	6,281	6,281	0.25	0.05	—	6,302
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	4.99	4.14	31.4	24.3	0.07	1.16	—	1.16	1.07	—	1.07	—	6,281	6,281	0.25	0.05	—	6,302
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.36	1.13	8.55	6.62	0.02	0.32	—	0.32	0.29	—	0.29	—	1,708	1,708	0.07	0.01	—	1,714
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.25	0.21	1.56	1.21	< 0.005	0.06	—	0.06	0.05	—	0.05	—	283	283	0.01	< 0.005	—	284
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.11	0.06	0.95	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	174	174	< 0.005	0.01	0.56	177
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.10	0.07	0.77	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	155	155	0.01	0.01	0.01	157
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.21	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	43.6	43.6	< 0.005	< 0.005	0.07	44.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.22	7.22	< 0.005	< 0.005	0.01	7.34
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Earthwork (embankment prep) (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.96	4.12	31.0	24.3	0.07	1.13	—	1.13	1.04	—	1.04	—	6,283	6,283	0.25	0.05	—	6,305

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.91	0.71	< 0.005	0.03	—	0.03	0.03	—	0.03	—	184	184	0.01	< 0.005	—	185
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.17	0.13	< 0.005	0.01	—	0.01	0.01	—	0.01	—	30.5	30.5	< 0.005	< 0.005	—	30.6
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.06	0.71	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	152	152	0.01	0.01	0.01	154

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.62	4.62	< 0.005	< 0.005	0.01	4.69
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.76	0.76	< 0.005	< 0.005	< 0.005	0.78
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Drainage work (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.76	4.18	6.05	0.02	0.15	—	0.15	0.13	—	0.13	—	2,349	2,349	0.10	0.02	—	2,357
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.91	0.76	4.18	6.05	0.02	0.15	—	0.15	0.13	—	0.13	—	2,349	2,349	0.10	0.02	—	2,357
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.06	0.34	0.50	< 0.005	0.01	—	0.01	0.01	—	0.01	—	193	193	0.01	< 0.005	—	194
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	32.0	32.0	< 0.005	< 0.005	—	32.1
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.03	0.59	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	114	114	< 0.005	< 0.005	0.33	116
Vendor	0.01	0.01	0.48	0.09	< 0.005	0.01	0.17	0.18	0.01	0.05	0.06	—	565	565	0.01	0.08	1.17	592

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.04	0.48	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	101	101	< 0.005	0.01	0.01	103
Vendor	0.01	0.01	0.51	0.09	< 0.005	0.01	0.17	0.18	0.01	0.05	0.06	—	565	565	0.01	0.08	0.03	591
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.62	8.62	< 0.005	< 0.005	0.01	8.75
Vendor	< 0.005	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	46.5	46.5	< 0.005	0.01	0.04	48.6
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.43	1.43	< 0.005	< 0.005	< 0.005	1.45
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.69	7.69	< 0.005	< 0.005	0.01	8.04
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.15. Concrete liner (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.49	1.25	7.86	9.89	0.04	0.29	—	0.29	0.26	—	0.26	—	3,972	3,972	0.16	0.03	—	3,986
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.49	1.25	7.86	9.89	0.04	0.29	—	0.29	0.26	—	0.26	—	3,972	3,972	0.16	0.03	—	3,986
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.41	0.34	2.14	2.69	0.01	0.08	—	0.08	0.07	—	0.07	—	1,080	1,080	0.04	0.01	—	1,084
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.06	0.39	0.49	< 0.005	0.01	—	0.01	0.01	—	0.01	—	179	179	0.01	< 0.005	—	179
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.23	0.23	0.11	1.90	0.00	0.00	0.33	0.33	0.00	0.08	0.08	—	349	349	0.01	0.01	1.12	354
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.06	0.02	1.91	0.32	0.01	0.04	0.52	0.56	0.04	0.14	0.18	—	1,839	1,839	0.03	0.29	4.13	1,929
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21	0.19	0.14	1.54	0.00	0.00	0.33	0.33	0.00	0.08	0.08	—	310	310	0.01	0.02	0.03	315

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.06	0.02	2.04	0.33	0.01	0.04	0.52	0.56	0.04	0.14	0.18	—	1,839	1,839	0.03	0.29	0.11	1,925
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.03	0.42	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	87.3	87.3	< 0.005	< 0.005	0.13	88.7
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.54	0.09	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	500	500	0.01	0.08	0.49	524
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	14.4	14.4	< 0.005	< 0.005	0.02	14.7
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.10	0.02	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	82.8	82.8	< 0.005	0.01	0.08	86.8

3.17. Concrete liner (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.44	1.21	6.94	9.82	0.04	0.25	—	0.25	0.23	—	0.23	—	3,973	3,973	0.16	0.03	—	3,987
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	0.18	0.15	0.88	1.25	< 0.005	0.03	—	0.03	0.03	—	0.03	—	505	505	0.02	< 0.005	—	507
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.16	0.23	< 0.005	0.01	—	0.01	0.01	—	0.01	—	83.7	83.7	< 0.005	< 0.005	—	84.0
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.18	0.13	1.43	0.00	0.00	0.33	0.33	0.00	0.08	0.08	—	304	304	0.01	0.02	0.03	309
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.06	0.02	1.98	0.33	0.01	0.04	0.52	0.56	0.04	0.14	0.18	—	1,792	1,792	0.03	0.29	0.10	1,878
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.01	0.19	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	40.0	40.0	< 0.005	< 0.005	0.06	40.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.25	0.04	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	228	228	< 0.005	0.04	0.21	239
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.63	6.63	< 0.005	< 0.005	0.01	6.73
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	37.7	37.7	< 0.005	0.01	0.03	39.6

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Mobilization / SWPPP installation	Linear, Grubbing & Land Clearing	7/28/2027	8/17/2027	5.00	15.0	—
Borrow area preparations / fence removal	Linear, Grubbing & Land Clearing	7/28/2027	8/17/2027	5.00	15.0	—
Misc. installations	Linear, Grubbing & Land Clearing	3/12/2028	4/15/2028	5.00	25.0	—
Closeout	Linear, Grubbing & Land Clearing	4/15/2028	4/28/2028	5.00	10.0	—
Earthwork (embankment prep)	Linear, Grading & Excavation	8/15/2027	1/15/2028	5.00	110	—
Drainage work	Linear, Drainage, Utilities, & Sub-Grade	3/5/2028	4/15/2028	5.00	30.0	—
Concrete liner	Linear, Paving	8/15/2027	3/5/2028	5.00	145	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Mobilization / SWPPP installation	Off-Highway Trucks	Diesel	Average	4.00	3.00	400	0.38
Mobilization / SWPPP installation	Forklifts	Diesel	Average	2.00	4.00	100	0.20
Borrow area preparations / fence removal	Excavators	Diesel	Average	2.00	6.00	82.0	0.38
Borrow area preparations / fence removal	Off-Highway Trucks	Diesel	Average	4.00	3.00	400	0.38
Borrow area preparations / fence removal	Forklifts	Diesel	Average	2.00	4.00	100	0.20
Borrow area preparations / fence removal	Skid Steer Loaders	Diesel	Average	1.00	4.00	74.0	0.37
Misc. installations	Off-Highway Trucks	Diesel	Average	4.00	3.00	400	0.38
Misc. installations	Forklifts	Diesel	Average	1.00	4.00	100	0.20
Misc. installations	Dumpers/Tenders	Diesel	Average	3.00	8.00	325	0.38
Misc. installations	Generator Sets	Diesel	Average	1.00	6.00	12.0	0.74
Closeout	Off-Highway Trucks	Diesel	Average	4.00	3.00	400	0.38
Closeout	Forklifts	Diesel	Average	1.00	4.00	100	0.20
Closeout	Dumpers/Tenders	Diesel	Average	4.00	8.00	400	0.38
Closeout	Generator Sets	Diesel	Average	1.00	6.00	12.0	0.74
Earthwork (embankment prep)	Excavators	Diesel	Average	2.00	6.00	82.0	0.38
Earthwork (embankment prep)	Off-Highway Trucks	Diesel	Average	4.00	3.00	400	0.38
Earthwork (embankment prep)	Skid Steer Loaders	Diesel	Average	2.00	4.00	74.0	0.37
Earthwork (embankment prep)	Dumpers/Tenders	Diesel	Average	2.00	8.00	400	0.38

Earthwork (embankment prep)	Rollers	Diesel	Average	2.00	6.00	75.0	0.38
Drainage work	Off-Highway Trucks	Diesel	Average	4.00	3.00	400	0.38
Drainage work	Forklifts	Diesel	Average	1.00	4.00	100	0.20
Drainage work	Skid Steer Loaders	Diesel	Average	1.00	4.00	74.0	0.37
Concrete liner	Off-Highway Trucks	Diesel	Average	2.00	4.00	400	0.38
Concrete liner	Forklifts	Diesel	Average	2.00	4.00	100	0.20
Concrete liner	Other Material Handling Equipment	Diesel	Average	2.00	8.00	300	0.40
Concrete liner	Generator Sets	Diesel	Average	2.00	6.00	12.0	0.74

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Mobilization / SWPPP installation	—	—	—	—
Mobilization / SWPPP installation	Worker	20.0	7.70	LDA,LDT1,LDT2
Mobilization / SWPPP installation	Vendor	0.00	4.00	HHDT,MHDT
Mobilization / SWPPP installation	Hauling	4.00	100	HHDT
Mobilization / SWPPP installation	Onsite truck	—	—	HHDT
Borrow area preparations / fence removal	—	—	—	—
Borrow area preparations / fence removal	Worker	20.0	7.70	LDA,LDT1,LDT2
Borrow area preparations / fence removal	Vendor	0.00	4.00	HHDT,MHDT
Borrow area preparations / fence removal	Hauling	0.00	20.0	HHDT
Borrow area preparations / fence removal	Onsite truck	—	—	HHDT
Concrete liner	—	—	—	—

Concrete liner	Worker	60.0	7.70	LDA,LDT1,LDT2
Concrete liner	Vendor	0.00	4.00	HHDT,MHDT
Concrete liner	Hauling	8.00	70.0	HHDT
Concrete liner	Onsite truck	—	—	HHDT
Earthwork (embankment prep)	—	—	—	—
Earthwork (embankment prep)	Worker	30.0	7.70	LDA,LDT1,LDT2
Earthwork (embankment prep)	Vendor	0.00	4.00	HHDT,MHDT
Earthwork (embankment prep)	Hauling	0.00	20.0	HHDT
Earthwork (embankment prep)	Onsite truck	—	—	HHDT
Misc. installations	—	—	—	—
Misc. installations	Worker	10.0	7.70	LDA,LDT1,LDT2
Misc. installations	Vendor	6.00	70.0	HHDT,MHDT
Misc. installations	Hauling	0.00	20.0	HHDT
Misc. installations	Onsite truck	—	—	HHDT
Closeout	—	—	—	—
Closeout	Worker	20.0	7.70	LDA,LDT1,LDT2
Closeout	Vendor	2.00	100	HHDT,MHDT
Closeout	Hauling	0.00	20.0	HHDT
Closeout	Onsite truck	—	—	HHDT
Drainage work	—	—	—	—
Drainage work	Worker	20.0	7.70	LDA,LDT1,LDT2
Drainage work	Vendor	2.00	100	HHDT,MHDT
Drainage work	Hauling	0.00	20.0	HHDT
Drainage work	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Ton of Debris)	Material Exported (Ton of Debris)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Mobilization / SWPPP installation	670	0.00	0.00	0.00	—
Borrow area preparations / fence removal	670	0.00	0.00	0.00	—
Misc. installations	0.00	0.00	0.00	0.00	—
Closeout	0.00	0.00	0.00	0.00	—
Earthwork (embankment prep)	2,880	0.00	0.00	0.00	—
Drainage work	0.00	0.00	0.00	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt

User Defined Linear	0.00	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2027	0.00	204	0.03	< 0.005
2028	0.00	204	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	31.0	annual days of extreme heat
Extreme Precipitation	0.55	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	1	1	4
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	71.8
AQ-PM	50.3
AQ-DPM	10.2
Drinking Water	78.4

Lead Risk Housing	69.9
Pesticides	89.6
Toxic Releases	28.0
Traffic	0.70
Effect Indicators	—
CleanUp Sites	53.4
Groundwater	84.7
Haz Waste Facilities/Generators	69.4
Impaired Water Bodies	43.8
Solid Waste	35.7
Sensitive Population	—
Asthma	49.6
Cardio-vascular	71.8
Low Birth Weights	46.3
Socioeconomic Factor Indicators	—
Education	99.3
Housing	32.3
Linguistic	98.7
Poverty	95.1
Unemployment	85.5

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	2.96419864
Employed	8.417810856
Median HI	6.749647119

Education	—
Bachelor's or higher	3.836776594
High school enrollment	20.46708585
Preschool enrollment	19.49185166
Transportation	—
Auto Access	18.65776979
Active commuting	26.34415501
Social	—
2-parent households	19.87681252
Voting	7.083279867
Neighborhood	—
Alcohol availability	64.18580778
Park access	22.57153856
Retail density	2.104452714
Supermarket access	46.72141666
Tree canopy	1.129218529
Housing	—
Homeownership	31.64378288
Housing habitability	38.73989478
Low-inc homeowner severe housing cost burden	16.33517259
Low-inc renter severe housing cost burden	80.44398819
Uncrowded housing	22.82817914
Health Outcomes	—
Insured adults	7.789041447
Arthritis	0.0
Asthma ER Admissions	46.2
High Blood Pressure	0.0
Cancer (excluding skin)	0.0

Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	34.6
Cognitively Disabled	80.8
Physically Disabled	63.7
Heart Attack ER Admissions	11.9
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	62.8
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	12.9
Elderly	75.4
English Speaking	3.3
Foreign-born	84.5
Outdoor Workers	0.3
Climate Change Adaptive Capacity	—
Impervious Surface Cover	88.0

Traffic Density	1.7
Traffic Access	0.0
Other Indices	—
Hardship	95.5
Other Decision Support	—
2016 Voting	32.2

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	83.0
Healthy Places Index Score for Project Location (b)	3.00
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Project specific information for schedule duration and days per phase of construction.
Construction: Off-Road Equipment	Project specific equipment lists and HP from project applicant.

Construction: Dust From Material Movement	Project specific import quantities provided by project applicant.
Construction: Trips and VMT	Trips per phase were provided by the project applicant.
Construction: Paving	No paving done.

APPENDIX B

Biological Resources Technical Report

SAN LUIS CANAL (CALIFORNIA AQUEDUCT POOL 17 AND POOL 18) LINER RAISE PROJECT

Biological Resources Technical Report

Prepared for
California Department of Water Resources
Division of Engineering

October 2025

SAN LUIS CANAL (CALIFORNIA AQUEDUCT POOL 17 AND POOL 18) LINER RAISE PROJECT

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October 2025

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Acronyms and Abbreviations

Acronym	Definition
BRTR	Biological Resources Technical Report
CASP	California Aqueduct Subsidence Program
Cal-IPC	California Invasive Plant Council
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CVP	Central Valley Project
CWHR	California Wildlife Habitat Relationships
DOE	Division of Engineering
DWR	California Department of Water Resources
ESA	Environmental Science Associates
FESA	Federal Endangered Species Act
GPS	Global Positioning System
IPaC	Information for Planning and Consultation
MBTA	Migratory Bird Treaty Act
MP	Milepost
MOU	Memorandum of Understanding
NRCS	Natural Resources Conservation Service
SLC	San Luis Canal
SR	State Route
SWP	State Water Project
USACE	U.S. Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WSDB	Westside Detention Basin
WSE	Water Surface Elevation
WEAP	Worker Environmental Awareness Program

1. Background

The California Department of Water Resources (DWR) South Central Region Office (SCRO) prepared this Biological Resources Technical Report (BRTR) to assess biological resources for the San Luis Field Division (SLFD) California Aqueduct Subsidence Program (CASP) Pool 17 and Pool 18 Liner Raise Project (Project).

CASP has been established to formulate, analyze, evaluate, recommend, and implement actions to address the consequences of subsidence of the California Aqueduct (Aqueduct) in the San Joaquin Valley on the operation and performance of the State Water Project (SWP).

Interim actions or projects have been identified in the SLFD to restore functionality capacity in critical areas to enable DWR to complete water deliveries, thereby increasing operational flexibility and improving safety and reliability. Pools 17 and 18 of the Aqueduct, otherwise known as the San Luis Canal (SLC), were identified as critical.

Subsidence in the SLFD has reduced the lined freeboard, which limits the current operating water surface elevation (WSE) and capacity of the SLC. To maintain capacity as subsidence continues, additional lined freeboard will need to be provided. Freeboard refers to the vertical distance between the design water surface and the top of the concrete canal lining. The amount of freeboard required to fully restore the design capacity will require additional embankment and subsequent liner raise. As an interim solution, select areas of liner in Pools 17 and 18 will be raised by approximately 1 foot and 9 inches for a total length of approximately 8.9 miles on both sides of Pools 17 and 18, to increase the lined freeboard and capacity of the SLC.

2. Environmental Setting

2.1 Project Site

Pools 17 and 18 span from Mile Post (MP) 122.07 to 143.23 of the SLC (**Figure 1**). The centroid of the stretch can be found 11 miles west of the unincorporated community of Five Points in Fresno County. Public Land Survey System is Section 14 of Township 17 South, Range 15 East on the Mount Diablo Principal Meridian, Tres Picos Farms Quad California United States Geologic Survey (USGS) 7.5-minute quadrangle. Liner raises within the Pools are proposed at the following locations (**Table 1, Figure 2**).

Construction will require the use of staging areas and borrow sites for earthen materials. The following locations have been identified for potential use (**Table 2, Figure 3** and **Figure 4**).

Other structures along the SLC that could be affected by the liner raises that would occur as part of the Project. Eleven existing road drains (culverts) that drain storm water that collects between the flood/waste berms and the access road back into the SLC would be rerouted to carry storm water to the opposite side of the berms (away from the SLC). One 36-inch drain inlet pipe would be removed at MP 134.85; this drain is no longer in service, and it would not be replaced.

TABLE 1
LINER RAISE LOCATIONS

Pool	Left Embankment		Right Embankment		Liner Miles
	Upstream MP	Downstream MP	Upstream MP	Downstream MP	
17	128.4	129.0	-	-	0.6
	129.9	130.8	129.9	130.8	1.8
	131.2	132.3	131.2	132.3	2.2
	132.7	132.9	132.7	132.9	0.4
18	133.0	134.3	133.0	135.6	3.9
Total					**8.9**

TABLE 2
STAGING AND BORROW AREA LOCATIONS

Pool	Milepost	Feature
17	127.6 Right	Borrow
	128.5 Right	Staging
	128.6 - 129.6 Left	Borrow
	129.9 - 130.65 Left	Borrow
	130.0 Right	Staging
	130.8 Left	Staging
	130.9 Right	Staging
	131.7 Left	Staging
	131.1 - 131.65 Left	Borrow
	131.75 - 132.2 Left	Borrow
18	132.9 Left	Staging
	133.9 - 134.4 Left	Borrow
	134.9 Right	Staging
	136.05 Left	Borrow

For the purposes of this report, the Project site encompasses the entire project footprint, including the liner raise areas for Pools 17 and 18 and associated areas that could be affected by the liner raises, the staging and borrow areas, and access routes. (**Figures 2 through 4**).

2.2 Physical Conditions

The Project would be located in the western San Joaquin Valley. The average temperature ranges from a high of 77.8° F to a low of 49.5° F. The average annual precipitation is 7.21 inches (National Oceanic and Atmospheric Administration 2024).

The SLC sits on land alternating between three landforms: eroded structural hills, floodplain, and alluvial fan (Natural Resources Conservation Service 2017). Land in the upper watershed is mainly used for livestock grazing. Land use on the alluvial fan and floodplain is dominated by irrigated agriculture.

Surface water is known to interact with the section of the SLC during years of elevated precipitation. The nearby watershed is the Cantua Creek Stream Group located west of the Project site. It originates on the eastern side of the California Coast Range (**Figure 5**). It has a drainage area of 201 square miles. Elevations in this watershed range from 315 feet near the SLC to over 5,100 feet at Santa Rita Peak. The Cantua Creek Stream watershed consists of five major creeks: Arroyo Hondo, Cantua, Salt, Martinez, and Domengine. These creeks drain a portion of the Coast Range and generally flow easterly into the western San Joaquin Valley. Presently, floodwaters from these creeks terminate at four locations, or basins, along an approximate 13-mile stretch of the SLC, with Martinez Creek flowing into Salt Creek approximately 3 miles upstream of the SLC. The large drainage channels can carry significant floodwater and sediment volumes to the basin.

2.3 Land Use

The existing land uses are the operations and maintenance of the SLC, open spaces, and agriculture. The agricultural land use and open spaces extend from the SLC into the surrounding landscapes. Adjacent agricultural land uses are those identified in digitized and verified 2022 crop-type data (Section 4.1.3). The agricultural land uses (e.g., crop types) may vary year-to-year due to normal crop rotations or influenced by changes in market price.

3. Methods

The information provided in this report was obtained from a desktop-level review of biological resources and biological field surveys. Sensitive biological resources including special-status plant and animal species, sensitive natural communities, and aquatic resources that may occur within the Project site were determined, in part, by reviewing natural resource agency databases, relevant literature, and other sources including historic survey data. DWR biologists have conducted countless surveys over the last several decades that contribute to the body of knowledge regarding the protection and distribution of species and habitat presence. A review of this information allowed for initial determinations of sensitive resource distributions and the probability of their occurrence within the Project site.

3.1 Definitions

3.1.1 Special-Status Species

Special-status species are defined as those plants and wildlife that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by federal, state, or local agencies as being under threat from development pressures as well as natural causes. Many of these species receive specific protection that is defined and regulated by the federal Endangered Species Act (FESA) or California Endangered Species Act (CESA).

Other species have been designated as special status on the basis of adopted policies and expertise of state resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and/or special districts to meet local conservation objectives.

Special-status animal species include species that are: (1) listed as threatened or endangered under the CESA or FESA; (2) proposed for federal listing as threatened or endangered; (3) state or federal candidate species; and (4) identified by the California Department of Fish and Wildlife (CDFW) as species of special concern (SSC) or fully protected (FP) species.

Special-status plant species include plants that are: (1) listed as threatened or endangered under the CESA or the FESA; (2) proposed for federal listing as threatened or endangered; (3) state or federal candidate species; (4) designated as rare by the CDFW; and (5) California Rare Plant Rank (CRPR) 1A, 1B, 2A 2B, 3, or 4 species.

- California Rare Plant Rank 1A: Plants presumed extirpated in California and either rare or extinct elsewhere
- California Rare Plant Rank 1B: Plants rare, threatened, or endangered in California and elsewhere
- California Rare Plant Rank 2A: Plants presumed extirpated in California but common elsewhere
- California Rare Plant Rank 2B: Plants rare, threatened, or endangered in California but common elsewhere
- California Rare Plant Rank 3: Plants about which more information is needed, a review list
- California Rare Plant Rank 4: Plants of limited distribution, a watch list

  California Rare Plant Rank Extensions:

  .1 – Seriously threatened in California (greater than 80 percent of occurrences are threatened and/or have a high degree and immediacy of threat).

  .2 – Moderately threatened in California (20 to 80 percent of occurrences are threatened and/or have a moderate degree and immediacy of threat).

“Sensitive” natural communities and habitats are defined by CDFW as those natural communities that have a reduced range and/or are imperiled because of various forms of development and other anthropogenic stressors, including residential and commercial expansion, various forms of agriculture, energy production, mining, etc.

3.1.2 Potential to Occur

The potential for special-status species to occur was assigned to one of four categories, as described below. Special-status species with a potential to occur are evaluated in Section 3.3 of this report.

- High: The species has been recently (since 2015) documented in the vicinity of the Project site, and suitable habitat for the species is present.
- Moderate: The Project site is located within the current range of the species, or there are nearby documented occurrences and suitable habitat for the species is present.
- Low: The Project site is located within the current range of the species, and low-quality habitat is present.
- None: The Project site is located outside of the species current range or suitable habitat to support the species is not present.

3.2 Literature and Database Review

The following information sources were reviewed to identify special-status species and their habitats, sensitive natural communities, aquatic resources, and wildlife movement corridors that may occur within the Project site:

- CDFW California Natural Diversity Database (CNDDB, [2024]), which provides an inventory of the status and locations of rare plants and animals in California. A three-mile search radius was conducted for each site (**Figure 6**).
- California Native Plant Society (CNPS) provides an inventory and ranking of Rare, Threatened, or Endangered vascular plant species of California (CNPS, [2024]). The list serves as the candidate list for listing as threatened and endangered by CDFW. A nine-quadrangle search was conducted for each site (Appendix B).
- United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) Online System (USFWS, [2024a]), which identifies USFWS-managed resources and suggested conservation measures for a defined project; indicates if any listed species, critical habitat, migratory birds, or other protected natural resources may be impacted by the projects; and initiates the regulatory review (Appendix B).
- Environmental Services Association (ESA) *San Luis Canal Embankment and Liner Raise Project Draft Aquatic Resources Delineation Report* (ESA, [2022]) (Appendix C).
- CDFW VegCamp mapping data (VegCamp,[2018]), provides Biogeographic Information and Observation System (BIOS). The mapping layer “Vegetation – Great Valley Ecoregion” [ds2632] was used as a baseline.
- USFWS National Wetlands Inventory online mapping data (USFWS, 2024b) for identification of wetland habitat available for special-tatus species.
- DWR land use mapping data. The review was done by using the verified 2022 DWR Land Use dataset and selecting all fields adjacent to Pools 17 and 18.

- DWR environmental data. DWR has collected environmental data in conjunction with ongoing maintenance projects. Environmental data recorded in the vicinity of the Project site since 2015 is included and analyzed in this technical report. This includes environmental survey data collected as part of ongoing maintenance projects. A summary of the surveys conducted is provided in **Table 3**.

TABLE 3
SURVEYS CONDUCTED NEAR POOLS 17 AND 18 FROM 2015 TO 2024 BY DWR

Pools 17 and 18 Project/Activity	Year(s)	Survey Type
Erosion Repair and Aqueduct Maintenance	2015 - 2024	Biological Resources Assessment
Access Road Maintenance, Mowing and Grading	2015 - 2024	Biological Resources Assessment
Cantua Stream Group Improvements Project	2016	Habitat Assessment
Cantua Stream Group Improvements Project	2016	Protocol Level Burrowing Owl
Cantua Stream Group Improvements Project	2016 - 2017	Burrowing Owl Construction Monitoring
Irrigation Crossing Pipe Inspections and Repair Project	2019	Reconnaissance Den and Burrow Survey
Irrigation Crossing Pipe Inspections and Repair Project	2019	Preconstruction Survey and Monitoring
California Aqueduct Subsidence Program	2020	Vegetation Mapping
California Aqueduct Subsidence Program	2020	Land Use Ground-truthing Surveys
California Aqueduct Subsidence Program	2020	Small Mammal Habitat Survey
California Aqueduct Subsidence Program	2020	Reconnaissance Den and Burrow Survey
CASP Geotechnical Explorations	2021	Preconstruction Surveys and Monitoring
California Aqueduct Subsidence Program	2023 - 2024	Survey Known Sensitive Resources
California Aqueduct Subsidence Program	2024	Western Spadefoot Habitat Assessment

This table does not include discrete maintenance projects in which special-status species observations may have been made but were not detected during a focused survey. However, any species observations collected during these other types of projects not shown in this table have been included in this report.

3.3 Special-Status Species Preliminary Analysis

3.3.1 Special-Status Animal Species

Special-status animal species with a potential to occur within 3 miles of the Project site as reported in USFWS's iPaC and CDFW's CNDDB (**Figure 6**) were analyzed in **Table 4**, which includes listing statuses, brief descriptions of habitat requirements, and a determination of the potential for species to occur within the Project site based on desktop review and general knowledge of the Project site.

Eight special-status wildlife species were determined to have a high potential to occur on the Project site: San Joaquin coachwhip (*Masticophis flagellum ruddocki*), , burrowing owl (*Athene cunicularia*; BUOW), California horned lark (*Eremophila alpestris actia*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus hudsonius*), prairie falcon (*Falco mexicanus*), Swainson's hawk (*Buteo swainsoni*), and white-tailed kite (*Elanus leucurus*).

Four special-status animal species were determined to have a moderate potential to occur on the Project site: short-eared owl (*Asio flammeus*), tricolored blackbird (*Agelaius tricolor*), yellow-headed blackbird (*Xanthocephalus xanthocephalus*), and American badger (*Taxidea taxus*).

Nine special-status animal species were determined to have a low potential to occur on the Project site: San Joaquin kit fox (*Vulpes macrotis mutica*), giant kangaroo rat (*Dipodomys ingens*), Northern California legless lizard (*Aniella pulchra*), California glossy snake (*Arizona elegans occidentalis*), Western pond turtle (*Actinemys marmorata*), golden eagle (*Aquila chrysaetos*), long-billed curlew (*Numenius americanus*), western spadefoot (*Spea hammondii*), and Crotch's bumble bee (*Bombus crotchii*).

All other special-status animal species listed below were determined to have no potential to occur on the Project site due to lack of suitable habitat or other considerations and are not discussed further.

TABLE 4
REVIEW OF REGIONALLY OCCURRING SPECIAL-STATUS ANIMAL SPECIES

Common Name ***Scientific Name***	**Listing Status**	**Habitat Requirements**	**Potential for Occurrence**
AMPHIBIANS			
Mole Salamanders (Ambystomatidae)			
California tiger salamander – central Califonria DPS *Ambystoma californiense*	FT, ST, CDFW WL	Restricted to grasslands and low foothills with pools or ponds that are necessary for breeding.	None. Although marginal upland habitat is present, no breeding habitat is identified within or near the Project. No occurrence has been recorded within the 3-mile search radius of the Project site.
True Frogs (Ranidae)			
California red-legged frog *Rana draytonii*	FT, CDFW SSC	Annual grassland and grassy understory of valley-foothill hardwood habitats in central and northern California. Needs underground refuges and vernal pools or other seasonal water sources.	None. Although marginal habitat is present there are no suitable water sources in the Project site. No occurrence has been recorded within the 3-mile search radius of the Project site.
Spadefoot Toads (Scaphiopodidae)			
Western spadefoot *Spea hammondii*	FPT, CDFW SSC	Mixed woodland, grasslands, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Prefers washes and other sandy areas with patches of brush and rocks. Rain pools or shallow temporary pools, which do not contain bullfrogs, fish, or crayfish are necessary for breeding. Perennial plants are a major food source.	Low. Marginal habitat is present within the Project site. Although temporary stands of water from storms or agriculture runoff are sometimes present. There are recorded occurrences within 3 miles of the Project site in CNDDB. The species was heard near Check 17 in 2024.

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
REPTILES			
Leopard Lizards (Crotaphytidae)			
Blunt-nosed leopard lizard *Gambelia sila*	FE, SE, CDFW FP	Inhabits semiarid grasslands, alkali flats, and washes. Prefers flat areas with open space for running, avoiding densely vegetated areas. Uses mammal dens and burrows for cover and shelter. Will use large shrubs with dense canopy cover for refuge and thermoregulation.	None. Grassland habitat is present within the Project site, however the high density and ruderal nature of the habitat it is not suitable. No occurrence has been recorded within the 3-mile search radius of the Project site.
Legless Lizards (Anniellidae)			
Northern California legless lizard *Aniella pulchra*	CDFW SSC	Found in the San Joaquin Valley in loose sandy soils with moisture. Often found in coastal areas with sandy soils.	Low. Sparse marginal habitat is present within the Project. The species has not been detected during surveys. One recorded occurrence has been documented in CNDDB within 3 miles of the Project site.
Egg-Laying Snakes (Colubridae)			
California glossy snake *Arizona elegans occidentalis*	CDFW SSC	Inhabits arid scrub, rocky washes, grasslands, and chaparral habitats. Appears to prefer microhabitats of open areas with friable soils for burrowing.	Low. Marginal habitat is present within the Project site. No occurrence has been recorded within the 3-mile search radius of the Project site.
San Joaquin coachwhip *Masticophis flagellum ruddocki*	CDFW SSC	Inhabits open, dry, treeless areas with little or no cover, including valley grassland and saltbush scrub. Takes refuge in rodent burrows, under shaded vegetation, and under surface objects.	High. Suitable habitat is present within the Project site. The species has been detected north and south of the Project site during surveys. There are no recorded occurrences within 3 miles of the Project site in CNDDB.
Giant gartersnake *Thamnophis gigas*	FT, ST	Agricultural wetlands such as rice fields and other waterways including irrigation and drainage canals, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands in the Central Valley.	None. Irrigation canals are present within the Project site but do not contain the necessary cover and preferred conditions. No occurrence has been recorded within the 3-mile search radius of the Project site.
Freshwater Turtles (*Emydidae*)			
Western pond turtle *Actinemys marmorata*	FPT, CDFW SSC	Permanent and intermittent waterways. Terrestrial habitat is also important for basking and egg-laying.	Low. Suitable habitat is present within the Project site. No occurrence has been recorded within the 3-mile search radius of the Project site.
BIRDS			
Hawks, Kites, Harriers, & Eagles (Accipitridae)			
Golden eagle *Aquila chrysaetos*	CDFW FP, CDFW WL	Found in a variety of habitats including shrublands, grasslands, farmland, and areas along rivers and streams. Prefer partially or completely open country, especially around mountains, hills, and cliffs.	Low. Only foraging habitat is present in the Project. No occurrence has been recorded within the 3-mile search radius of the Project site.

Common Name ***Scientific Name***	**Listing Status**	**Habitat Requirements**	**Potential for Occurrence**
Swainson's hawk *Buteo swainsoni*	ST	Found in Great Basin grassland, riparian forest, riparian woodland, valley and foothill grassland. Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, alfalfa, or grain fields supporting rodent populations.	High. Foraging, breeding, and nesting habitat are present within the Project site. This species has been observed during past surveys and documented within 3 miles of the Project in CNDDB.
Northern harrier *Circus hudsonius*	CDFW SSC, USFWS BCC	Nests and forages in meadows, marshes, and grasslands.	High. Foraging and breeding habitat are present within the Project site. This species has been observed during past surveys and documented within 3 miles of the Project site in CNDDB.
White-tailed kite *Elanus leucurus*	CDFW FP	Found year-round in coastal and valley lowlands; rarely found away from agricultural areas. Inhabits herbaceous and open stages of most habitats mostly in cismontane California.	High. Suitable habitat is present within the Project. The species has been historically observed foraging in the vicinity of the Project, however, there are no recorded occurrences of nesting within 3 miles of the Project site on CNDDB.
Falcons (Falconidae)			
Prairie falcon Falco mexicanus	CDFW WL	Found in annual grasslands to alpine meadows, but is associated primarily with perennial grasslands, savannahs, rangeland, agricultural fields, and desert scrub areas.	High. Suitable habitat is present within the Project site. Historic detections have been made during surveys, however, there are no recorded occurrences within 3 miles of the Project site on CNDDB.
True Owls (Strigidae)			
Burrowing owl *Athene cunicularia*	SC, USFWS BCC	Found in open grasslands with low vegetation, golf courses, and disturbed and ruderal habitat in urban areas. Usually nests in old burrows of ground squirrels, or other small mammals.	High. Foraging and breeding habitat are present within the Project site. This species has been observed during past surveys and documented in the CNDDB within 3 miles of the Project site.
Short-eared owl *Asio flammeus*	CDFW SSC, USFWS BCC	Found in prairies, grasslands, meadows, and agricultural areas. Prefers large, open areas with low vegetation.	Moderate. Suitable habitat is present within the Project site, but no detections have been made during surveys. One recorded occurrence was documented in CNDDB approximately 3 miles from the northern end of the Project site.
New World Vultures (Cathartidae)			
California condor *Gymnogyps californianus*	FE, SE, CDFW FP	Grassland, chaparral, oak, savannah, and coniferous forests. Large trees or cliff faces are required for nesting.	None. Grassland habitat is the only suitable habitat present and there is no nesting opportunities located in the Project site. No occurrence has been recorded within the 3-mile search radius of the Project site.

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
Shrikes (Laniidae)			
Loggerhead shrike *Lanius ludovicianus*	CDFW SSC	Found in broken woodlands, savannah, pinyon-juniper, Joshua tree, riparian forests, desert oases, scrub, and washes. Prefers open country for hunting, with perches for scanning, and dense shrubs and brush for nesting.	High. Suitable habitat is present within the Project site. Detections have been made during surveys and there are recorded occurrences in CNDDB within 3 miles of the Project site.
Larks (Alaudidae)			
California horned lark *Eremophila alpestris actia*	CDFW WL	Found in prairies and heavily grazed pastures. Prefers bare, dry ground and areas of short, sparse vegetation.	High. Suitable habitat is present within the Project site. This species has been observed north and south of the Project site, but not within; there are recorded occurrences in CNDDB within 3 miles of the Project site.
Blackbirds (Icteridae)			
Tricolored blackbird *Agelaius tricolor*	ST, CDFW SSC, USFWS BCC	Largely endemic to California, most numerous in the Central Valley and nearby vicinity. Typically requires open water, protected nesting substrate, and foraging grounds within vicinity of the nesting colony. Nests in dense thickets of cattails, tules, willow, blackberry, wild rose, and other tall herbs near fresh water. Also nests in agricultural crops (e.g., silage), where colonies are threatened during harvest.	Moderate. Although sparse marginal nesting habitat for the species occurs on site, this species has been observed foraging north of the Project site and recorded observations are documented in CNDDB within 3 miles of the Project site. This species was not observed during focused surveys conducted for the species in 2024. Although this species is unlikely to nest on site, it could be observed foraging in the area on occasion.
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	CDFW SSC	Breeds almost exclusively in marshes with tall emergent vegetation, such as tule or cattail stands, generally in open areas and edges over relatively deep water. During migration and winter, prefers open cultivated lands, fields, and pastures.	Moderate. Suitable nesting habitat is sparse in the Project site. Historic detections have been made during surveys and recorded observations are documented in CNDDB within 3 miles of the Project site. This species is unlikely to nest on site but could forage in the area on occasion.
Sandpipers and Allies (Scolopacidae)			
Long-billed curlew *Numenius americanus*	CDFW WL	Found in lowland areas near agriculture in the interior of California. The Central and Imperial Valleys are important areas for wintering and migrating.	Low. Although suitable habitat is present within the Project site, there are no recent recorded occurrences within 3 miles of the Project site in CNDDB.
MAMMALS			
Squirrels & relatives (Sciuridae)			
San Joaquin antelope squirrel *Ammospermopilus nelsoni*	ST	Found in relatively arid annual grassland and shrubland communities. Prefer areas with a sparse-to-moderate cover of shrubs such as saltbushes.	None. Suitable habitat is not present within the Project. This species has not been detected during surveys. There is one recorded occurrence within 3 miles of the Project site in CNDDB from 1932.

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
Kangaroo rats, Pocket mice, & Kangaroo mice (Heteromyidae)			
Fresno kangaroo rat *Dipodomys nitratoides exilis*	FE, SE	Inhabits arid, alkaline, annual grassland and shrubland associations between 60 and 90 meters above sea level. Uses nearly level terrain with sandy loam soils for excavation of burrows.	None. Suitable habitat is not present within the Project site. No occurrence has been recorded within the 3-mile search radius of the Project site.
Giant kangaroo rat *Dipodomys ingens*	FE, SE	Inhabits fine sandy loam soils supporting sparse annual grass/forb vegetation and marginally found in low-density alkali desert scrub.	Low. Suitable habitat is not present within the Project site. However, the species has recorded occurrences documented 3 miles west of the Project site.
Mice, Rats, & Voles (Muridae)			
Tulare grasshopper mouse *Onychomys torridus*	CDFW SSC	Found in arid shrubland communities in hot, arid grassland and shrubland associations, such as saltbush scrub.	None. Suitable habitat is not present within the Project site. No occurrence has been recorded within the 3-mile search radius of the Project site.
Foxes, Wolves, Coyotes (Canidae)			
San Joaquin kit fox *Vulpes macrotis mutica*	FE, ST	Grassland or grassy open stages with scattered shrubby vegetation; requires loose textured sandy soils for burrowing; requires suitable prey base of small rodents.	Low. Suitable habitat is present within the Project site. Detections have not been made during surveys, but the area has been documented as a corridor for the species in the past. There are no recorded occurrences within 3 miles of the Project site in CNDDB.
Weasels & relatives (Mustelidae)			
American badger *Taxidea taxus*	CDFW SSC	Found in dry, open grasslands, fields, and pastures. Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	Moderate. Suitable habitat is present within the Project. Although this species has been observed north of the Project site and there are recorded occurrences within 3 miles of the Project site in CNDDB, this species was not observed during surveys conducted for the species in 2024.
INSECTS			
Bumble Bees (Bombus)			
Crotch's bumble bee *Bombus crotchii*	SC	Occurs primarily in California. Prefers grassland and scrub area within drier climates. They overwinter in leaf litter and soft soil.	Low. Marginal habitat for foraging may be present, however, succession blooms are not available to sustain nesting. Given the intensive agricultural land and pesticide use in the vicinity, conditions are likely unfavorable for the establishment of bee populations within the project site.
Brush-footed butterflies (Nymphalidae)			
Monarch butterfly *Danaus plexippus*	FC	Live mainly in prairies, meadows, and grasslands. Their life cycle depends on the host plant, milkweed.	None. Although grassland is present in the right-of-way there is limited food availability for the species to survive on. Species' known host plant has not been documented at the Project site.

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
FISH			
Smelts (Nymphalidae)			
Delta smelt *Hypomesus transpacificus*	FT, SE	The upper Sacramento-San Joaquin Delta of California.	None. Suitable habitat is not present within the Project site. No occurrence has been recorded within the 3-mile search radius of the Project site.
BRACHIOPODS			
Fairy Shrimp (Branchinectidae)			
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	Ephemeral freshwater habitats including alkaline pools, clay flats, vernal pools, vernal lakes, vernal swales, and other types of seasonal wetlands.	None. Suitable habitat is not present within the Project site. No occurrence has been recorded within the 3-mile search radius of the Project site.

NOTES: CDFW FP= California Fully Protected; CDFW SSC = California Species of Special Concern; FC = Federal Candidate for Listing; FE = Federally Endangered; FPT = Federally Proposed Threatened; FT = Federally Threatened; SE = Federally Endangered; ST = State Threatened; SC = State Candidate for Listing; USFWS BCC = Birds of Conservation Concern

3.3.2 Special-Status Plant Species

Special-status plant species as reported in USFWS's iPaC, CDFW's CNDDB, and CNPS were analyzed in **Table 5**, which includes listing statuses, brief descriptions of habitat requirements, and a determination of the potential for species to occur within the Project site based on desktop review and general knowledge of the Project site.

Four species have been recorded in the CNDDB or CNPS within 3 miles of the Project site; San Joaquin woollythreads (*Monolopia congdonii*), showy golden madia (*Madia radiata*), forked fiddleneck (*Amsinckia furcate*), and Indian Valley bush-mallow (*Malacothamnus aboriginum*).

All special-status plant species listed below were determined to have low or no potential to occur on the Project site due to lack of suitable habitat or other considerations and are not discussed further.

TABLE 5
REVIEW OF REGIONALLY OCCURRING SPECIAL-STATUS PLANT SPECIES

Common Name *Scientific Name*	Listing Status (Fed/State/ CRPR)	Flowering Period	Habitat Requirements	Potential for Occurrence
Asteraceae (Sunflower Family)				
western lessingia *Benitoa occidentalis*	CRPR 4.3	May-Nov.	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland. Elevation range extends from 450 to 1070 meters above mean sea level (amsl).	None. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2015 more than 15 miles west of the Project.

Common Name *Scientific Name*	Listing Status (Fed/State/ CRPR)	Flowering Period	Habitat Requirements	Potential for Occurrence
Hall's tarplant *Deinandra halliana*	CRPR 1B.2	Apr.-May	Chenopod scrub, cismontane woodland, and valley and foothill grassland. Elevation range extends from 260 to 950 meters above mean sea level (amsl).	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2017 more than 9 miles west of the Project.
pale-yellow layia *Layia heterotricha*	CRPR 1B.1	Mar.-Jun.	Cismontane woodland, coastal scrub, pinyon and juniper woodland, and valley and foothill grassland. Elevation range extends from 300 to 1,705 meters amsl.	Low. Marginal habitat is present in the right of way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1994 more than 8 miles west of the Project.
Munz's tidy-tips *Layia munzii*	CRPR 1B.2	Mar.-Apr.	Chenopod scrub, Valley and foothill grassland (alkaline clay) Elevation range extends from 150 to 700 meters amsl.	Low. Marginal habitat is present in the right of way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1940 more than 6 miles west of the Project.
showy golden madia *Madia radiata*	CRPR 1B.1	Mar.-May	Cismontane woodland and valley and foothill grassland. Elevation range extends from 25 to 1,215 meters amsl.	Low. Marginal habitat is present in the right of way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1935 more than 3 miles west of the Project.
sylvan microseris *Microseris sylvatica*	CRPR 4.2	Mar.-Jun.	Chaparral, Cismontane woodland, Great Basin scrub, Pinyon and juniper woodland, Valley and foothill grassland. Elevation range extends from 45 to 1,500 meters amsl.	Low. Marginal habitat is present within the right of way; however, the only nearby occurrence was last confirmed in the adjacent "Joaquin Rocks' quad in 1996.
San Joaquin woollythreads *Monolopia congdonii*	FE CRPR 1B.2	Feb.-May	Chenopod scrub and valley and foothill grassland (sandy). Elevation range extends from 60 to 800 meters amsl.	Low. Suitable habitat is present in the right of way, however, the species has not been observed within 3 miles of the Project since the 1940's. A revisit in 1988 by CDFW did not observe the species and noted no native habitat remained at the site.
chaparral ragwort *Senecio aphanactis*	CRPR 2B.2	Jan.-Apr. (May)	Chaparral, Cismontane woodland, Coastal scrub. Elevation range extends from 15 to 800 meters amsl.	None. Habitat is not present. The nearest observation occurred in 2023 more than 8 miles west of the Project.
Boraginaceae (Forget-Me-Not Family)				
forked fiddleneck *Amsinckia furcata*	CRPR 4.2	Feb.-May	Cismontane woodland, Valley and foothill grassland. Elevation range extends from 50 to 1,000 meters amsl.	Low. Marginal habitat is present in the right of way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1937 more than 2 miles west of the Project.
Brassicaceae (Cabbage Family)				
Panoche pepper-grass *Lepidium jaredii* ssp. *album*	CRPR 1B.2	Feb.-Jun.	Valley and foothill grassland with clay, steep slopes, and sometimes alkaline soils. Elevation range extends from 185 to 745 meters amsl.	Low. Marginal habitat is present in the right of way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 2023, more than 8 miles west of the Project.

Common Name *Scientific Name*	Listing Status (Fed/State/ CRPR)	Flowering Period	Habitat Requirements	Potential for Occurrence
Chenopodiaceae (Goosefoot Family)				
Lost Hills crownscale *Atriplex coronata* var. *vallicola*	CRPR 1B.2	Apr.-Sep.	Chenopod scrub, valley and foothill grassland, and vernal pools. Elevation range extends from 50 to 635 meters amsl.	Low. Marginal habitat is present within the AOI but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. Nearest observation from 2016 occurred more than 7 miles west of the Project.
crownscale *Atriplex coronata* var. *coronata*	CRPR 4.2	Mar.-Oct.	Chenopod scrub, valley and foothill grassland, and vernal pools. Elevation range extends from 1 to 590 meters amsl.	Low. Marginal habitat is present in the right of way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 2005 more than 9 miles west of the Project.
Lamiaceae (Mint Family)				
San Benito thorn-mint *Acanthomintha obovata ssp. obovata*	CRPR 4.2	Apr.-Jul.	Chaparral, Cismontane woodland, Valley and foothill grassland. Elevation range extends from 395 to 1,500 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2015 more than 15 miles west of the Project.
San Benito monardella *Monardella antonina ssp. benitensis*	CRPR 4.3	Apr.-Sep.	Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland. Elevation range extends from 500 to 1,570 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2004 more than 11 miles west of the Project.
San Joaquin bluecurls *Trichostema ovatum*	CRPR 4.2	Jul.-Oct.	Chenopod scrub, Valley and foothill grassland. Elevation range extends from 65 to 320 meters amsl.	Low. Marginal habitat is present in the right of way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1937 more than 10 miles northeast of the Project.
Liliaceae (Lily Family)				
stinkbells *Fritillaria agrestis*	CRPR 4.2	Mar.-Jun.	Chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland. Elevation range extends from 10 to 1,555 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2015 more than 15 miles west of the Project.
Malvaceae (Mallow Family)				
Indian Valley bush-mallow *Malacothamnus aboriginum*	CRPR 1B.2	Apr.-Oct.	Chaparral and cismontane woodland. Elevation range extends from 150 to 1,700 meters amsl.	None. Suitable habitat does not occur within the Project. The high degree of past and ongoing disturbance further reduces the likelihood for this perennial species to occur. The nearest observation occurred in 1998 more than 3 miles west of the Project.

Common Name *Scientific Name*	Listing Status (Fed/State/ CRPR)	Flowering Period	Habitat Requirements	Potential for Occurrence
Onagraceae (Evening Primrose Family)				
Brewer's clarkia *Clarkia breweri*	CRPR 4.2	Apr.-Jun.	Chaparral, Cismontane woodland, Coastal scrub. Elevation range extends from 215 to 1,115 meters amsl.	None. Suitable habitat does not occur within the Project. The high degree of past and ongoing disturbance further reduces the likelihood for this perennial species to occur. The nearest observation occurred in 2004 more than 11 miles west of the Project.
Papaveraceae (Poppy Family)				
San Benito poppy *Eschscholzia hypecoides*	CRPR 4.3	Mar.-Jun.	Chaparral, Cismontane woodland, Valley and foothill grassland. Elevation range extends from 200 to 1,500 meters amsl.	Low. Marginal habitat is present in the right of way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1988 more than 5 miles west of the Project.
Polemoniaceae (Phlox Family)				
few-flowered eriastrum *Eriastrum sparsiflorum*	CRPR 4.3	May-Sep.	Chaparral, Cismontane woodland, Great Basin scrub, Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland. Elevation range extends from 1,075 to 1,710 meters amsl.	None. Suitable habitat does not occur within the Project. The high degree of past and ongoing disturbance further reduces the likelihood for this perennial species to occur. The nearest observation occurred in 2004 more than 11 miles west of the Project.
Panoche navarretia *Navarretia panochensis*	CRPR 1B.3	Apr.-Aug.	Chenopod scrub, Valley and foothill grassland. Elevation range extends from 330 to 860 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2019 more than 10 miles west of the Project.
prostrate vernal pool navarretia *Navarretia prostrata*	CRPR 1B.2	Apr.-Jul.	Coastal scrub, Meadows and seeps, Valley and foothill grassland (alkaline), Vernal pools. Elevation range extends from 3 to 1,210 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2004 more than 12 miles west of the Project.
Polygonaceae (Buckwheat Family)				
cottony buckwheat *Eriogonum gossypinum*	CRPR 4.2	Mar.-Sep.	Chenopod scrub and valley and foothill grassland. Elevation range extends from 100 to 550 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2003 more than 7 miles west of the Project.
protruding buckwheat *Eriogonum nudum var. indictum*	CRPR 4.2	May-Oct.	Chaparral, Chenopod scrub, and cismontane woodland. Elevation range extends from 150 to 1,463 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2020 more than 8 miles west of the Project.
Idria buckwheat *Eriogonum vestitum*	CRPR 4.3	Apr.-Aug.	Valley and foothill grassland. Elevation range extends from 235 to 900 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 1995 more than 10 miles north of the Project.

Common Name *Scientific Name*	Listing Status (Fed/State/ CRPR)	Flowering Period	Habitat Requirements	Potential for Occurrence
Primulaceae (Primerose Family)				
California androsace *Androsace elongata* ssp. *acuta*	CRPR 4.2	Mar.-Jun.	Chaparral, Cismontane woodland, Coastal scrub, Meadows and seeps, Pinyon and juniper woodland, Valley and foothill grassland. Elevation range extends from 150 to 1,305 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2010 more than 7 miles west of the Project.

NOTES: FE = Federally Endangered

CRPR = California Rare Plant Ranking

1B = Plants Rare, Threatened, or Endangered in California and Elsewhere

2B = Plants Rare, Threatened, or Endangered in California and Elsewhere but Are More Common Elsewhere

4B = Watch List: Plants of Limited Distribution

0.1 = Seriously Threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

0.2 = Moderately Threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

0.3 = Not Very Threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

3.3.3 Habitat Connectivity

Wildlife corridors, or habitat corridors, are natural or semi-natural lands (e.g., rural, agricultural, ruderal, barren) that connect populations of wildlife and larger habitat areas across the landscape. While these resources may be utilized strictly for travel purposes, for example, a dry culvert under a roadway or bridge, they can contain natural vegetation and habitats that support foraging, roosting, and breeding activities as well.

Wildlife movement corridors are critical for the long-term health of ecological systems for several reasons. Corridors provide connections that provide wildlife with access to water, food, and cover sources, spatially linking these three resources with wildlife in different areas. In addition, wildlife movement between habitat areas provides for genetic exchange between populations of wildlife in otherwise separated natural areas, thereby improving genetic variability within species which also enhances a species' ability to respond to changing environmental conditions. This is especially critical for small populations subject to loss of variability from genetic drift and effects of inbreeding.

Habitat connectivity in relation to the SLC can be considered in three main aspects—north to south along the SLC, east to west across the SLC, and the open water environment within the SLC.

- **North to South**. The SLC runs generally north to south along California's Central Valley and can be considered a link between habitats dispersed throughout the Central Valley. The north to south connection along both sides of the SLC is open and can provide temporary habitat for traveling wildlife.
- **East to West**. The habitat connectivity from east to west is less open due to the aquatic nature of the SLC. Periodic bridges, overchutes, and utility crossings over the canal provide

terrestrial passage from one side to the other. Structures and crossings may also be used for bird or bat nesting and roosting.

- **Open Water**. Waterfowl and coastal bird species often use the SLC as a resting area during the spring and fall migratory periods. Bats and birds forage for insects over the open water.

3.4 Field Surveys

General evaluations or biological resource surveys were conducted within the vicinity of Pools 17 and 18, including within the SLC, DWR rights-of-way, and adjacent lands. Field surveys were conducted for vegetation, general habitat assessments, land use, and aquatic and biological resources (**Table 3**). Biological resources surveyed consisted of focused and general evaluations for known and potential special-status species presence, including, blunt-nosed leopard lizard (*Gambelia sila*) habitat, western spadefoot, burrowing owl, Swainson's hawk and nesting raptors, tricolored blackbird, swallows (*Hirundinidae*), bats (*Chiroptera*), small mammal habitat, San Joaquin kit fox, canid dens and burrows, and Crotch's bumble bee (*Bombus crotchii*). Although protocol-level surveys were not performed for all special-status species over the entire pools, the extensive number of surveyor hours in the field during targeted or reconnaissance surveys, past and present, increased the potential for sensitive resources to be observed and documented. All relevant survey data compiled from 2015 and onward was used in preparation of this report.

3.4.1 Habitat Surveys

Vegetation and Habitat Mapping

Vegetation and habitat mapping occurred in February 2020 between MP 122.0 and MP 172.5, along the DWR right-of-way from the SLC to the adjacent property boundaries. Surveys consisted of driving all accessible roads within the SLC right-of-way and stopping when necessary to classify vegetation alliances.

Vegetation communities were defined by the dominant species and categorized into vegetation alliances based on the definitions included in *A Manual of California Vegetation* (Manual) (Sawyer et al. 2009). Each stand identified had both compositional and structural integrity as defined in the CDFW-CNPS Protocol for the Combined Vegetation Rapid Assessment and Relevé Field Form (CNPS 2019). The minimum mapping units described in the CDFW-CNPS Protocol of one acre for upland vegetation and 0.5 acres for special stands, including riparian areas and wetlands, were used in the assessments.

Vegetation was also mapped as part of the aquatic resource surveys, as described further in sections below, and the results were added to the vegetation and habitat maps.

General Habitat Assessment

General habitat assessment surveys in the vicinity of Pools 17 and 18 have been conducted annually for maintenance projects such as erosion repairs and vegetation management. Results from surveys conducted from 2015 to 2024 are included in this report. During general habitat assessments, all observations of special-status species and their suitable habitat were

recorded. These surveys included pedestrian, windshield, or a combination thereof using the SLC access roads, toe roads, and publicly accessible roads. Species or species' resources (e.g., habitat and microhabitat) were visually identified using a spotting scope, binoculars, or unaided vision. In areas of potential interest, such as areas with sensitive or native habitat features, pedestrian surveys were conducted to ensure total visual coverage of the area.

Aquatic Resources

In 2021, a desktop review of aerial photographs (1984–2021) was completed. Mapped vegetation types, soil surveys, U.S. Geological Survey 7.5-minute topographic quadrangle maps, and the National Wetlands Inventory were referenced for signatures of hydrophytic vegetation, inundation and/or soil saturation, topographic depressions, or channelization (ESA, 2022).

Aquatic resource delineation and mapping surveys were performed on June 22, 23, and 24 and September 28, 2021, at ephemeral drainages that were identified along Cantua Creek and Salt Creek. The delineation and mapping was completed following the protocols described in the *1987* [U.S. Army] *Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (USACE 2008). Aquatic resources and the associated vegetation types in the vicinity were identified and are described in Section 4.3, below.

3.4.2 Special-Status Species Surveys

Blunt-nosed Leopard Lizard

Blunt-nosed leopard lizard is found in semiarid grasslands, alkali flats, and washes. The species also requires the presence of small mammal burrows for use. The species prefers flat areas with open space for running and thus avoids densely vegetated areas.

A desktop analysis was conducted using past general assessment from 2015 through the current year of areas within the Project site with potentially suitable habitat to conduct protocol level surveys for the species.

Suitable habitat was not identified in the vicinity of the Project site; therefore, protocol surveys were not conducted.

Western Spadefoot

Suitable breeding sites for western spadefoot include turbid ephemeral pools, such as vernal pools, stock ponds, roadside ditches, irrigation ditches, and deep pools within ephemeral creek beds with extended hydroperiod after flows have subsided for the season. Suitable upland habitat can include open grassland habitat and open shrubland with sandy friable soils, with presence of small mammal burrows.

Potential suitable upland and breeding habitats for western spadefoot were identified using aerial imagery and USFWS National Wetlands Inventory. Research conducted by Baumberger et al. (2019), was incorporated for search distances and habitat suitability. Field verifications were then conducted and once suitable habitat presence was confirmed, visual surveys to

determine species presence occurred. The surveys also included verifying the suitability of upland habitat identified by the habitat suitability model. Based on research conducted by Baumberger et al. (2019), the habitat suitability model was developed using a maximum distance of 262 meters from suitable aquatic habitats to upland soil types that spadefoots prefer for aestivation. The survey methodology to determine presence of western spadefoot is described below.

Spadefoot diurnal surveys were conducted beginning of March until mid-July 2024. Surveys were focused on western spadefoot individuals in the egg, larval, and metamorph life stages and occurred at suitable breeding sites within and adjacent to the DWR right-of-way. Surveys involved visually inspecting the pools for any signs of amphibian presence; when present, further inspection was done by dip-netting larval amphibians to identify the species. Dip-netting was done when visual inspection alone wasn't sufficient for adequately surveying the pools. Plastic handled dip-nets with nylon mesh and fine mesh aquarium nets were used to sweep through vegetation and other debris when sampling the pools for spadefoots and other amphibians. The number of sweeps varied per pool based on the size of the pool and whether spadefoot was previously observed at that location.

Pools that were too difficult to dip-net because of muddy conditions or depth were revisited later to check for metamorphs within the adjacent upland. Any metamorph amphibians encountered were hand-captured to identify the species. Shallow ephemeral pools along roads and road shoulders with the presence of spadefoot larvae were revisited to determine if metamorphosis was completed before the breeding pool dried up.

Estimation of the total number and life stages of each species were recorded. Larval and metamorph amphibians were inspected for abnormalities, and representative photographs of each individual were taken. In addition, pools and surrounding upland habitat where spadefoots were observed were photographed. Additional data collected included estimated pool size, depth, and notes on habitat and vegetation in and near the pool.

Swainson's Hawk and Nesting Raptors

The species is observed throughout the Central Valley during the spring and summer. They depend on annual grasslands and agricultural fields for foraging. The species also requires structures or trees for nesting opportunities. Single trees, small stands of trees spread amongst the agricultural fields, structures, and homesteads with shade trees provide nesting habitat for the species.

Swainson's hawk surveys were conducted in 2015 and 2016 along the SLC between MP 128.0 and MP 141.0. Surveys were conducted by windshield and methods were consistent with the *Swainson's Hawk Technical Advisory Committee Recommended Timing and Methodology* (2000). Incidental observations of nests were documented during other site assessments that occurred within the vicinity of Pools 17 and Pool 18; thus, data going back to 2015 is included in this report. In 2021, DWR biologists surveyed occupied or suitable nest trees within the vicinity of Pools 17 and 18 and those within the line of sight from the SLC to determine the potential for nesting raptors.

A desktop analysis using aerial imagery identified areas within the vicinity of the Project site with potentially suitable nesting trees for Swainson's hawk and other nesting raptors. A field-based habitat assessment at these locations verified habitat suitability for Swainson's hawk and other nesting raptors. Surveys occurred in the DWR right-of-way and the immediately adjacent area, depending on access and visual capabilities, with an approximately 0.25 to 0.5-mile buffer around the SLC. Individual observations of Swainson's hawk, nest locations, and active or suitable nesting trees were documented. Surveys were conducted by windshield and methods were consistent with the *Swainson's Hawk Technical Advisory Committee Recommended Timing and Methodology* (2000). Surveys were conducted between February 18, 2021, and August 4, 2021.

Tricolored Blackbird

Tricolored blackbirds typically require open water, protected nesting substrate, and foraging grounds within the vicinity of the nesting colony. This species nests in dense thickets of cattails (*Typha* spp.), tules (*Schoenoplectus* sp.), willow (*Salix* spp.), blackberry (*Rubus* spp.), wild rose (*Rosa* spp.), and other tall herbs near fresh water. They also nest in crops such as grains or silage.

Potential suitable nesting habitat included areas where the above criteria were partially or fully met, and they were identified by analyzing existing baseline data and aerial imagery. Biologists then conducted a field-based habitat assessment at these locations to verify habitat suitability for tricolored blackbird in May 2021. Surveys occurred in the DWR right-of-way and the immediately adjacent area, depending on access and visual capabilities, with an approximately 0.25 to 0.5-mile buffer around the SLC.

During the 2024 field season previously known occurrences within the vicinity of the Project site were revisited to update the status of the observations.

Burrowing Owl

Burrowing owls inhabit open, dry grassland and desert habitats, and in grass, forb, and open shrub stages of pinyon-juniper and ponderosa pine habitats. They usually nests in old burrows of ground squirrel, or other small mammals.

In 2015, a burrowing owl reconnaissance survey was conducted for a flood improvement project. During this reconnaissance survey, all suitable burrowing owl burrow locations between MP 128.0 and MP 141.0 on the right side of the SLC within the right of way were recorded with a global positioning system (GPS) device. In 2016, additional burrowing owl surveys were conducted between the same MPs in accordance with the 2012 *Staff Report on Burrowing Owl Mitigation,* Appendix D*,* breeding season survey protocol (CDFG 2012). The surveys were primarily conducted by windshield in areas where the surrounding area was clearly visible from the vehicle; however, transects were walked where windshield surveys were not adequate to determine the presence of burrowing owls or burrows. Transects were typically spaced 25 to 60 feet apart, depending on topography and vegetation height and density. In 2016 and 2017, additional surveys were conducted between MP 128.0 and 141.0 to monitor known burrowing owl occurrences during embankment raises and other related construction activities.

In 2019, all irrigation crossings with suitable burrowing owl burrow locations between MP 108.0 to 143.0, were recorded and mapped. These surveys followed the same methodology as described above. All suitable burrowing owl burrow locations near various irrigation crossings were recorded and mapped using GPS-enabled devices.

In 2021, burrowing owl surveys were conducted as part of the raptor nesting study within Pools 17 and 18, between February 18, 2021, and August 4, 2021. Surveys were conducted by windshield and methods consistent with CDFW protocol. Species or active burrow sightings were recorded using GPS.

During the 2024 field season previously known occurrences within the vicinity of the Project site were revisited to update the status of the observations.

Bats and Swallows

Bridges and check structures are known to provide usable habitat for bats (Keeley 2020) as well as for swallows (Audubon 2021). All species of swallows receive protection under the federal Migratory Bird Treaty Act (MBTA), which specifically protects active bird nests and their young. Bats use bridges for daytime shelter and night roosts, specifically for migratory stopover sites, hibernation sites, day roosts for nursery and bachelor colonies, and night roosts at different times of the year. Swallows are migratory and use bridges during the spring/summer breeding season.

Visual surveys were conducted for bats and swallows in May 2021 and acoustic surveys were conducted at bridges that could be impacted by the Project during summer and fall that same year (**Table 6**). The structures were visually inspected for secondary signs of use by bats (e.g., guano) and swallows (guano and nest structures).

TABLE 6
BRIDGES CROSSING ALONG POOL 17 AND POOL 18 OF THE SLC THAT COULD BE IMPACTED BY THE PROJECT

Bridges	Milepost	Pool
Highway 33 Bridge/Derrick Avenue	125.31	17
Clarkson Avenue	128.50	17
San Mateo Avenue	130.81	17
Cerini Avenue	132.77	17
Mt. Whitney Avenue	134.90	18
Excelsior Avenue/Parkhurst Avenue	137.06	18
Jeffrey Avenue	139.35	18
Oakland Avenue	141.57	18
Highway 145/Fresno-Coalinga Avenue	143.12	18

To confirm ongoing use and to identify the specific species using the structures these locations were further assessed using targeted survey tools and methods described below.

Bat Surveys

During 2021, two acoustic surveys of each of the bridges identified in Table 6 occurred: once in the summer during the rearing season, and once in the fall during migration. The surveys utilized hand-held acoustic mobile detectors to record and identify use and the species present. The mobile capability of these acoustic detectors allows the microphones to be pointed toward areas of high use (determined by presence of guano deposits, observations of flying bats, or usable habitat features) but still allows for functionally omnidirectional sampling to ensure all airspace is surveyed and low-density species are detected if they are present. All bat detections were independently assessed and verified during post-processing using the Kaleidoscope Pro Classifier software.

During each survey, a total of six survey stations were sampled at each bridge (three on each side). Each survey station was surveyed for 10 minutes using the mobile detectors, which recorded individual flyovers. The use of the survey stations was an adaption of the mobile acoustic transect survey protocol (Loeb et al. 2015).

Data collected included all observed species, as identified by Kaleidoscope Pro Classifier auto identifier (created by Wildlife Acoustics), as well as any observed population and distribution patterns, such as the level of activity, population size estimates, and areas of each bridge that appeared to be preferred, including any flight corridors.

Between April and July 2024, surveys utilized hand-held acoustic mobile detectors and a passive detector to record and identify the species present.

Bridges with previous detections were revisited as well as Check 17 (**Table 7**). The mobile capability of these acoustic detectors allows the microphones to be pointed toward areas of high use (determined by presence of guano deposits, observations of flying bats, or usable habitat features), but still allows for functionally omnidirectional sampling to ensure all airspace is surveyed and low-density species are detected if they are present.

TABLE 7
BRIDGES CROSSING REVISITED OF THE SLC THAT COULD BE IMPACTED BY THE PROJECT

Bridges	Milepost	Pool
Highway 33 Bridge/Derrick Avenue	125.31	17
San Mateo Avenue	130.81	17
Cerini Avenue	132.77	17
Check 17	132.95	18
Excelsior Avenue/Parkhurst Avenue	137.06	18
Jeffrey Avenue	139.35	18
Highway 145/Fresno-Coalinga Avenue	143.12	18

During each bridge survey, a total of six survey stations were sampled at each bridge (three on each side). Each survey station was surveyed for 10 minutes using the mobile detectors, which

recorded individual flyovers. At check 17 a passive recorder was placed in a central location next to Check 17 just after sunset. This omnidirectional microphone provided a larger detection radius and higher sensitivity than that of the handheld microphones (Loeb et al. 2015). These tools and methods have been established as an effective way to target specific features to survey for bat use (Loeb et al. 2015). All bat detections were independently assessed and verified during post-processing using the SonoBat 4.4.5 (Version 4) North America software. The passive detector was left in place for two hours while active detectors were deployed for one hour.

Data collected included all recorded species.

Swallow Surveys

In 2021, Swallow surveys were conducted at each bridge identified in Table 6 during the spring/summer breeding season (extending from April through August), which peaks in June when these birds are in the region and nesting. Surveys were conducted prior to dusk, when foraging and nest site activities were high and identification characteristics were visible. All biologists used quality optics (binoculars and/or spotting scopes) and were familiar with avian field identification and swallow species found in the region.

The initial survey included recording whether species presence or nesting activity was observed at each bridge. Then, two point-count stations were surveyed at each bridge—one on the upstream side and one on the downstream side. The point count stations were positioned approximately 10 meters from the side of each bridge to facilitate full visibility and perspective. The relatively short span of each bridge, along with clear views down their lengths, allowed the sides of each bridge and bridge surroundings to be fully surveyed from the two point-count stations. Each point count lasted a total of 10 minutes, and the data collected included all species observed, as well as any population and distribution patterns noted, such as the level of activity, population size estimate, estimate of number of active nests, and any areas of the bridge that appeared to be preferred. The survey was conducted by two teams of biologists who worked in tandem to survey each bridge from the two-point count stations concurrently.

In 2024, surveys for swallows were not conducted at bridges within the Project site, as they are known habitat for swallows. Therefore, swallows were assumed present on every bridge within the Project site. However, a survey was conducted that specifically examined the Check 17 structure for use by swallows — mainly nesting activity. The survey lasted for 30 minutes, and the data collected included all species observed, such as the level of activity, population size estimate, estimate of number of active nests, and any areas of the structure that appeared to be preferred. The survey was conducted in mid-July (during the spring/summer breeding season) by two biologists who worked in tandem to survey the structure concurrently. All biologists used quality optics (binoculars and/or spotting scopes) and were familiar with avian field identification and swallow species found in the region.

Small Mammal Habitats

Two field surveys were conducted to identify potential suitable habitat for giant kangaroo rat, and other special-status small mammal species with potential to occur within and around the

Project site. The goal was to identify and analyze any site that contained adequate habitat features. Qualifying habitat features included the presence of sandy-loam or friable soils, sparse annual grasses, and desert shrubs such as Atriplex. If a site was identified as potential habitat, an examination for evidence (burrows, scats, tail drags, dust bath, seed caches, haystacks, vertical vents, etc.) of special-status small mammal species would be conducted.

Surveys were conducted on May 19 and June 2, 2021 using vehicle and pedestrian surveys in Pool 17 and Pool 18.

Crotch's Bumble Bee

The habitat assessments followed the Habitat Assessment portion of the 2023 California Department of Fish and Wildlife Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species (survey considerations) (CDFW 2023). The assessments included documenting potential nesting resources, potential overwintering resources, and potential foraging resources. Each blooming plant species was identified, the approximate percent cover of these species was calculated, and the percent of the species that were in bloom was estimated. To calculate the estimated floral cover at each site, an approximate one meter by one meter quadrat was placed randomly within the site at five separate locations. The cover of each flowering species within a quadrat was calculated and averaged among the five quadrats. Shrubs and trees were excluded from quadrats, and instead the percent coverage of these plants were measured using aerial imagery and area calculation tools on ArcGIS Pro.

Because bumble bees are an annual species, only plants that were alive this season had their cover estimated; however, the remains of plants from previous seasons were identified to the finest known level (species or genus) and noted to determine if successional blooms are potentially possible within the site if conditions are favorable. Observed land use activities that may be considered to cause habitat disturbances were documented at each site and in the adjacent lands to each site. Habitat disturbing activities that surveyors looked for included soil disturbances, vegetation removal, chemical application, fire, honey bee (*Apis mellifera*) boxes, and heavy grazing.

Where visible, surveyors took notes of nesting and overwintering features and of flowering plants in the adjacent lands. However, surveyors did not enter these lands to avoid trespassing, so the list of nesting features, overwintering features, and flowering plants is likely incomplete and the percent cover of plants and flowers in the adjacent lands could not be calculated. Habitat disturbing activities in the adjacent lands were also documented using the same criteria for the site assessment.

In sites where there was potentially suitable foraging habitat, foraging bee surveys were performed. A site was considered potentially suitable if the percent cover of flowering resources was at least greater than one percent during the habitat assessment. These surveys were performed following the Foraging Bumble Bee portion of the CDFW survey considerations (CDFW 2023). Each of these surveys were conducted at least one hour after sunrise and at most two hours before sunset, temperatures were between 65 degrees Fahrenheit and 90 degrees Fahrenheit, shadows were visible during surveying periods, sustained wind speeds

were below 8 miles per hour, and surveys were not performed on days with precipitation. Each survey was 60 person-minutes long. All observed pollinating insects were recorded; however, because the purpose of these surveys was to identify potentially occurring bumble bees, these insects were only identified to the finest detail possible through visual observations.

Wildlife Corridor

San Joaquin kit fox have been observed historically along the SLC and adjacent lands. This indicates that the SLC right-of-way may be used as a migratory corridor, for foraging, and possibly for denning.

To assess use by this species, infrared motion-activated wildlife cameras were utilized in combination with scent/track stations in areas with the highest potential for San Joaquin kit fox. Reconyx Hyperfire cameras with 0.2-second trigger speed, up to 90 photos per trigger, and 80mb/s download speed were used. Scent/track stations consisted of one square meter of diatomaceous earth spread on the ground with a scent tablet and paste placed in the center to attract wildlife. DWR biologists placed cameras and scent/track stations near active dens, old dens, fallow agricultural lands, historic CNDDB kit fox records, areas high in small mammal presence (kangaroo rats; *Dipodomys* spp.), and potential movement corridors. Cameras and scent/track stations were deployed for a minimum of 10 days per the *United States Fish and Wildlife San Joaquin Kit Fox Protocol for the Northern Range* (USFWS 1999). Four camera deployments, each consisting of four camera/track stations, were placed to cover the left and right sides of Pools 17 and 18. Cameras were deployed from August 16, 2021, to October 7, 2021, see **Table 8** below for more detail.

TABLE 8
CAMERA DEPLOYMENT LOCATIONS AND DATES

Deployment Date	Location
8/16/2021 – 8/26/2021	141.30 Left
	139.90 Left
	137.64 Left
	132.95 Left
8/30/2021 – 9/09/2021	141.14 Right
	139.84 Right
	137.58 Right
	134.25 Right
9/13/2021 - 9/23/2021	130.34 Left
	126.78 Left
	125.09 Left
	122.28 Left
9/27/2021 - 10/07/2021	129.21 Right
	127.36 Right
	124.74 Right
	123.29 Right

Dens and Burrows

Den and burrow surveys within Pool 17 and Pool 18 were conducted in 2019 and 2020 on both sides of the SLC from MP 122.0 to 143.0. The results from the 2019 and 2020 surveys were then verified during surveys conducted in 2021. Surveys were conducted by windshield and on foot to gain one hundred percent visual coverage. Surveyors drove all accessible roads and scanned for canid dens and medium-sized burrows with typical signs of key hole or elliptical entrances of the target species. In areas where visual coverage could not be obtained by windshield, in areas with thick vegetation or steep inclines, or in areas where no roads were present, surveyors walked transects — generally 30 feet apart. All identified canid dens were mapped using ArcGIS Collector. The condition of the dens and possible species occupying the dens were documented, and photographs were taken. The 2020 and 2021 surveys were conducted from September 22 to 24, 2020; June 2, 2021; and June 14, 2021.

During the 2024 field season previously known occurrences within the vicinity of the Project site were revisited to update the status of the observations.

Special-Status Plants

A desktop analysis was conducted to identify areas in the vicinity of the Project site with potentially suitable habitat for special-status plants that were identified during the literature review. The desktop analysis is described in Section 3.3.2 and **Table 5**.

4. Results: Discussion of Biological Resources

4.1 Habitat Communities and Land Use

4.1.1 Plant Species

Plant diversity along the SLC and adjacent land varies from year-to-year and is dependent on many factors including precipitation, erosion, adjacent land use, and maintenance activities. The following is the list of plants observed along the SLC and adjacent lands since 2015 (**Table 9**).

TABLE 9
PLANTS OBSERVED WITHIN THE PROJECT SITE

Scientific Name	Common Name
Ambrosia psilostachya	ragweed
Amsinckia menziesii	fiddleneck
Arundo donax	Giant reed
Astragalus sp.	astragalus
Atriplex lentiformis	quailbush
Atriplex polycarpa	cattle spinach
Avena barbata	slim oat
Avena fatua	wild oat
Baccharis pilularis	coyote bush
Baccharis salicifolia	Mule fat

Scientific Name	Common Name
Brassica nigra	black mustard
Bromus diandrus	ripgut
Bromus madritensis	Foxtail
Bromus madritensis ssp. rubens	red brome
Centaurea melitensis	tocalote
Centaurea solstitialis	Yellow starthistle
Centromadia sp.	tarweed
Convolvulus arvensis	bindweed
Croton setigerus	doveweed
Datura wrightii	Jimsonweed
Deinandra sp.	tarplant
Erigeron canadensis	Canada horseweed
Erodium cicutarium	red-stemmed filaree
Helianthus sp.	sunflower
Heliotropium curassavicum	Heliotrope
Hordeum murinum	foxtail barley
Lactuca serriola	prickly lettuce
Laennecia coulteri	Coulter's horseweed
Lepidium latifolium	broadleaved pepperweed
Malva neglecta	common mallow
Malva parviflora	cheeseweed
Marrubium vulgare	horehound
Matricaria discoidea	pineapple weed
Melilotus sp.	sweet clover
Parkinsonia sp.	palo verde
Poa annuua	annual bluegrass
Prosopis sp.	mesquite
Rumex crispus	curly dock
Salsola tragus	Russian thistle
Sisymbrium irio	London rocket
Tamarix sp.	saltcedar
Typha sp.	cattails
Urtica sp.	stinging nettle

4.1.2 Vegetation Alliances and Habitat Types

Based on the habitat mapping that was described in Section 3.4.1, the Project site consists of 9 vegetation alliances that were identified using categories and criteria defined in the Manual. From those vegetation alliances, four habitat types can be distinguished using California Wildlife

Habitat Relationships (CWHR) in conjunction with the Manual. Habitat and natural community types present within the Project site include barren, alkali desert scrub, annual grassland, and desert riparian (**Table 10**) (CWHR). A discussion of additional land use types, such as permanent crops, annual crops, and idle lands can be found in Section 4.1.3. Mapped vegetation alliances are depicted in **Figure 7** and **Figure 8**.

TABLE 10
VEGETATION ALLIANCES AND HABITAT TYPES WITHIN THE PROJECT SITE

Vegetation Community/ Land Cover Type (State Rank)	Associated CWHR Habitat Type	Description
fiddleneck- filaree fields (S5)	annual grassland	Characterized by open grasslands composed of annual grasses and forbs. Often occur as an understory to other habitats. Species diversity and structure depends largely on weather patterns and grazing. Great physical differences are characterized between seasons.
wild oats and annual brome grassland (SNA)		
upland mustard and other ruderal forbs*		
sunflower patches*		
quailbush scrub (S4)	alkali desert scrub	Characterized by open stands of very low to moderately high (0.25-2.0 m; 0.8-6.6 ft) grayish, spinescent, leptophyllous to microphyllous subshrubs and shrubs, which are physically uniform, widely spaced, and occur on relatively dry soils.
allscale (Atriplex) scrub (S4)		
mesquite thickets*	desert riparian	Characterized as dense groves of low shrublike trees. These habitats are found adjacent to permanent surface water (e.g., streams, springs) or in naturally subirrigated areas. Usually, an abrupt transition occurs between this and adjacent shorter and more open desert habitats.
tamarisk thickets (SNA)		
bare land	barren	Characterized by the absence of vegetation. Any habitat with <2% total vegetation cover by herbaceous, desert, or nonwildland species and <10% cover by tree or shrub species is defined this way. May consist of sparse growth, rock, gravel, and soil.

Notes:

* Alliances that have sufficient data to propose the vegetation type, but not enough research and regional information to be confident about its status in California's vegetation (California Department of Fish and Wildlife, VegCAMP).

SNA = Semi-natural Alliances - strongly dominated by non-native plants that have become naturalized in the state.

S1 = Critically Imperiled – At very high risk of extirpation due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.

S2 = Imperiled – At high risk of extirpation due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.

S3 = Vulnerable – At moderate risk of extirpation due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

S4 = Apparently Secure – At a fairly low risk of extirpation due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

S5 = Secure – At very low or no risk of extirpation due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.

The three most dominant habitat types are barren, desert riparian, and annual grassland. The barren areas are concentrated on the embankment slopes and the shoulder of the SLC paved roads. Annual grassland can be found along portions of the embankment slopes and SLC road shoulders, adjacent to the barren habitat. The desert riparian habitat type consists of mesquite and salt cedar thickets at the toe of the embankments – between the agricultural land and the SLC embankment within the DWR right of way.

Where desert riparian and alkali desert scrub habitats occur, they are remnants of planting efforts in the late 1960s and early 1970s by the CDFW are present. The parcels were created in an agreement between DWR and CDFW to provide wintering habitat for wildlife (DWR 1974). CDFW managed and monitored the parcels for the agreement term.

Areas with mesquite thickets, such as the planted parcels and narrow strips within the SLC right of way, are a direct result of the planting efforts made by CDFW. The mesquite thickets are a provisional alliance since they are dominated by the Chilean mesquite (*Prosopis chilensis*) and not the honey mesquite (*Prosopis glandulosa*), which is ranked as a sensitive species (NatureServe State Rank S3). Furthermore, the habitat type can only be classified as a sensitive natural community if the mesquite is naturally occurring vegetation. According to the *National Vegetation Classification Standard, Version 2*, natural vegetation is defined as vegetation where ecological processes primarily determine species and site characteristics, and the vegetation is comprised of a largely spontaneously growing set of plant species that are shaped by both site and biotic processes (Küchler 1969, Westhoff and van der Maarel 1973). The mesquite thickets present are not a result of natural, spontaneous processes; they are planted. These mesquite thickets more closely follow the definition of cultural vegetation, defined as vegetation with a distinctive structure, composition, and development determined by regular human activity, and therefore do not meet the criteria of a sensitive natural community (Küchler 1969). The planted areas have not been maintained for many years and both the plantings and native patches have been encroached upon by invasive plants and adjacent landowners.

The provisional alliances documented during vegetation mapping are a mixture of native vegetation and invasive species or relatively small areas where a common native species is dominant. These provisional alliances are not considered sensitive. All native vegetation patches, including the past artificially established parcels, exist as remnant native communities.

The habitat types are geographically fragmented and persistently disturbed. The highly fragmented and disturbed nature of the SLC right of way can be attributed to introduced non-native species, adjacent agricultural land use, routine mowing and spraying along the SLC, and vandalism such as burning, discing, and trash dumping.

4.1.3 Adjacent Land Use

The land use adjacent to the Project site is primarily agricultural production (**Figure 9** and **Figure 10**). Land not in agricultural production is typically occupied with produce processing plants, equipment storage, or homesteads. Both Pools 17 (MP 122.07 to MP 132.94) and 18 (MP 132.95 to MP 143.22) of the SLC are located within the Westlands Water District, which supplies the majority of surface water for agricultural use in their district. A variety of permanent and annual crops are cultivated within the Westlands Water District service area.

The largest acreage of crops within the area are permanent crops such as almonds and pistachios, but many annual crops are produced here as well. Annual crops include alfalfa, grain, tomato, corn, lettuce, leafy greens, melon, squash, cucumber, onion, garlic, and many other fresh produce crops. Acreage between MP 132.95 and MP 143.24 (Pool 18) was largely

observed as idle, which includes lands that have been cropped within the past 3 years or are being prepared for crop production. These idle lands have been used to cultivate annual crops such as lettuce, onion, garlic, tomato, and melon. An agricultural field with annual crops can produce and harvest as many as three crops in one year. Annual crops optimal for each growing season will be planted after the harvest and amendment of the previous crop. This continual working of the land makes it difficult for local wildlife and plants to establish.

4.2 Sensitive Natural Communities

None of the habitat types and associated alliances present meet the criteria for sensitive or rare natural communities. The lack of species diversity and isolation from surrounding agricultural practices are typical obstacles and inhibit habitat ecosystems from flourishing or existing in a natural state.

4.3 Aquatic Resources

Cantua Creek at MP 133.67 and Salt Creek at MP 137.06 were identified. Ephemeral drainages were identified along Cantua Creek and Salt Creek; these ephemeral drainage channels are isolated and are not tributary to jurisdictional waters. The aquatic resources delineation identified approximately 4.16 acres of aquatic resources in the Project site including seasonal wetland and ephemeral drainage, these aquatic resources are described in detail, below. Aquatic habitats in the Project site were classified using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin 1979) ("Cowardin Classification").

Seasonal Wetland

A seasonal wetland has water present for an extended time to promote the growth of hydrophytes and anaerobic soils. However, the wetland is temporary and drains within a season.

Seasonal wetland SW-1 is hydrologically connected to Cantua Creek and totals 0.448 acre in the Project site at MP 133.8 right (**Table 11**, **Figure 11**, and **Figure 12**). Vegetation in the Cantua Creek Project site included Bermuda grass (FACU[1]), California sunflower (*Helianthus californicus*; OBL[2]), Italian rye grass (*Festuca perennis*; FAC[3]), tall flatsedge (*Cyperus eragrostis*; FACW[4]), perennial pepperweed (*Lepidium latifolium*; FAC), sheep sorrel (*Rumex acetosella*; FAC), curly dock (*R. crispus*; FAC), and Baltic rush (*Juncus balticus*; FACW). The wetland contains a rock gabion that serves as a sediment screening device surrounding a concrete drain inlet structure. A small patch of broadleaf cattail (*Typha latifolia*; OBL) and Mexican fan palm (*Washingtonia robusta*; FACW) saplings too small to warrant a separate

1 "FACU" refers to *facultative upland* and is based on the wetland plant indicator status in the Arid West regional list.

2 "OBL" refers to *obligate wetland* and is based on the wetland plant indicator status in the Arid West regional list.

3 "FAC" refers to *facultative* and is based on the wetland plant indicator status in the Arid West regional list.

4 "FACW" refers to *facultative wetland* and is based on the wetland plant indicator status in the Arid West regional list.

wetland type was observed immediately adjacent to the drain inlet structure at the lowest point of seasonal wetland SW-1.

Ephemeral Drainage

An ephemeral drainage has flowing water immediately following precipitation when rainfall or groundwater provides water for channel flow. During dry periods, ephemeral drainages do not exhibit flowing water. In the Project site, ephemeral drainages periodically flow following precipitation during the winter season and are dry during other times of the year.

Four ephemeral drainage segments (ED-1 through ED-4), totaling approximately 3.716 acres, were identified in the Project site along Cantua Creek near MP 133.8 right (**Table 11** and **Figure 11**). In addition, five ephemeral drainage segments (ED5 through ED-9), totaling 0.370 acres, were identified along Salt Creek at MP 136.0 right and MP 137.0 right (**Table 11, Figure 13**, and **Figure 14**). All ephemeral drainages have been realigned to varying degrees within the Project site and convey substantial sediment from upstream reaches. Due to the high degree of historic and ongoing disturbance in much of the surrounding uplands by ongoing agricultural activities, the OHWM is primarily marked by areas of shelving and scour, occasional water staining, a change in the plant community, and/or drift deposits. Very little vegetation is supported in these drainage segments.

TABLE 11
AQUATIC RESOURCES IN THE PROJECT SITE

Aquatic Resource (Map ID)	Rapanos Waters Type	Waters of the U.S. (ac)	Isolated (ac)	Rationale
Seasonal Wetland (SW-1)	Isolated waters	--	0.448	Seasonal wetlands are isolated from any downstream connection to jurisdictional waters.
Waters				
Channels (ED-1 – ED-4) (Cantua Creek)	Isolated waters	--	3.716	Ephemeral drainages are isolated from any downstream connection to jurisdictional waters.
Channels (ED-5 – ED-9) (Salt Creek)	Isolated waters	--	0.370	

The ephemeral drainage channels in the Project site are isolated and not tributary to jurisdictional waters and are therefore not expected to be waters of the U.S. pursuant to the Supreme Court's decision in the consolidated cases of *Rapanos v. United States* and *Carabell v. United States* (referred to hereafter as *Rapanos*).

4.4 Special-Status Animal Species

Preliminary analysis for special-status animal species described in Section 3.3 in combination with surveys conducted from 2015 through 2024 resulted in the following findings (**Figure 15** and **Figure 16**).

Blunt-nosed Leopard Lizard

Suitable habitat was not identified within the Project site and blunt-nosed leopard lizard was not observed during any of the general or focused surveys that occurred between 2015-2024. Therefore, blunt-nosed leopard lizard is not expected to occur within the Project site.

Western Pond Turtle

Marginal habitat for western pond turtle is present within the Project site. Western pond turtles use aquatic habitats primarily for foraging, thermoregulation, and avoidance of predators. They prefer habitats with large areas for cover (logs, algae, vegetation) and basking sites (boulders or other substrates) and have been observed to avoid areas of open water lacking these habitat features (Holland 1994). The SLC does not offer these features as a concrete-lined canal, open with zero coverage, and little to no foraging habitat is available. Marginal habitat may be present in the form of adjacent drainage basins and canals on the adjacent properties. Therefore, western pond turtle was determined to have a low potential to occur within the Project site.

Special Status Reptiles

San Joaquin coachwhip prefers open arid areas such as grassland and scrub habitat. Ancillary observations of the species have been observed along the SLC right of way, however it has not been documented within the Project site. The species habitat is present and therefore has a high potential to occur with the Project site. The California glossy snake has similar habitat preferences of the San Joaquin coachwhip, however the species has not been observed at any time within the Project site. Since habitat is present for the species the likelihood of occurring is low.

The Northern California legless lizard prefers dry sandy washes. This feature is not found with the Project site and the species has not been detected during surveys conduct from 2015-2024, therefore the likelihood of occurrence is low.

Giant garter snakes prefer slow-moving or stagnant waterways and avoid open spaces without cover. The SLC as a concrete-lined canal, open with zero coverage, and has a strong current does not offer suitable habitat to the species. Marginal habitat may be present in the form of adjacent drainage basins and canals on the adjacent properties. However, the species has never been observed in the region or the Project site, therefore it has no potential to occur.

Western Spadefoot

Marginal suitable aquatic habitat and suitable upland habitat is present within and surrounding the Project site. This species has been observed in two areas near but outside of the Project site. Beyond these locations, presence is unlikely, as surveys conducted in 2024 did not detect spadefoot within the Project site. Additionally, spadefoot has not been incidentally recorded along this section of the Aqueduct in any of the past surveys conducted in the region. However, there is no habitat mapped as suitable upland, occupied habitat, suitable breeding, or potential breeding located in any staging areas or borrow areas so the possible risks to western spadefoot are low.

Special Status Amphibians

California tiger salamander and California red-legged frog require pools for breeding similar to the western spadefoot. However, the species require vegetation to attach their eggs to and ponds where western spadefoot are found often lack vegetation. Predation from bullfrogs (*Lithobates catesbeianus*) is also a high concern, bullfrog tadpoles are found all over the Project site when pools and puddles are available. Therefore, the species have no potential occur.

Swainson's Hawk

The Project site provides suitable habitat for Swainson's hawks. In 2021, active nests were observed in a mesquite tree on the right side of the SLC at MP 133.60, and a cottonwood tree at MP 138.40 right. In 2024, an active nest was observed in the same cottonwood tree at MP 138.40 right. Therefore, Swainson's hawk was determined to have a high potential to occur within the Project site.

Tricolored Blackbird

Tricolored blackbirds are known to occur in the vicinity of the Project site. In 2021, tricolored blackbirds were observed at MP 141.90 right in an agricultural canal and a single individual was heard calling in a wheat field at MP 126.70 right. No further observations were made at either of these sites. On April 30 and July 19, 2024, the previously known occurrences were revisited to update the status of the observations. No tricolored blackbirds were observed and suitable nesting habitat remains sparse. Although this species is unlikely to nest on site, it could be observed foraging in the area on occasion.

Therefore, tricolored blackbird was determined to have a low potential to nest and moderate potential to forage within the Project site.

Burrowing Owl

Marginal habitat for the species is present along portions of the embankments bordering the SLC roads of the Project site. Nine active burrows have been recorded in our dataset with typically two active burrows in a given year. However, only one active burrow was observed at MP 134.17 in 2024. Therefore, burrowing owl was determined to have a high potential to occur within the Project site.

Other Special-Status Birds

Northern harrier is commonly observed throughout the area of the Project site. Annual grassland provides nesting and foraging habitat for the species, as well as the adjacent agricultural fields and fallowed lands. However, nesting sites have not been identified due to their inconspicuous placement. Therefore, the species has high potential to occur within the Project site.

White-tailed kite has been historically observed foraging in the vicinity of the Project site and suitable habitat is present. Therefore, this species has high potential to occur within the Project site.

Suitable habitat for short-eared owl is present in the Project site and documented occurrences have been recorded within 3 miles of the Project site. However, no detections have been made during surveys within the Project site. Therefore, this species has moderate potential to occur within the Project site.

Limited suitable nesting habitat for yellow-headed blackbird is present within the Project site. However, historic detections have been made during surveys and recorded observations are documented in CNDDB within 3 miles of the Project site. This species is unlikely to nest on-site but could forage in the area on occasion. Therefore, this species has moderate potential to occur within the Project site.

Other special-status bird species observed in the area include loggerhead shrike, California horned lark, and prairie falcon. Foraging and breeding habitat is available for these species at the Project site. However, nesting availability for the prairie falcon has not been observed. From 2015 to 2024, five loggerhead shrike, one California horned lark, and one prairie falcon were observed at the Project site.

Other Migratory Birds and Raptors

Exposed I-beams on bridges and check structures allow for cavities or ledges for birds to build nests. Cliff swallows (*Petrochelidon pyrrhonota*) are known to nest on the bridges and check structures in the area of the Project site.

Common ravens (*Corvus corax*) often nest on power poles, bridges, and structures in the area of the Project. Larger stick nests were observed on the gate at Check 17. No activity was observed, however, based on the size and material type, it is possible that the nest is associated with common raven.

Approximately 26 active nest sites of migratory birds have been detected over the past five years in the area of the Project site. Most active nests observed at the Project site have been located in available trees along the right-of-way such as eucalyptus and large mesquite stands or power poles.

Bats

A diversity of bat species have been documented in the vicinity of the Project site. However, no visual evidence of roosting was observed such as urine stains or piles of guano. The SLC may also provide a corridor for bats, facilitating movement of various species that roost and/or hibernate in surrounding areas.

Bats recorded during the spring surveys (April- May) in 2024, included Brazilian free-tailed bat (*Tadarida brasiliensis)*, silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus)*; Yuma myotis (*Myotis yumanensis*), litte brown bat (*Myotis lucifugus*), greater bonneted bat (*Eumops perotis*), western red bat (*Lasiurus blossevillii*), pallid bat (*Antrozous pallidus*) California myotis (*Myotis californicus*), and big brown bat (*Eptesicus fuscus*) (**Table 12**).

TABLE 12
DETECTED BAT SPECIES AT THE BRIDGES WITHIN THE AREA OF THE PROJECT SITE

Bridge	TABR	EPFU	LANO	LACI	MYYU	MYLU	EUPE*	LABL*	ANPA*	Myotis Spp
125.31					X					
130.81	X		X	X	X					
132.77	X		X	X		X				X
132.95	X	X		X	X	X	X			
137.06	X		X	X						
139.35								X	X	
143.12										

Notes: TABR= Tadarida brasiliensis; EPFU= Eptesicus fuscus; LANO= Lasionycteris noctivagans; LACI= Lasiurus cinereus; MYYU= Myotis yumanensis; MYLU= Myotis lucifugus; EUPE= Eumops perotis californicus; LABL= Lasiurus blossevillii; ANPA= Antrozous pallidus; *denotes Species of Special Concern

The pallid bat was detected at MP 139.35, along with another species of special concern, the western red bat. A western mastiff was detected at MP 132.95. The pallid bat was only detected on one audio file, the western red bat on two, Given the time of night that these individuals were recorded, approximately two hours past sunset, and the scarcity of detection on any other audio files at this site, it is likely that these individuals were using the SLC for movement.

A *Myotis* species was detected at MP 132.77, but the species could not be confirmed. Although identification could not be determined, the characteristics of the call were not similar to those of any special-status bats.

Therefore, western mastiff bat, pallid bat, and western red bat have moderate potential to occur within the Project site.

Small Mammal Habitat

Suitable habitat for small mammals was not identified in the vicinity of the Project site. Although suitable habitat is not present within the Project site, giant kangaroo rat has CNDDB recorded occurrences documented 3 miles west of the Project site. Therefore, giant kangaroo rat has a low potential to occur within the Project site.

Wildlife Corridor (San Joaquin kit fox and American Badger)

During camera deployments, cameras were placed along the SLC to demonstrate what wildlife prey or predator base of the San Joaquin kit fox may be present or absent. The camera stations in key den and burrow areas did not detect San Joaquin kit fox. The SLC serves as a wildlife corridor for many common species. These species use the corridor for movement (North to

South) and as a home range (breeding, foraging). Examples of species detected during camera studies conducted in 2021 are as follows.

- **Carnivores**. Carnivores detected included coyotes (*Canis latrans*), raccoons (*Procyon lotor*), striped skunk (*Mephitis mephitis*), domestic dogs (*Canis familiaris*), domestic cats (*Felis catus*), and bobcats (*Lynx rufus*). Coyotes are the most recorded carnivores.
- **Small mammals**. Small mammal species detected were California ground squirrels, kangaroo rats (*Dipodomys* spp.), desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), and a mouse (*Cricetidae, Heteromyidae, or Muridae* sp.).
- **Birds**. Bird species detected were northern mockingbird (*Mimus polyglottos*), Eurasian collared dove (*Streptopelia decaocto*), mourning dove (*Zenaida macroura*), and western kingbird (*Tyrannus verticalis*).

No San Joaquin kit fox or evidence was recorded at the camera/ track stations. Therefore, this species is not expected to occur within the Project site

Dens and Burrows

One potentially suitable San Joaquin kit fox den was observed in 2021 at approximately MP 134.50. In 2024, three potentially suitable dens for the species were located on the left side of the SLC at MP 126.82 and MP 136.81. However, the dens did not have the typical characteristics such as a keyhole entrance. No signs of use, such as scat, small mammal remains, or paw prints belonging to the species were observed.

In 2021 or 2024 American badger dens with the typical elliptical shape or claw marks were not observed in the Project site. However, the species has been observed north of the Project site and therefore has a low likelihood of occurring.

Crotch's Bumble Bee

During general habitat assessment in 2024, surveyors noted if there were any ancillary observations of bumble bees. No observations were made. Suitable nesting and foraging habitat is available for the species within the Project site. Therefore, Crotch's bumble bee has a moderate potential to occur foraging within the Project site.

Monarch Butterfly

There are no CNDDB records for the species within 3 miles of the Project site, however, monarch butterfly was present on the USFWS iPaC search result. Although this species was reported in the iPaC, the host plant for the species reproduction cycle was not observed within the Project site. Therefore, this species is not expected to occur within the Project site.

Vernal Pool Fairy Shrimp

There are no CNDDB records for the species within 3 miles of the Project site, however, vernal pool fairy shrimp was present on the USFWS iPaC search result. There are no records or

observations of vernal pools present within the Project site; thus, vernal pool fairy shrimp are not expected to occur within the Project site.

4.5 Special-Status Plant Species

The non-native grassland present in the right of way is ruderal and highly disturbed. The Project site lacks suitable vegetation alliances for special-status species listed in Table 5; therefore, special-status plant species are not expected to occur within the Project site.

5.0 Discussion of Impacts

This section describes the potential impacts to protected biological resources in association with project activities.

5.1 Habitats, Sensitive Natural Communities, and Aquatic Resources

5.1.1 General Habitat

Distribution and health of the vegetation and habitats present will not be impacted. The Project site is exposed to disturbances as discussed in section 4.1.2.

The right of way does serve as a wildlife movement corridor and may be temporarily impacted during construction. The right of way will still be available for travel, but construction activities that generate noise, vibrations, and light may affect species passing through.

5.1.2 Terrestrial Habitats and Agricultural Lands

Implementation of the Project would occur primarily on bare land (disturbed), developed, fiddleneck-filaree fields, and wild oats and annual brome grassland. Staging and borrows sites have been identified in fiddleneck-filaree fields, wild oats and annual brome grasslands, and bare land (disturbed). However, one site does consist of a mesquite thicket and atriplex scrub.

5.1.3 Sensitive Natural Communities

None of the vegetation communities and associated alliances within the Project site meet the criteria for sensitive or rare natural communities.

5.1.4 Aquatic Resources

All aquatic resources identified in section 4.3 are within the Project site but will be avoided, therefore no impacts will occur to aquatic resources.

5.2 Special-Status Animal Species

Burrowing owl, Crotch’s bumble bee, San Joaquin coachwhip, Swainson’s hawk, tricolored blackbird, white-tailed kite, other special-status and migratory birds, and special-status bats have the potential to occur within the Project site.

5.2.1 San Joaquin Coachwhip

One special-status reptile, San Joaquin coachwhip (CDFW species of special concern), has a high potential to occur within the Project site. Although this species has not been documented within the Project site, ancillary observations of this species have been documented along the Aqueduct right-of-way and suitable habitat for this species is present within the Project site.

5.2.2 Burrowing Owl

Habitat for this species is present along portions of the embankments bordering the Aqueduct roads along the Project site, and a total of nine active burrows have been recorded within the Project site, with an average of two active burrows documented in a given year. Only one active burrowing owl burrow was observed at MP 134.17 in 2024. DWR biologists theorize that burrowing owls may use sections of the Aqueduct as overwintering sites and disperse to their breeding sites by spring. Thus, this species has a high potential to occur within the upland annual grassland and disturbed habitats throughout the Project site.

5.2.3 Swainson's Hawk

Active Swainson's hawk nests were observed in 2021 and 2024 during protocol-level surveys conducted in accordance with the Swainson's Hawk Technical Advisory Committee Recommended Timing and Methodology (2000), and the Project site provides suitable habitat for this species to nest and forage. Two active Swainson's hawk nest sites were identified in 2021; a Swainson's hawk nest was located in a mesquite tree on the right side of the Aqueduct at MP 133.60, and an active nest was observed in a cottonwood tree on the right side of the Aqueduct at MP 138.40. The Swainson's hawk nest in the cottonwood tree at MP 138.40 was also confirmed to be active in 2024. Thus, Swainson's hawk nesting is known to occur within 0.25 miles of the Project site and potential impacts to the species may occur.

The annual grassland and scattered trees throughout the Project site provide suitable nesting and foraging habitat for this species.

5.2.4 White-Tailed Kite

While suitable foraging habitat for white-tailed kite is present throughout the Project site, the species has only been historically observed foraging in the vicinity. Given the limited presence of dense-canopied trees and the absence of dense broadleaf deciduous groves typically used for nesting and roosting, nesting by white-tailed kite is not likely to occur within the Project site. White-tailed kite has the potential to occasionally forage within the open annual grassland and agricultural areas throughout the Project site and surrounding areas.

5.2.5 Tricolored Blackbird

Tricolored blackbirds typically nest near open fresh water in dense, tall vegetation like cattails (Typha spp.), tule (Schoenoplectus sp.), willows (Salix spp.), blackberry (Rubus spp.), and wild rose (Rosa spp.); however, they will also use crops like grain or silage for nesting. Potentially suitable nesting habitat, identified through data analysis and field verification in May 2021, was present in areas partially or fully meeting these requirements. In 2021, tricolored blackbirds

were observed on the Project site at MP 141.90 in an agricultural canal and a single calling individual at MP 126.70 right in a wheat field. However, a 2024 survey found no tricolored blackbirds, and only sparse, marginal nesting habitat was observed within the Project site. Consequently, the potential for nesting within the Project site is low, but there is a moderate potential for this species to occasionally forage or occur on-site.

5.2.6 Other Migratory Birds and Raptors

In addition to the special-status bird species discussed previously, the Project site supports a diversity of other migratory birds, including special-status non-listed bird species, protected under the federal Migratory Bird Treaty Act of 1918 and Sections 3503.5, 3505, and 3511 of the California Fish and Game Code. Surveys have identified active nests, primarily in available trees (such as eucalyptus and large mesquite stands) and on power poles along the right-of-way. Commonly observed bird species include common raven, northern mockingbird (*Mimus polyglottos*), mourning dove, western kingbird, and cliff swallow. Special-status non-listed birds with potential to nest on site include California horned lark, loggerhead shrike, northern harrier, and short-eared owl. Nesting migratory birds and raptors have the potential to nest on bridges, structures, power poles, and vegetation (i.e., trees, shrubs, and on the ground) throughout the Project site.

5.2.7 Special-Status Mammals

Three special-status bat species—pallid bat, western mastiff bat, and western red bat—were detected during bat surveys in 2024. However, no visual evidence of roosting was observed such as urine stains or piles of guano. Therefore, these special-status bats are determined to have a moderate potential to occur within the Project site.

5.2.8 Crotch’s Bumble Bee

One special-status invertebrate species, Crotch’s bumble bee, was determined to have a moderate potential to occur within the Project site following the 2024 habitat assessment..

Due to the species’ recent listing, there is not much available data from natural resource agency databases. Staging and borrow sites will be located in potential foraging habitat for the species. Potential construction related impacts may occur as direct mortality from vehicle strikes or if a nest is observed where ground disturbance is planned then destruction and mortality may occur.

5.3 Special-Status Plant Species

No special-status plant species are expected to occur within the Project site; therefore, no potential impacts to special-status plants would occur.

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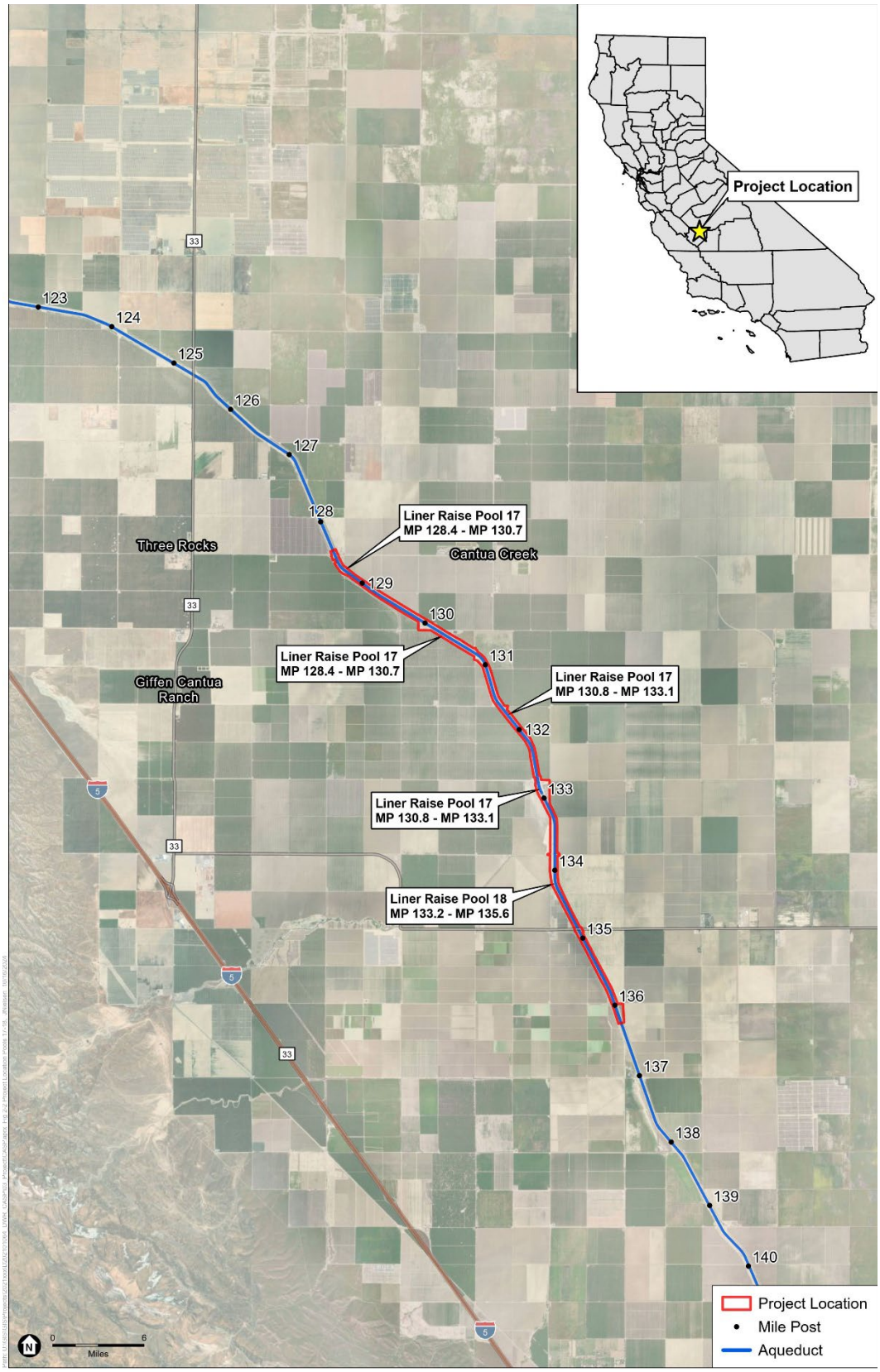
Appendix A
Figures



SOURCE: ESRI; DWR, 2024.

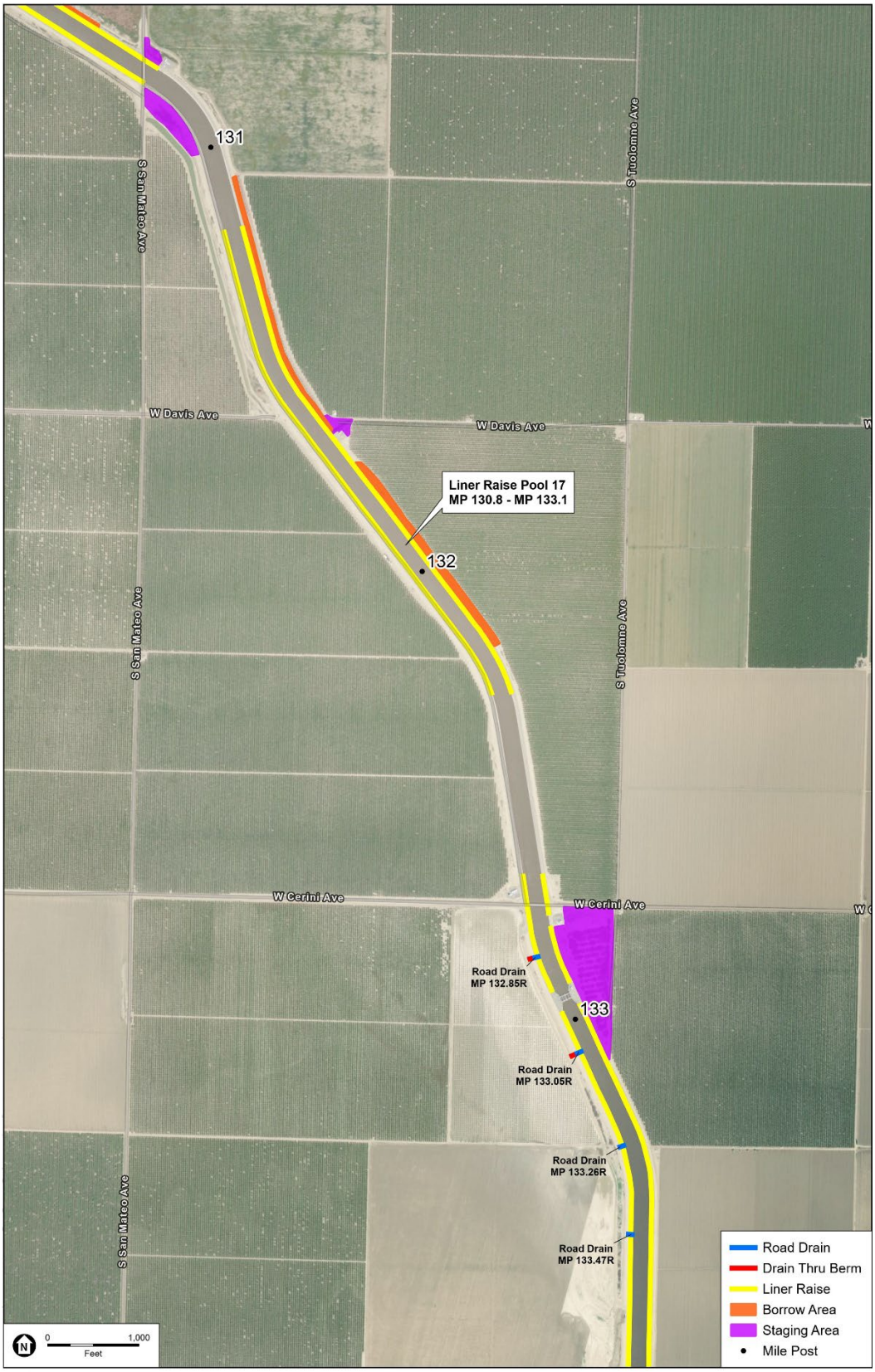
CASP Enviro Support

Figure 1. Pool 17 and Pool 18 Location

SOURCE: ESRI; DWR, 2024

CASP Enviro Support

Figure 2. Pool 17 and Pool 18 Project Site



SOURCE: ESRI; DWR, 2024

CASP Enviro Support

Figure 3. Pool 17 Project Site

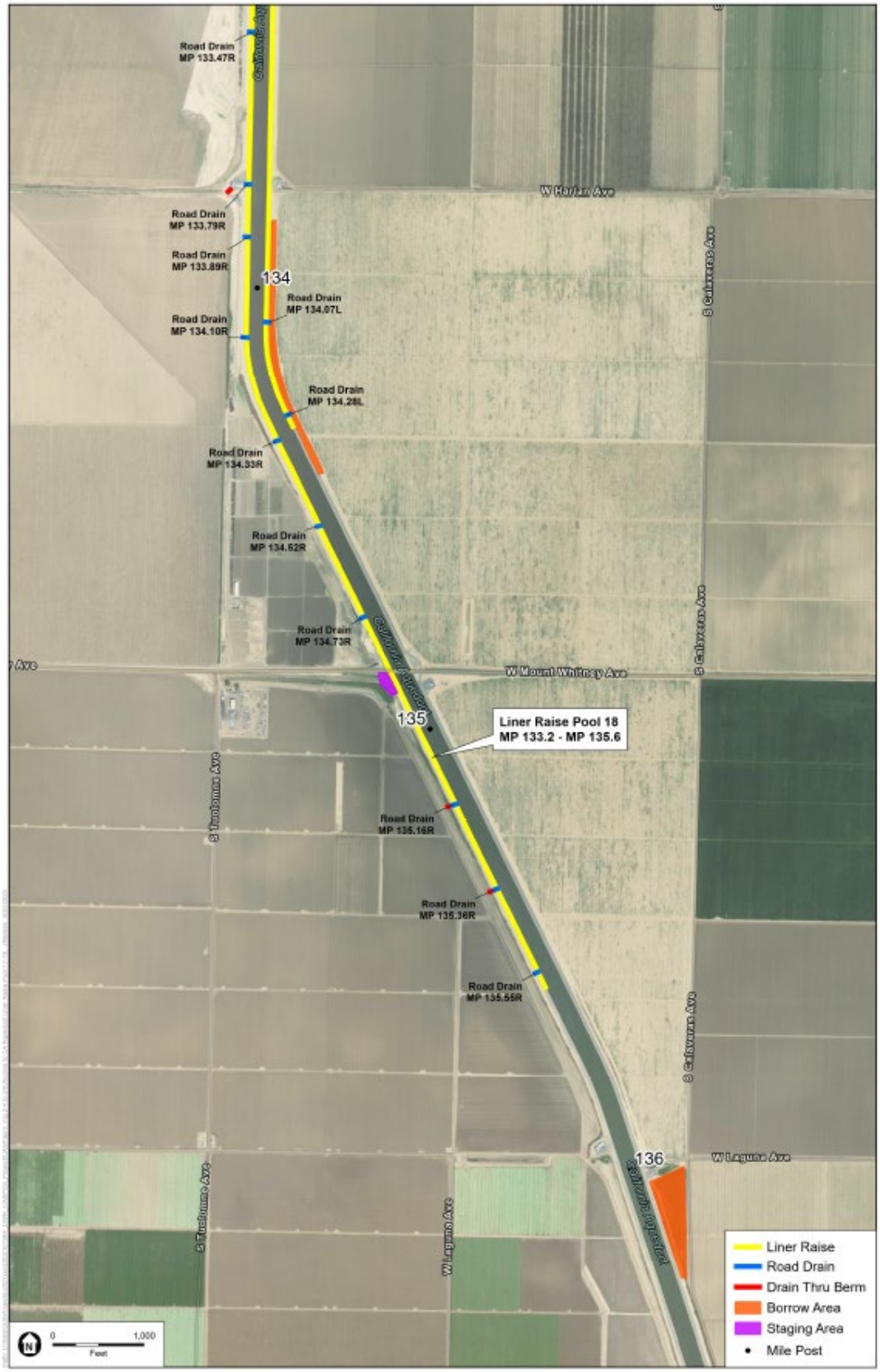


Figure 4. Pool 18 Project Site

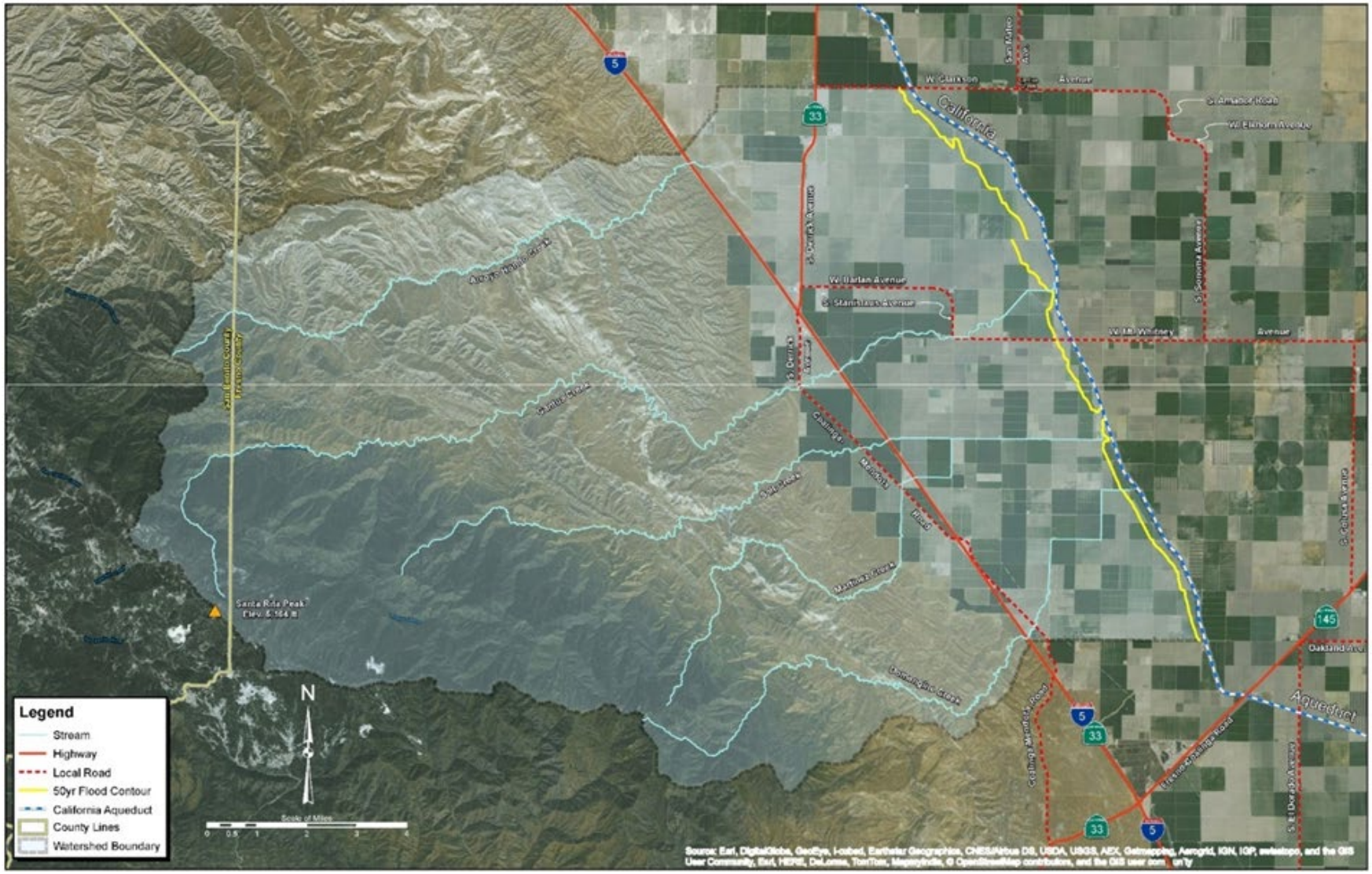


Figure 5. Cantua Creek Stream Group Watershed Located in Pools 17 and 18.

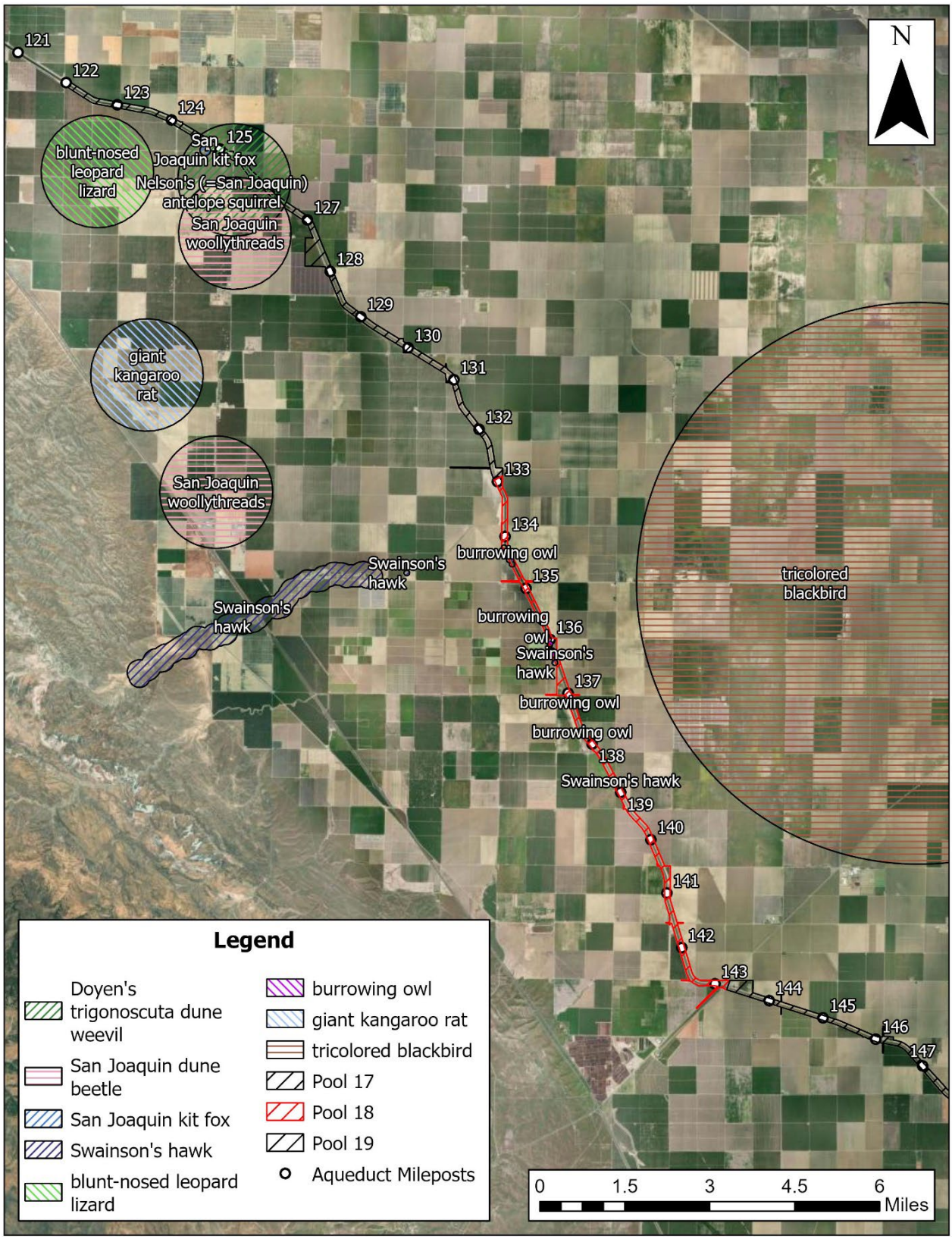


Figure 6. CNDDB Records Within 3 Miles of the Project Site and Observed Species

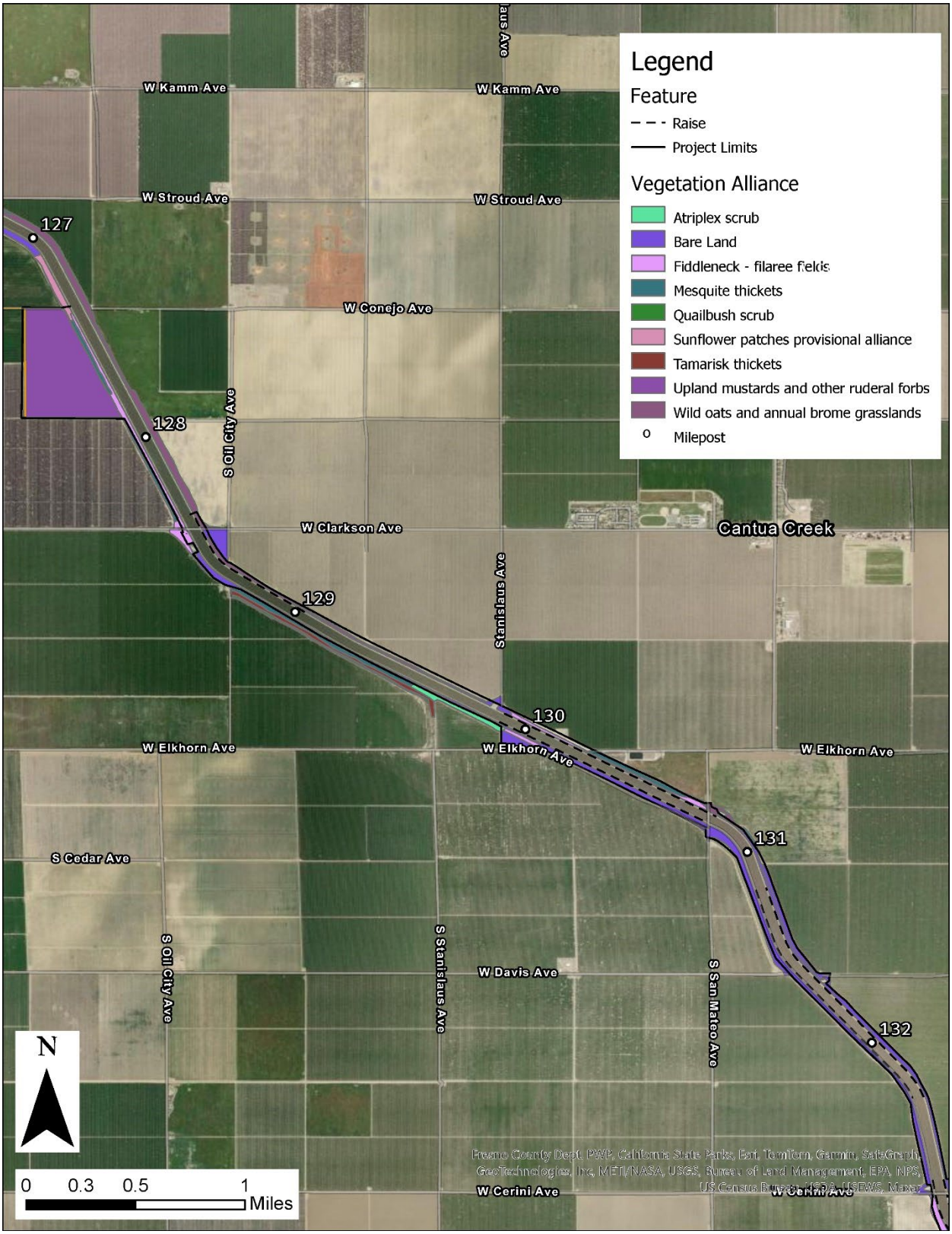


Figure 7. Pool 17 Vegetation Alliance Mapping

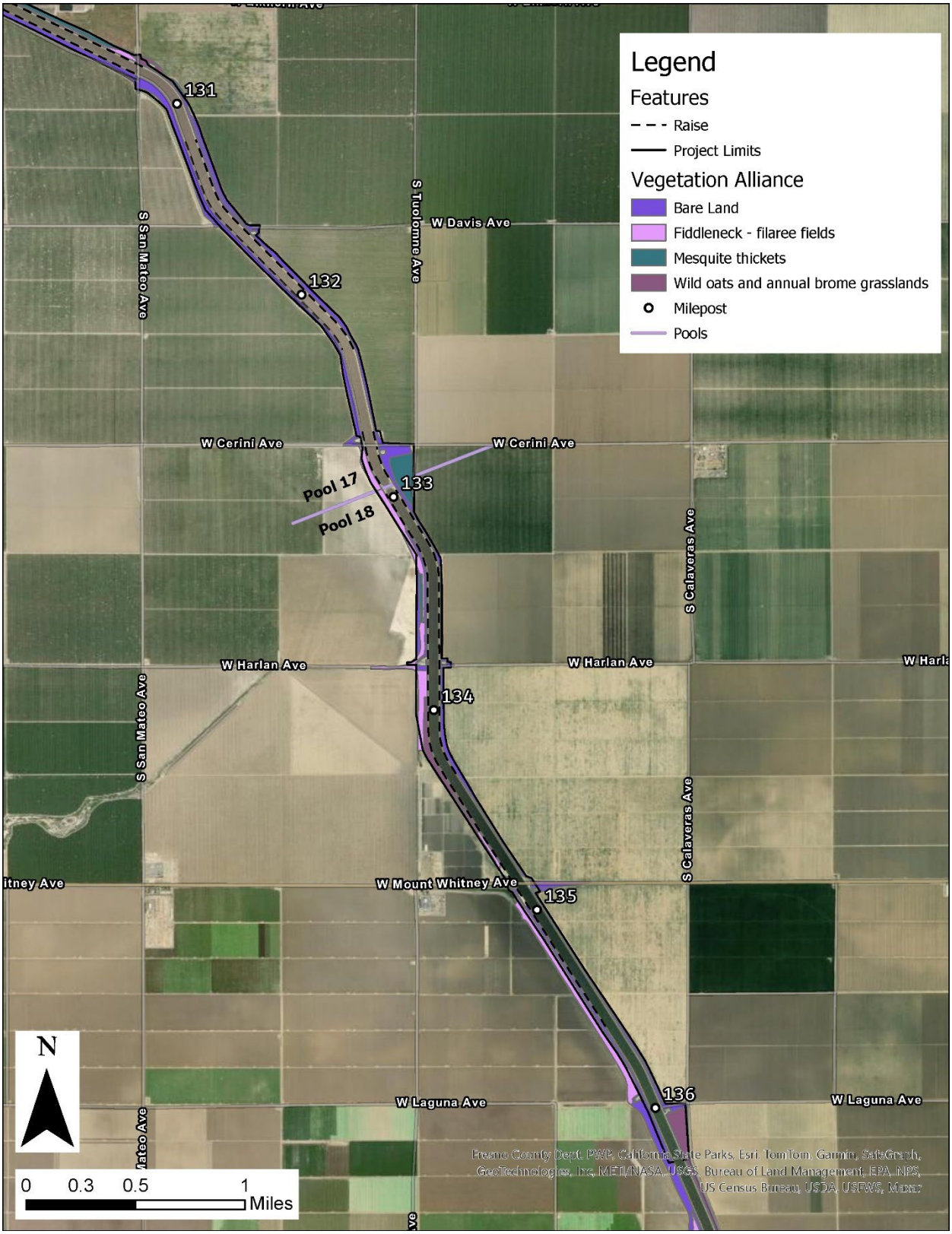


Figure 8. Pool 18 Vegetation Alliance Mapping.

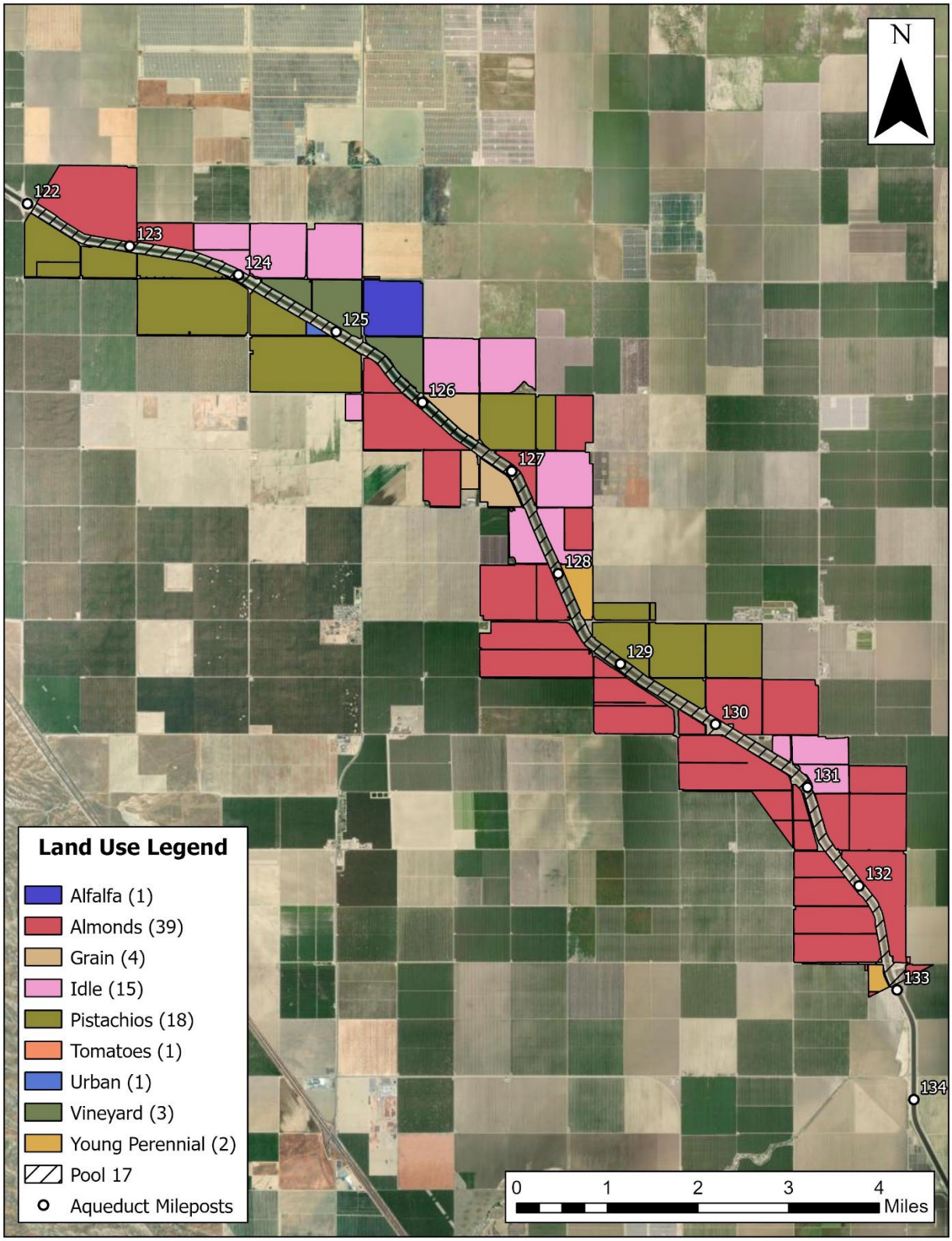


Figure 9. Adjacent Land Use Within Pool 17.

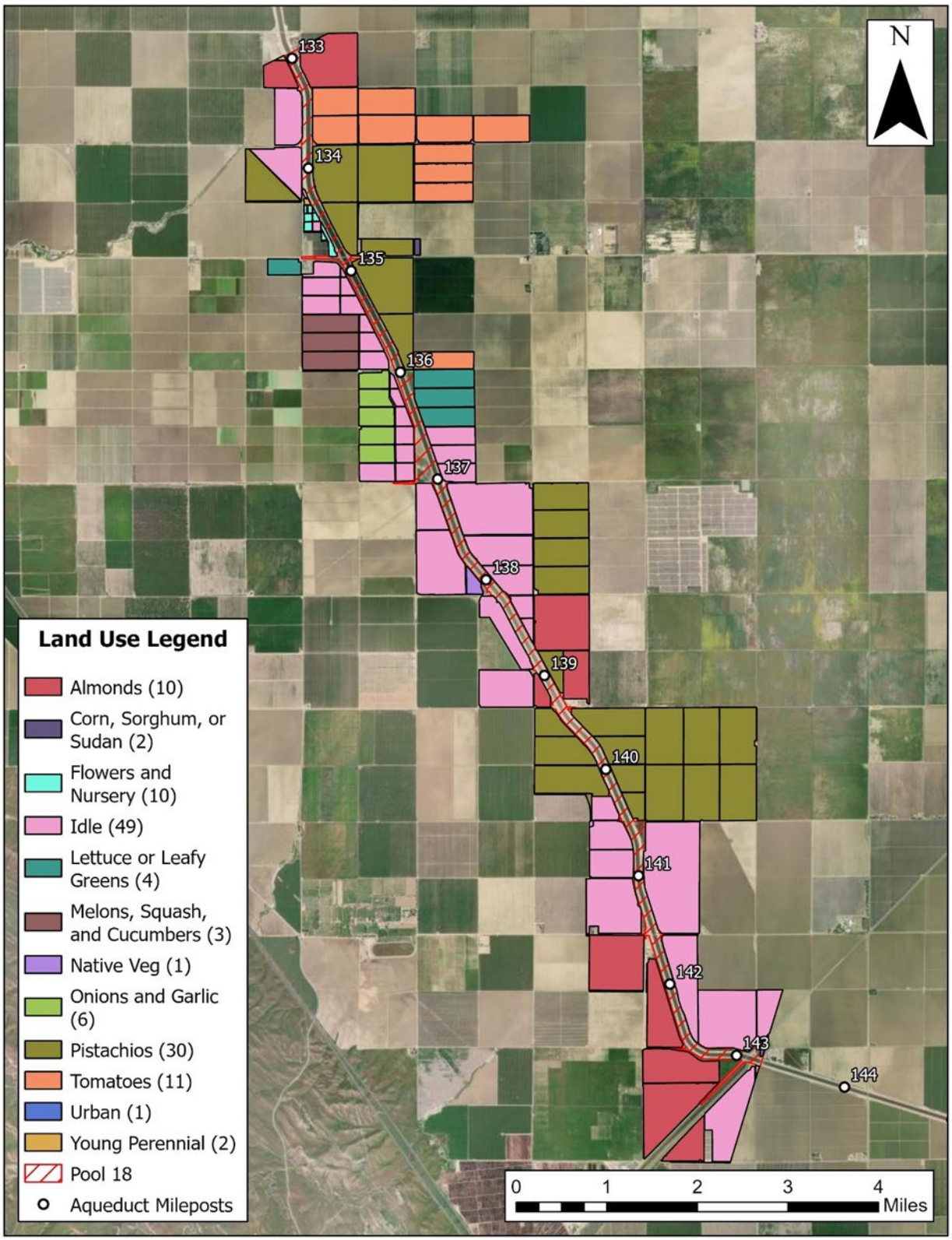


Figure 10. Adjacent Land Use Within Pool 18.

Name	Type	Acres	Sq Ft	Linear Feet
ED-1	Ephemeral Drainage	3.509	152,844	4,185
ED-2	Ephemeral Drainage	0.195	8,510	600
ED-3	Ephemeral Drainage	0.004	157	77
ED-4	Ephemeral Drainage	0.008	344	83
ED-5	Ephemeral Drainage	0.004	162	65
ED-6	Ephemeral Drainage	0.071	3,083	666
ED-7	Ephemeral Drainage	0.062	2,682	329
ED-8	Ephemeral Drainage	0.016	697	347
ED-9	Ephemeral Drainage	0.217	9,463	937
OW-1	Detention Basin	0.641	27,939	
OW-2	Perennial Pond	0.389	16,935	
OW-3	Detention Basin	3.594	156,561	
SW-1	Seasonal Wetland	0.448	19,509	
SW-2	Seasonal Wetland	81.688	3,558,339	
SW-3	Seasonal Wetland under RR Bridge (West)	0.026	1,115	
SW-4	Seasonal Wetland under RR Bridge (East)	0.010	426	
SW-5	Seasonal Wetland	131.082	5,709,948	
SW-6	Seasonal Wetland	14.956	651,479	
SW-7	Seasonal Wetland	152.365	6,637,006	

SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

Cantua Creek Survey Area
Concrete Inlet Structure
Rock Gabion Structure
Seasonal Wetland
Ephemeral Drainage
Ephemeral Drainage Centerline

San Luis Canal Embankment and Liner Raise Project

Figure 4-1
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 12/14/2021

Figure 11. Aquatic Resources Identified Adjacent to Project Site

Name	Type	Acres	Sq Ft	Linear Feet
ED-1	Ephemeral Drainage	3.509	152,844	4,185
ED-2	Ephemeral Drainage	0.195	8,510	600
ED-3	Ephemeral Drainage	0.004	157	77
ED-4	Ephemeral Drainage	0.008	344	83
ED-5	Ephemeral Drainage	0.004	162	65
ED-6	Ephemeral Drainage	0.071	3,083	666
ED-7	Ephemeral Drainage	0.062	2,682	329
ED-8	Ephemeral Drainage	0.016	697	347
ED-9	Ephemeral Drainage	0.217	9,463	937
OW-1	Detention Basin	0.641	27,939	
OW-2	Perennial Pond	0.389	16,935	
OW-3	Detention Basin	3.594	156,561	
SW-1	Seasonal Wetland	0.448	19,509	
SW-2	Seasonal Wetland	81.688	3,558,339	
SW-3	Seasonal Wetland under RR Bridge (West)	0.026	1,115	
SW-4	Seasonal Wetland under RR Bridge (East)	0.010	426	
SW-5	Seasonal Wetland	131.082	5,709,948	
SW-6	Seasonal Wetland	14.956	651,479	
SW-7	Seasonal Wetland	152.365	6,637,006	

SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

Cantua Creek Survey Area
Concrete Inlet Structure
Rock Gabion Structure
Seasonal Wetland
Ephemeral Drainage
Ephemeral Drainage Centerline

San Luis Canal Embankment and Liner Raise Project

Figure 4-2
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 12/14/2021

Figure 12. Aquatic Resources Identified Adjacent to Project Site

Name	Type	Acres	Sq Ft	Linear Feet
ED-1	Ephemeral Drainage	3.509	152,844	4,185
ED-2	Ephemeral Drainage	0.195	8,510	600
ED-3	Ephemeral Drainage	0.004	157	77
ED-4	Ephemeral Drainage	0.008	344	83
ED-5	Ephemeral Drainage	0.004	162	65
ED-6	Ephemeral Drainage	0.071	3,083	666
ED-7	Ephemeral Drainage	0.062	2,682	329
ED-8	Ephemeral Drainage	0.016	697	347
ED-9	Ephemeral Drainage	0.217	9,463	937
OW-1	Detention Basin	0.641	27,939	
OW-2	Perennial Pond	0.389	16,935	
OW-3	Detention Basin	3.594	156,561	
SW-1	Seasonal Wetland	0.448	19,509	
SW-2	Seasonal Wetland	81.688	3,558,339	
SW-3	Seasonal Wetland under RR Bridge (West)	0.026	1,115	
SW-4	Seasonal Wetland under RR Bridge (East)	0.010	426	
SW-5	Seasonal Wetland	131.082	5,709,948	
SW-6	Seasonal Wetland	14.956	651,479	
SW-7	Seasonal Wetland	152.365	6,637,006	

SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

Salt Creek Survey Area
Data Point
Concrete Inlet Structure
Ephemeral Drainage
Ephemeral Drainage Centerline

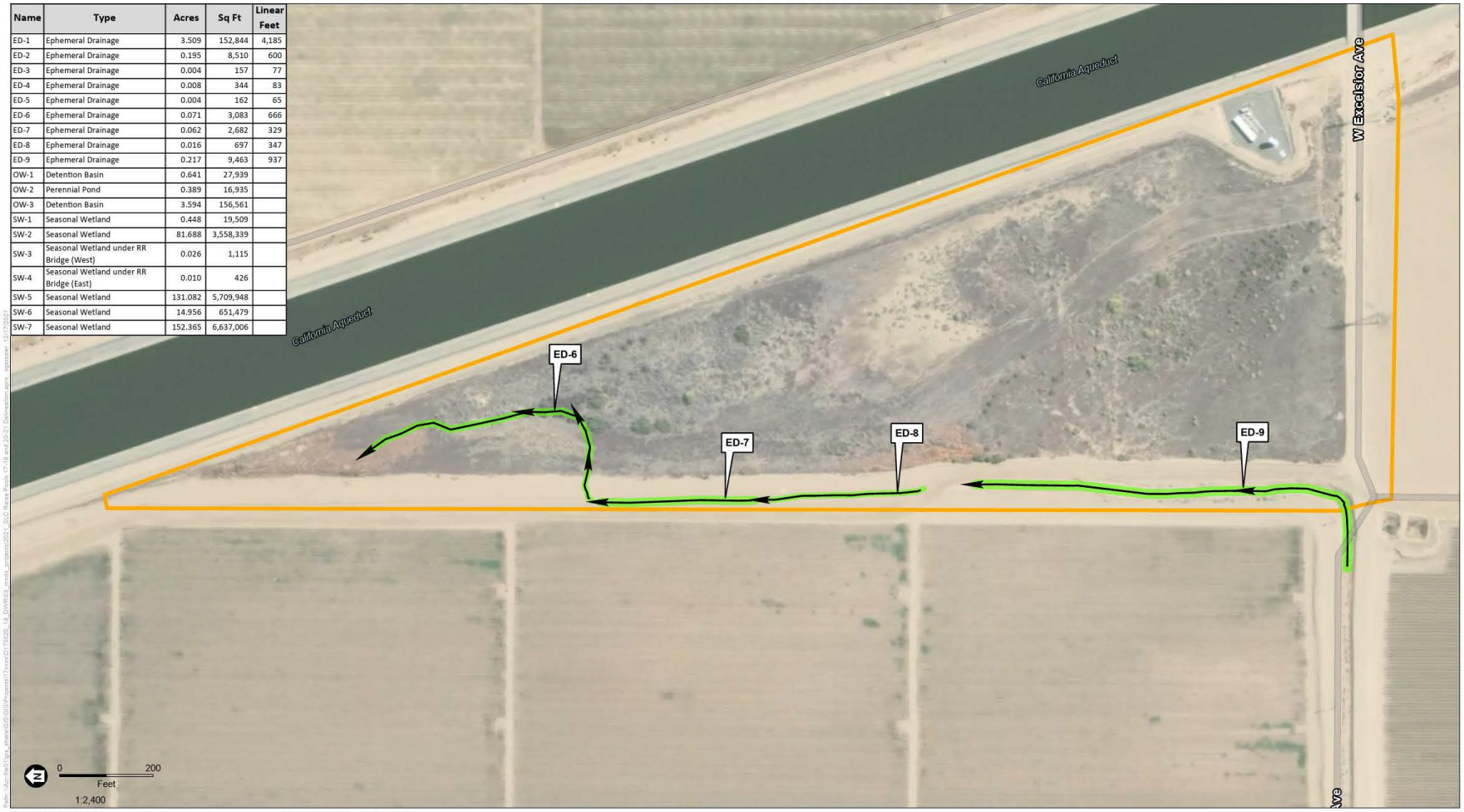
San Luis Canal Embankment and Liner Raise Project

Figure 4-3
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 12/14/2021

Figure 13. Aquatic Resources Identified Adjacent to Project Site

Name	Type	Acres	Sq Ft	Linear Feet
ED-1	Ephemeral Drainage	3.509	152,844	4,185
ED-2	Ephemeral Drainage	0.195	8,510	600
ED-3	Ephemeral Drainage	0.004	157	77
ED-4	Ephemeral Drainage	0.008	344	83
ED-5	Ephemeral Drainage	0.004	162	65
ED-6	Ephemeral Drainage	0.071	3,083	666
ED-7	Ephemeral Drainage	0.062	2,682	329
ED-8	Ephemeral Drainage	0.016	697	347
ED-9	Ephemeral Drainage	0.217	9,463	937
OW-1	Detention Basin	0.641	27,939	
OW-2	Perennial Pond	0.389	16,935	
OW-3	Detention Basin	3.594	156,561	
SW-1	Seasonal Wetland	0.448	19,509	
SW-2	Seasonal Wetland	81.688	3,558,339	
SW-3	Seasonal Wetland under RR Bridge (West)	0.026	1,115	
SW-4	Seasonal Wetland under RR Bridge (East)	0.010	426	
SW-5	Seasonal Wetland	131.082	5,709,948	
SW-6	Seasonal Wetland	14.956	651,479	
SW-7	Seasonal Wetland	152.365	6,637,006	



SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

Salt Creek Survey Area
Ephemeral Drainage Centerline
Ephemeral Drainage

San Luis Canal Embankment and Liner Raise Project

Figure 4-4
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 12/14/2021

Figure 14. Aquatic Resources Identified Downstream Project Site

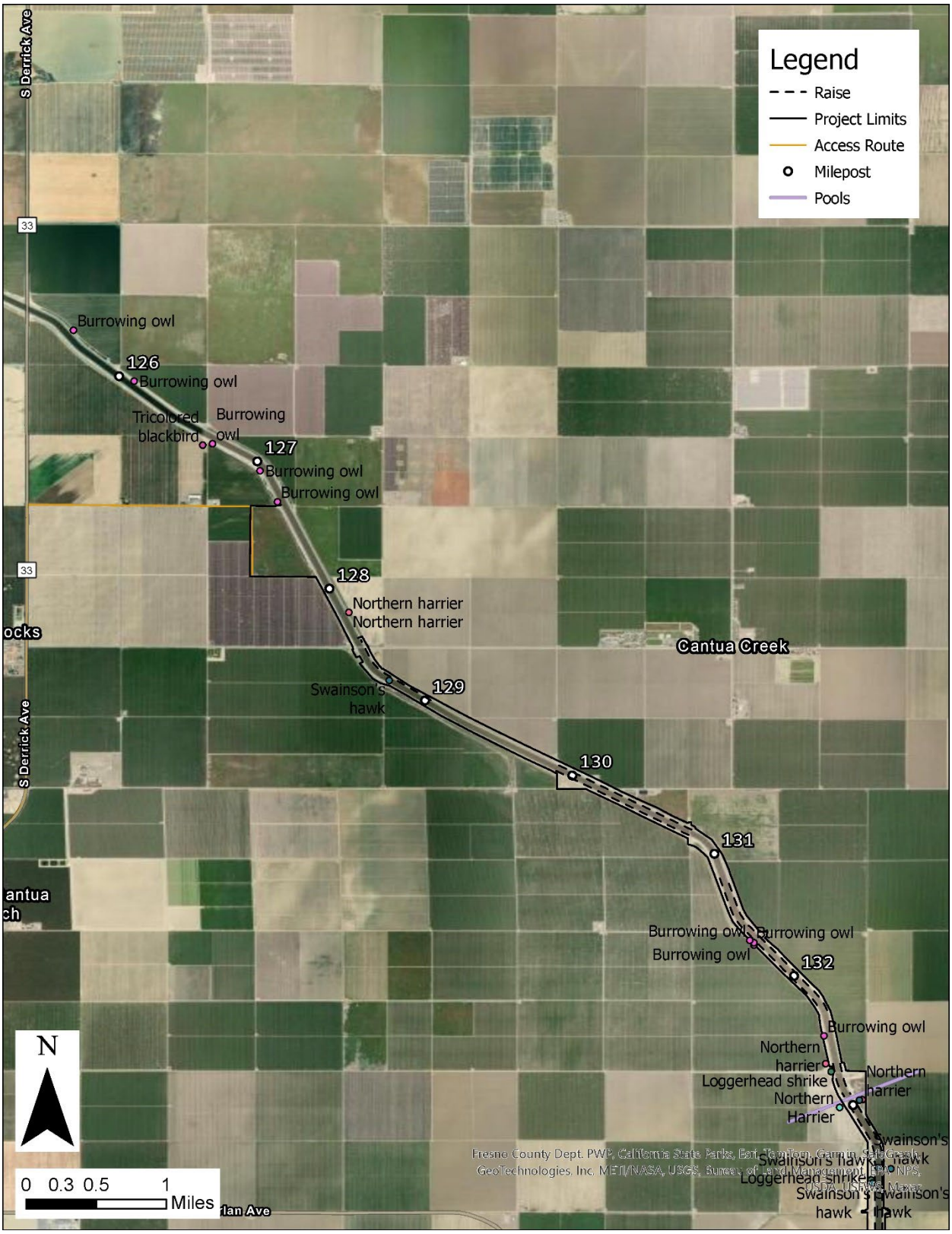


Figure 15. Species Observations Made in Pool 17.

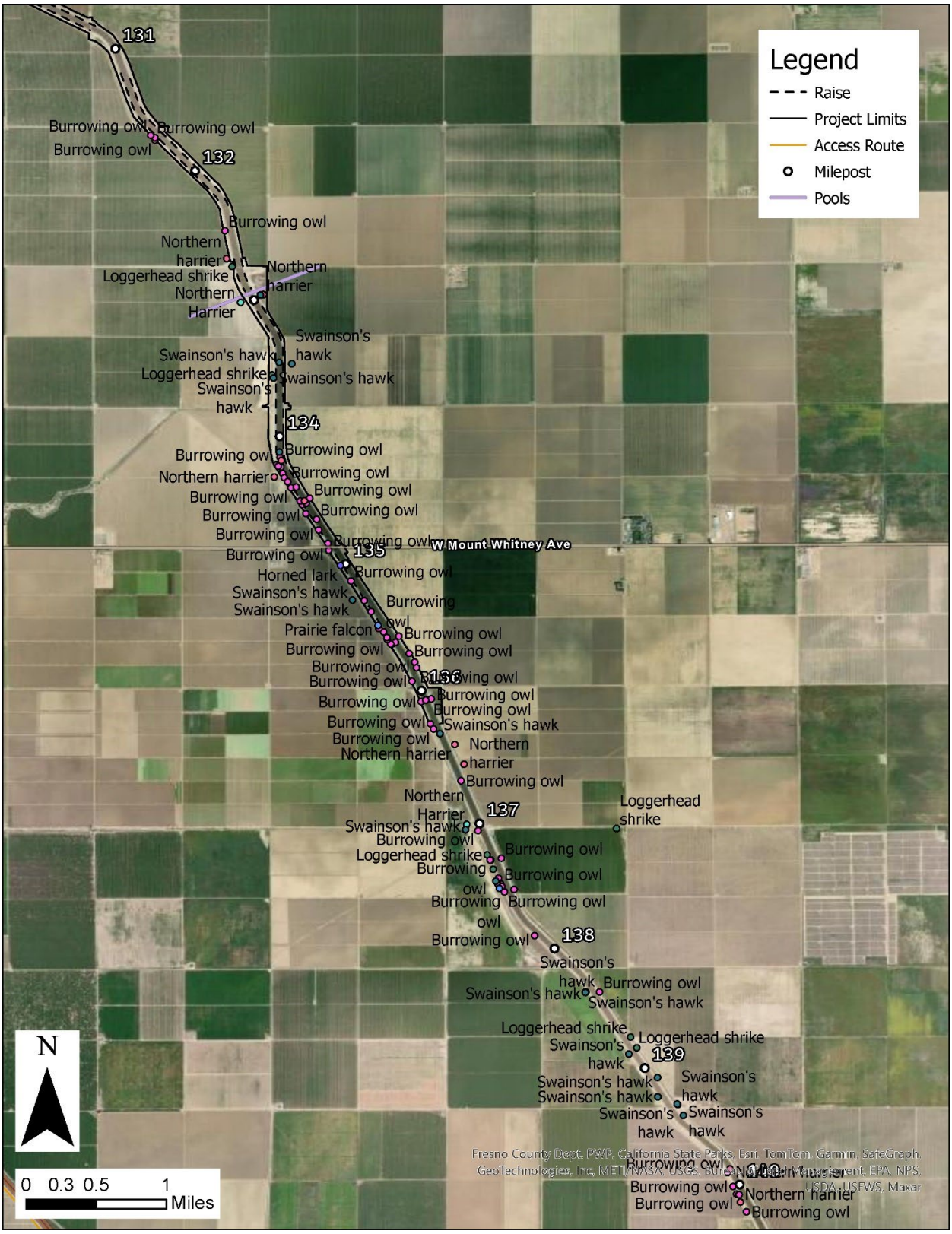


Figure 16. Species Observations Made in Pool 18.

Appendix B
Database Search Results

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

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Location

Fresno County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building

2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

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Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

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2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Fresno Kangaroo Rat Dipodomys nitratoides exilis Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5150	**Endangered**
Giant Kangaroo Rat Dipodomys ingens Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6051	**Endangered**
San Joaquin Kit Fox Vulpes macrotis mutica Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2873	**Endangered**

Birds

NAME	STATUS
California Condor Gymnogyps californianus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8193	**Endangered**

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard Gambelia silus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/625	**Endangered**

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Northwestern Pond Turtle Actinemys marmorata — **Proposed Threatened**
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/1111

Amphibians

NAME	STATUS
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	**Threatened**
Western Spadefoot Spea hammondii Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5425	**Proposed Threatened**

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	**Candidate**

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp Branchinecta lynchi Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/498	**Threatened**

Flowering Plants

NAME	STATUS

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San Joaquin Wooly-threads Monolopia (=Lembertia) congdonii Endangered

Wherever found

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/3746

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

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There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week

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12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

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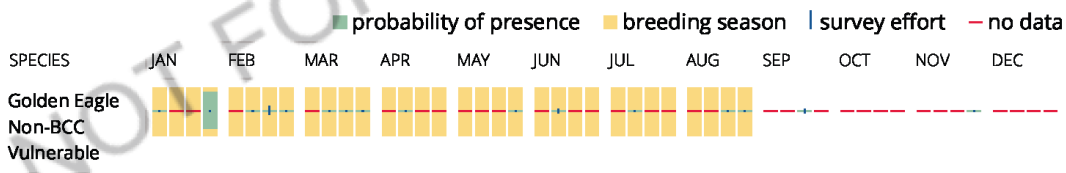

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

NOT FOR CONSULTATION

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

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NAME	BREEDING SEASON
Belding's Savannah Sparrow Passerculus sandwichensis beldingi This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Bullock's Oriole Icterus bullockii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull Larus californicus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
Clark's Grebe Aechmophorus clarkii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Common Yellowthroat Geothlypis trichas sinuosa This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31

Golden Eagle Aquila chrysaetos — **Breeds Jan 1 to Aug 31**

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Spinus lawrencei — **Breeds Mar 20 to Sep 20**

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Northern Harrier Circus hudsonius — **Breeds Apr 1 to Sep 15**

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/8350

Santa Barbara Song Sparrow Melospiza melodia graminea — **Breeds Mar 1 to Sep 5**

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/5513

Tricolored Blackbird Agelaius tricolor — **Breeds Mar 15 to Aug 10**

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Western Grebe aechmophorus occidentalis — **Breeds Jun 1 to Aug 31**

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/6743

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

■ probability of presence ■ breeding season | survey effort – no data

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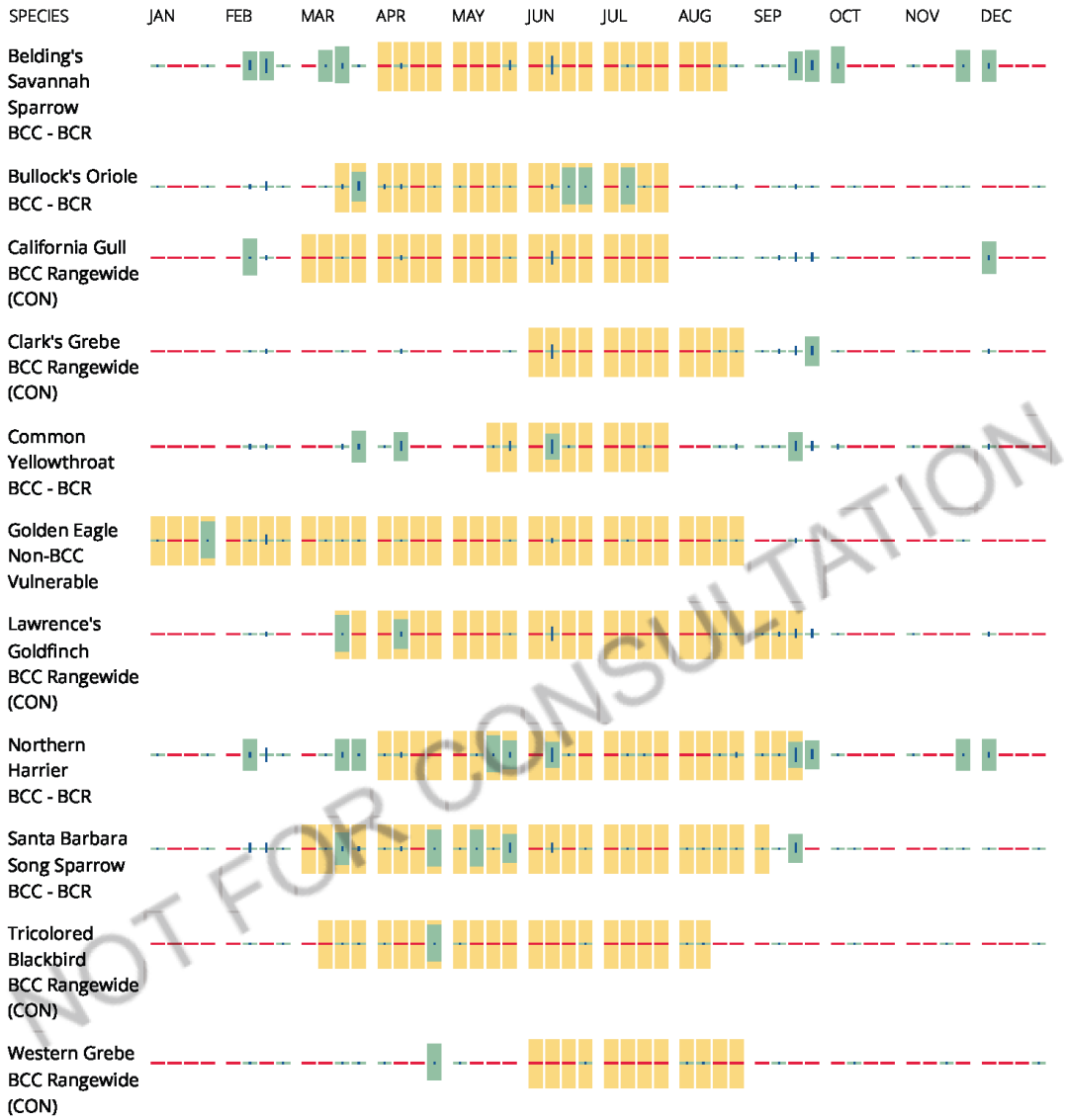

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Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

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Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1Kx
- PEM1C
- PEM1Ch
- PEM1Ax

FRESHWATER POND

- PUBFx

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PUSAx
PUSCx

RIVERINE
R2UBHx
R2UBF
R4SBCx
R5UBF

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

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Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should

seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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Rare Plant Inventory Nine Quad Search

ScientificName	CommonName	Family	Lifeform	CRPR	GRank	SRank	CESA	FESA
Acanthomintha obovata ssp. *obovata*	San Benito thorn-mint	Lamiaceae	annual herb	4.2	G4T3T4	S3S4	None	None
Amsinckia furcata	forked fiddleneck	Boraginaceae	annual herb	4.2	G4	S4	None	None
Androsace elongata ssp. *acuta*	California androsace	Primulaceae	annual herb	4.2	G5?T3T4	S3S4	None	None
Atriplex coronata var. *coronata*	crownscale	Chenopodiaceae	annual herb	4.2	G4T3	S3	None	None
Atriplex coronata var. *vallicola*	Lost Hills crownscale	Chenopodiaceae	annual herb	1B.2	G4T3	S3	None	None
Benitoa occidentalis	western lessingia	Asteraceae	annual herb	4.3	G3G4	S3S4	None	None
Clarkia breweri	Brewer's clarkia	Onagraceae	annual herb	4.2	G4	S4	None	None
Deinandra halliana	Hall's tarplant	Asteraceae	annual herb	1B.1	G3	S3	None	None
Delphinium recurvatum	recurved larkspur	Ranunculaceae	perennial herb	1B.2	G2?	S2	None	None
Eriastrum sparsiflorum	few-flowered eriastrum	Polemoniaceae	annual herb	4.3	G5	S4	None	None
Eriogonum gossypinum	cottony buckwheat	Polygonaceae	annual herb	4.2	G3G4	S3S4	None	None
Eriogonum nudum var. *indictum*	protruding buckwheat	Polygonaceae	perennial herb	4.2	G5T4	S4	None	None
Eriogonum vestitum	Idria buckwheat	Polygonaceae	annual herb	4.3	G3	S3	None	None
Eschscholzia hypecoides	San Benito poppy	Papaveraceae	annual herb	4.3	G4	S4	None	None
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	4.2	G3	S3	None	None
Layia heterotricha	pale-yellow layia	Asteraceae	annual herb	1B.1	G2	S2	None	None
Layia munzii	Munz's tidy-tips	Asteraceae	annual herb	1B.2	G2	S2	None	None
Lepidium jaredii ssp. *album*	Panoche pepper-grass	Brassicaceae	annual herb	1B.2	G2G3T2T3	S2S3	None	None
Madia radiata	showy golden madia	Asteraceae	annual herb	1B.1	G3	S3	None	None
Malacothamnus aboriginum	Indian Valley bushmallow	Malvaceae	perennial deciduous shrub	1B.2	G3	S3	None	None
Microseris sylvatica	sylvan microseris	Asteraceae	perennial herb	4.2	G4	S4	None	None
Monardella antonina ssp. *benitensis*	San Benito monardella	Lamiaceae	perennial rhizomatous herb	4.3	G4T3	S3	None	None
Monolopia congdonii	San Joaquin woollythreads	Asteraceae	annual herb	1B.2	G2	S2	None	FE
Navarretia panochensis	Panoche navarretia	Polemoniaceae	annual herb	1B.3	G3	S3	None	None
Navarretia prostrata	prostrate vernal pool navarretia	Polemoniaceae	annual herb	1B.2	G2	S2	None	None
Senecio aphanactis	chaparral ragwort	Asteraceae	annual herb	2B.2	G3	S2	None	None
Trichostema ovatum	San Joaquin bluecurls	Lamiaceae	annual herb	4.2	G3	S3	None	None

Appendix C
Aquatic Resource Report

SAN LUIS CANAL EMBANKMENT AND LINER RAISE PROJECT

Draft Aquatic Resources Delineation Report

Prepared for
California Department of Water Resources
Division of Engineering
South Central Region Office

April 2022

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Division of Engineering
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April 2022

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Bend	Orlando	San Jose
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Destin	Portland	Seattle
Irvine	Sacramento	Tampa
Los Angeles	San Diego	
Oakland	San Francisco	

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CHAPTER 1
Introduction

This report documents the results and conclusions of an aquatic resources delineation conducted for the California Department of Water Resources' (DWR's) San Luis Canal Embankment and Liner Raise Project (Proposed Project) in June and September 2021. The Proposed Project involves raising the embankment in Pools 17, 18, 20, and 21—a 38-mile segment of the California Aqueduct. The Proposed Project would also involve extending the concrete liner within the canal prism and incorporating structure modifications. Structures that would be modified include turnouts and turn-ins, irrigation and utility crossings, check structures, and bridge crossings. The Proposed Project area consists of a 38-mile segment of the San Luis Canal and adjacent areas that would be subject to effects from implementation of the Proposed Project. This area is referred to as the Area of Interest (AOI).

On behalf of DWR, Environmental Science Associates (ESA) investigated the extent of aquatic resources within the aquatic resources study area, comprising three distinct locations previously identified as potentially supporting aquatic resources within the AOI, that may be subject to regulation under the Clean Water Act (CWA) as well as State regulations, including the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). This report also provides background information necessary to support future permit applications (if any) for the Proposed Project under Sections 404 and 401 of the CWA, the California Water Resources Control Board's Dredge or Fill Procedures, and Section 1600 of California Fish and Game Code (CFGC) administered by California Department of Fish and Wildlife (CDFW).

An aquatic resource delineation involves determining the boundaries between wetlands, waters, and surrounding uplands through the investigation of the three parameters that define a wetland: vegetation, soils, and hydrology, as well as those parameters that define non-wetland waters ("other waters") potentially subject to State and/or federal jurisdiction. The aquatic resources study area was determined via desktop analysis in collaboration with DWR South Central Regional Office biologists familiar with the Proposed Project's AOI. All aquatic resources and their extent and boundaries identified in this report are based on ESA's field observations and regulatory interpretation informed by prior court case decisions.

1.1 Aquatic Resources Study Area

The aquatic resources study area is in Fresno County, California, within the city of Huron and the community of Cantua Creek. The aquatic resources study area falls within the *Tres Picos Farms* and *Huron* California U.S. Geological Survey (USGS) 7.5-minute series quadrangles. The approximate centroid of the Cantua Creek study area is 36.44070278°, -120.30388333°, the Salt

Creek study area is 36.40209167°, -120.28781944°, and the Arroyo Pasajero study area is 36.19611111°, -120.06174167°. The aquatic resources study area is a subset of the AOI where the Cantua Creek and Arroyo Pasajero stream groups, as described under Section 2.3 *Hydrology*, intercept the AOI. The aquatic resources study area is approximately 473.68 acres in size (**Figures 1 and 2**).

1.1.1 Directions to the Survey Areas within the Study Area

The study area comprises three discrete locations within the AOI, which are located along different predominant drainages defining each sub-region. As such, the study area is discussed as the drainage-specific locations.

Directions to the Cantua Creek study area from Sacramento:

- Take Interstate 5 South from Sacramento.
- Take exit 357 to West Kamm Avenue.
- Turn left onto West Kamm Avenue.
- Turn right onto California Highway (CA) 33 South.
- Turn left onto West Clarkson Avenue; the Cantua Creek study area is immediately southwest of the West Clarkson Avenue and San Luis Canal intersection.

Directions to the Salt Creek study area from Sacramento:

- Take Interstate 5 South from Sacramento.
- Take exit 349 to Derrick Avenue.
- Turn left onto CA-33 North/South Derrick Avenue.
- Turn right onto West Harlan Avenue.
- Merge onto South Stanislaus Avenue.
- Continue straight onto West Mt. Whitney Avenue.
- Turn right onto South Tuolumne Avenue.
- Turn left at the first cross street onto West Laguna Avenue; the Salt Creek study area is immediately southeast of the West Laguna Avenue terminus.

Directions to the Arroyo Pasajero study area from Sacramento:

- Take Interstate 5 South from Sacramento.
- Take exit 325 to Jayne Avenue.
- Turn left onto Jayne Avenue.
- Turn right onto West Gale Avenue.
- Turn left onto access road/ramp approximately 1,500 feet west of the West Gale/South Madera Avenue intersection.

- Continue east on the access road/ramp; the Arroyo Pasajero study area is immediately west and northwest of the access gate. (Access to the northern portion of the study area is via the San Luis Canal access road.)

Note: Please contact DWR for access and escort to/from each survey area.

1.2 Contact Information

1.2.1 Applicant

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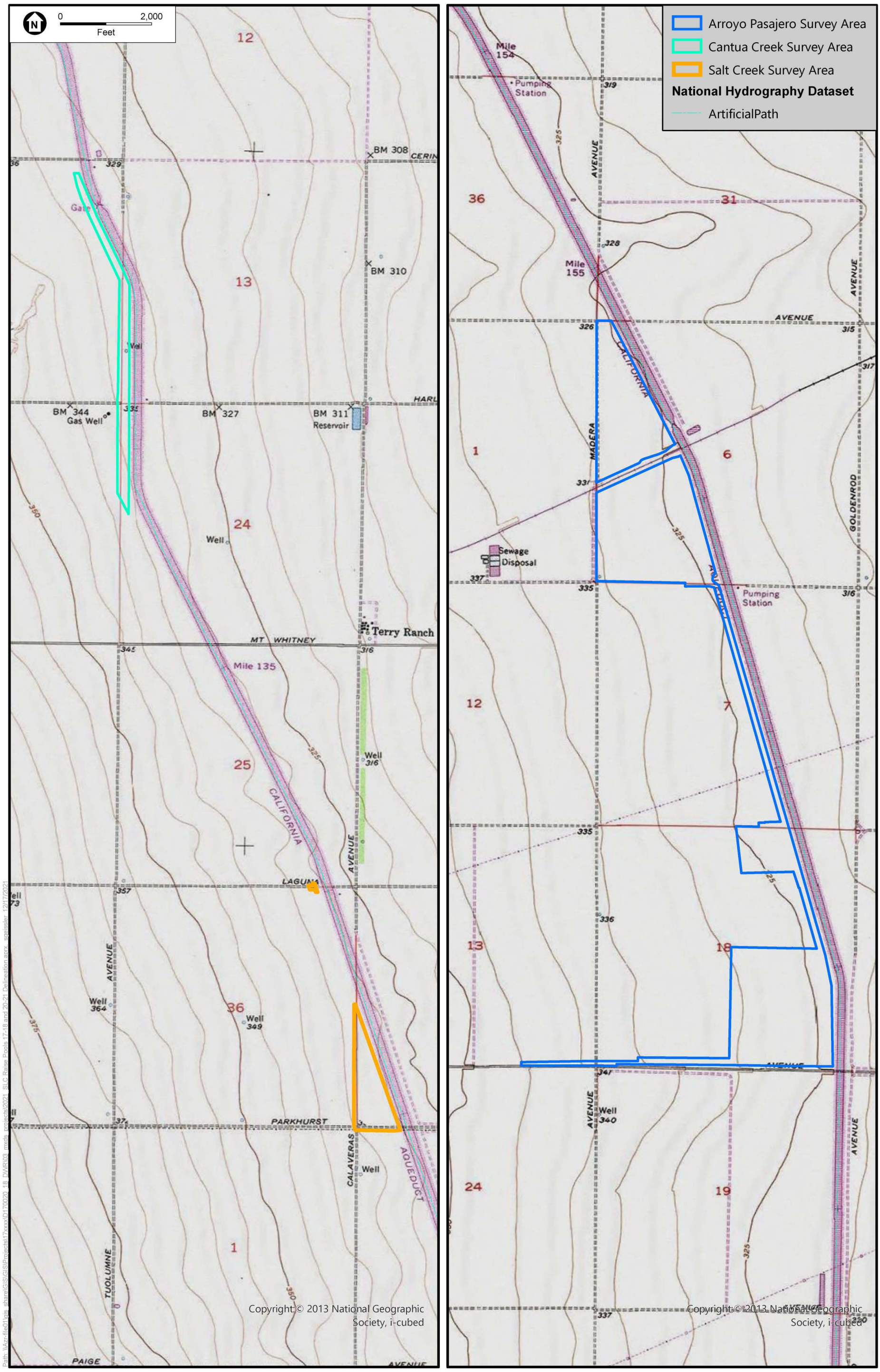
SOURCE: DWR, 2020; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 1
Regional Location



SOURCE: NHD; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 2
Study Area

ESA

CHAPTER 2
Existing Conditions

The aquatic resources study area is located in the southern San Joaquin Valley, within the San Joaquin sub-region of the Great Central Valley floristic province of California. Historically, this region supported extensive grasslands, marshes, vernal pools, riparian woodlands alkali sink vegetation, and stands of valley oak (*Quercus lobata*). The southern portion of the San Joaquin Valley supports some desert elements (Baldwin et al. 2012), such as hot, dry summers, high sun exposure rates, and drought-tolerant vegetation communities. Agricultural development has resulted in substantial changes to and conversions of these habitats. Currently, regional land uses are mainly agricultural with interspersed rural residential and commercial structures.

The northern portion of the aquatic resources study area is bound to the north by West Clarkson Avenue, to the east by South Sonoma Avenue, to the west by CA-33, and to the south by West Paige Avenue. The southern portion of the aquatic resources study area is bound to the north by CA-198, South Goldenrod Avenue to the east, the city of Huron and South Siskiyou Avenue to the west, and West Gale Avenue to the south. Land uses within and adjacent to the aquatic resources study area are characterized primarily by agricultural production with sparse rural residential and commercial uses.

2.1 Land Cover Types and Vegetation Communities

This section describes the vegetation communities and habitats that occur in the aquatic resources study area. The vegetation community descriptions and terminology used are based on CDFW's *List of California Terrestrial Natural Communities Recognized by The California Natural Diversity Database* (CDFW 2021), and Holland's *Preliminary Description of Terrestrial Natural Communities of California* (Holland 1986). Vegetation communities are assemblages of plant species that occur together in the same area and are defined by species composition (**Appendix A**) and relative abundance.

Land cover types occurring within the aquatic resources study area were observed by ESA biologists Eric Christensen and Megan Minter in 2021 during June and September site reconnaissance surveys and derived from a review of satellite imagery. Land cover types in the aquatic resources study area consist of cropland (including dryland grain crops, irrigated grain crops, irrigated hayfield, and irrigated row and field crops), deciduous orchard, urban (landscaped and developed) land cover, grassland, alkali desert scrub, ruderal habitat, and the aquatic habitats of Cantua, Salt, and Arroyo Pasajero Creeks and constructed basins within the Westside Detention Basin (WSDB).

2.1.1 Aquatic Feature Types and Vegetation Communities

Seasonal Wetland

Seasonal wetland features within the aquatic resources study area were dominated by annual, emergent herbaceous vegetation. Dominant species within these features include tall flatsedge (*Cyperus eragrostis*), Bermuda grass (*Cynodon dactylon*), California sunflower (*Helianthus californicus*), Italian rye grass (*Festuca perennis*), field barley (*Hordeum marinum*), alkali pepperweed (*Lepidium dictyotum*), perennial pepperweed (*L. latifolium*), shinning pepperweed (*L. nitidum*), pennyroyal (*Mentha pulegium*), rabbitsfoot grass (*Polypogon monspeliensis*), cocklebur (*Xanthium strumarium*), sheep sorrel (*Rumex acetosella*), curly dock (*R. crispus*), and common spikeweed (*Centromadia pungens*). Very small patches of broadleaf cattail (*Typha latifolia*), sandbar willow (*Salix exigua*), Fremont cottonwood (*Populus fremontii*) saplings, and Mexican fan palm (*Washingtonia robusta*) saplings that are too small to be considered a separate community type were observed immediately adjacent to and/or within drain inlet structures at the lowest point of certain features (see Photo 1 in **Appendix F**), typically, where flow is impeded and retained. Such control structures include closed gate valves, or gabions structures near inlets. Seasonal wetlands in the aquatic resources study area include the terminus of Cantua Creek and the majority of constructed basins associated within the WSDB.

Valley Foothill Riparian

Valley foothill riparian is a plant community that supports woody vegetation found along rivers, creeks, and streams. This shrub- or tree-dominated community ranges in density from partial (>20 percent) shrub/tree cover to a fully closed canopy of large mature shrubs or trees. Vegetation observed included Fremont cottonwood, Athel tamarisk (*Tamarix aphylla*), smallflower tamarisk (*T. parviflora*), arroyo willow (*S. lasiolepis*), Gooding's willow (*S. gooddingii*), big saltbush (*Atriplex lentiformis*), and silverscale saltbush (*Atriplex argentea*). Understory is predominantly composed of cocklebur, mugwort (*Artemisia douglasiana*), arroyo willow and Fremont cottonwood saplings, California sunflower, and mule fat (*Baccharis salicifolia*). Valley foothill riparian habitat within the aquatic resources study area is formed by vegetation along portions of the constructed basins associated within the WSDB.

Ephemeral Drainage

Ephemeral drainage includes all areas that are largely unvegetated (less than 5 percent vegetation cover) and convey water immediately after precipitation events or other sources of water input (e.g., irrigation runoff) throughout the year. This includes Cantua and Salt Creeks and an unnamed tributary to Salt Creek.

Open Water

Open water includes two detention basins and a perennial pond, all of which are unvegetated (less than 5 percent vegetation cover) and remain inundated for an extended period of time throughout the year. All open water features are located within the WSDB.

2.1.2 Terrestrial Land Cover Types and Vegetation Communities

Non-Native Annual Grassland

California annual grassland consists of sparse to dense coverage of non-native grasses often associated with numerous other annual and perennial herbs. Non-native grassland species generally respond well to moderate disturbance, such as grazing, which may have played a role in their widespread establishment. Annual grasslands provide a nearly continuous ground coverage, and generally have low habitat structure and diversity as a result of historic management and disturbances. Species observed in this community include slender oat (*Avena barbata*), foxtail chess (*Bromus madritensis*), and ripgut brome (*Bromus diandrus*), as well as sporadic broadleaf species such as Russian thistle (*Salsola tragus*), prickly lettuce (*Lactuca serriola*), and cheeseweed mallow (*Malva parviflora*). Non-native annual grassland occurs throughout the aquatic resources study area in uplands along roads and cropland margins, primarily near Salt Creek and Arroyo Pasajero.

Alkali Desert Scrub

Alkali desert scrub habitat within the aquatic resources study area is primarily found in the northern end of the aquatic resources study area, where agriculture and associated runoff are absent. This habitat type is typified by xeric conditions and dominated by small- to moderate-size shrubs. Plants commonly observed growing in this area include cattle saltbush (*Atriplex polycarpa*), big saltbush, California buckwheat (*Eriogonum fasciculatum*), Chilean mesquite (*Prosopis chilensis*), and Coulter's horseweed (*Laennecia coulteri*). Alkali desert scrub primarily occurs in the uplands adjacent to Cantua Creek.

2.1.3 Developed Land Cover Types

Cropland

Cropland includes dryland grain crops, irrigated grain crops, irrigated hayfield, and irrigated row and field crops. Cropland is generally planted on an annual basis and harvested within a single growing season. Similar to orchards, herbaceous field crops consist of a single plant species planted in rows. Herbaceous field crops are often managed over a multi-year process of crop rotation to maintain soil fertility. As a result, plant crop composition can vary from year to year. The most commonly cultivated herbaceous field crop observed within the aquatic resources study area was alfalfa (*Medicago sativa*), with other crops including onions (*Allium cepa*), garlic (*Allium sativum*), and tomatoes (*Solanum lycopersicum*). Cropland occurs at multiple locations adjacent to the aquatic resources study area, mainly near Cantua Creek and Arroyo Pasajero.

Orchard

Orchards occur throughout the area surrounding the aquatic resources study area and represent a dominant land cover type. Each orchard consists of a single plant species planted in rows, most commonly almond (*Prunus dulcis*) and pistachio (*Pistacia vera*). Most orchards have sparse herbaceous vegetation (similar to those found in non-native annual grassland) growing in the

understory, while others are actively maintained as barren. Orchard occurs at multiple locations adjacent to the aquatic resources study area, mainly near Cantua Creek and Salt Creek.

Developed

A small portion of the aquatic resources study area comprises landscaped areas made up of constructed structures (e.g., pump stations, bridges, portions of the San Luis Canal). This land cover type also includes unvegetated areas occupied by buildings, roads, parking lots, paved areas, and other developed facilities, as well as heavily disturbed areas. Developed portions of the aquatic resources study area support little to no vegetative cover, with few native species. Species observed in these habitats include the same as those described under *Ruderal*, below. Developed land cover occurs along roads, unpaved access roads, the San Luis Canal, and paved areas adjacent to the aquatic resources study area.

Ruderal

Ruderal vegetation is composed of plants that are often the first to colonize a disturbed area, and spontaneously arise and spread widely without human intervention. In California, ruderal vegetation is often composed of an assemblage of non-native grasses and forbs. Common species in this habitat type include pigweed amaranth (*Amaranthus albus*), mustard (*Hirschfeldia incana*), Saharan mustard (*Brassica tournefortii*), tocalote (*Centaurea melitensis*), yellow star thistle (*Centaurea solstitialis*), bull thistle (*Cirsium vulgare*), large flowered sand spurry (*Spergularia macrotheca*), mat amaranth (*Amaranthus blitoides*), field bindweed (*Convolvulus arvensis*), perennial pepperweed, prickly Russian thistle, American nightshade (*Solanum americanum*), common sow thistle (*Sonchus oleraceus*), woolly mullein (*Verbascum thapsus*), and non-native grasses such as those described under *Non-Native Annual Grassland*.

Ruderal vegetation was observed along and within previously disturbed areas, along roads and the San Luis Canal, in uplands adjacent to drain inlet and outlet structures, along the peripheries of cropland and deciduous orchards, and interspersed within other vegetative community types. Ruderal vegetation is present adjacent to active agricultural activities and roads, where recent or routine disturbance occurs. This vegetation type occurs along all locations within the aquatic resources study area that abut roads and actively maintained cropland and orchards.

2.2 Soils

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey was consulted to determine the soil units occurring within the aquatic resources study area. The *Custom Soil Resource Report for Santa Clara Area, California, Western Part* (NRCS 2021a; included as **Appendix B**) describes four soil units occurring within the aquatic resources study area. Of those, none contain components listed by the NRCS on the national hydric soils list for Fresno County, California, Western Part (NRCS 2021b). A brief description of each soil unit is provided below. **Figures 3-1** through **3-8** provide a series of soils maps showing the soil units in the aquatic resources study area, and Appendix B provides the source of the following descriptions:

- **Ciervo clay, 0 to 2 percent slopes,** is not listed as hydric. This soil unit occurs in alluvial fan skirts with parent material as alluvium derived from calcareous sedimentary rock. This is a moderately well-drained soil with a high water capacity of 9.8 inches. The map unit composition is 80 percent Ciervo clay and similar soils and 20 percent minor components.
- **Cerini clay loam, 0 to 2 percent slopes,** is not listed as hydric. This soil unit occurs in alluvial fans with parent material as alluvium derived from calcareous sedimentary rock. This is a well-drained soil with a high water capacity of 9.6 inches. The map unit composition is 85 percent Cerini clay loam and similar soils and 15 percent minor components.
- **Excelsior sandy loam, sandy substratum, 0 to 2 percent slopes,** is not listed as hydric. This soil unit occurs in alluvial fans and floodplains with parent material derived from calcareous sedimentary rock. This is a well-drained soil with a moderate water capacity of 6.8 inches. The map unit composition is 85 percent Excelsior, sandy loam, sandy substratum, and similar soils and 15 percent minor components.
- **Westhaven clay loam, 0 to 2 percent slopes,** is not listed as hydric. This soil unit occurs in alluvial fans with parent material as alluvium derived from calcareous sedimentary rock. This is a well-drained soil with a high water capacity of 10.5 inches. The map unit composition is 85 percent Westhaven clay loam and similar soils and 15 percent minor components.

2.3 Hydrology

The aquatic resources study area is located in Fresno County, near the southwestern end of the San Joaquin Valley. The majority of the aquatic resources study area is drained by constructed and natural channels that have been artificially realigned to flow through and around areas of agricultural and other development. Eastward water flow is impeded by the San Luis Canal and agricultural channels. Substantial flow is largely ephemeral to seasonal and is concentrated into channels, ditches, and canals that ultimately parallel the San Luis Canal and flow south toward the former Tulare Lake. These features eventually flow into irrigated agricultural fields in the northern portion of the aquatic resources study area, and into the WSDB in the southern portion of the aquatic resources study area. The hydrology in the aquatic resources study area has been substantially altered by agricultural development since the latter half of the 1800s (San Francisco Call 1898). All of the streams in the aquatic resources study area have been channelized, relocated, or altered in a variety of ways.

The northern portion of the aquatic resources study area (generally near the city of Huron and further north) is located in the Cantua Creek watershed and drains the eastern facing portion of the Coast Range immediately west of the aquatic resources study area. The Cantua Creek watershed includes five major creeks: Arroyo Hondo, Cantua, Salt, Martinez, and Domengine Creeks. Floodwaters from these creeks terminate at four locations, or basins, along a 13-mile stretch of the San Luis Canal, with Martinez Creek converging into Salt Creek roughly 3 miles upstream of the San Luis Canal (California Department of Water Resources 2021).

The southern portion of the aquatic resources study area (generally south of CA-198) is located in the Arroyo Pasajero watershed and also drains the eastern facing portion of the Coast Range west of the aquatic resources study area. The Arroyo Pasajero watershed includes four ephemeral creeks that are tributaries to the Arroyo Pasajero Creek: Zapato Chino, Los Gatos, Warthan, and Jacalitos Creeks. These creeks converge into large drainage channels and convey significant

floodwater and sediment to Arroyo Pasajero Creek and ultimately the WSDB basins. Features such as a dike, gabion weirs, drain inlets, and a rubber dam were built into the WSDB basins and San Luis Canal to control flows, manage sediment, and protect adjacent properties (California Department of Water Resources 2021). Flow from the Arroyo Pasajero watershed terminates in the constructed basins comprising the WSDB.

None of the drainages in the aquatic resources study area ultimately connect to any waters that are tributary to streams considered traditional navigable waters.

2.4 Climate

The overall San Joaquin Valley climate is Mediterranean in nature, which is characterized by warm to hot, dry summers and cool, wet winters, with the bulk of precipitation occurring as rain in the winter months. The climate in the Fresno County area is temperate with mean annual precipitation of 6.95 inches and mean annual temperatures ranging from a high of 77.2 degrees Fahrenheit to a low of 48.3 degrees Fahrenheit (see **Table 2-1** and **Appendix C**) (NOAA 2021). ESA biologists Eric Christensen and Megan Minter conducted the field investigation for this aquatic resources delineation on June 22–24, and September 28, 2021. According to the National Oceanic and Atmospheric Administration (NOAA), no rain had fallen in the aquatic resources study area in the 7 days prior to any of the survey dates. The most recent significant rainfall event in the area prior to the site visit occurred on March 20, 2021, when 0.37 inches of rain fell (NOAA 2021). The annual precipitation total through June 2021 for the western Fresno County area was slightly below average (2016–2020 is 6.15 inches, versus 4.03 inches in 2021) according to the mean precipitation totals for the years 2016–2021 (see Table 2-1).

TABLE 2-1
MONTHLY TOTAL PRECIPITATION FOR FIVE POINTS 5 SSW, CA, IN INCHES

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2016	2.92	0.00	1.11	0.62	M0.55	0.00	0.00	0.00	0.00	0.7	1.00	0.7	7.6
2017	2.64	2.72	0.84	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	6.88
2018	1.21	0.00	2.71	0.00	M0.00	0.00	0.00	0.00	0.00	0.21	1.37	0.95	6.45
2019	1.09	2.16	0.55	0.00	1.56	0.00	0.00	0.00	0.00	M0.00	0.40	2.23	7.99
2020	0.50	0.00	2.25	0.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	3.94
2021	3.23	0.00	0.80	0.00	0.00	0.00							4.03
Mean	**1.93**	**0.81**	**1.38**	**0.32**	**0.35**	**0.00**	**0.00**	**0.00**	**0.00**	**0.18**	**0.61**	**0.84**	**6.15**

NOTE:
1 T = trace amounts of precipitation
2 M = missing and is used when more than 1 day of data is missing for a month

SOURCE: NOAA 2021.

SOURCE: NRCS; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 3-1
Soils Map

ESA

SOURCE: NRCS; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 3-2
Soils Map

ESA

Path: \\Azr-file01\gis_share\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, sgeissler 12/17/2021

SOURCE: NRCS; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 3-3
Soils Map

ESA

SOURCE: NRCS; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 3-4
Soils Map

ESA

SOURCE: NRCS; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 3-5
Soils Map

ESA

Path: \\azr-file01\gis_share\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, sgeissler 12/17/2021

SOURCE: NRCS; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 3-6
Soils Map

ESA

Path: \\Azr-file01\gis_share\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, sgeissler 12/17/2021

SOURCE: NRCS; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 3-7
Soils Map

ESA

Path: \\Azr-file01\gis_share\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, sgeissler 12/17/2021

SOURCE: NRCS; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 3-8
Soils Map

ESA

CHAPTER 3
Regulatory Framework

3.1 Clean Water Act – Section 404

The CWA establishes the basic structure for regulating discharges of pollutants into waters of the United States (waters of the U.S.) and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. "Clean Water Act" became the Act's common name with amendments in 1972. The CWA is the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands.

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the U.S. Applicants must obtain a permit from the USACE for discharges of dredged or fill material into waters of the U.S., including wetlands, for non-exempt activities before proceeding. Waters of the U.S. are under the jurisdiction of USACE and U.S. Environmental Protection Agency (EPA).

Compliance with CWA Section 404 requires compliance with other laws and regulations. USACE cannot issue an individual permit or verify the use of a general nationwide permit until the requirements of the federal Endangered Species Act (FESA) and the National Historic Preservation Act (NHPA), among other federal regulations, have been met. In addition, USACE cannot issue or verify any permit until a water quality certification or a waiver of certification has been issued pursuant to CWA Section 401.

3.1.1 Waters of the U.S. – Regulatory Definitions

On August 30, 2021, a U.S. district court issued an order vacating the Navigable Waters Protection Rule (NWPR). The NWPR previously defined waters of the U.S. In light of this order, the USACE has halted implementation of the NWPR and is interpreting waters of the U.S. consistent with the pre-2015 regulations, judicial interpretations, and guidance documents until further notice. The current effective definition of waters of the United States and related terms may be found in the July 1, 2014, annual edition of the Code of Federal Regulations (CFR) at Title 33 Section 328.3, with <u>emphasis added</u>:

(a) The term <u>waters of the United States</u> <u>*means*</u>

1. *All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;*
2. *All interstate waters including interstate wetlands;*

3. *All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:*
    i. *Which are or could be used by interstate or foreign travelers for recreational or other purposes; or*
    ii. *From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or*
    iii. *Which are used or could be used for industrial purpose by industries in interstate commerce;*
4. *All impoundments of waters otherwise defined as waters of the United States under the definition;*
5. *Tributaries of waters identified in paragraphs (a) (1) through (4) of this section;*
6. *The territorial seas;*
7. *Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1) through (6) of this section.*
8. *Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.*
9. *Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.*

(b) *The term* wetlands *means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.*

(c) *The term* adjacent *means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are ''adjacent wetlands.''*

(d) *The term* high tide line *means the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to*

the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

(e) The term ordinary high water mark *means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.*

(f) The term tidal waters *means those waters that rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by hydrologic, wind, or other effects.*

Most perennial and intermittent streams, and their adjacent wetlands, will qualify as waters of the U.S. Ephemeral streams may or may not qualify, depending on whether they exhibit an ordinary high water mark (OHWM) and bed and bank, as well as other factors. An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round and groundwater is not a source of water for the stream. Rather, runoff from rainfall is the primary source of water for stream flow. An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow. A perennial stream has flowing water year-round during a typical year (66 Federal Register 42099).

3.1.2 Waters of the U.S. – Agency Guidance

In January 2001, the U.S. Supreme Court issued a decision in the case of the *Solid Waste Agency of Northern Cook County (SWANCC) v. U.S. Army Corps of Engineers* that altered USACE regulatory authority over wetlands that are isolated from navigable waters. The SWANCC ruling disallows a determination that an aquatic resource is a waters of the U.S. based solely on the use of the aquatic resource by migratory birds.

On December 2, 2008, the EPA and the USACE released revised guidance on the definitions of jurisdictional waters of the U.S. in response to *Rapanos v. United States* and *Carabell v. United States*. According to this guidance, the USACE and the EPA will take jurisdiction over the following waters:

1. Traditional navigable waters, which is defined as all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
2. Wetlands adjacent to traditional navigable waters; including adjacent wetlands that do not have a continuous surface connection to traditional navigable waters.
3. Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months).

4. Wetlands adjacent to non-navigable tributaries as defined above; that have a continuous surface connection to such tributaries (e.g., they are not separated by uplands, a berm, dike, or similar feature).

The EPA and the USACE decide jurisdiction over the following waters, based on a fact-specific analysis to determine if there is a significant nexus, as defined below, to a traditional navigable waters:

1. Non-navigable tributaries that are not relatively permanent.
2. Wetlands adjacent to non-navigable tributaries that are not relatively permanent.
3. Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary.

The EPA and the USACE generally do not assert jurisdiction over the following features:

1. Swales or erosional features (e.g., gullies, small washes characterized by low-volume, infrequent, or short-duration flow).
2. Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

The EPA and the USACE have defined the significant nexus standard as follows:

1. A significant nexus analysis assesses the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters.

2. Significant nexus includes consideration of hydrologic and ecologic factors including:
    a. Volume, duration, and frequency of flow, including consideration of certain physical characteristics of the tributary
    b. Proximity to the traditional navigable water
    c. Size of the watershed
    d. Average annual rainfall
    e. Average annual winter snow pack
    f. Potential of tributaries to carry pollutants and flood waters to traditional navigable waters
    g. Provision of aquatic habitat that supports a traditional navigable water
    h. Potential of wetlands to trap and filter pollutants or store flood waters
    i. Maintenance of water quality in traditional navigable waters

3.2 Clean Water Act – Section 401

Under CWA Section 401, applicants for a federal license or permit to conduct activities which may result in the discharge of a pollutant into waters of the U.S. must obtain certification from the State in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that require a federal license or federal permit, such as a CWA Section 404 permit, must also comply with CWA Section 401.

Section 401 of the CWA gives the State authority to grant, deny, or waive certification of proposed federally licensed or permitted activities resulting in discharge to waters of the U.S. The State Water Resources Control Board (State Water Board) directly regulates multi-regional projects and supports the Section 401 certification and wetlands program statewide. The Regional Water Quality Control Board (RWQCB) regulates activities pursuant to Section 401(a)(1) of the federal CWA, which specifies that certification from the State is required for any applicant requesting a federal license or permit to conduct any activity including but not limited to the construction or operation of facilities that may result in any discharge into navigable waters. The certification shall originate from the State or appropriate interstate water pollution control agency in/where the discharge originates or will originate. Any such discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the CWA.

3.3 Porter-Cologne Water Quality Control Act

The State Water Board and the RWQCBs (together "Boards") are the principal State agencies with primary responsibility for the coordination and control of water quality. In the Porter-Cologne Act, the legislature declared that the "state must be prepared to exercise its full power and jurisdiction to protect the quality of the waters in the State from degradation…" (California Water Code Section 13000).

The Porter-Cologne Act grants the Boards the authority to implement and enforce the water quality laws, regulations, policies, and plans to protect the groundwater and surface waters of the State. Waters of the state require, if impacted, waste discharge permitting and/or a CWA Section 401 certification (in the case of a required USACE permit under Section 404). The enforcement of the state's water quality requirements is not solely the purview of the Boards and their staff. For instance, per CFGC, Section 5650, CDFW has the authority to enforce certain water quality provisions in state law.

Most projects involving water bodies or drainages are regulated by the RWQCB, the principal state agency overseeing water quality of the state at the local/regional levels. The survey area is located within the jurisdiction of the Central Valley RWQCB. Where waters of the State overlap with waters of the U.S., pending verification from the USACE, those waters would be regulated under Section 401 of the CWA, which is described in the Regulatory Framework in Section 3.1.

In the absence of waters of the U.S., waters may be regulated under the Porter-Cologne Act if project activities, discharges, or proposed activities or discharges could affect California's

surface, coastal, or ground waters. The permit submitted by the applicant and issued by RWQCB is either a Water Quality Certification in the presence of waters of the U.S. or a Waste Discharge Requirement in the absence of waters of the U.S.

3.3.1 Waters of the State

"Waters of the State" includes all "waters of the U.S." In 2000, the State Water Board determined that all waters of the U.S. are also waters of the State by regulation, prior to any regulatory or judicial limitations on the federal definition of waters of the U.S. (California Code of Regulations Title 23, Section 3831[w]). This regulation has remained in effect despite subsequent changes to the federal definition. Therefore, waters of the State includes features that have been determined by the EPA or the USACE to be "waters of the U.S." in an approved jurisdictional determination; "waters of the U.S." upon which a USACE permitting decision was based; and features that are consistent with any current or historic final judicial interpretation of "waters of the U.S." or any current or historic federal regulation defining "waters of the U.S." under the CWA.

A new statewide wetland definition and procedures for discharges of dredged and fill material became effective in May 2020. The new state wetland definition is:

> *An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.*

Based on the new statewide wetland definition, the following wetlands are defined as waters of the State:

1. Natural wetlands
2. Wetlands created by modification of a surface water of the State
3. Artificial wetlands that meet any of the following criteria:
    a. Approved by an agency as compensatory mitigation for impacts to other waters of the State, except where the approving agency explicitly identifies the mitigation as being of limited duration
    b. Specifically identified in a water quality control plan as a wetland or other water of the State
    c. Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape
    d. Greater than or equal to 1 acre in size, unless the artificial wetland was constructed, and is currently used and maintained, primarily for one or more of the following purposes (i.e., the following artificial wetlands are not waters of the State unless they also satisfy the criteria set forth in 2, 3a, or 3b):
        i. Industrial or municipal wastewater treatment or disposal

ii. Settling of sediment

iii. Detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial stormwater permitting program

iv. Treatment of surface waters

v. Agricultural crop irrigation or stock watering

vi. Fire suppression

vii. Industrial processing or cooling

viii. Active surface mining—even if the site is managed for interim wetlands functions and values

ix. Log storage

x. Treatment, storage, or distribution of recycled water

xi. Maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits)

xii. Fields flooded for rice growing

All artificial wetlands that are less than an acre in size and do not satisfy the criteria set forth in 2, 3.a, 3.b, or 3.c are not waters of the State. If an aquatic feature meets the wetland definition, the burden is on the applicant to demonstrate that the wetland is not a water of the State.

3.4 California Fish and Game Code Section 1600

Pursuant to Division 2, Chapter 6, Section 1600 et seq. of the CFGC, CDFW regulates "any activity that may substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river lake or stream." A notification of a Lake or Streambed Alteration must be submitted to CDFW for such activities. In addition, CDFW may exert authority under Section 1600 et seq. over areas near lakes and streams, including wetland and riparian habitats. Because CDFW includes under its regulatory authority streamside habitats that may not qualify as wetlands under the CWA definition, CDFW regulatory authority is generally broader than USACE jurisdiction.

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CHAPTER 4
Methodology

4.1 Pre-Field Review

Prior to conducting the field investigation, the following information was reviewed:

- Fresno, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps (historic quadrangles were reviewed as well as the current quadrangle).
- Google Earth aerial photographs of the aquatic resources study area for vegetative, topographic, and hydrographic signatures (Google Earth 2021) (historic aerial photographs from 1984–2020 were reviewed as well as current 2021 aerial photographs).
- *Custom Soil Resource Report for Fresno County, California, Western Part* (NRCS 2021a), for information about soils and geomorphology.
- The National Hydric Soils List for Fresno County, California, Western Part (NRCS 2021b) to determine if any soils mapped within the aquatic resources study area are considered hydric at the level of soil series.
- The National Wetlands Inventory (NWI) (U.S Fish and Wildlife Service [USFWS] 2021).
- Arid West Regional Wetland Plant List (USACE 2020).

Remote Sensing

Prior to field surveys, potential aquatic resources were identified via remote sensing. The desktop analysis relied on the interpretation of aerial photography and other existing data such as the USFWS NWI (USFWS 2021) and EcoAtlas (San Francisco Estuary Institute 2022). During the analysis, information and signatures of aquatic resources were identified on aerial photographs. Information and wetland signatures used during this analysis included:

- NWI – area is mapped as a wetland/water on the USFWS NWI
- EcoAtlas – the California Aquatic Resource Inventory includes USFWS NWI data, National Hydrography Dataset data (US Geological Survey 2021), and maps from regional and local agencies.
- Signatures of hydrophytic vegetation (observed as different color than surrounding vegetation)
- Signatures of inundation and/or soil saturation
- Signatures of topographic depressions or channelization

These potential aquatic resources identified in the desktop analysis were then visited in the field to be investigated further.

4.2 Field Survey Methods

The aquatic resources delineation was conducted by ESA biologists Eric Christensen and Megan Minter on June 22–24 and September 28, 2021. Prior to field surveys, the biologists analyzed aerial photography from normal wet seasons across multiple years to locate potential features using wetland and drainage signatures, as described above under *Remote Sensing*. Areas showing evidence of wetland and/or drainage signatures were investigated within the delineation aquatic resources study area. During the investigation, the biologists surveyed the entire aquatic resources study area, investigating all potential waters of the U.S. and/or waters of the State.

The delineation used the "Routine Determination Method" as described in the *1987 Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), hereafter referred to as the "1987 Manual." The 1987 Manual was used in conjunction with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008a), hereafter referred to as the "Arid West Supplement." For areas where the 1987 Manual and the Arid West Supplement differ, the Arid West Supplement was followed. In addition, the *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008b) was referenced to assist in identifying the OHWM and the lateral limits of the stream channels in the aquatic resources study area.

Three positive parameters must normally be present for an area to be considered a wetland: (1) a dominance of wetland vegetation, (2) presence of hydric soils, and (3) presence of wetland hydrology. Presence or absence of positive indicators for wetland vegetation, soils, and hydrology was assessed per the 1987 Manual and Arid West Supplement. Data were collected at sample points within the aquatic resources study area. In accordance with USACE guidance, sample points were taken at sites representative of the vegetation, hydrology, and physical characteristics across the various wetland types and at adjacent upland areas. Results were extrapolated to nearby wetlands exhibiting similar vegetation and hydrologic conditions. Data points were recorded on Arid West wetland determination and OHWM data forms, which are provided as **Appendix D**.

Determination of Hydrophytic Vegetation

At each data point, a visual assessment of the dominant plant species was made within a 3-foot radius. Dominant species were assessed using the recommended "50/20" rule per the Arid West Supplement. Plants were identified to species using *The Jepson Manual: Vascular Plants of California (Second Edition)* (Baldwin et al. 2012) and/or online botanical resources (Calflora Database [2021] and *Jepson eFlora* [Jepson Flora Project 2021]. The *Regional Wetland Plant List: 2020 Arid West Plant List* (USACE 2020) was used to determine the wetland indicator status of all plants. All species noted within the study plots were recorded on the data sheets.

Determination of Hydric Soils

Soils were characterized at each data point by color, texture, organic matter accumulation, and the presence or absence of hydric soil indicators. Color was described using the *Munsell Soil Color Book* (Munsell Color 2015). Soils were also inspected for redoximorphic features and soil texture to determine whether the soils met the definitions of any of the hydric soil indicators described in the Arid West Supplement and listed on the Arid West data sheets.

Determination of Wetland Hydrology

The presence of wetland hydrology was determined at each data point by the documentation of the presence or absence of primary and/or secondary wetland hydrology indicators, according to the Arid West Supplement.

Determination of Ordinary High Water Mark

For "other waters of the U.S." to be considered jurisdictional, these features must exhibit a defined bed and bank and an OHWM. Drainages with obvious bed and banks and OHWMs were characterized by noting vegetation, geomorphology (e.g., incision), and hydrologic characteristics and by measuring representative channel bank cross-sections to obtain OHWM. Representative channel cross-section OHWM was recorded in the field and used to map streams through geographic information systems (GIS) software along with high-resolution aerial photographs and detailed topographic data. For stream segments that were culverted, the width of the culvert was measured or estimated to determine the OHWM.

4.3 Mapping and Acreage Calculations

All accessible features, including wetland sample points, wetland boundaries, OHWM intervals, and stream channel courses, were recorded using a global positioning system (GPS) with sub-meter accuracy (EOS Arrow 100 GNSS receiver with Esri's ArcGIS Collector application) or hand-recorded on aerial images of the aquatic resources study area. In the office, GPS data were downloaded and aquatic features mapped using GIS software (ArcGIS 10.6.1) on an overlay of both topography and geo-referenced aerial photography. GPS-determined wetland boundaries and data points were visually confirmed. Where access was restricted due to topography, natural barriers, or property boundaries, location information was extrapolated, and aerial imagery and NWI data (listed above) were used to complete feature boundaries. Acreages of aquatic resource polygons and the length of linear features were determined using ArcGIS.

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CHAPTER 5
Results

5.1 Aquatic Resources

The aquatic resources delineation identified approximately 389.284 acres of aquatic resources in the aquatic resources study area. Aquatic habitats in the aquatic resources study area were classified using the *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC 2013) ("Cowardin Classification"). Aquatic resources within the aquatic resources study area are presented in **Table 5-1** and described below. Supporting information, such as plant species observed, a soils report, a rainfall summary, Arid West data sheets the Operations and Maintenance Business Information Link (OMBIL) Regulatory Module (ORM) data sheet, and representative photographs of the delineation aquatic resources study area are provided respectively in Appendices A through F. **Figures 4-1** through **4-8** illustrate the locations and extent of the aquatic resources within the aquatic resources study area.

TABLE 5-1
AQUATIC RESOURCES

Feature Name	Cowardin Classification[1]	Linear feet (ft.)	Area (ac)	Area (sq. ft.)
Wetlands				
seasonal wetland (SW-1)	*Palustrine, Emergent, Persistent, Seasonally Flooded, Diked/Impounded* (PEM1Ch)	--	0.448	19,509
seasonal wetland (SW-2)	PEM1Ch	--	81.688	3,558,339
seasonal wetland (SW-3)	PEM1Ch	--	0.026	1,115
seasonal wetland (SW-4)	PEM1Ch	--	0.010	426
seasonal wetland (SW-5)	PEM1Ch	--	131.082	5,709,948
seasonal wetland (SW-6)	PEM1Ch	--	14.956	651,479
seasonal wetland (SW-7)	PEM1Ch	--	152.365	6,637,006
	Total Wetlands	**--**	***380.574***	***16,577,822***
Other Waters				
ephemeral drainage (ED-1)	*Riverine, Intermittent, Streambed, Seasonally Flooded, Excavated* (R4SBCx)	4,185	3.509	152,844
ephemeral drainage (ED-2)	R4SBCx	600	0.195	8,510
ephemeral drainage (ED-3)	R4SBCx	77	0.004	157
ephemeral drainage (ED-4)	R4SBCx	83	0.008	344
ephemeral drainage (ED-5)	R4SBCx	65	0.004	162
ephemeral drainage (ED-6)	R4SBCx	666	0.071	3,083
ephemeral drainage (ED-7)	R4SBCx	329	0.062	2,682

Feature Name	Cowardin Classification[1]	Linear feet (ft.)	Area (ac)	Area (sq. ft.)
ephemeral drainage (ED-8)	R4SBCx	347	0.016	697
ephemeral drainage (ED-9)	R4SBCx	937	0.217	9,463
other water (OW-1)	*Palustrine, Unconsolidated Bottom, Artificially Flooded, Excavated* (PUBKx)	--	0.641	27,939
other water (OW-2)	*Palustrine, Unconsolidated Bottom, Permanently Flooded* (PUBH)	--	0.389	16,935
other water (OW-3)	PUBKx	--	3.594	156,561
	Total Other Waters of the U.S.	**7,289**	**8.709**	**379,376**
	Total Aquatic Resources	**7,289**	**389.284**	**16,957,198**

[1] The Cowardin classifications included in this table and report are more specific than those included in the Aquatic Resources Table in Appendix E due to form limitations. This additional detail primarily relates to the San Luis Canal embankment impeding water flow and the nature of the seasonal wetlands in constructed basins within the WSDB.

5.1.1 Wetlands

Seasonal Wetland

Seasonal wetland SW-1 is hydrologically connected to Cantua Creek and totals 0.448 acres in the aquatic resources study area (**Appendix F, photo 1**). Vegetation in the Cantua Creek survey area included Bermuda grass (FACU[1]), California sunflower (OBL[2]), Italian rye grass (FAC[3]), tall flatsedge (FACW[4]), perennial pepperweed (FAC), sheep sorel (FAC), curly dock (FAC), and Baltic rush (FACW). The wetland contains a rock gabion that serves as a sediment screening device surrounding a concrete drain inlet structure. A small patch of broadleaf cattail (OBL) and Mexican fan palm (FACW) saplings too small to warrant a separate wetland type was observed immediately adjacent to the drain inlet structure at the lowest point of seasonal wetland SW-1.

Seasonal wetlands SW-2 through SW-7 are hydrologically connected to Arroyo Pasajero and total 380.127 acres in the aquatic resources study area (**Appendix F, photos 2–4**). These wetlands occur within constructed basins that partially comprise the WSDB. Vegetation in the Arroyo Pasajero survey area included those species found in seasonal wetland SW-1 above; in addition, large stands of big saltbush (FAC), Fremont cottonwood (NL[5]), sandbar willow (FACW), and smallflowered tamarisk (FAC) were observed in portions of the seasonal wetlands. Small clusters of broadleaf cattail, Fremont cottonwood saplings, and Mexican fan palm saplings were observed immediately adjacent to a drain inlet structure around a small scour pool in the southwest corner of seasonal wetland SW-5 (near data points 2a and 2b). Elevation tends from northeast to southwest, where the San Luis Canal embankment impedes drainage.

1 "FACU" refers to *facultative upland* and is based on the wetland plant indicator status in the Arid West regional list.

2 "OBL" refers to *obligate wetland* and is based on the wetland plant indicator status in the Arid West regional list.

3 "FAC" refers to *facultative* and is based on the wetland plant indicator status in the Arid West regional list.

4 "FACW" refers to *facultative wetland* and is based on the wetland plant indicator status in the Arid West regional list.

5 "NL" refers to *not listed* in the Arid West regional list.

Surface soil cracks as evidence of routine soil saturation was observed within these features during the field surveys and was the primary indicator of wetland hydrology in these wetlands (Indicator B6 from the Arid West Supplement). Additional primary hydrology indicators noted include inundation visible in aerial imagery (Indicator B7), sediment deposits (Indicator B2), drift deposits (Indicator B3), and water marks (Indicator B1). Hydric soils were indicated in these features by the presence of a depleted matrix (Indicator F3[6] from the Arid West Supplement) and redox depressions (Indicator F8). Sample point 2a reflects the conditions observed in the seasonal wetlands during the field investigation and in the surrounding upland areas represented by sample point 2b (Appendix D). These features within the aquatic resources study area are classified as *Palustrine, Emergent, Persistent, Seasonally Flooded, Diked/Impounded* (FGDC 2013).

Valley Foothill Riparian

There are 7.86 acres of discontinuous riparian habitat patches within the constructed basin of the WSDB in the aquatic resources study area (Appendix F, photos 2–4). Patches of this community are dispersed through portions of the seasonal wetland within the constructed basins. They are dominated by hydrophytic vegetation and exhibit indicators of hydric soil and wetland hydrology. This community occurs in low-elevation areas on the basin floor, typically adjacent to the San Luis Canal embankment, that detain water. Therefore, the areas mapped as riparian in the aquatic resources study area are also considered seasonal wetlands. Due to the location of riparian vegetation in the low elevations on the basin floor, they meet the hydrology indicators A2 (high water table) and A3 (saturation) during the normal wet portion of the growing season and are also expected to support hydric soils.

5.1.2 Waters

Ephemeral Drainage

An ephemeral drainage has flowing water immediately following precipitation, when rainfall or groundwater provides water for channel flow. During dry periods, ephemeral drainages do not exhibit flowing water. In the aquatic resources study area, ephemeral drainages periodically flow following precipitation during the winter season and are dry during other times of the year. Six ephemeral drainage segments, totaling approximately 4.085 acres (7,288.57 linear feet), were identified in the aquatic resources study area along Cantua Creek (**Appendix F, photo 5**) and Salt Creek (**Appendix F, photos 6–7**) (Appendix D). Ephemeral drainage segments ED-1 through ED-4 comprise portions of Cantua Creek, and segments ED-5 through ED-9 comprise portions of Salt Creek. All ephemeral drainages have been realigned to varying degrees within the aquatic resources study area and convey substantial sediment from upstream reaches. Due to the high degree of historic and ongoing disturbance in much of the surrounding uplands by ongoing agricultural activities, the OHWM is primarily marked by areas of shelving and scour, occasional water staining, a change in the plant community, and/or drift deposits (Appendix D). Very little vegetation is supported in these drainage segments, with the exception of segment ED-8. Segment ED-8 mainly supports mule fat and big saltbush. Within the aquatic resources study area, these

[6] Hydric soil indicators are presented in three groups in the Arid West Supplement. Group A: Indicators for All Soils. Group F: Indicators for Loamy and Clayey Soils. Group S: Indicators for Sandy Soils.

features are classified as *Riverine, Intermittent, Streambed, Seasonally Flooded, Excavated* (FGDC 2013).

Other Waters

Two detention basins (OW-1 and OW-3) and one perennial pond (OW-2) were observed within the WSDB. The detention basins were constructed as components of ongoing groundwater recharge operations and are expected to inundate partially from direct precipitation and when water height reaches their respective spillways. Water height within the WSDB is actively managed through the use of a southern control structure (temporary rubber coffer dam atop a permanent concrete dam), which is used at least annually. Each detention basin includes large drain inlets that infrequently (i.e., only during local flood conditions that rarely result in the overtopping of flood control infrastructure) convey water under the San Luis Canal from OW-1 into a large ditch to the east and from OW-3 into the San Luis Canal.

The perennial pond (OW-2) is a topographic low point that is charged by residual groundwater during the summer months when the surrounding seasonal wetlands (SW-2, SW-3, SW-4, and SW-5) are not inundated (**Appendix F, photo 8**). The perennial pond is located below a railroad bridge that is supported by earthen berms beyond the aerial portion. These earthen berms cause water flow to truncate and continue flowing south under the railroad bridge and through the perennial pond. As such, the pond is expected to have emanated as a scour pool during winter months when the WSDB receives and accumulates flow from the Arroyo Pasajero watershed.

Very little vegetation is supported in the detention basins and perennial pond. For these detention basins, the OHWM was mapped as the limits of the artificial banks. Limits of the pond were mapped at the extent of the perennial feature, with the surrounding area beyond being seasonal wetland. Within the aquatic resources study area, the detention basins are classified as *Palustrine, Unconsolidated Bottom, Artificially Flooded, Excavated* and the perennial pond is classified as *Palustrine, Unconsolidated Bottom, Permanently Flooded* (FGDC 2013).

5.2 Analysis of Waters of the U.S.

Table 5-2 below describes the situation and rationale for each aquatic resource as to why it is or is not considered to be a water of the U.S. subject to USACE jurisdiction.

TABLE 5-2
APPLICATION OF THE CLEAN WATER ACT TO AQUATIC RESOURCES

Aquatic Resource (Map ID)	Rapanos Waters Type	Waters of the U.S. (ac)	Isolated (ac)	Rationale
Wetlands				
Seasonal Wetland (SW-1)	Isolated waters	--	0.448	Seasonal wetlands are isolated from any downstream connection to jurisdictional waters.
Seasonal Wetland (SW-2 – SW-7)	Isolated waters	--	380.126	Artificial basins constructed for groundwater recharge and retention; not connected to any downstream jurisdictional waters.

Aquatic Resource (Map ID)	Rapanos Waters Type	Waters of the U.S. (ac)	Isolated (ac)	Rationale
Waters				
Channels (ED-1 – ED-9) (Cantua Creek, Salt Creek)	Isolated waters	--	4.085	Ephemeral drainages are isolated from any downstream connection to jurisdictional waters.
Detention Basins and Pond (OW-1 – OW-3)	Isolated waters	--	4.624	Artificial detention basins and pond constructed for groundwater recharge and retention; not connected to any downstream jurisdictional waters.
	Total:		**389.284**	

All of the ephemeral drainage channels (Cantua Creek and Salt Creek) in the aquatic resources study area are isolated and not tributary to jurisdictional waters, and are therefore not expected to be waters of the U.S. pursuant to the Supreme Court's decision in the consolidated cases of *Rapanos v. United States* and *Carabell v. United States* (referred to hereafter as *Rapanos*).

Seasonal wetland SW-1 in the aquatic resources study area is isolated and not tributary to jurisdictional waters, and are therefore not waters of the U.S. pursuant to *Rapanos*. Seasonal wetlands SW-2 through SW-7 were constructed, are used for groundwater recharge operations, and are not tributary to jurisdictional waters; therefore, these features are not expected to be waters of the U.S.

The detention basins and perennial pond (OW-1 through OW-3) in the aquatic resources study area were constructed, are used for floodwater management and controlled releases, and are not tributary to jurisdictional waters; therefore, these features are not expected to be waters of the U.S.

Based on the information above and the isolation of all features from waters of the U.S, ESA does not expect that any features would be subject to USACE jurisdiction and recommends that DWR determine if an approved jurisdictional determination is necessary for additional regulatory certainty.

5.3 Analysis of Waters of the State

The definition of "Waters of the State" includes all features listed in Table 5-2.

Under the State definition, seasonal wetlands 1–7, ephemeral drainages 1–9, the perennial pond (OW-2), and detention basins (OW-1 and OW-3) meet the definition of wetland because they are artificial wetlands that resulted from historic human activity, are subject to ongoing operation and routine annual maintenance (i.e., non-woody (<4-inch diameter at breast height [4.5 feet above grade] vegetation removal, grading in areas absent of large trees) though it does not interrupt the seasonal hydrologic cycle (e.g., charging, drying), and have become relatively permanent parts of the landscape. Therefore, ESA recommends that DWR determine if a Section 401 CWA Water Quality Certification or Waste Discharge Requirement for the overall Proposed Project is

necessary prior to implementation of Proposed Project activities that would affect waters of the State.

5.4 Analysis of Section 1600 Regulated Areas

The 7.86 acres of valley foothill riparian habitat within the seasonal wetlands (SW-2 through SW-7) within the WSDB is expected to by subject to Section 1600 of CFGC. DWR maintains two streambed alteration agreements (1600-2020-0076-R4 for a portion of the WSDB and 1600-2020-0083-R4 for a portion of the Cantua Creek aquatic resource survey area) with CDFW; therefore, ESA recommends that DWR determine if an additional streambed alteration agreement from CDFW is necessary prior to implementation of Proposed Project activities that would affect regulated riparian habitat.

5.5 Conclusions

A total of 389.284 acres and 7,288.57 linear feet of aquatic resources were mapped in the approximately 473.68-acre aquatic resources study area. None of the aquatic resources meet the criteria for waters of the U.S. because none exhibit a downstream connection with a traditional navigable water. However, a total of **389.284** acres and **7,288.57** linear feet of the aquatic resources are likely to be considered of waters of the State. Additionally, **7.86** acres of riparian habitat are expected to be considered a regulated area per Section 1600 of CFGC. Collectively, these regulated resources include:

- 380.574 acres of wetland
- 8.709 acres (7,288.57 linear feet) of other waters of the State
- 7.86 acres of riparian habitat subject to Section 1600

None of the ephemeral drainages are subject to Section 10 of the Rivers and Harbors Act due to the absence of a connection to a traditional navigable water and lack of tidal influence.

This report documents the aquatic resources boundary delineation and best professional judgment of ESA investigators. All aquatic resources, riparian habitat, and their extent identified in this report are based on ESA's field observations and regulatory interpretation informed by prior court case decisions. ESA does not possess the regulatory authority to issue final conclusions as to the boundaries or extent of waters of the U.S.; waters of the State; or riparian habitat.

Name	Type	Acres	Sq Ft	Linear Feet
ED-1	Ephemeral Drainage	3.509	152,844	4,185
ED-2	Ephemeral Drainage	0.195	8,510	600
ED-3	Ephemeral Drainage	0.004	157	77
ED-4	Ephemeral Drainage	0.008	344	83
ED-5	Ephemeral Drainage	0.004	162	65
ED-6	Ephemeral Drainage	0.071	3,083	666
ED-7	Ephemeral Drainage	0.062	2,682	329
ED-8	Ephemeral Drainage	0.016	697	347
ED-9	Ephemeral Drainage	0.217	9,463	937
OW-1	Detention Basin	0.641	27,939	
OW-2	Perennial Pond	0.389	16,935	
OW-3	Detention Basin	3.594	156,561	
SW-1	Seasonal Wetland	0.448	19,509	
SW-2	Seasonal Wetland	81.688	3,558,339	
SW-3	Seasonal Wetland under RR Bridge (West)	0.026	1,115	
SW-4	Seasonal Wetland under RR Bridge (East)	0.010	426	
SW-5	Seasonal Wetland	131.082	5,709,948	
SW-6	Seasonal Wetland	14.956	651,479	
SW-7	Seasonal Wetland	152.365	6,637,006	

SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

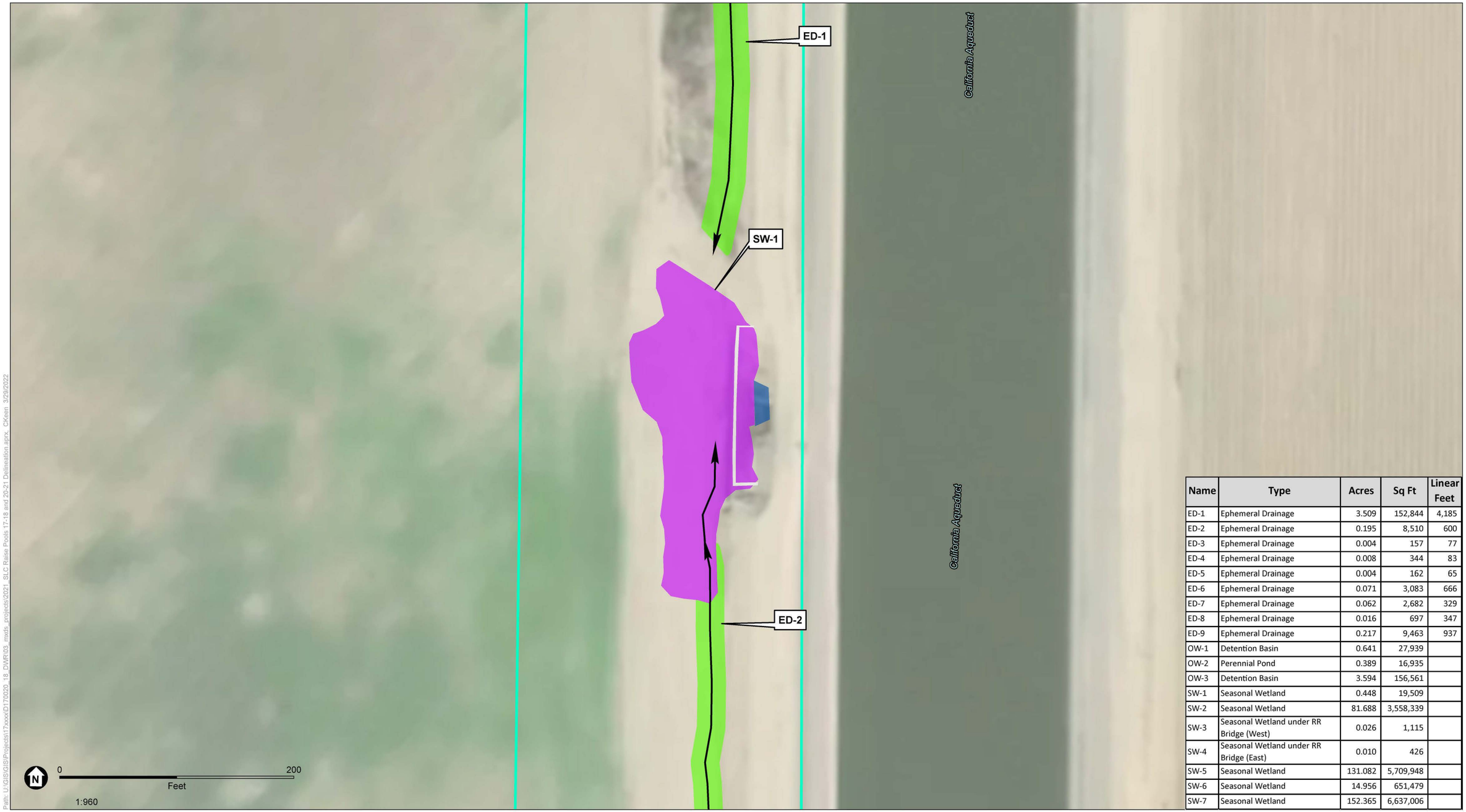
- Cantua Creek Survey Area
- Data Point
- Concrete Inlet Structure
- Rock Gabion Structure
- Seasonal Wetland
- Ephemeral Drainage
- Ephemeral Drainage Centerline

San Luis Canal Embankment and Liner Raise Project

Figure 4-1
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 3/29/2022

Path: U:\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, CKeen, 3/29/2022



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SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

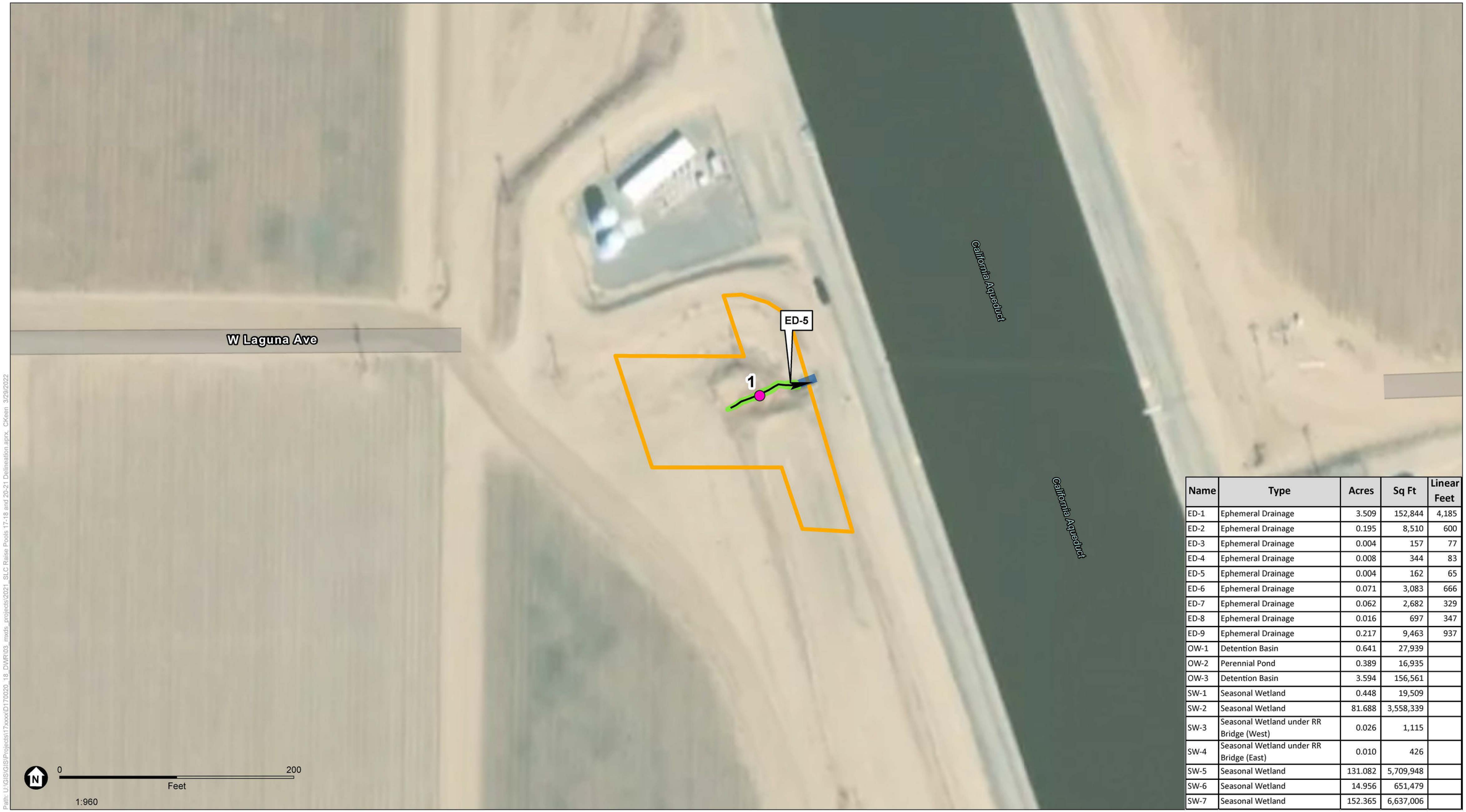
Cantua Creek Survey Area
Concrete Inlet Structure
Rock Gabion Structure
Seasonal Wetland
Ephemeral Drainage
Ephemeral Drainage Centerline

San Luis Canal Embankment and Liner Raise Project

Figure 4-2
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 3/29/2022

Path: U:\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, CKeen, 3/29/2022



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Path: U:\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation aprx, CKeen 3/29/2022

SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

Salt Creek Survey Area
Data Point
Concrete Inlet Structure
Ephemeral Drainage
Ephemeral Drainage Centerline

San Luis Canal Embankment and Liner Raise Project

Figure 4-3
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 3/29/2022

Name	Type	Acres	Sq Ft	Linear Feet
ED-1	Ephemeral Drainage	3.509	152,844	4,185
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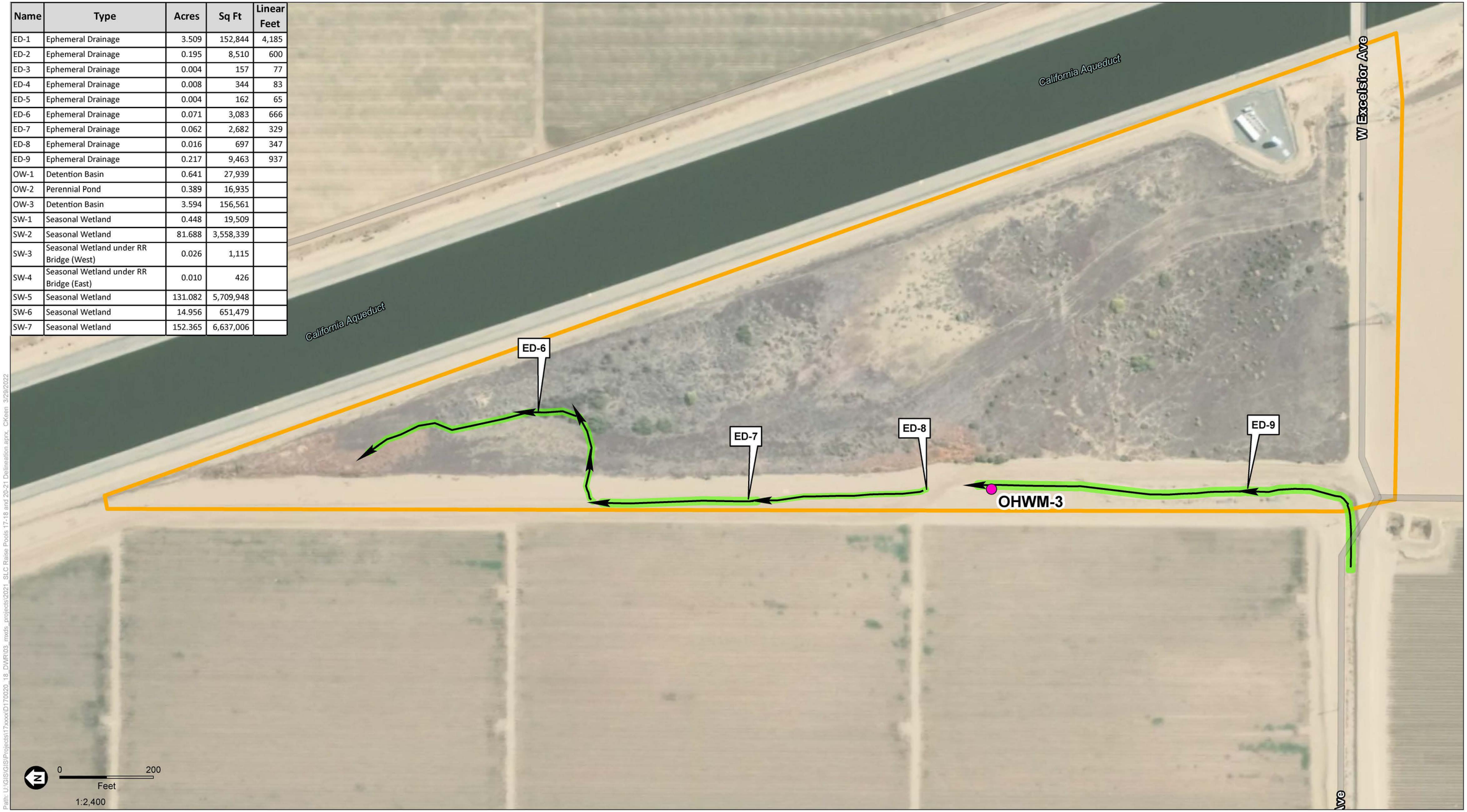
SW-7	Seasonal Wetland	152.365	6,637,006	



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SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

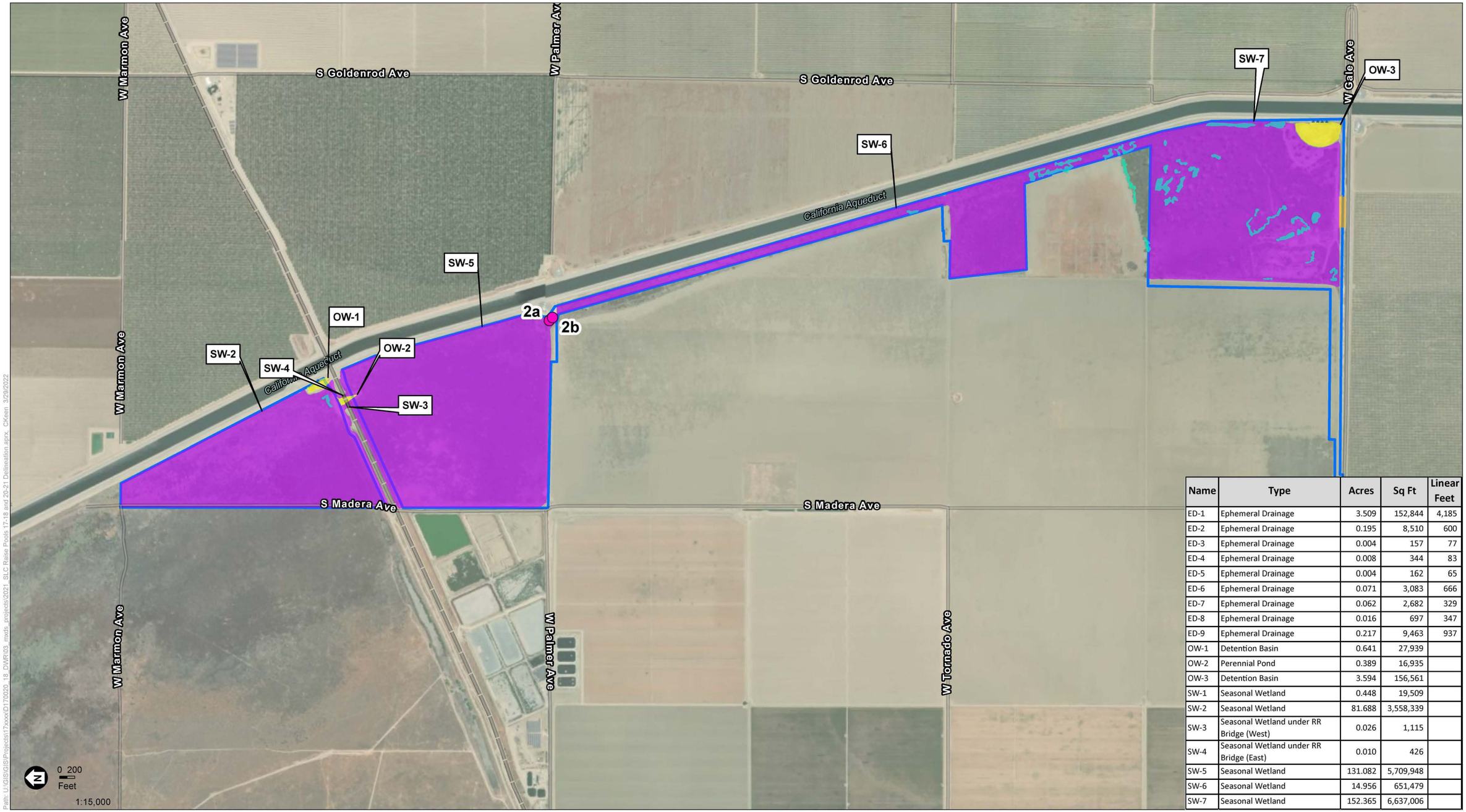
ESA

Salt Creek Survey Area
Ephemeral Drainage
Data Point
Ephemeral Drainage Centerline

San Luis Canal Embankment and Liner Raise Project

Figure 4-4
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 3/29/2022



Name	Type	Acres	Sq Ft	Linear Feet
ED-1	Ephemeral Drainage	3.509	152,844	4,185
ED-2	Ephemeral Drainage	0.195	8,510	600
ED-3	Ephemeral Drainage	0.004	157	77
ED-4	Ephemeral Drainage	0.008	344	83
ED-5	Ephemeral Drainage	0.004	162	65
ED-6	Ephemeral Drainage	0.071	3,083	666
ED-7	Ephemeral Drainage	0.062	2,682	329
ED-8	Ephemeral Drainage	0.016	697	347
ED-9	Ephemeral Drainage	0.217	9,463	937
OW-1	Detention Basin	0.641	27,939	
OW-2	Perennial Pond	0.389	16,935	
OW-3	Detention Basin	3.594	156,561	
SW-1	Seasonal Wetland	0.448	19,509	
SW-2	Seasonal Wetland	81.688	3,558,339	
SW-3	Seasonal Wetland under RR Bridge (West)	0.026	1,115	
SW-4	Seasonal Wetland under RR Bridge (East)	0.010	426	
SW-5	Seasonal Wetland	131.082	5,709,948	
SW-6	Seasonal Wetland	14.956	651,479	
SW-7	Seasonal Wetland	152.365	6,637,006	

SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

- Arroyo Pasajero Survey Area
- Data Point
- Riparian Habitat
- Concrete Inlet Structure
- Concrete Outlet Structure
- Control Structure
- Seasonal Wetland
- Seasonal Wetland under RR Bridge
- Other Waters

San Luis Canal Embankment and Liner Raise Project

Figure 4-5
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 3/29/2022

Path: U:\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx. CKeen 3/29/2022

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ED-3	Ephemeral Drainage	0.004	157	77
ED-4	Ephemeral Drainage	0.008	344	83
ED-5	Ephemeral Drainage	0.004	162	65
ED-6	Ephemeral Drainage	0.071	3,083	666
ED-7	Ephemeral Drainage	0.062	2,682	329
ED-8	Ephemeral Drainage	0.016	697	347
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SW-5	Seasonal Wetland	131.082	5,709,948	
SW-6	Seasonal Wetland	14.956	651,479	
SW-7	Seasonal Wetland	152.365	6,637,006	

SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

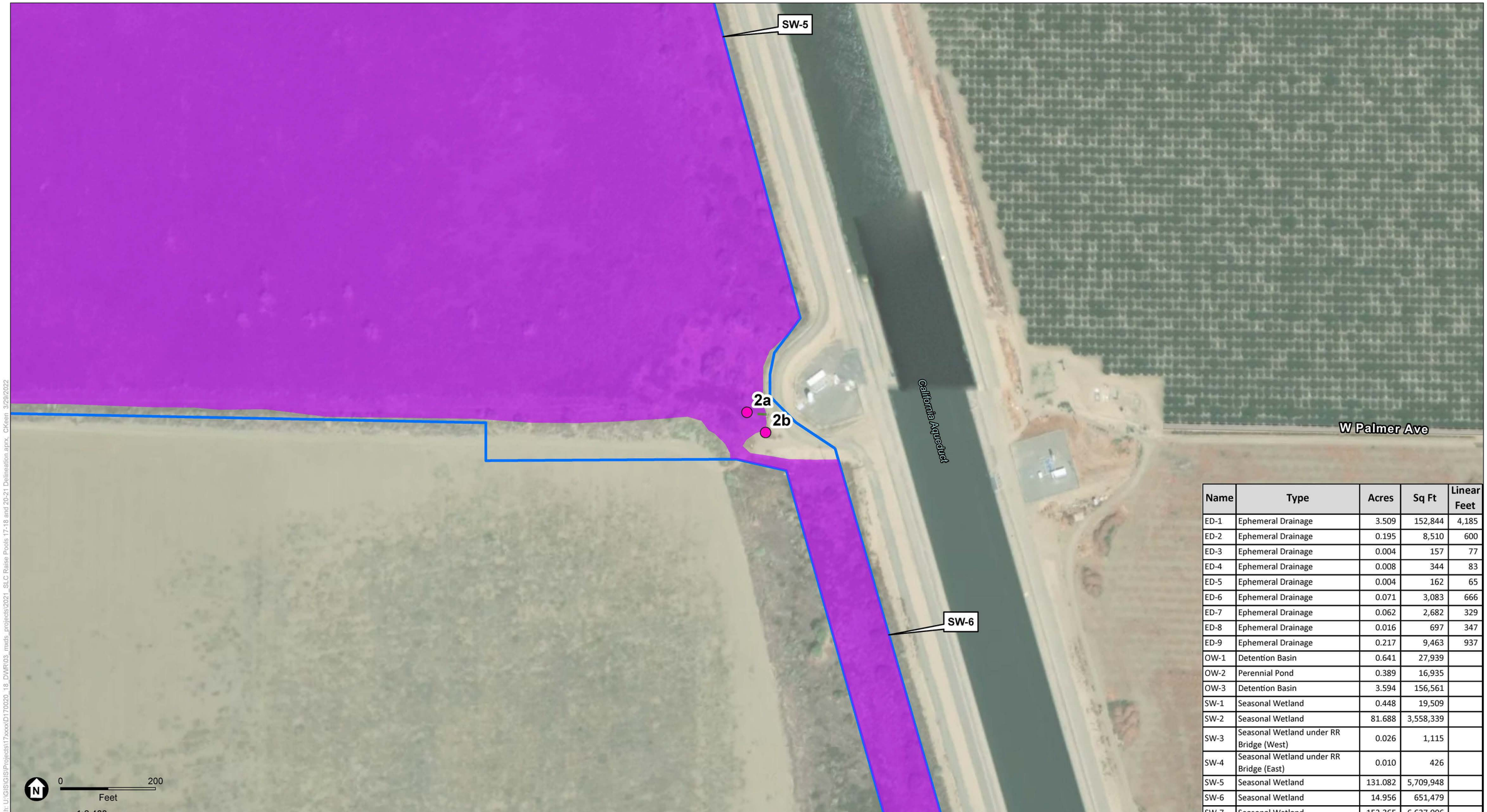
- Arroyo Pasajero Survey Area
- Riparian Habitat
- Concrete Inlet Structure
- Seasonal Wetland
- Seasonal Wetland under RR Bridge
- Other Waters

San Luis Canal Embankment and Liner Raise Project

Figure 4-6
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 3/29/2022

Path: U:\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, CKeen, 3/29/2022



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SW-6	Seasonal Wetland	14.956	651,479	
SW-7	Seasonal Wetland	152.365	6,637,006	

SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

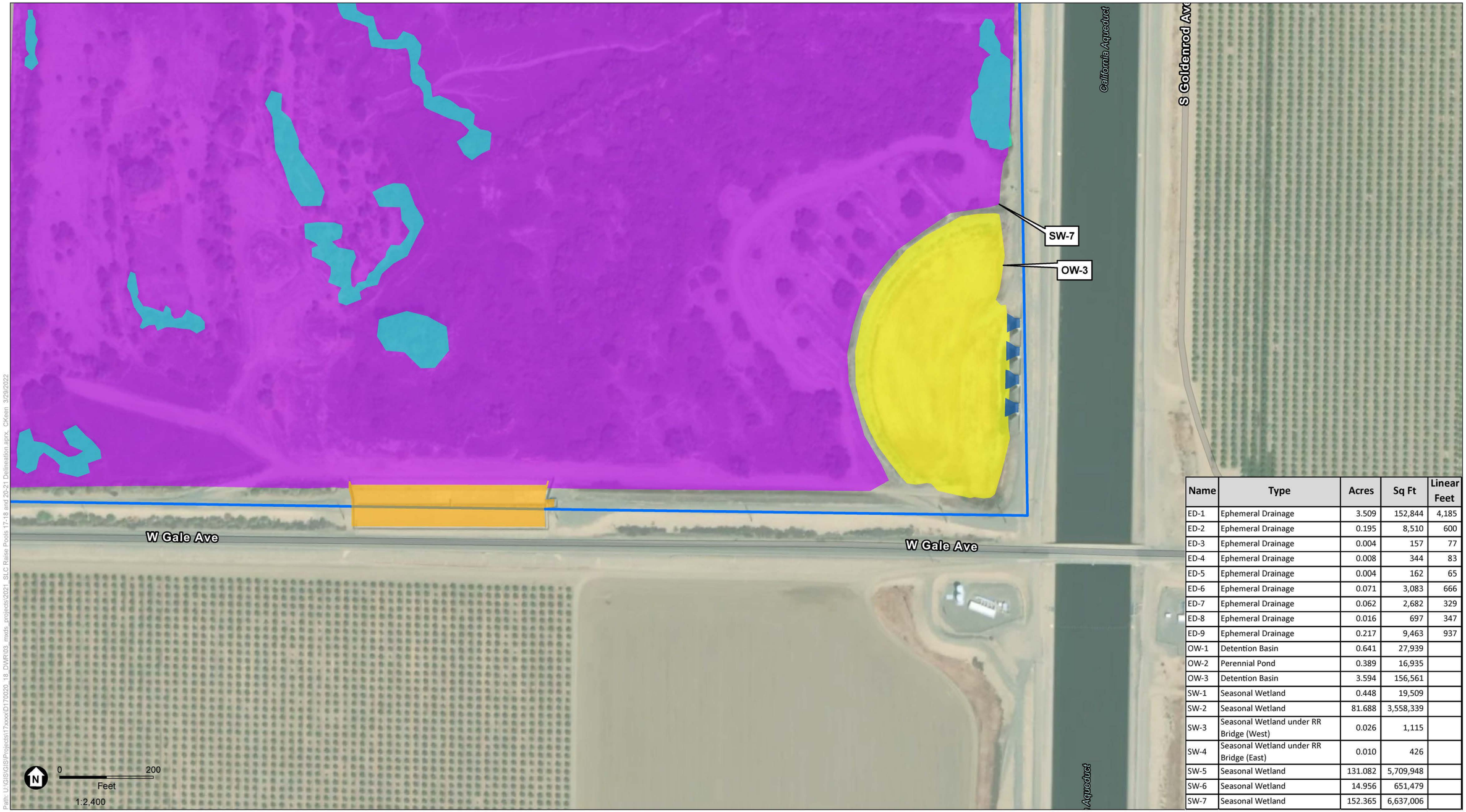
Arroyo Pasajero Survey Area
Data Point
Concrete Outlet Structure
Seasonal Wetland

San Luis Canal Embankment and Liner Raise Project

Figure 4-7
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 3/29/2022

Path: U:\GIS\GIS\Projects\17xxxx\D170020_18_DVR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, CKeen, 3/29/2022



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SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

- Arroyo Pasajero Survey Area
- Riparian Habitat
- Concrete Inlet Structure
- Control Structure
- Seasonal Wetland
- Other Waters

San Luis Canal Embankment and Liner Raise Project

Figure 4-8
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 3/29/2022

Path: U:\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, CKeen, 3/29/2022

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Appendix A
Plant Species Observed

VASCULAR FLORA RECORDED FROM THE SAN LUIS CANAL EMBANKMENT AND LINER RAISE PROJECT STUDY AREA

Scientific Name	Common Name	Wetland Indicator Status
Amaranthaceae		
Amaranthus albus	Pigweed amaranth	FACU
Amaranthus blitoides	Mat amaranth	FACU
Arecaceae		
Washingtonia robusta	Mexican fan palm	FACW
Asteraceae		
Artemisia douglasiana	Mugwort	FAC
Artemisia dracunculus	Tarragon	FACU
Baccharis salicifolia	Mule fat	FAC
Centaurea melitensis	Tocalote	NL
Centaurea solstitialis	Yellow starthistle	NL
Centromadia pungens	Common spikeweed	FAC
Cirsium vulgare	Bull thistle	FACU
Deinandra kelloggii	Kellogg's tarweed	NL
Erigeron bonariensis	Flax-leaved horseweed	FACU
Erigeron canadensis	Canada horseweed	FACU
Helianthus annuus	Common sunflower	FACU
Helianthus californicus	California sunflower	OBL
Lactuca serriola	Prickly lettuce	FACU
Laennecia coulteri	Coulter's horseweed	FAC
Sonchus oleraceus	Common sow thistle	UPL
Xanthium strumarium	Cocklebur	FAC
Boraginaceae		
Amsinckia intermedia	Common fiddleneck	NL
Amsinckia menziesii	Menzie's fiddleneck	NL
Heliotropium curassavicum	Heliotrope	FACU
Brassicaceae		
Brassica tournefortii	Saharan mustard	NL
Capsella bursa-pastoris	Shepherd's purse	FACU
Hirschfeldia incana	Mustard	NL
Lepidium dictyotum	Alkali pepperweed	FAC
Lepidium latifolium	Perennial pepperweed	FAC
Lepidium nitidum	Shinning pepperweed	FAC
Raphanus sativus	Wild radish	NL
Caryophyllaceae		
Spergularia macrotheca	Large flowered sand spurry	FAC
Chenopodiaceae		
Atriplex argentea	Silverscale saltbush	FAC
Atriplex lentiformis	Big saltbush	FAC
Atriplex polycarpa	Cattle saltbush	FACU
Salsola tragus	Prickly Russian thistle	FACU

VASCULAR FLORA RECORDED FROM THE SAN LUIS CANAL EMBANKMENT AND LINER RAISE PROJECT STUDY AREA

Scientific Name	Common Name	Wetland Indicator Status
Cleomaceae		
Peritoma arborea	Bladderpod	NL
Convolvulaceae		
Convolvulus arvensis	Field bindweed	NL
Cuscuta californica	California dodder	NL
Cyperaceae		
Cyperus eragrostis	Tall flatsedge	FACW
Fabaceae		
Medicago polymorpha	Bur medic	FACU
Medicago sativa	Alfalfa	UPL
Melilotus indicus	Annual yellow sweetclover	FACU
Prosopis chilensis	Chilean mesquite	NL
Geraniaceae		
Erodium botrys	Broad-leaf filaree	FAC
Erodium cicutarium	Redstem filaree	NL
Juglandaceae		
Juglans hindsii	California walnut	FACU
Juglans regia	English walnut	
Juncaceae		
Juncus balticus	Baltic rush	FACW
Lamiaceae		
Marrubium vulgare	White horehound	FACU
Mentha pulegium	Pennyroyal	OBL
Salvia columbariae	Chia sage	NL
Trichostema lanceolatum	Vinegarweed	FACU
Malvaceae		
Malva parviflora	Cheeseweed mallow	NL
Myrsinaceae		
Lysimachia arvensis	Scarlet pimpernel	FAC
Papaveraceae		
Eschscholzia californica	California poppy	NL
Plantaginaceae		
Plantago lanceolata	Ribwort	FAC

VASCULAR FLORA RECORDED FROM THE SAN LUIS CANAL EMBANKMENT AND LINER RAISE PROJECT STUDY AREA

Scientific Name	Common Name	Wetland Indicator Status
Poaceaa		
Arundo donax	Giant reed	FACW
Avena barbata	Slender oat	NL
Avena fatua	Wild oat	NL
Bromus diandrus	Ripgut brome	NL
Bromus hordeaceus	Soft chess	FACU
Bromus madritensis	Foxtail chess	UPL
Cynodon dactylon	Bermuda grass	FACU
Festuca perennis	Italian rye grass	FAC
Hordeum marinum	Field barley	FAC
Phalaris paradoxa	Hood canarygrass	FAC
Poa pratensis	Kentucky blue grass	FAC
Polypogon monspeliensis	Rabbitsfoot grass	FACW
Polygonaceae		
Eriogonum angulosum	Angled stem buckwheat	NL
Rumex acetosella	Sheep sorrel	FAC
Rumex crispus	Curly dock	FAC
Salicaceae		
Populus fremontii	Fremont cottonwood	NL
Salix exigua	Sandbar willow	FACW
Salix gooddingii	Goodding's black willow	FACW
Salix laevigata	Red willow	FACW
Scrophulariaceae		
Verbascum thapsus	Woolly mullein	FACW
Solanaceae		
Datura wrightii	Jimsonweed	UPL
Nicotiana quadrivalvis	Indian tobacco	FACU
Solanum americanum	American nightshade	FACU
Tamaricaceae		
Tamarix aphylla	Athel tamarisk	FAC
Tamarix parviflora	Smallflower tamarisk	FAC
Typhaceae		
Typha latifolia	Broadleaf cattail	OBL

SOURCE: ESA, 2021

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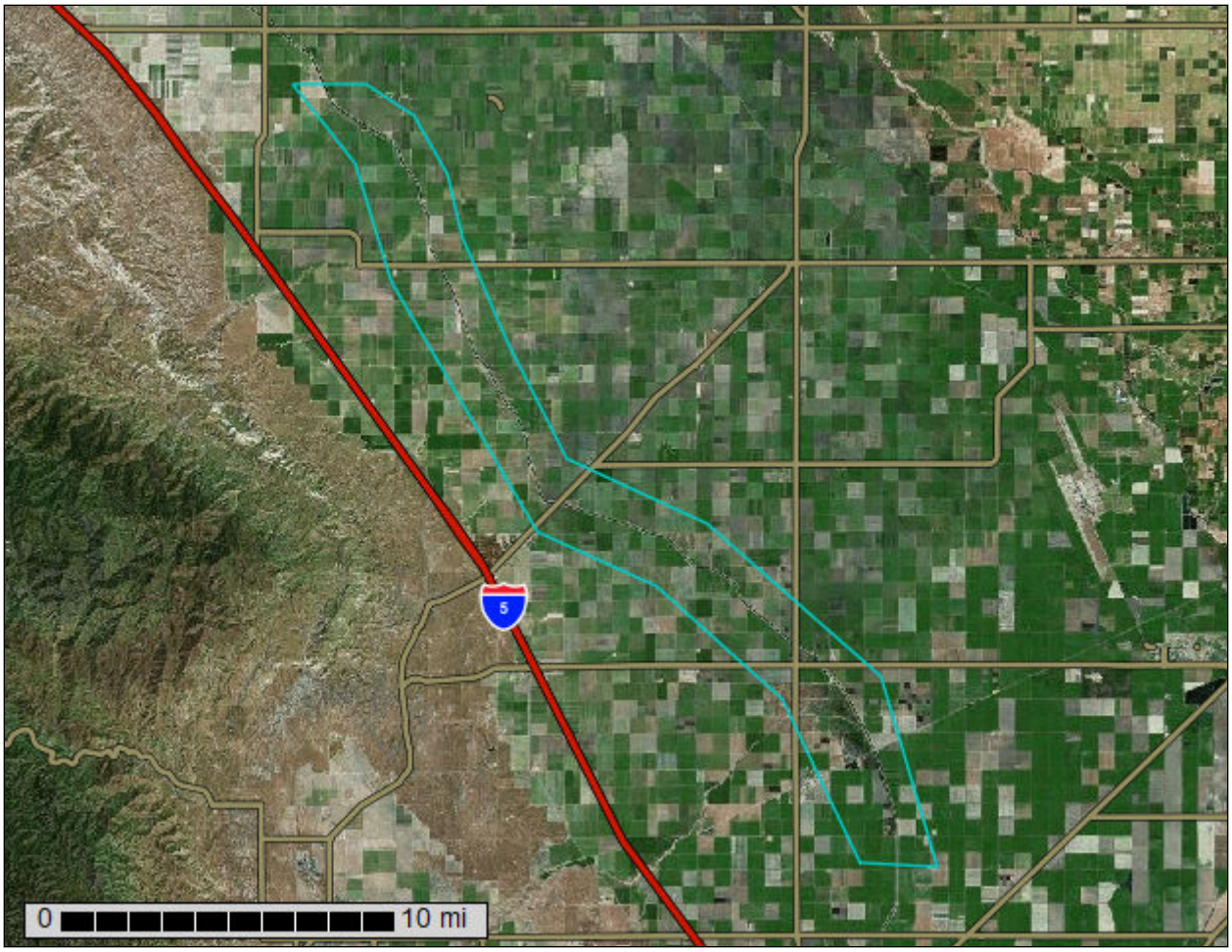
Appendix B
Soils Report

United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Fresno County, California, Western Part



October 26, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

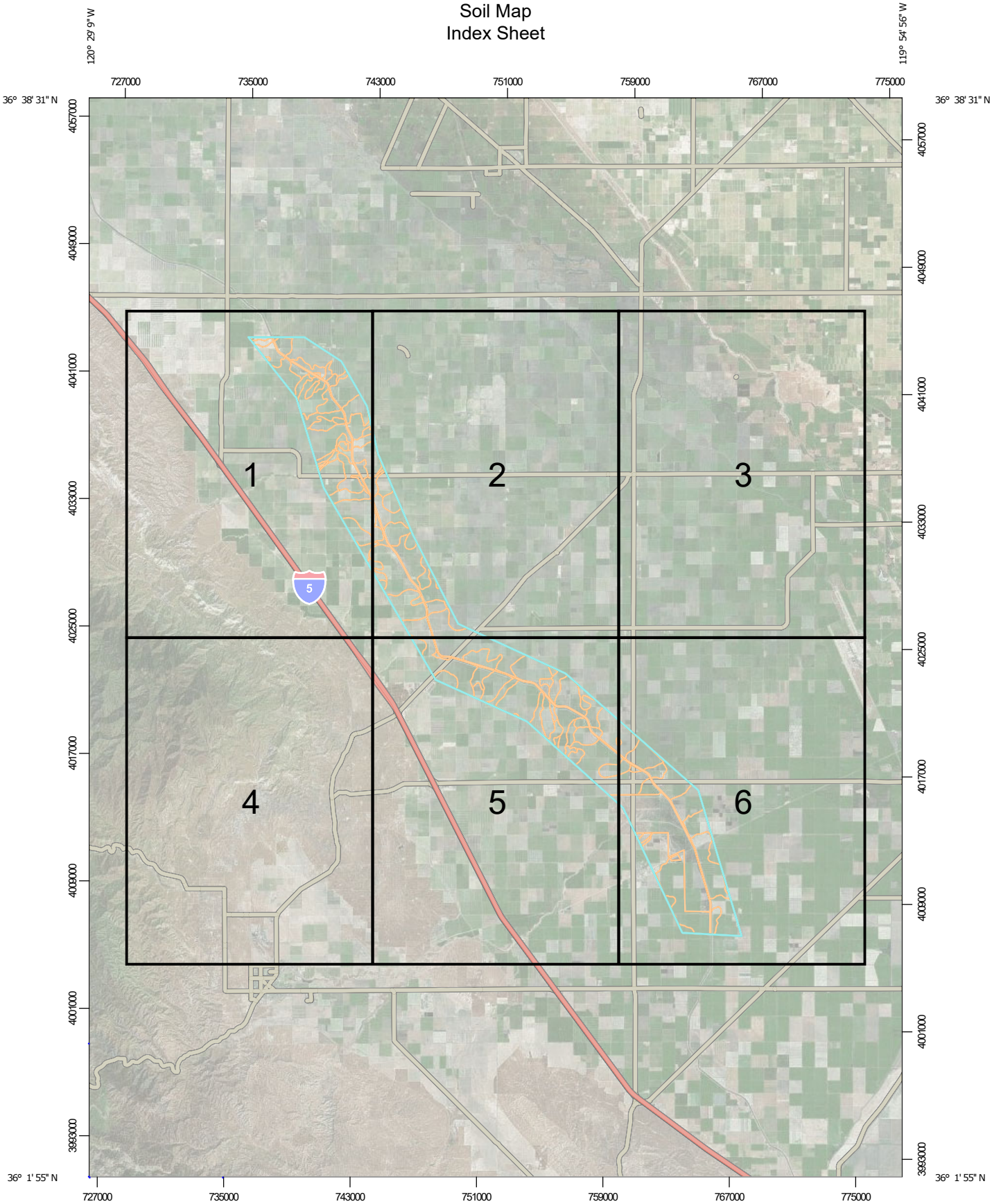
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map
Index Sheet



Map Scale: 1:330,000 if printed on A portrait (8.5" x 11") sheet.

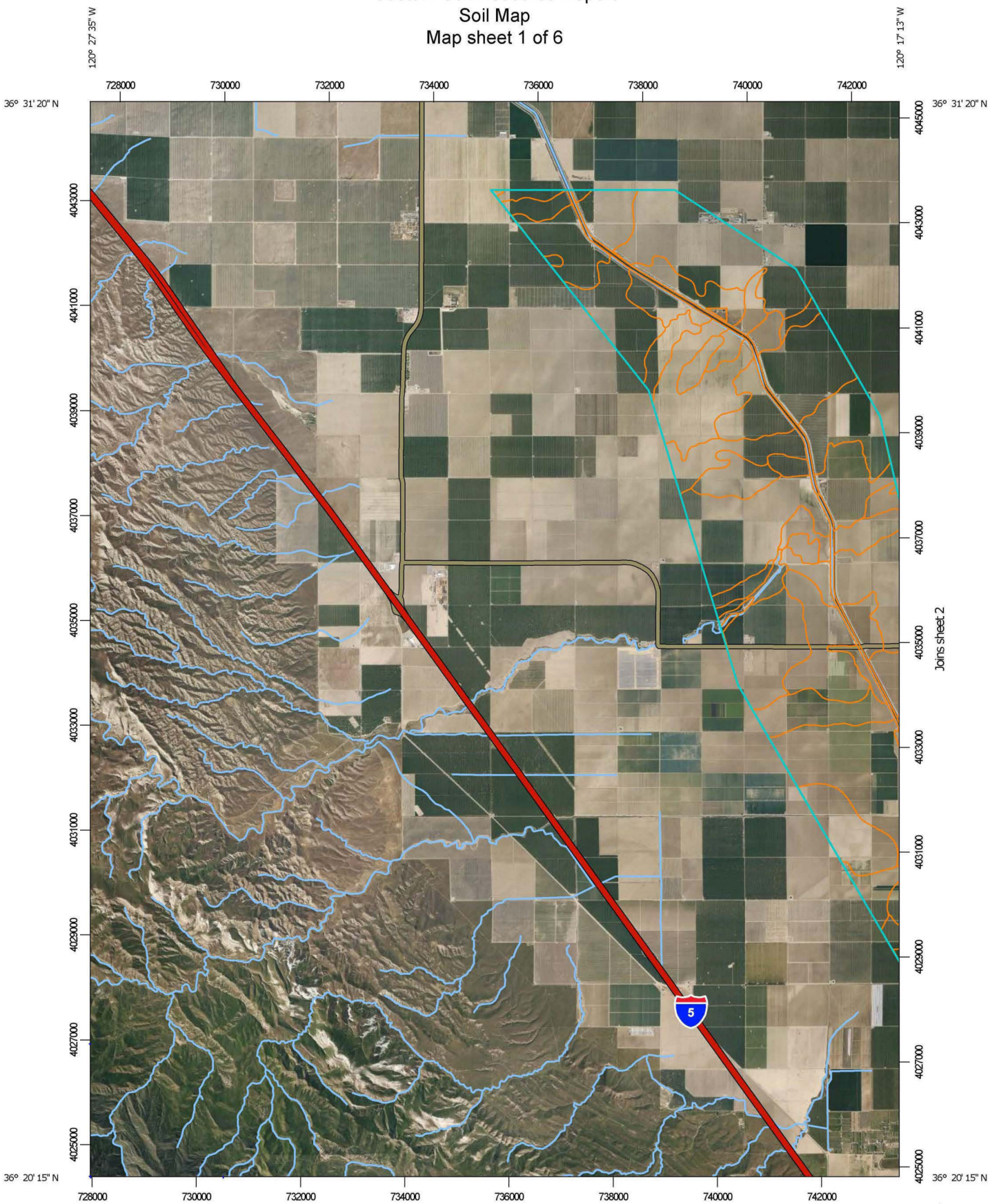
N

Meters: 0 4500 9000 18000 27000

Feet: 0 15000 30000 60000 90000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

Custom Soil Resource Report
Soil Map
Map sheet 1 of 6



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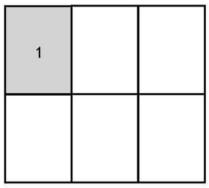
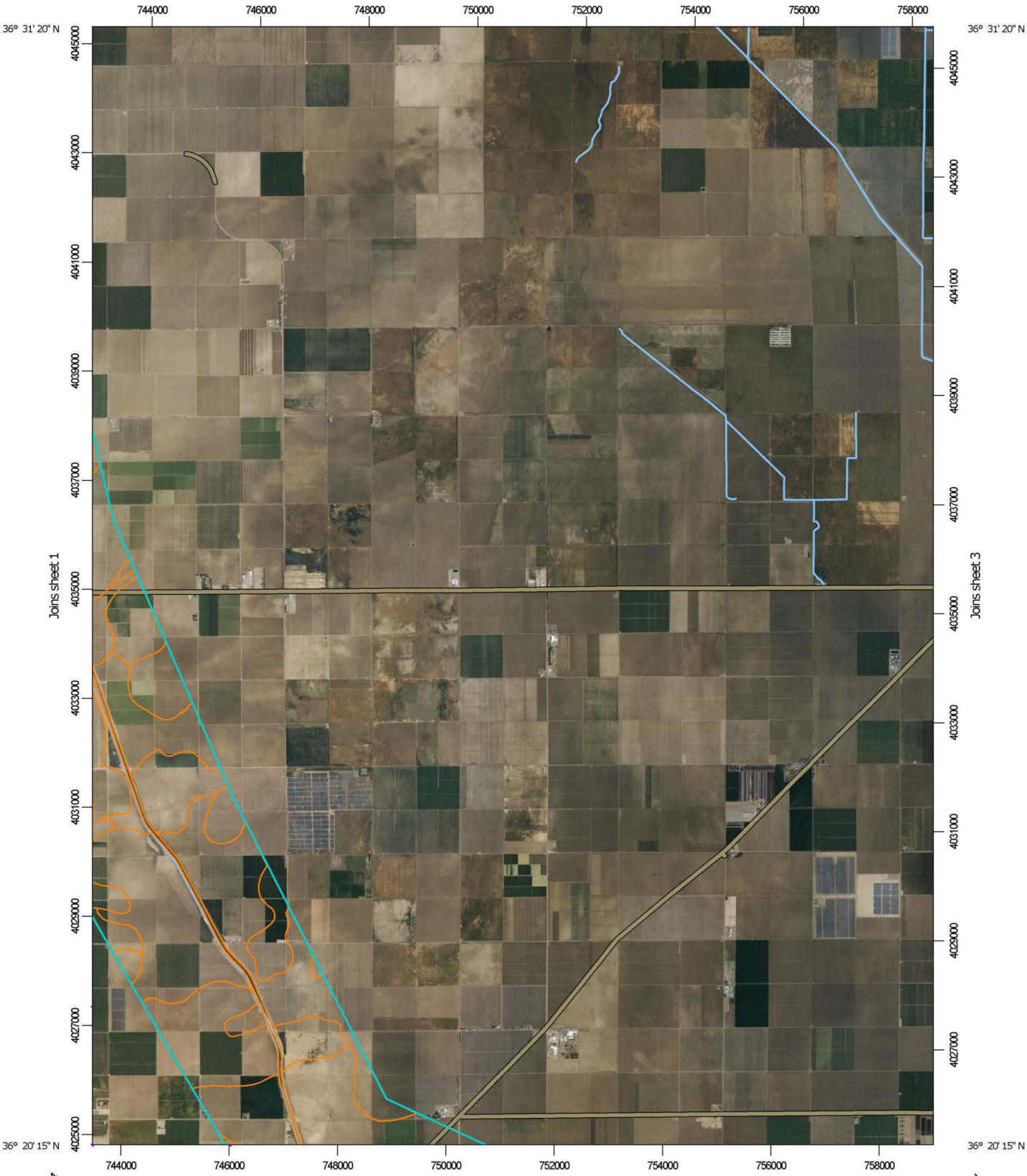
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84



Map Sheet Location

Custom Soil Resource Report
Soil Map
Map sheet 2 of 6



Map Scale: 1:100,000 if printed on A portrait (8.5" x 11") sheet.

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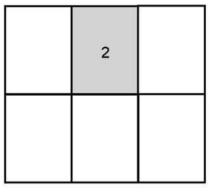
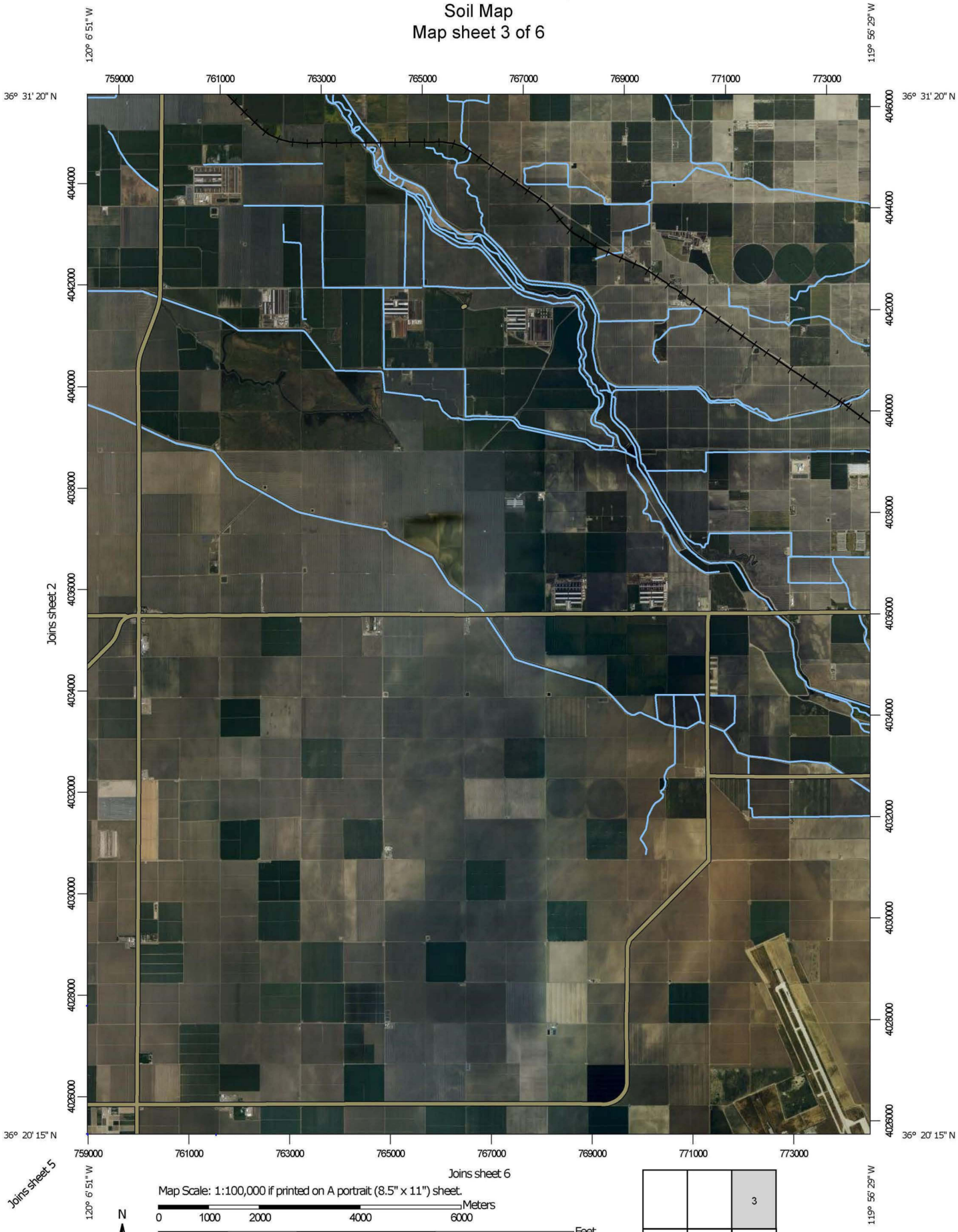
Feet: 0 4500 9000 18000 27000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84



Map Sheet Location

Custom Soil Resource Report
Soil Map
Map sheet 3 of 6



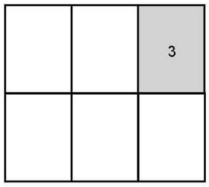
Map Scale: 1:100,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 1000 2000 4000 6000

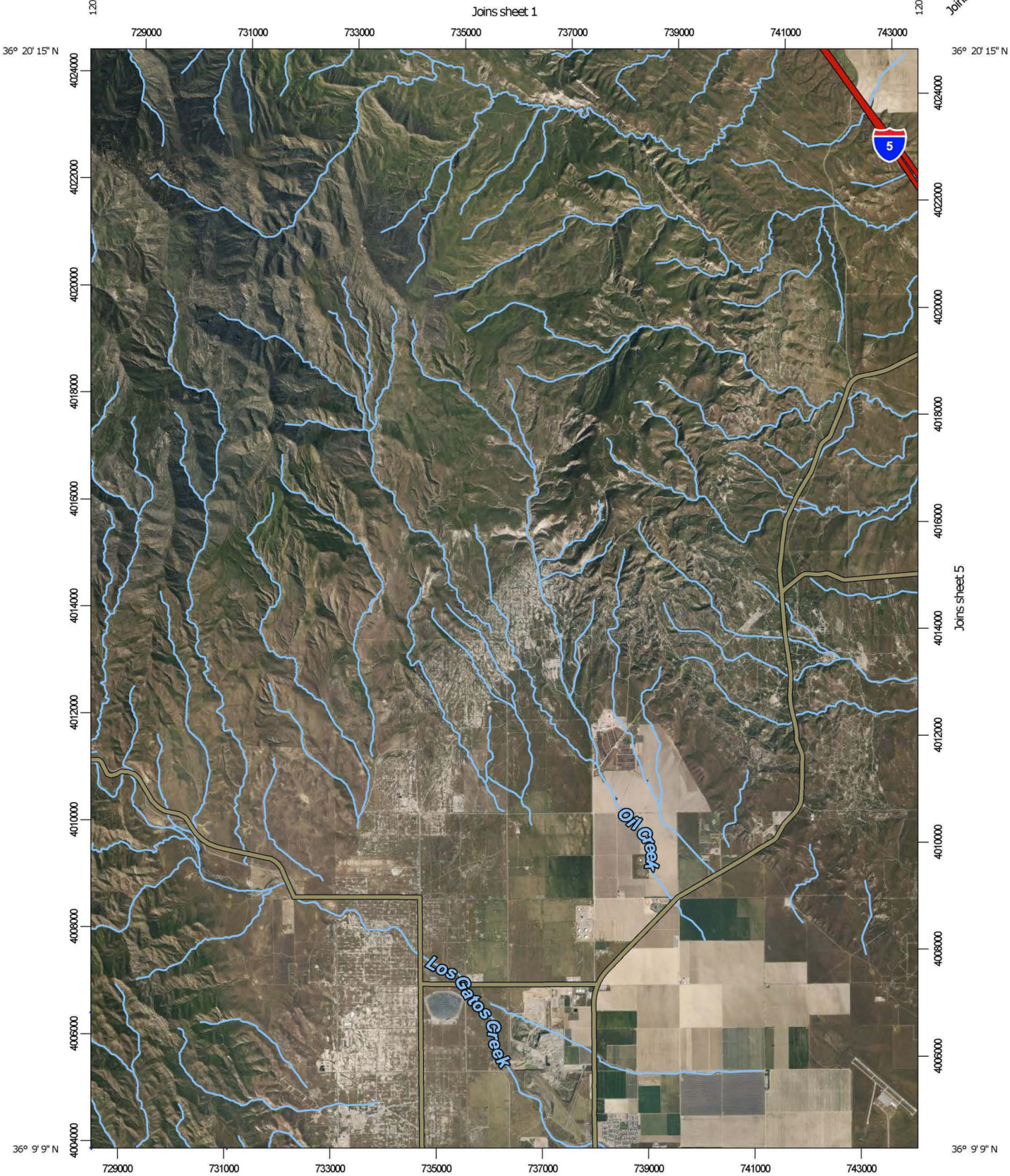
Feet: 0 4500 9000 18000 27000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84



Map Sheet Location

Custom Soil Resource Report
Soil Map
Map sheet 4 of 6



Map Scale: 1:100,000 if printed on A portrait (8.5" x 11") sheet.

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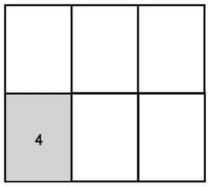
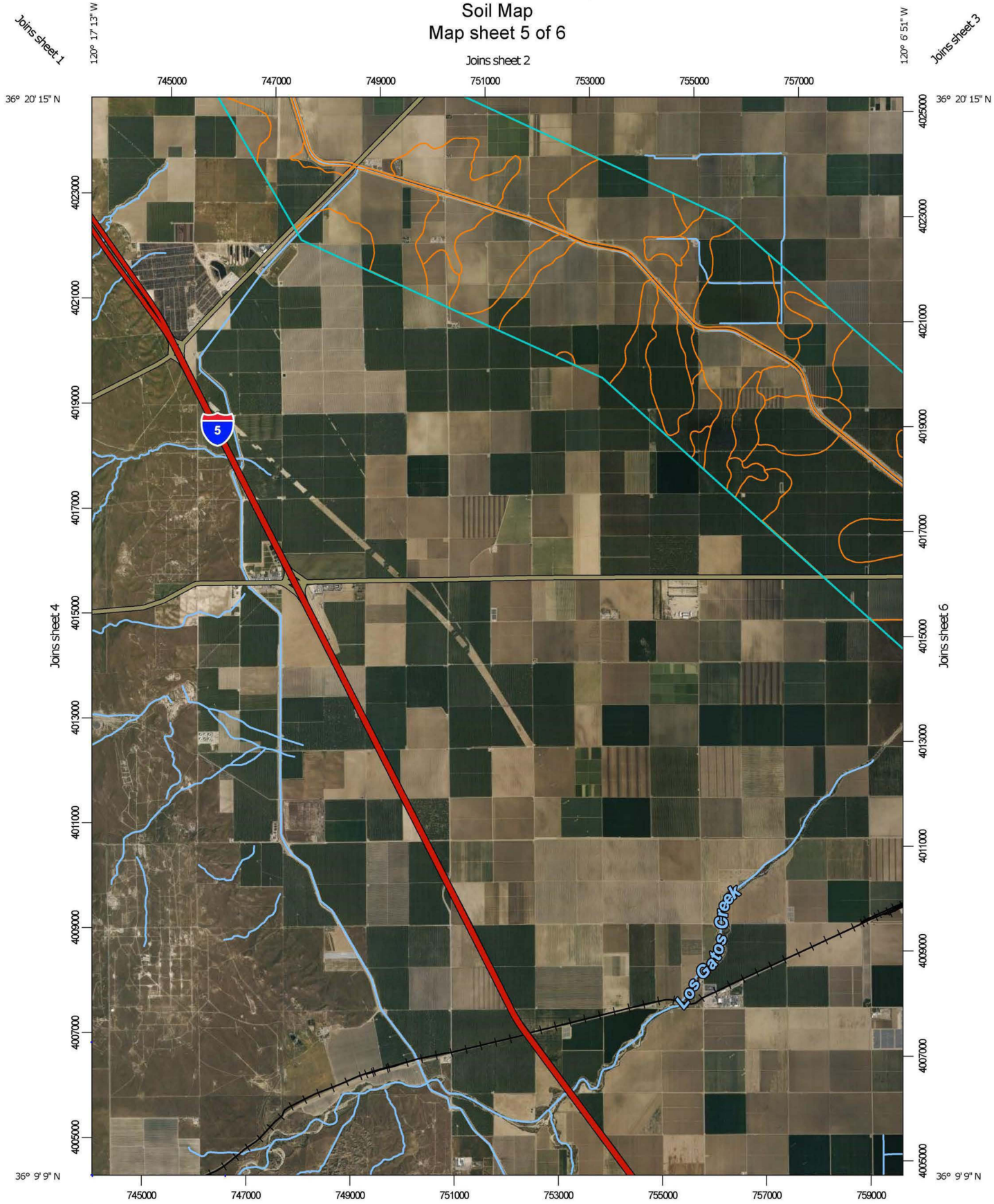
Feet: 0 4500 9000 18000 27000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84



Map Sheet Location

Custom Soil Resource Report
Soil Map
Map sheet 5 of 6



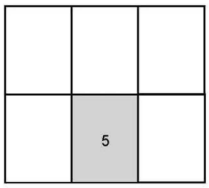
Map Scale: 1:100,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 1000 2000 4000 6000

Feet: 0 4500 9000 18000 27000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84



Map Sheet Location

Custom Soil Resource Report
Soil Map
Map sheet 6 of 6

Map Scale: 1:100,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 1000 2000 4000 6000

Feet: 0 4500 9000 18000 27000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

		6

Map Sheet Location

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Fresno County, California, Western Part
Survey Area Data: Version 16, Sep 3, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 1, 1999—Dec 31, 2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
436	Panoche loam, 0 to 2 percent slopes	1,158.7	2.6%
437	Panoche sandy loam, 0 to 2 percent slopes	275.4	0.6%
442	Panoche clay loam, 0 to 2 percent slopes	2,846.2	6.4%
445	Excelsior sandy loam, 0 to 2 percent slopes, MLRA 17	940.4	2.1%
447	Excelsior sandy loam, sandy substratum, 0 to 2 percent slopes	174.7	0.4%
459	Ciervo clay, 0 to 2 percent slopes	11,186.0	25.1%
461	Ciervo clay, saline-sodic, wet, 0 to 1 percent slopes	373.7	0.8%
462	Ciervo, wet-Ciervo complex, saline-sodic, 0 to 1 percent slopes	2,018.8	4.5%
474	Westhaven loam, 0 to 2 percent slopes	2,429.1	5.4%
477	Westhaven clay loam, 0 to 2 percent slopes	7,934.1	17.8%
478	Cerini sandy loam, 0 to 2 percent slopes, MLRA 17	1,359.6	3.0%
479	Cerini clay loam, 0 to 2 percent slopes	8,612.3	19.3%
490	Cerini sandy loam, subsided, 0 to 5 percent slopes	122.5	0.3%
492	Panoche loam, subsided, 0 to 5 percent slopes	640.7	1.4%
960	Excelsior, sandy substratum-westhaven association, flooded, 0 to 2 percent slopes	3,837.0	8.6%
981	Sewage disposal pond	54.3	0.1%
982	Water	674.6	1.5%
Totals for Area of Interest		**44,644.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps.

The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Fresno County, California, Western Part

436—Panoche loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2ycb2
Elevation: 260 to 850 feet
Mean annual precipitation: 7 to 9 inches
Mean annual air temperature: 63 to 65 degrees F
Frost-free period: 311 to 335 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Panoche and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Panoche

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Typical profile

Ap - 0 to 7 inches: loam
Bw - 7 to 24 inches: loam
Bk - 24 to 60 inches: loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneVery rare
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Kimberlina

Percent of map unit: 5 percent

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Cerini

Percent of map unit: 3 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Calflax

Percent of map unit: 2 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Excelsior

Percent of map unit: 2 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Twisselman

Percent of map unit: 2 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Kettleman

Percent of map unit: 1 percent
Landform: Hills, alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, tread
Down-slope shape: Concave, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

437—Panoche sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hnzp

Elevation: 300 to 850 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 250 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Panoche, sandy loam, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Panoche, Sandy Loam

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 7 inches: sandy loam
Bw - 7 to 16 inches: loam
Bk1 - 16 to 27 inches: loam
Bk2 - 27 to 43 inches: loam
Bk3 - 43 to 57 inches: loam
Bk4 - 57 to 72 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Cerini, clay loam

Percent of map unit: 4 percent
Landform: Alluvial fans

Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Westhaven, loam
Percent of map unit: 4 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Kimberlina, sandy loam
Percent of map unit: 4 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Excelsior, sandy loam
Percent of map unit: 3 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

442—Panoche clay loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 2ycb1
Elevation: 270 to 890 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 62 to 65 degrees F
Frost-free period: 305 to 326 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Panoche, clay loam, and similar soils: 87 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Panoche, Clay Loam

Setting
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile
Ap - 0 to 7 inches: clay loam
Bw - 7 to 16 inches: loam
Bk1 - 16 to 27 inches: loam
Bk2 - 27 to 43 inches: loam
Bk3 - 43 to 57 inches: loam

Bk4 - 57 to 72 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Calflax

Percent of map unit: 4 percent
Landform: Fan skirts
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Cerini

Percent of map unit: 3 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Posochanet

Percent of map unit: 2 percent
Landform: Fan skirts
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ciervo

Percent of map unit: 2 percent
Landform: Fan skirts
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Kimberlina

Percent of map unit: 1 percent
Landform: Alluvial fans
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Wasco

Percent of map unit: 1 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

445—Excelsior sandy loam, 0 to 2 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2ss8v
Elevation: 200 to 1,000 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 62 to 65 degrees F
Frost-free period: 240 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Excelsior and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Excelsior

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous coarse-loamy alluvium derived from sedimentary rock

Typical profile

Ap - 0 to 7 inches: sandy loam
A - 7 to 23 inches: sandy loam
C - 23 to 72 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneVery rare
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups
Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Cerini
Percent of map unit: 6 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Excelsior
Percent of map unit: 4 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Kimberlina
Percent of map unit: 3 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Westhaven
Percent of map unit: 1 percent
Landform: Flood plains, alluvial fans
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Bakersfield
Percent of map unit: 1 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear

Hydric soil rating: Yes

447—Excelsior sandy loam, sandy substratum, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hnzw
Elevation: 180 to 900 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Excelsior, sandy loam, sandy substratum, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Excelsior, Sandy Loam, Sandy Substratum

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 7 inches: sandy loam
A - 7 to 23 inches: sandy loam
C1 - 23 to 53 inches: stratified loamy sand to silt loam
C2 - 53 to 72 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): 2s

Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Kimberlina, sandy loam
Percent of map unit: 4 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Excelsior, sandy loam
Percent of map unit: 4 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Excelsior, sandy loam, saline-sodic
Percent of map unit: 2 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Wasco, sandy loam
Percent of map unit: 2 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Polvadero, sandy loam
Percent of map unit: 2 percent
Landform: Fan remnants
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Westhaven, loam
Percent of map unit: 1 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

459—Ciervo clay, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: hp02
Elevation: 210 to 730 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Ciervo, clay, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ciervo, Clay

Setting

Landform: Fan skirts
Landform position (two-dimensional): Footslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 17 inches: clay
Bw - 17 to 27 inches: clay
Bknyz - 27 to 41 inches: silty clay
Bknz - 41 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Ciervo, clay loam

Percent of map unit: 5 percent
Landform: Fan skirts
Hydric soil rating: No

Ciervo, clay, saline-sodic, wet

Percent of map unit: 4 percent
Landform: Fan skirts
Hydric soil rating: No

Ciervo, clay, saline-sodic

Percent of map unit: 4 percent

Landform: Fan skirts
Hydric soil rating: No

Tranquillity, clay, saline-sodic
Percent of map unit: 3 percent
Landform: Fan skirts
Hydric soil rating: No

Cerini, clay loam
Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

Panoche, clay loam
Percent of map unit: 1 percent
Landform: Alluvial fans
Hydric soil rating: No

Westhaven, loam
Percent of map unit: 1 percent
Landform: Alluvial fans
Hydric soil rating: No

461—Ciervo clay, saline-sodic, wet, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: hp03
Elevation: 170 to 330 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 240 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Ciervo, clay, saline-sodic, wet, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ciervo, Clay, Saline-sodic, Wet

Setting
Landform: Fan skirts
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile
Ap - 0 to 17 inches: clay
Bw - 17 to 27 inches: clay
Bknyz - 27 to 41 inches: silty clay

Bknz - 41 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 48 to 60 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 50.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Ciervo, clay, saline-sodic

Percent of map unit: 6 percent
Landform: Fan skirts
Ecological site: R017XY907CA - Aridic Alkali Desert
Hydric soil rating: No

Tranquillity, clay, saline-sodic, wet

Percent of map unit: 5 percent
Landform: Fan skirts
Ecological site: R017XY907CA - Aridic Alkali Desert
Hydric soil rating: No

Ciervo, clay loam, saline-sodic, wet

Percent of map unit: 5 percent
Landform: Fan skirts
Ecological site: R017XY907CA - Aridic Alkali Desert
Hydric soil rating: No

Calflax, clay loam, saline-sodic, wet

Percent of map unit: 4 percent
Landform: Fan skirts
Ecological site: R017XY907CA - Aridic Alkali Desert
Hydric soil rating: No

462—Ciervo, wet-Ciervo complex, saline-sodic, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: hp04
Elevation: 170 to 580 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 240 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ciervo, clay, saline-sodic, wet, and similar soils: 50 percent
Ciervo, clay, saline-sodic, and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ciervo, Clay, Saline-sodic, Wet

Setting

Landform: Fan skirts
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 17 inches: clay
Bw - 17 to 27 inches: clay
Bknyz - 27 to 41 inches: silty clay
Bknz - 41 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 48 to 60 inches
Frequency of flooding: Very rareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 50.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): 3s

Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Ciervo, Clay, Saline-sodic

Setting

Landform: Fan skirts
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 17 inches: clay
Bw - 17 to 27 inches: clay
Bknyz - 27 to 41 inches: silty clay
Bknz - 41 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 40.0
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Ciervo, clay loam, saline-sodic, wet

Percent of map unit: 5 percent
Landform: Fan skirts
Hydric soil rating: No

Cerini, clay loam

Percent of map unit: 3 percent
Landform: Fan skirts
Hydric soil rating: No

Ciervo, clay

Percent of map unit: 3 percent
Landform: Fan skirts
Hydric soil rating: No

Calflax, clay loam, saline-sodic, wet
Percent of map unit: 3 percent
Landform: Fan skirts
Hydric soil rating: No

Panoche, clay loam
Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Tranquillity, clay, saline-sodic
Percent of map unit: 3 percent
Landform: Fan skirts
Hydric soil rating: No

474—Westhaven loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: hp09
Elevation: 270 to 690 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 65 degrees F
Frost-free period: 240 to 290 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Westhaven, loam, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Westhaven, Loam

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile
Ap - 0 to 7 inches: loam
Bw - 7 to 17 inches: loam
Bk1 - 17 to 42 inches: stratified loam to silty clay loam
Bk2 - 42 to 65 inches: stratified loamy sand to silty clay loam
C - 65 to 72 inches: stratified loam to silty clay loam

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Cerini, clay loam

Percent of map unit: 4 percent
Landform: Alluvial fans
Hydric soil rating: No

Wasco, sandy loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Kimberlina, sandy loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Excelsior, sandy loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Panoche, loam

Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

477—Westhaven clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hp0d
Elevation: 250 to 640 feet

Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 65 degrees F
Frost-free period: 240 to 290 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Westhaven, clay loam, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Westhaven, Clay Loam

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 12 inches: clay loam
Bw - 12 to 21 inches: silty clay loam
Bk - 21 to 61 inches: stratified loam to silty clay loam
C - 61 to 72 inches: stratified loamy sand to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Cerini, clay loam

Percent of map unit: 5 percent
Landform: Alluvial fans
Hydric soil rating: No

Ciervo, clay
Percent of map unit: 2 percent
Landform: Fan skirts
Hydric soil rating: No

Calflax, clay loam, saline-sodic
Percent of map unit: 2 percent
Landform: Fan skirts
Hydric soil rating: No

Westhaven, loam
Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

Posochanet, clay loam, saline-sodic
Percent of map unit: 2 percent
Landform: Fan skirts
Hydric soil rating: No

Lethent, clay loam
Percent of map unit: 2 percent
Landform: Fan remnants
Hydric soil rating: No

478—Cerini sandy loam, 0 to 2 percent slopes, MLRA 17

Map Unit Setting
National map unit symbol: 2vnd5
Elevation: 210 to 930 feet
Mean annual precipitation: 6 to 11 inches
Mean annual air temperature: 62 to 66 degrees F
Frost-free period: 240 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Cerini and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cerini

Setting
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile
Ap - 0 to 5 inches: sandy loam
Bw - 5 to 25 inches: clay loam

Bk1 - 25 to 35 inches: stratified sandy loam to clay loam
Bk2 - 35 to 79 inches: stratified sandy loam to clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneVery rare
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Westhaven, loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Excelsior, sandy loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Kimberlina, sandy loam

Percent of map unit: 2 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Granoso

Percent of map unit: 1 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ciervo, clay

Percent of map unit: 1 percent
Landform: Alluvial fans

Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

479—Cerini clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hp0g
Elevation: 160 to 800 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 230 to 290 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Cerini, clay loam, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cerini, Clay Loam

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 5 inches: clay loam
Bw - 5 to 25 inches: clay loam
Bk1 - 25 to 35 inches: stratified sandy loam to clay loam
Bk2 - 35 to 62 inches: stratified sandy loam to clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Ciervo, clay

Percent of map unit: 4 percent
Landform: Fan skirts
Hydric soil rating: No

Panoche, clay loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Excelsior, sandy loam

Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

Kimberlina, sandy loam

Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

Cerini, sandy loam

Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

Westhaven, loam

Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

490—Cerini sandy loam, subsided, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: hp0n
Elevation: 330 to 620 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 240 to 290 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Cerini, sandy loam, subsided, and similar soils: 85 percent

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cerini, Sandy Loam, Subsided

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 5 inches: sandy loam
Bw - 5 to 25 inches: clay loam
Bk1 - 25 to 35 inches: stratified sandy loam to clay loam
Bk2 - 35 to 62 inches: stratified sandy loam to clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Excelsior, sandy loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Kimberlina, sandy loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Westhaven, loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Panoche, loam, subsided
Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

Cerini, clay loam, subsided
Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

Cerini, sandy loam
Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

492—Panoche loam, subsided, 0 to 5 percent slopes

Map Unit Setting
National map unit symbol: hp0q
Elevation: 330 to 590 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Panoche, loam, subsided, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Panoche, Loam, Subsided

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile
Ap - 0 to 7 inches: loam
Bw - 7 to 16 inches: loam
Bk1 - 16 to 27 inches: loam
Bk2 - 27 to 43 inches: loam
Bk3 - 43 to 57 inches: loam
Bk4 - 57 to 72 inches: sandy loam

Properties and qualities
Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Cerini, clay loam, subsided

Percent of map unit: 5 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Panoche, clay loam, subsided

Percent of map unit: 5 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Excelsior, sandy loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Kimberlina, sandy loam

Percent of map unit: 2 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

960—Excelsior, sandy substratum-westhaven association, flooded, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hp2l

Elevation: 310 to 850 feet
Mean annual precipitation: 7 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Excelsior, sandy loam, sandy substratum, and similar soils: 50 percent
Westhaven, loam, and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Excelsior, Sandy Loam, Sandy Substratum

Setting

Landform: Alluvial fans, flood plains
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Tread
Microfeatures of landform position: Bars and channels
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

A1 - 0 to 7 inches: sandy loam
A2 - 7 to 23 inches: sandy loam
C1 - 23 to 53 inches: stratified loamy sand to silt loam
C2 - 53 to 72 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: Occasional
Calcium carbonate, maximum content: 3 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Description of Westhaven, Loam

Setting

Landform: Alluvial fans, flood plains
Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Tread
Microfeatures of landform position: Bars and channels
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 7 inches: loam
Bw - 7 to 17 inches: loam
Bk1 - 17 to 42 inches: stratified loam to silty clay loam
Bk2 - 42 to 65 inches: stratified loamy sand to silty clay loam
C - 65 to 72 inches: stratified loam to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: Occasional
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Minor Components

Ciervo, clay

Percent of map unit: 10 percent
Landform: Fan skirts
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Excelsior, sandy loam

Percent of map unit: 5 percent
Landform: Alluvial fans, flood plains
Microfeatures of landform position: Bars and channels
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Cerini, clay loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Anela, very gravelly sandy loam
Percent of map unit: 2 percent
Landform: Flood plains
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

981—Sewage disposal pond

Map Unit Setting
National map unit symbol: hp2n
Elevation: 140 to 650 feet
Farmland classification: Not prime farmland

Map Unit Composition
Sewage disposal pond: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

982—Water

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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Appendix C
WETS Table

WETS Table

WETS Station: FIVE POINTS 5 SSW, CA								
Requested years: 1942 - 2000								
Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	54.9	36.0	45.5	1.40	0.64	1.70	4	0.1
Feb	62.5	39.5	51.0	1.31	0.53	1.50	3	0.0
Mar	68.0	41.6	54.8	1.08	0.41	1.25	3	0.0
Apr	75.8	45.4	60.6	0.52	0.17	0.53	1	0.0
May	84.3	51.0	67.7	0.29	0.00	0.25	1	0.0
Jun	91.8	57.3	74.5	0.10	0.00	0.00	0	0.0
Jul	97.8	62.4	80.1	0.01	0.00	0.00	0	0.0
Aug	95.5	61.0	78.3	0.02	0.00	0.00	0	0.0
Sep	90.6	57.6	74.1	0.19	0.00	0.11	0	0.0
Oct	80.2	49.6	64.9	0.34	0.00	0.33	1	0.0
Nov	66.3	41.2	53.7	0.75	0.38	0.85	2	0.0
Dec	55.7	36.7	46.2	0.95	0.47	1.13	2	0.0
Annual:					5.14	7.93		
Average	77.0	48.3	62.6	-	-	-	-	-
Total	-	-	-	6.95			18	0.1

GROWING SEASON DATES			
Years with missing data:	24 deg = 43	28 deg = 36	32 deg = 32
Years with no occurrence:	24 deg = 7	28 deg = 2	32 deg = 0
Data years used:	24 deg = 16	28 deg = 23	32 deg = 27
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	Insufficient data	2/8 to 12/3: 298 days	3/20 to 11/19: 244 days
70 percent *	Insufficient data	1/28 to 12/15: 321 days	3/10 to 11/30: 265 days
* Percent chance of the growing season occurring between the Beginning and Ending dates.			

STATS TABLE - total precipitation (inches)													
Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1942												0.83	0.83
1943	1.50	0.64	2.81	0.49									5.44
1944			0.16	0.59	0.86	T	0.00	0.00	0.00	0.53	M0.81	0.66	3.61
1945	0.44	2.75	0.90	0.11	1.11	0.09	0.00	T	T	0.64	0.39	1.07	7.50
1946	0.29	0.81	0.98	0.02	0.13	0.00	T	0.00	0.00	0.25	0.96	1.77	5.21
1947	0.29	0.72	0.78	0.18	0.25	0.00	0.00	0.00					2.22
1948				1.47	0.06	MT						1.06	2.59
1949	0.48	0.57	2.29	0.09	0.68	T	0.01	T	0.00	T	0.31	0.95	5.38
1950	0.68	0.61	0.89	0.46	0.00	0.00	0.00	0.00	0.39	0.46	0.34	0.61	4.44
1951	1.25	0.25	0.07	0.60	0.00	0.00	0.00	0.00	0.00	0.11	0.75	1.94	4.97

1952	2.02	0.25	1.66	1.50	0.00	0.00	0.00	0.00	0.00	0.36	0.88	1.93	8.60
1953	0.41	T	0.20	1.06	0.26	T	0.00	0.00	0.00	0.02	1.33	0.12	3.40
1954	1.70	0.47	1.18	0.32	0.28	0.02	0.00	0.00	0.00	0.00		M1.13	5.10
1955	2.63	1.50	0.00	0.97	1.11	0.00	0.00	0.00	0.00	0.00	0.35	3.51	10.07
1956					1.10	0.00	0.00	0.00	T	0.74	0.00	0.11	1.95
1957	1.98	0.63	T	1.08	0.30						M0.00	1.06	5.05
1958	1.53	2.48	3.27	1.39	0.49	0.00	0.00	0.00	0.64	0.00	0.05	0.28	10.13
1959	1.33		0.04	0.03	0.01	0.00	0.00	0.00	0.06	0.00	0.00	0.18	1.65
1960	0.97	1.24	0.34	0.63	0.00	0.00	0.00	0.00	0.00	0.00	2.04	0.26	5.48
1961	1.36	0.51	0.17	0.30	0.32	0.00	0.04	0.00	0.00	0.00	1.06	1.42	5.18
1962	1.05	3.45	0.57	T	0.07	0.00	0.00	0.00	0.00	0.17	0.00	1.20	6.51
1963	0.81	1.64	0.50	1.16	0.33	0.00	0.00	0.00	0.07		1.64	0.09	6.24
1964	0.84			MT	0.03	T		M0.15	0.00	0.91		0.76	2.69
1965	0.33	0.32	0.59	1.29	0.00		0.04				3.09	1.26	6.92
1966	0.46		0.01	0.00	0.19	0.04	0.28	0.00	0.05	0.00	0.29	1.86	3.18
1967	1.49	0.10	1.04	1.43	0.12	0.03	0.00	0.00	0.23	0.00	1.66		6.10
1968	0.53	0.69	1.09	0.43	0.00	0.00	0.00	0.00	0.00	1.08	1.11	0.94	5.87
1969	4.91	4.50	0.84	0.73	0.00	0.99	0.02	0.00	0.00	0.04	0.37	0.23	12.63
1970	1.71	M0.84	M0.45	0.04	0.00	0.02	0.00	0.00	0.00	0.00	1.07	1.81	5.94
1971	0.18	0.11	0.09	0.60	0.80	0.00	0.00	0.00	0.00	0.03	0.44	1.39	3.64
1972	0.11	T	0.00	0.01	0.05	0.00	0.02	0.00	0.20	0.46	2.34	0.61	3.80
1973	2.01	3.12	1.14	0.03	0.00	0.00	0.00	0.00	0.00	0.63	0.39	0.50	7.82
1974	3.06	0.04	1.24	0.11	0.00	0.00	0.11	0.00	0.00	0.67	0.26	1.11	6.60
1975	0.22	0.66	1.21	0.22	0.00	0.00	0.00	0.22	0.08	0.68	0.06	0.12	3.47
1976	0.00	2.16	0.45	1.39	0.00	0.03	T	0.25	2.64	0.16	0.75	0.58	8.41
1977	0.52	0.07	0.32	0.01	0.93	0.17	0.00	0.00	0.00	T	0.25	2.38	4.65
1978	2.38	3.89		1.56	0.00	0.00	0.00	0.00	1.48	0.00	1.15	0.55	11.01
1979	2.31	1.66	0.99	0.00	0.00	0.00	0.13	0.00	0.05	0.10	0.52	0.32	6.08
1980	3.31	2.85	1.28	0.20	0.26	0.00	0.01	0.00	0.00	0.00	0.10	0.13	8.14
1981	M1.18	M0.47	2.61	1.39	0.18	0.00	0.00	0.00	0.00	0.37	1.04	0.34	7.58
1982	M0.53	0.42	M2.53	1.58	0.00	2.50	M0.00	M0.00	0.91	0.71	M2.22	0.84	12.24
1983	2.84	2.08	3.47	0.59	0.18	0.00	0.00	0.36	1.24	T	M0.45	M1.46	12.67
1984	0.11	0.39	M0.10	0.10	0.00	0.05	0.00	M0.00	0.00	0.47	1.02	1.76	4.00
1985	M0.48	0.00	0.95	0.00	0.00	0.05		0.00	0.00	0.50	1.89	0.65	4.52
1986	1.06	2.22	2.15	0.63	0.00	0.00	0.00	M0.00	0.	M0.	0.00	M0.	6.33

									00	00		27	
1987	1.39	0.59	2.20	M0.00		0.00	0.00	M0.00	M0.00	M0.27	0.46	1.05	5.96
1988	M1.34	0.00	0.11		0.00	0.22	0.00	0.00	0.00	0.00	0.74	M1.81	4.22
1989	0.23	1.01	0.26	0.00	0.07	0.00	0.00	0.00	0.89	0.05	0.44	0.00	2.95
1990	2.38	0.86	0.28	0.27	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.16	4.63
1991	0.32	1.60	3.49	M0.00	M0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.98	6.62
1992		3.20	M1.19	0.00	0.00	0.00	0.00	0.00	0.00	2.06	0.00	M1.32	7.77
1993	4.38	2.65	4.08	0.00			0.00	0.00	0.00	M1.30	M0.43	M0.78	13.62
1994	1.51	1.59	M0.31	0.36	2.13	0.00	0.00	M0.00	M0.35	0.35	M0.45	0.34	7.39
1995	6.11	M1.17	M5.59	0.49	0.60	0.09	0.00	0.00	0.00	0.00	0.00	0.75	14.80
1996	M1.50	M1.71	0.93	0.33	M0.13	M0.16	0.00	0.00	0.00	1.75	0.56	3.45	10.52
1997	M1.93	0.44	1.01	T	T	0.00	T	0.00	M0.08	0.10	1.85	0.79	6.20
1998	M1.09	4.86	1.45	1.29	1.77	0.45	0.00	0.00	0.53	0.36	1.08	0.00	12.88
1999	M0.42	M0.24	M0.83	0.41			0.00	0.00					1.90
2000	M1.60	M2.31	M1.15	0.94	0.00	M0.22	0.00			1.53	0.00	0.00	7.75
2001	M2.39	M1.73	M2.38	0.77	0.00	0.00	T	0.00	0.00	M0.05		M0.57	7.89
2002		M0.18	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	M0.75	M2.27	4.03
2003	M0.35	1.45	0.81	0.51	0.78	0.00	0.00	0.06	0.00	0.04	0.12	1.59	5.71
2004	0.83	2.54	M0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.09	0.30	3.70	9.46
2005	1.39	1.91	1.00		0.60	0.00		0.00	0.16			0.39	5.45
2006	3.27		M1.08	0.36	1.10	0.00	M0.00	0.00	0.00	0.32	0.08	0.14	6.35
2007	0.38	0.65	0.24	0.61	0.00	0.00	0.00	M0.00	0.68	0.35	0.03	0.87	3.81
2008	3.88	0.32	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.22	0.34	M0.80	5.88
2009	0.40	M1.71	0.01	0.00	0.03	0.52	0.00	0.00	0.00	0.54	0.08	1.31	4.60
2010	2.11	2.32	0.23	1.38		0.00	0.00	0.00	0.00	0.00	0.95	3.19	10.18
2011	1.88	0.99	M1.52	M0.43	0.04	0.42	0.00	0.00	M0.00	0.42	0.72	0.00	6.42
2012	0.37	0.41	1.44	1.02	0.00	0.00	M0.00	M0.00	0.00	0.00	0.42	0.90	4.56
2013	0.47	0.36	0.84	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.07	2.08
2014	0.10	M1.42	0.67	0.30	0.00	0.00	0.00	0.00	0.00	0.00	1.00	2.47	5.96
2015	0.10	0.28	0.00	0.56	0.47	0.00	0.00	M0.00	0.00	0.39	0.76	1.01	3.57
2016	2.92	0.00	1.11	0.62	M0.55	0.00	0.00	0.00	0.00	0.70	1.00	0.70	7.60
2017	2.64	2.72	0.84	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	6.88
2018	1.21	0.00	2.71	0.00	M0.00	0.00	0.00	0.00	0.00	0.21	1.37	0.95	6.45
2019	1.09	2.16	0.55	0.00	1.56	0.00	0.00	0.00	0.00	M0.00	0.40	2.23	7.99
2020	0.50	0.00	2.25	0.86	0.00	0.00	0.00	0.00	0.00	0.00	M0.00	0.33	3.94

2021	3.23	0.00	0.80	0.00	0.00	M0.00	4.03
Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.							
Data missing for all days in a month or year is blank.							
Creation date: 2016-07-22							

Appendix D
Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: San Luis Canal Embankment and Liner Raise Proj City/County: Fresno County Sampling Date: 6/23/21

Applicant/Owner: California Department of Water Resources State: CA Sampling Point: DP-1

Investigator(s): Eric Christensen, Megan Minter Section, Township, Range: S36, T17S, R15E

Landform (hillslope, terrace, etc.): alluvial fan Local relief (concave, convex, none): concave Slope (%): 0-2

Subregion (LRR): C - Mediterranean California Lat: 36.41408889 Long: -120.28734167 Datum: WGS84

Soil Map Unit Name: Excelsior, sandy substratum-westhaven association, flooded, 0 to 2 pen NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Climatic/hydrologic conditions were dry in 2020 and more typical in 2021. The PDSI for the study area was categorized as "near normal". Feature is an ephemeral drainage downhill from an actively disced agricultural row crop field. Hydrology of the region has been historically altered by agricultural development.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Herb Stratum (Plot size: ____)			
1. Brassica tournefortii	40	Yes	NL
2. Bromus madritensis	30	Yes	UPL
3. Amsinckia intermedia	20	Yes	NL
4.			
5.			
6.			
7.			
8.			
	90	= Total Cover	

Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	30	x 5 =	150
Column Totals:	30 (A)		150 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** ✓

Remarks:

SOIL

Sampling Point: DP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	2.5Y3/4	100					silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** ✓

Remarks:

Agricultural discing/culivation 50 feet upslope. Soil not consolidated and fine sediment routinely washes in to feature.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
✓ Surface Soil Cracks (B6)
✓ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
✓ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): _____

Water Table Present? Yes ____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): _____

Wetland Hydrology Present? **Yes** ✓ **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

Gate valve and concrete drain inlet structure downstream of data point. Drain conveys flow under San Luis Canal.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: San Luis Canal Embankment and Liner Raise Proj City/County: Fresno County Sampling Date: 6/23/21

Applicant/Owner: California Department of Water Resources State: CA Sampling Point: DP-2a

Investigator(s): Eric Christensen, Megan Minter Section, Township, Range: S6, T20S, R18E

Landform (hillslope, terrace, etc.): alluvial fan Local relief (concave, convex, none): concave Slope (%): 0-2

Subregion (LRR): C - Mediterranean California Lat: 36.21075278 Long: -120.05921944 Datum: WGS84

Soil Map Unit Name: Excelsior, sandy substratum-westhaven association, flooded, 0 to 2 pen NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** **Yes ✓ No ____**
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Climatic/hydrologic conditions were dry in 2020 and more typical in 2021. The PDSI for the study area was categorized as "near normal". Feature is a seasonal wetland below a drain inlet pipe within a constructed basin in the Arroyo Pasajero Recharge System. Hydrology of the region has been historically altered by agricultural development and locally for groundwater replenishment and flood control activities.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus fremontii	5	Yes	NL
2.			
3.			
4.			
	5 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. Baccharis salicifolia	15	Yes	FAC
2. Helianthus californicus	20	Yes	OBL
3. Salix exigua	5	Yes	FACW
4.			
5.			
	40 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Heliotropium curassavicum	20	Yes	FACU
2. Lepidium latifolium	20	Yes	FAC
3. Datura wrightii	2	No	UPL
4. Helianthus californicus	3	No	UPL
5. Typha latifolia	3	No	OBL
6.			
7.			
8.			
	48 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 52 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	5	x 2 =	10
FAC species	40	x 3 =	120
FACU species	20	x 4 =	80
UPL species		x 5 =	0
Column Totals:	85 (A)		230 (B)

Prevalence Index = B/A = 2.7058823529

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ✓ No ____**

Remarks:

SOIL

Sampling Point: DP-2a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	2.5Y3/2	90	7.5YR5/8	10	C	PL	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Data point within constructed groundwater recharge basin below drain inlet.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ✓ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 14

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

Drain outlet pipe 5 feet uphill of data point.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: San Luis Canal Embankment and Liner Raise Proj City/County: Fresno County Sampling Date: 6/23/21

Applicant/Owner: California Department of Water Resources State: CA Sampling Point: DP-2b

Investigator(s): Eric Christensen, Megan Minter Section, Township, Range: S6, T20S, R18E

Landform (hillslope, terrace, etc.): alluvial fan Local relief (concave, convex, none): concave Slope (%): 0-2

Subregion (LRR): C - Mediterranean California Lat: 36.21063611 Long: -120.05908611 Datum: WGS84

Soil Map Unit Name: Excelsior, sandy substratum-westhaven association, flooded, 0 to 2 pen NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

Climatic/hydrologic conditions were dry in 2020 and more typical in 2021. The PDSI for the study area was categorized as "near normal" in 2021. Feature is an upland adjacent to a constructed basin in the Arroyo Pasajero Recharge System. Hydrology of the region has been historically altered by agricultural development and locally for groundwater replenishment and flood control activities.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. Atriplex lentiformis	3	No	FAC
2.			
3.			
4.			
5.			
	3 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Lepidium latifolium	20	Yes	FAC
2. Amsinckia intermedia	3	No	NL
3. Bromus madritensis	2	No	UPL
4.			
5.			
6.			
7.			
8.			
	25 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 75 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:
OBL species	____	x 1 = 0
FACW species	____	x 2 = 0
FAC species	1	x 3 = 3
FACU species	____	x 4 = 0
UPL species	____	x 5 = 0
Column Totals:	1 (A)	3 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Marginal hydrophytic vegetation present due to dominance of one invasive facultative species.

SOIL

Sampling Point: DP-2b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	2.5Y3/2						silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Data point within access road/ramp adjacent to constructed groundwater recharge basin.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

No evidence of wetland hydrology

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: SAN LUIS CANAL EMBANKMENT AND LINER RAISE PROJECT
Date: June 22, 2021
Time: 12:15 p.m.
Project Number:
Town:
State: CA
Stream: Cantua Creek
Photo begin file#: 3011
Photo end file#: 3522
Investigator(s): Eric Christensen, Megan Minter

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details: Cantua Creek (OHWM-1)

Projection: WGS84 **Datum:** WGS84
Coordinates: 36.456012, -120.305631

Potential anthropogenic influences on the channel system:
San Luis Canal impedes eastward flow and rock gabion around culvert inlet controls, truncates, and receives episodic stream flow. Adjacent row crop tilling and management activities. Routine sediment management within stream portions to maintain capacity and prevent flooding. Extensive agricultural development upstream.

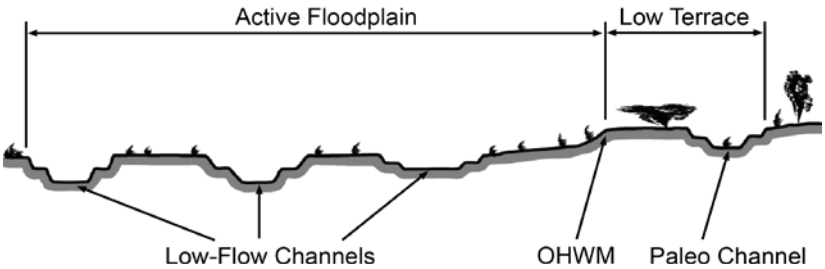
Brief site description:
Episodic stream bounded on east by San Luis Canal and on west by active row crop fields.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates: 1984-2021
- ☑ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation s for site
- ☑ Global positioning system GPS
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b Describe the sediment texture (using the Wentworth class size and the vegetation characteristics of the floodplain unit.
   c Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☑ GPS
   - ☑ Digitized on computer
   - ☐ Other:

Project ID: **Cross section ID:** **Date:** **Time:**

Cross section drawing:

West East

OHWM

GPS point: 36.45598611, -120.30565833

Indicators:

- ☐ Change in average sediment texture
- ☑ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:
OHWM is clearly defined by abrupt change in slope where bank falls into the channel. Soil cracks and debris evident along channel.

Floodplain unit: ☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: 36.45598333, -120.30565000

Characteristics of the floodplain unit:

Average sediment texture: fine silt

Total veg cover: 40 % Tree: 0 % Shrub: 20 % Herb: 20 %

Community successional stage:

- ☐ NA
- ☑ Early herbaceous & seedlings
- ☐ Mid herbaceous, shrubs, saplings
- ☐ Late (herbaceous, shrubs, mature trees

Indicators:

- ☑ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☑ Surface relief
- ☑ Other: Scour line
- ☑ Other: Vegetation absent from channel center
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: SAN LUIS CANAL EMBANKMENT AND LINER RAISE PROJECT	**Date:** June 22, 2021	**Time:** 12:45 p.m.
Project Number:	**Town:**	**State:** CA
Stream: Cantua Creek	**Photo begin file#:** 3011	**Photo end file#:** 3522
Investigator(s): Eric Christensen, Megan Minter		

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details: Cantua Creek (OHWM-2)

Projection: WGS84 **Datum:** WGS84

Coordinates: 36.44378056, -120.30215278

Potential anthropogenic influences on the channel system:

San Luis Canal impedes eastward flow and rock gabion around culvert inlet controls, truncates, and receives episodic stream flow. Adjacent row crop tilling and management activities. Routine sediment management within stream portions to maintain capacity and prevent flooding. Extensive agricultural development upstream.

Brief site description:

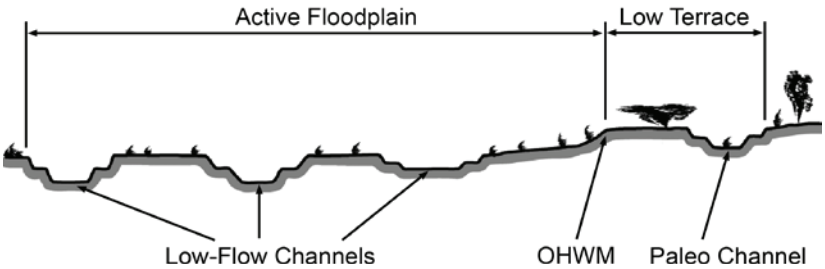
Episodic stream bounded on east by San Luis Canal and on west by active row crop fields.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates: 1984-2021
- ☑ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation s for site
- ☑ Global positioning system GPS
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b Describe the sediment texture (using the Wentworth class size and the vegetation characteristics of the floodplain unit.
   c Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☑ GPS
   - ☑ Digitized on computer
   - ☐ Other:

Project ID: **Cross section ID:** **Date:** **Time:**

Cross section drawing:

West East

OHWM

GPS point: 36.44378056, -120.30215278

Indicators:

- ☐ Change in average sediment texture
- ☑ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:
OHWM is clearly defined by abrupt change in slope where bank falls into the channel. Soil cracks and debris evident along channel.

Floodplain unit: ☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: 36.44376111, -120.30212222

Characteristics of the floodplain unit:

Average sediment texture: fine silt

Total veg cover: 20 % Tree: 0 % Shrub: 10 % Herb: 10 %

Community successional stage:

- ☐ NA
- ☑ Early herbaceous & seedlings
- ☐ Mid herbaceous, shrubs, saplings
- ☐ Late (herbaceous, shrubs, mature trees

Indicators:

- ☑ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☑ Surface relief
- ☑ Other: Scour line
- ☑ Other: Vegetation absent from channel center
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: SAN LUIS CANAL EMBANKMENT AND LINER RAISE PROJECT
Date: September 28, 2021
Time: 9:40 a.m.
Project Number:
Town:
State: CA
Stream: Salt Creek
Photo begin file#: 1952
Photo end file#: 5351
Investigator(s): Eric Christensen, Megan Minter

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details: Salt Creek (OHWM-3)

Projection: WGS84 **Datum:** WGS84
Coordinates: 36.40186667, -120.28400556

Potential anthropogenic influences on the channel system:
Stream is routed south and east of row crop agricultural field. Water pipeline and access road traverse segments of stream channel. San Luis Canal impedes eastward flow and directs stream north. Adjacent row crop tilling and management activities. Routine sediment management within upstream portions to maintain capacity and prevent flooding. Extensive agricultural development upstream.

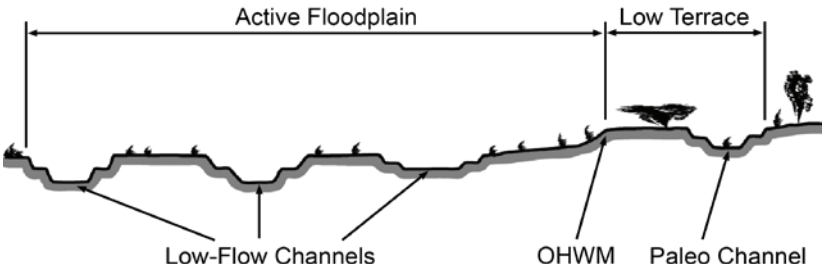
Brief site description:
Episodic stream bounded on west by agricultural field and east by San Luis Canal.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates: 1984-2021
- ☑ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation s for site
- ☑ Global positioning system GPS
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b Describe the sediment texture (using the Wentworth class size and the vegetation characteristics of the floodplain unit.
   c Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☑ GPS
   - ☑ Digitized on computer
   - ☐ Other:

Project ID: **Cross section ID:** **Date:** **Time:**

Cross section drawing:

West East

OHWM

GPS point: 36.40186667, -120.28400556

Indicators:

- ☑ Change in average sediment texture
- ☐ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:
OHWM is clearly defined by abrupt change in slope where bank falls into the channel. Soil cracks and debris evident along channel.

Floodplain unit: ☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: 36.40185833, -120.28397222

Characteristics of the floodplain unit:

Average sediment texture: fine sand

Total veg cover: 10 % Tree: 0 % Shrub: 0 % Herb: 10 %

Community successional stage:

- ☐ NA
- ☑ Early herbaceous & seedlings
- ☐ Mid herbaceous, shrubs, saplings
- ☐ Late (herbaceous, shrubs, mature trees

Indicators:

- ☑ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☑ Presence of bed and bank
- ☑ Benches
- ☑ Soil development
- ☑ Surface relief
- ☑ Other: Scour line
- ☑ Other: Vegetation absent from channel center
- ☐ Other: _____

Comments:

Appendix E

Aquatic Resources Table

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
ED-1	CALIFORNIA	R4SB	RIVERINE	Area	3.509	ACRE	B1WETNONADJ	36.45132097	-120.30319791	Cantua Creek
ED-2	CALIFORNIA	R4SB	RIVERINE	Area	0.195	ACRE	B1WETNONADJ	36.44429067	-120.30188920	Cantua Creek
ED-3	CALIFORNIA	R4SB	RIVERINE	Area	0.004	ACRE	B1WETNONADJ	36.44349964	-120.30222362	Cantua Creek
ED-4	CALIFORNIA	R4SB	RIVERINE	Area	0.008	ACRE	B1WETNONADJ	36.44326870	-120.30244732	Cantua Creek
ED-5	CALIFORNIA	R4SB	RIVERINE	Area	0.004	ACRE	B1WETNONADJ	36.41409342	-120.28730555	Unnamed tributary to Salt Creek
ED-6	CALIFORNIA	R4SB	RIVERINE	Area	0.071	ACRE	B1WETNONADJ	36.40475685	-120.28361671	Salt Creek
ED-7	CALIFORNIA	R4SB	RIVERINE	Area	0.062	ACRE	B1WETNONADJ	36.40368726	-120.28411595	Salt Creek
ED-8	CALIFORNIA	R4SB	RIVERINE	Area	0.016	ACRE	B1WETNONADJ	36.40271631	-120.28405513	Salt Creek
ED-9	CALIFORNIA	R4SB	RIVERINE	Area	0.217	ACRE	B1WETNONADJ	36.40068347	-120.28403268	Salt Creek
OW-1	CALIFORNIA	PUB	ORGSOILFLT	Area	0.641	ACRE	B2GRNDWATER	36.21917993	-120.06223761	Arroyo Pasajero
OW-2	CALIFORNIA	PUB	LACUSTRINF	Area	0.389	ACRE	B2GRNDWATER	36.21817551	-120.06288743	Arroyo Pasajero
OW-3	CALIFORNIA	PUB	ORGSOILFLT	Area	3.594	ACRE	B2GRNDWATER	36.18261132	-120.05036687	Arroyo Pasajero
SW-1	CALIFORNIA	PEM	DEPRESS	Area	0.448	ACRE	B1WETNONADJ	36.44527771	-120.30191816	Cantua Creek
SW-2	CALIFORNIA	PEM	DEPRESS	Area	81.688	ACRE	B2GRNDWATER	36.22097839	-120.06581638	Arroyo Pasajero
SW-3	CALIFORNIA	PEM	DEPRESS	Area	0.026	ACRE	B2GRNDWATER	36.21809267	-120.06313381	Arroyo Pasajero
SW-4	CALIFORNIA	PEM	DEPRESS	Area	0.01	ACRE	B2GRNDWATER	36.21824549	-120.06272409	Arroyo Pasajero
SW-5	CALIFORNIA	PEM	DEPRESS	Area	131.082	ACRE	B2GRNDWATER	36.21393598	-120.06355737	Arroyo Pasajero
SW-6	CALIFORNIA	PEM	DEPRESS	Area	14.956	ACRE	B2GRNDWATER	36.20270256	-120.05588193	Arroyo Pasajero
SW-7	CALIFORNIA	PEM	DEPRESS	Area	152.365	ACRE	B2GRNDWATER	36.18730847	-120.05378318	Arroyo Pasajero

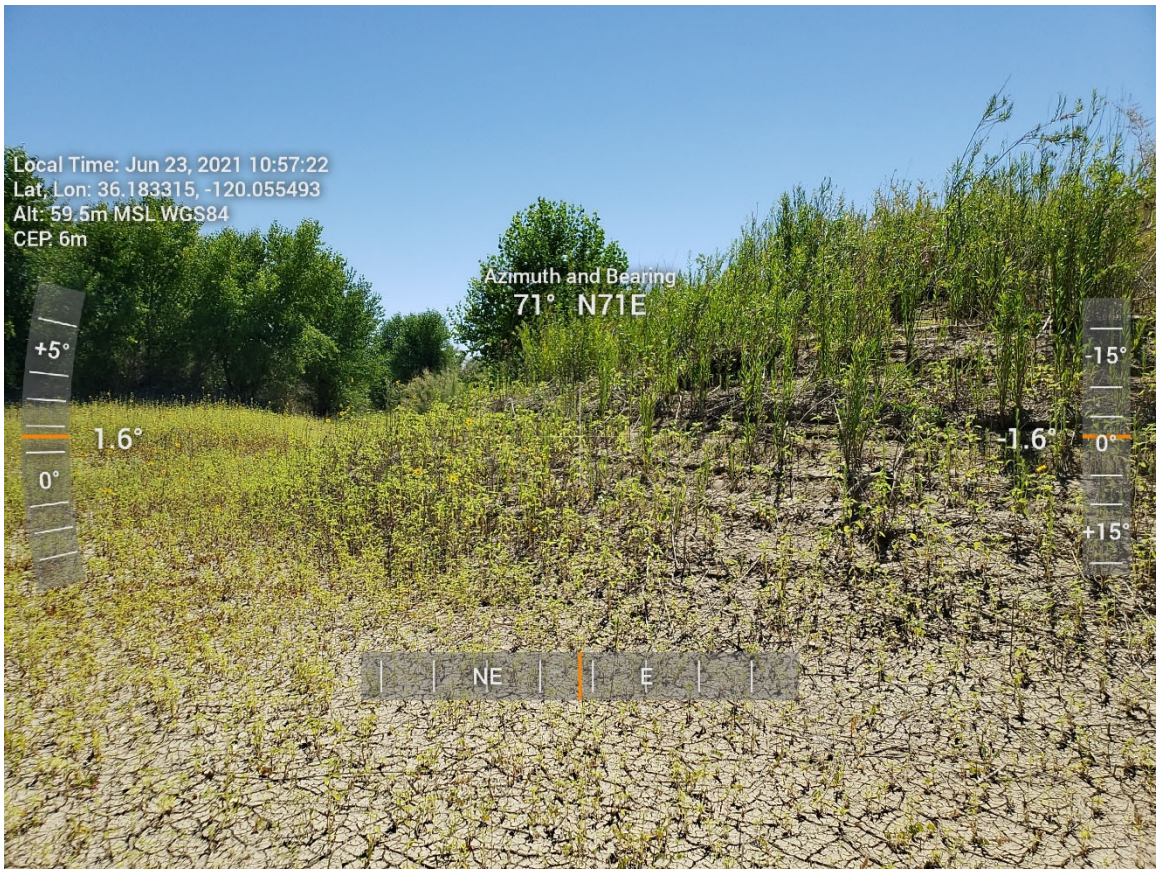
Appendix F

Aquatic Resources Study Area Photographs

San Luis Canal Embankment and Liner Raise Project

Photo 1

SW-1 is in the center with the rock gabion structure and concrete drain inlet to the right.
June 22, 2021



San Luis Canal Embankment and Liner Raise Project

Photo 2
View from SW-7 water marks on the mound to the right and cracked soil evident throughout.
June 23, 2021

San Luis Canal Embankment and Liner Raise Project

Photo 3

Data point 2a is in the center foreground and view is within SW-5 in the Arroyo Pasajero Recharge System.

June 22, 2021

San Luis Canal Embankment and Liner Raise Project

Photo 4
View of SW-7 with predominance of perennial pepperweed and other facultative plant species evident.
June 23, 2021

San Luis Canal Embankment and Liner Raise Project

Photo 5
ED-1 is shown in the center (cracked soil and drift lines evident) with the San Luis Canal Embankment on the left.
June 22, 2021

San Luis Canal Embankment and Liner Raise Project

Photo 6

ED-5 is in the center with data point 1 located at the center point. Concrete drain inlet receives flow when ephemeral drainage conveys water.
June 23, 2021

San Luis Canal Embankment and Liner Raise Project

Photo 7
View of ED-8 looking upstream with soil stratification and embedded shells/debris evident.
September 28, 2021

San Luis Canal Embankment and Liner Raise Project

Photo 8
OW-2 is shown in the center background under and behind a railroad bridge.
June 23, 2021

APPENDIX C

Cultural Resources Inventory Report (Confidential)

APPENDIX D

Tribal Cultural Consultation

Tribal Consultation Log
CASP SLFD Pools 17 and 18 Liner Raise Project

Date	Tribe	AB52?	From	From Agency	To	To Agency	Type	Subject
7/19/24	n/a	n/a	Melissa Grijalva-Foreman	DWR	NAHC	NAHC	email with attachments	SLF and Tribal contact list request.
7/19/24	n/a	n/a	NAHC	NAHC	Melissa Grijalva-Foreman (ESA)	DWR	email with attachments	SLF and Tribal contact list request receipt confirmation.
7/23/24	n/a	n/a	Cameron Vela (NAHC)	NAHC	Robin Hoffman (ESA)	DWR	email with attachments	SLF negative results and Tribal contact list.
10/10/24	Amah Mutsun Tribal Band	No	Jesse Dillon	DWR	Valentin Lopez, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Big Sandy Rancheria of Western Mono Indians	No	Jesse Dillon	DWR	Elizabeth Kipp, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Cold Springs Rancheria of Mono Indians	No	Jesse Dillon	DWR	Carol Bill, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Dumna Wo-Wah Tribal Government	No	Jesse Dillon	DWR	Robert Ledger, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Dunlap Band of Mono Indians	No	Jesse Dillon	DWR	Benjamin Charley, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Kitanemuk & Yowlumne Tejon Indians	No	Jesse Dillon	DWR	Delia Dominguez, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Northern Valley Yokut / Ohlone Tribe	No	Jesse Dillon	DWR	Timothy Perez, Tribal Compliance	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Salinan Tribe of Monterey, San Luis Obispo Counties	No	Jesse Dillon	DWR	Patti Dunton, Tribal Administrator	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Santa Rosa Rancheria Tachi Yokut Tribe	Yes	Jesse Dillon	DWR	Leo Sisco, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Sierra Foothill Wuksachi Yokuts Tribe	No	Jesse Dillon	DWR	Marie Dominguez, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Table Mountain Rancheria	No	Jesse Dillon	DWR	Michelle Heredia-Cordova,	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Traditional Choinumni Tribe	No	Jesse Dillon	DWR	David Alvarez, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Tule River Indian Tribe	No	Jesse Dillon	DWR	Neil Peyron, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Wuksachi Indian Tribe/Eshom Valley Band	No	Jesse Dillon	DWR	Kenneth Woodrow, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Xolon-Salinan Tribe	No	Jesse Dillon	DWR	Karen White, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/11/24	Amah Mutsun Tribal Band	No	Jesse Dillon	DWR	Valentin Lopez, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Big Sandy Rancheria of Western Mono Indians	No	Jesse Dillon	DWR	Elizabeth Kipp, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Cold Springs Rancheria of Mono Indians	No	Jesse Dillon	DWR	Carol Bill, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Dumna Wo-Wah Tribal Government	No	Jesse Dillon	DWR	Robert Ledger, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
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10/11/24	Kitanemuk & Yowlumne Tejon Indians	No	Jesse Dillon	DWR	Delia Dominguez, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Northern Valley Yokut / Ohlone Tribe	No	Jesse Dillon	DWR	Timothy Perez, Tribal Compliance	Tribe	email with formal request	Notification and invitation to consult.
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10/11/24	Santa Rosa Rancheria Tachi Yokut Tribe	Yes	Jesse Dillon	DWR	Leo Sisco, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Table Mountain Rancheria	No	Jesse Dillon	DWR	Michelle Heredia-Cordova,	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Traditional Choinumni Tribe	No	Jesse Dillon	DWR	David Alvarez, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
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10/11/24	Wuksachi Indian Tribe/Eshom Valley Band	No	Jesse Dillon	DWR	Kenneth Woodrow, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Xolon-Salinan Tribe	No	Jesse Dillon	DWR	Karen White, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/16/24	Traditional Choinumni Tribe	No	David Alvarez, Chair	Tribe	Marea Bell	DWR	phone call	Response to consultation request and informed DWR that the
11/06/24	Tule River Indian Tribe	No	Jesse Dillon	DWR	Charmaine McDarment, Chairperson	Tribe	certified mail	Notification and invitation to consult.
11/13/24	Santa Rosa Rancheria Tachi Yokut Tribe	Yes	Jesse Dillon	DWR	Leo Sisco, Chairperson	Tribe	email	Notification and invitation to consult; reply on top of email from
11/13/24	Amah Mutsun Tribal Band	No	Jesse Dillon	DWR	Valentin Lopez, Chairperson	Tribe	email	Notification and invitation to consult; reply on top of email from
11/15/24	Amah Mutsun Tribal Band	No	[General]	Tribe	Jesse Dillon	DWR	email	Response to consultation request and informed DWR that the

Robin Hoffman

From: NAHC@NAHC <NAHC@nahc.ca.gov>
Sent: Friday, July 19, 2024 4:23 PM
To: Melissa Grijalva-Foreman
Cc: Robin Hoffman; Vela, Cameron@NAHC
Subject: RE: SLF Search and Native American Contacts: D202101064.03 CASP SJFD Pools 17 and 18 Liner Raise Project
Attachments: D202101064.03_CASP_Pool_17_18_NAHC_Request_20240719.pdf; Fig 2 Project Location (Pool 17 18) Tribal.pdf; Fig 1 Project Vicinity (Pools 17 18) Tribal.pdf

Hello,

Thank you for your message. We're in receipt of your project. Our turn-around time is approximately 4 weeks, and we don't anticipate responding sooner than that timeframe. Our response will be delivered by email. Please let us know if you have any questions.

Kind Regards,

Native American Heritage Commission
1550 Harbor Blvd Suite 100
West Sacramento, CA 95691
Phone: 916-373-3710

From: Melissa Grijalva-Foreman <MGrijalva-Foreman@esassoc.com>
Sent: Friday, July 19, 2024 4:02 PM
To: NAHC@NAHC <NAHC@nahc.ca.gov>
Cc: Robin Hoffman <rhoffman@esassoc.com>
Subject: SLF Search and Native American Contacts: D202101064.03 CASP SJFD Pools 17 and 18 Liner Raise Project

Good afternoon,

I would like to request a Sacred Lands File search and list of Native American contacts for the *D202101064.03 CASP SJFD Pools 17 and 18 Liner Raise Project* in *Fresno County*. The formal request form, project location, and vicinity maps are attached. Please let me know if you have any questions.

Thank you,

Melissa Grijalva-Foreman, MA
Cultural Resource Specialist

ESA | Environmental Science Associates
Oakland, CA

1-925-408-6032 **cell**
1-510-463-6766 **direct**
MGrijalva-Foreman@esassoc.com | **esassoc.com**

ESA partners with clients and communities to drive sustainable, resilient, and equitable solutions that shape a better world. Let's stay in touch: **Sign up for our newsletter.**

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: D202101064.03 - CASP SLFD Pools 17 & 18 Liner Raise Project

County: Fresno County

USGS Quadrangle Name: Cantua Creek and Tres Picos Farms

Township: 16s **Range: 15E** **Section(s): 29, 32, 33**
Township: 17S **Range: 15E** **Section (s): 2, 3, 11, 13, 14, 24, 25**

Company/Firm/Agency: Environmental Science Associates

Street Address: 775 Baywood Dr Suite 100

City: Petaluma **Zip:** 94954-6531

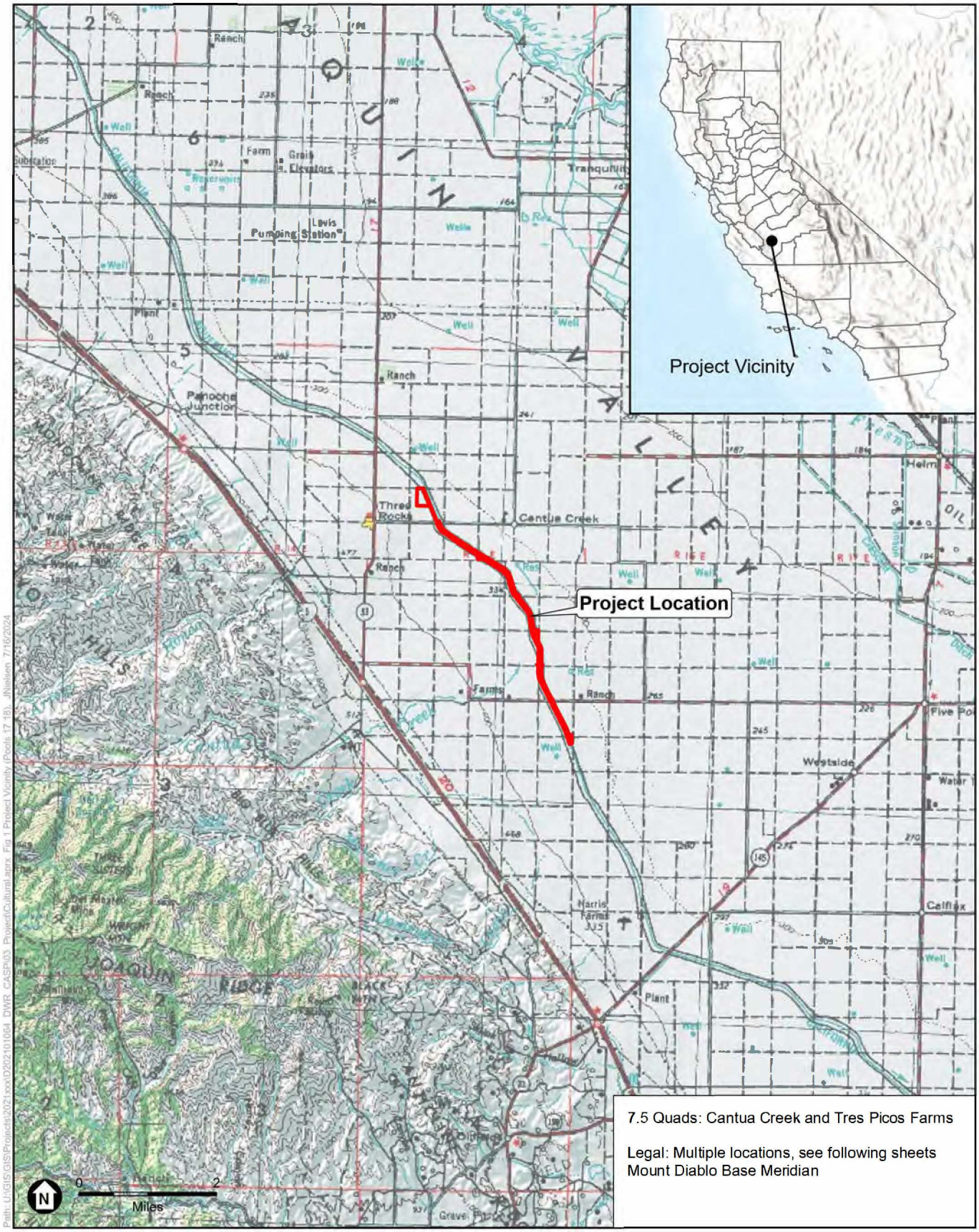
Phone: 707-494-3349

Fax:

Email: rhoffman@esassoc.com

Project Description:

Per the CASP Executive Charter, to address subsidence along the California Aqueduct corrective actions are needed. While long-term corrective planning is underway, near-term "interim actions" are needed to continue existing operations through the San Luis Field Division. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

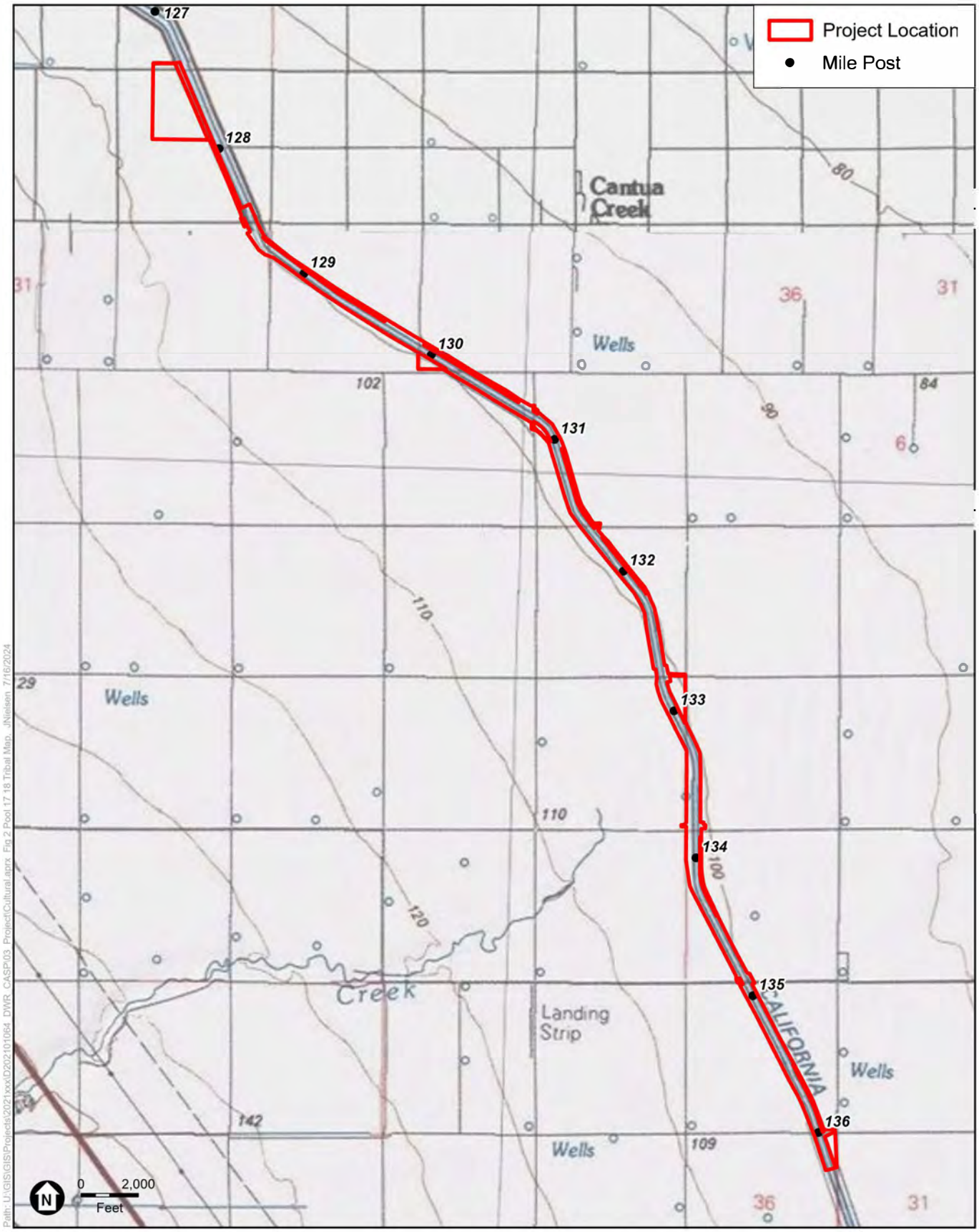


SOURCE: ESRI; DWR, 2024.

CASP SLFD Pools 17 and 18 Liner Raise Project

Figure 1
Project Vicinity

ESA



SOURCE: USGS; DWR, 2024.

CASP SLFD Pools 17 and 18 Liner Raise Project

Figure 2
Project Location

ESA

Robin Hoffman

From: Vela, Cameron@NAHC <Cameron.Vela@nahc.ca.gov>
Sent: Tuesday, July 23, 2024 1:24 PM
To: Robin Hoffman
Subject: D202101064.03 CASP SLFD Pools 17 & 18 Liner Raise Project
Attachments: SLF No D202101064.03 CASP SLFD Pools 17 & 18 Liner Raise Project 7.23.2024.pdf; D202101064.03 CASP SLFD Pools 17 & 18 Liner Raise Project List 7.23.2024.xlsx

Good Afternoon,

Attached is the response to the project referenced above. If you have any additional questions, please feel free to contact our office email at nahc@nahc.ca.gov.

Thank You,

Cameron Vela
Native American Heritage Commission
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Cameron.vela@nahc.ca.gov
Direct Line: (916) 573-0168
Office: (916) 373-3710

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NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710

July 22, 2024

Robin Hoffman
ESA

Via Email to: rhoffman@esassoc.com

Re: D202101064.03 CASP SLFD Pools 17 & 18 Liner Raise Project, Fresno County

Dear Mr. Hoffman:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Cameron.vela@nahc.ca.gov.

Sincerely,

Cameron Vela

Cameron Vela
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Fresno County
7/23/2024

County	Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
Fresno	Amah Mutsun Tribal Band	N	Valentin Lopez, Chairperson	P.O. Box 5272 Galt, CA, 95632	(916) 743-5833		vjltestingcenter@aol.com	Costanoan Northern Valley Yokut	Alameda,Calaveras,Contra Costa,Fresno,Madera,Mariposa,Merced,Monterey,San Benito,San Francisco,San	7/20/2023
	Amah Mutsun Tribal Band	N	Ed Ketchum, Vice-Chairperson		(530) 578-3864		aerieways@aol.com	Costanoan Northern Valley Yokut	Alameda,Calaveras,Contra Costa,Fresno,Madera,Mariposa,Merced,Monte	7/20/2023
	Kitanemuk & Yowlumne Tejon Indians	N	Delia Dominguez, Chairperson	115 Radio Street Bakersfield, CA, 93305	(626) 339-6785		2deedominguez@gmail.com	Kitanemuk Southern Valley Yokut	Fresno,Kern,Kings,Los Angeles,Madera,Monterey,San Benito,San Luis Obispo,Tulare	
	Northern Valley Yokut / Ohlone Tribe	N	Katherine Perez, Chairperson	P.O. Box 717 Linden, CA, 95236	(209) 649-8972		canutes@verizon.net	Costanoan Northern Valley Yokut	Alameda,Calaveras,Contra Costa,Fresno,Madera,Mariposa,Merced,Sacramento,San Benito,San Joaquin,Santa	4/30/2024
	Northern Valley Yokut / Ohlone Tribe	N	Timothy Perez, Tribal Compliance Officer	P.O. Box 717 Linden, CA, 95236	(209) 662-2788		huskanam@gmail.com	Costanoan Northern Valley Yokut	Alameda,Calaveras,Contra Costa,Fresno,Madera,Mariposa,Merced,Sacramento,San Benito,San Joaquin,Santa	11/21/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Shana Powers, THPO	P.O. Box 8 Lemoore, CA, 93245	(559) 423-3900		spowers@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Nichole Escalon, Cultural Specialist I	P.O. Box 8 Lemoore, CA, 93245	(559) 924-1278		nescalone@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Samantha McCarty, Cultural Specialist II	P.O. Box 8 Lemoore, CA, 93245	(559) 633-3440		smccarty@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Table Mountain Rancheria	F	Michelle Heredia-Cordova, Chairperson	P.O. Box 410 Friant, CA, 93626	(559) 822-2587	(559) 822-2693	mhcordova@tmr.org	Yokut	Fresno,Kern,Kings,Madera,Monterey,San Benito,San Luis Obispo,Tulare	12/21/2023
	Table Mountain Rancheria	F	Bob Pennell, Cultural Resource Director	P.O. Box 410 Friant, CA, 93626	(559) 325-0351	(559) 325-0394	rpennell@tmr.org	Yokut	Fresno,Kern,Kings,Madera,Monterey,San Benito,San Luis Obispo,Tulare	
	Tule River Indian Tribe	F	Neil Peyron, Chairperson	P.O. Box 589 Porterville, CA, 93258	(559) 781-4271	(559) 781-4610	neil.peyron@tulerivertribe-nsn.gov	Yokut	Alameda,Amador,Calaveras,Contra Costa,Fresno,Inyo,Kern,Kings,Madera,Mariposa,Merced,Monterey,Sacramento,San	
	Tule River Indian Tribe	F	Kerri Vera, Environmental Department	P. O. Box 589 Porterville, CA, 93258	(559) 783-8892	(559) 783-8932	kerri.vera@tulerivertribe-nsn.gov	Yokut	Alameda,Amador,Calaveras,Contra Costa,Fresno,Inyo,Kern,Kings,Madera,Mariposa,Merced,Monterey,Sacramento,San	7/22/2016
	Tule River Indian Tribe	F	Joey Garfield, Tribal Archaeologist	P. O. Box 589 Porterville, CA, 93258	(559) 783-8892	(559) 783-8932	joey.garfield@tulerivertribe-nsn.gov	Yokut	Alameda,Amador,Calaveras,Contra Costa,Fresno,Inyo,Kern,Kings,Madera,Mariposa,Merced,Monterey,Sacramento,San	7/22/2016
	Wuksachi Indian Tribe/Eshom Valley Band	N	Kenneth Woodrow, Chairperson	1179 Rock Haven Ct. Salinas, CA, 93906	(831) 443-9702		kwood8934@aol.com	Foothill Yokut Mono	Alameda,Calaveras,Contra Costa,Fresno,Inyo,Kings,Madera,Marin,Mariposa,Merced,Mono,Monterey,San Benito,San	6/19/2023

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed D202101064.03 CASP SLFD Pools 17 & 18 Liner Raise Project, Fresno County.

Record: PROJ-2024-003730
Report Type: List of Tribes
Counties: Fresno
NAHC Group: All

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Valentin Lopez
Chairperson
Amah Mutsun Tribal Band
P.O. Box 5272
Galt, CA, 95632
vjltestingcenter@aol.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Lopez,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

The Environmental Coordination Section (ECS) in DOE supports various aspects of environmental compliance of our division's work, including compliance with AB 52, and the DWR *Tribal Engagement Policy*. Currently, DOE's environmental team is supporting multiple projects of which the Amah Mutsun Tribal Band (Tribe) has been identified as possible partner, consulting Tribe, or otherwise interested. For ease of review, and in furtherance of DWR goals of collaboration and transparency, we have consolidated consultation letters different projects into one envelope. My intention is to acknowledge the multiple consultation letters and provide consolidated communication where possible.

The consultation letters enclosed are related to the following projects.

- The Pools 17 and 18 Liner Raise Project is located approximately 12 miles west of Helm, California, within Fresno County, on the San Luis Canal. DWR and Reclamation are proposing to jointly implement this project.

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Sarah Cannon	ECS Manager	Sarah.Cannon@water.ca.gov (916) 882-2829
Jesse Dillon	CASP Program Manager	Jesse.Dillon@water.ca.gov (916) 699-8403
Anecita Augustinez	DWR Office of Tribal Affairs	Anecita.Augustinez@water.ca.gov (916) 216-8637

Should you have any questions, comments, or concerns at any point, please do not hesitate to contact me directly, reach out to the designated project contact(s), or contact the DWR Tribal Office. We remain committed to partnering with you in a clear and cooperative manner, to properly account for and manage resources important to the Tribe, consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

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DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

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The Honorable Valentin Lopez
Chairperson
Amah Mutsun Tribal Band
P.O. Box 5272
Galt, CA, 95632
vjltestingcenter@aol.com

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Lopez,

This letter serves as a formal invitation to the Amah Mutsun Tribal Band (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

If the Tribe would like to consult under Assembly Bill (AB) 52, this is also notice DWR has not received an AB 52 request for notification from the Tribe and is an opportunity to ensure current and future engagement to consult under AB 52.

Brief Overview of Project Description
The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment of the San Luis Canal located in portions of Pools 17 and 18 (see Attachments 1 and 2), which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing the capacity and operational flexibility that has become limited due to subsidence while improving safety and reliability.

Brief Program Background
The concrete-lined San Luis Canal was constructed as a series of interconnected pools that are operated in coordination to convey water, primarily by gravity, from one pool to the next through check structures and pumping plants. The San Luis Canal traverses portions of the Central Valley that have experienced subsidence, which is defined as a local or regional drop in ground surface elevation. This subsidence has reduced the San

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Luis Canal's delivery capability and reliability, as well as increased maintenance, repair, and energy costs.

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Cultural Resources Investigations To-Date

Cultural resources investigations completed to date for the Project include the activities listed below. An *Archaeological and Architectural Resources Inventory Report* is currently being prepared for the project.

- California Native American Heritage Commission Sacred Lands File search request (no sacred sites identified)
- Records searches of the California Historical Resources Information System for the Project Area and vicinity (six previously recorded cultural resources in the Project Area, all of which are historic-era built environmental resources)
- Intensive-level pedestrian survey of the Project Area (no archaeological resources identified)

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DWR is the lead agency under the CEQA and is proposing to prepare an Initial Study/Mitigated Negative Declaration for the Project. As part of the cultural resources review of the Project under CEQA, we are writing to provide the Tribe an opportunity to submit any information the Tribe is willing to share about cultural resources or Tribal cultural resources as defined in California Public Resources Code (PRC) §21074, that may be near the proposed Project Area shown in Attachments 1 and 2. We understand that the locations of these resources are sensitive and resource locations will not be disclosed in public documents and will be kept confidential as provided for under California Government Code §6254.10.

Because the Project is being jointly proposed by DWR and Reclamation, it is subject to federal environmental regulations, including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966 (NHPA). Reclamation is the lead federal agency for NEPA/NHPA purposes.

Conclusion

DWR is committed to working collaboratively with the Tribe to properly account for and manage resources important to the Tribe consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*. We welcome any recommendations regarding the appropriate management or treatment of resources, including Tribal cultural resources, that occur within or near the Project Area. This notification does not limit the Tribe's ability to submit information regarding the identification or significance of Tribal cultural resources, the significance of the Project's potential impact on tribal cultural resources, or any appropriate mitigation measures (PRC §21080.3.2(c)(1)).

If the Tribe has any questions or needs additional information, please contact DWR Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR

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Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Ed Ketchum, Vice-Chairperson, Amah Mutsun Tribal Band
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

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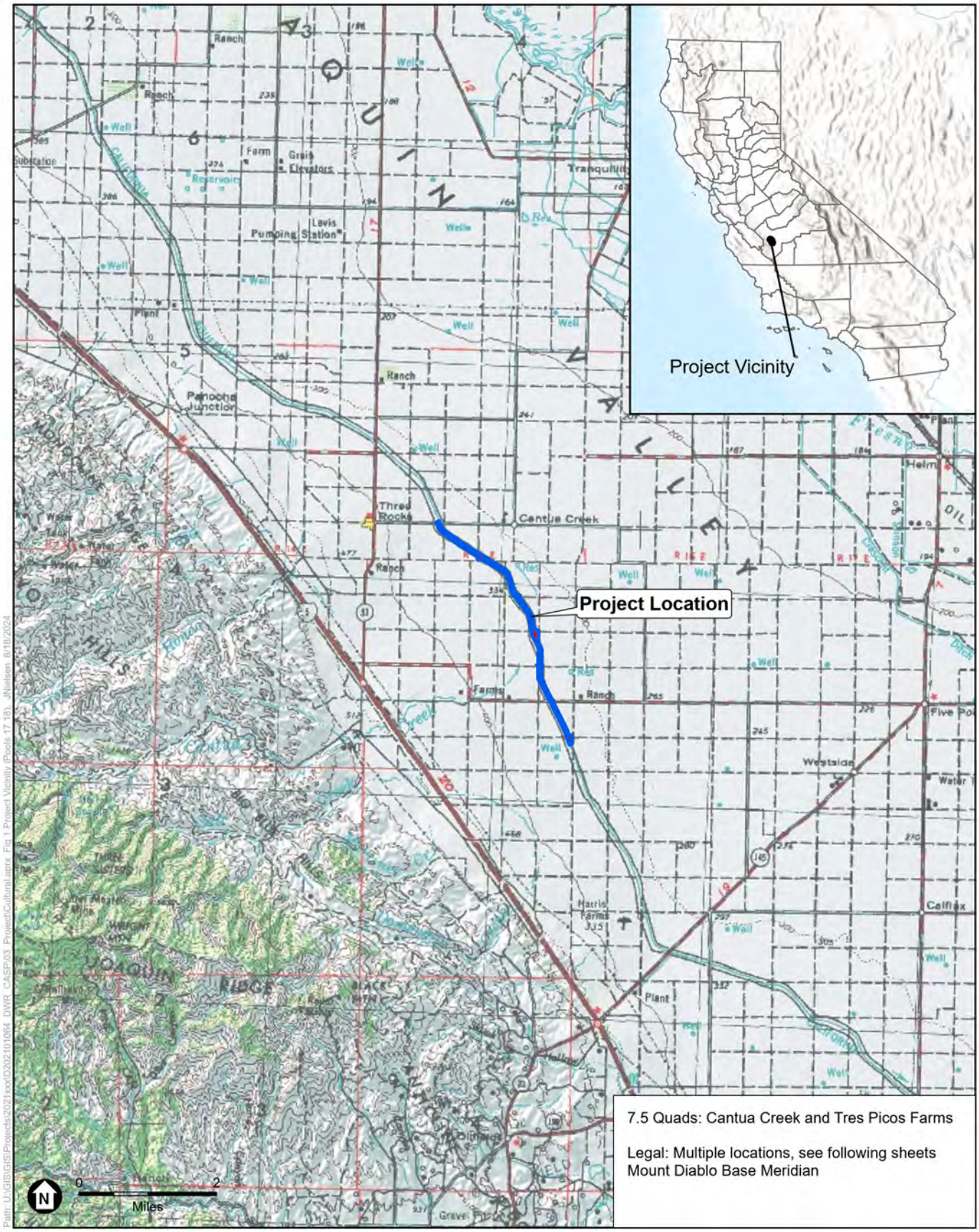

SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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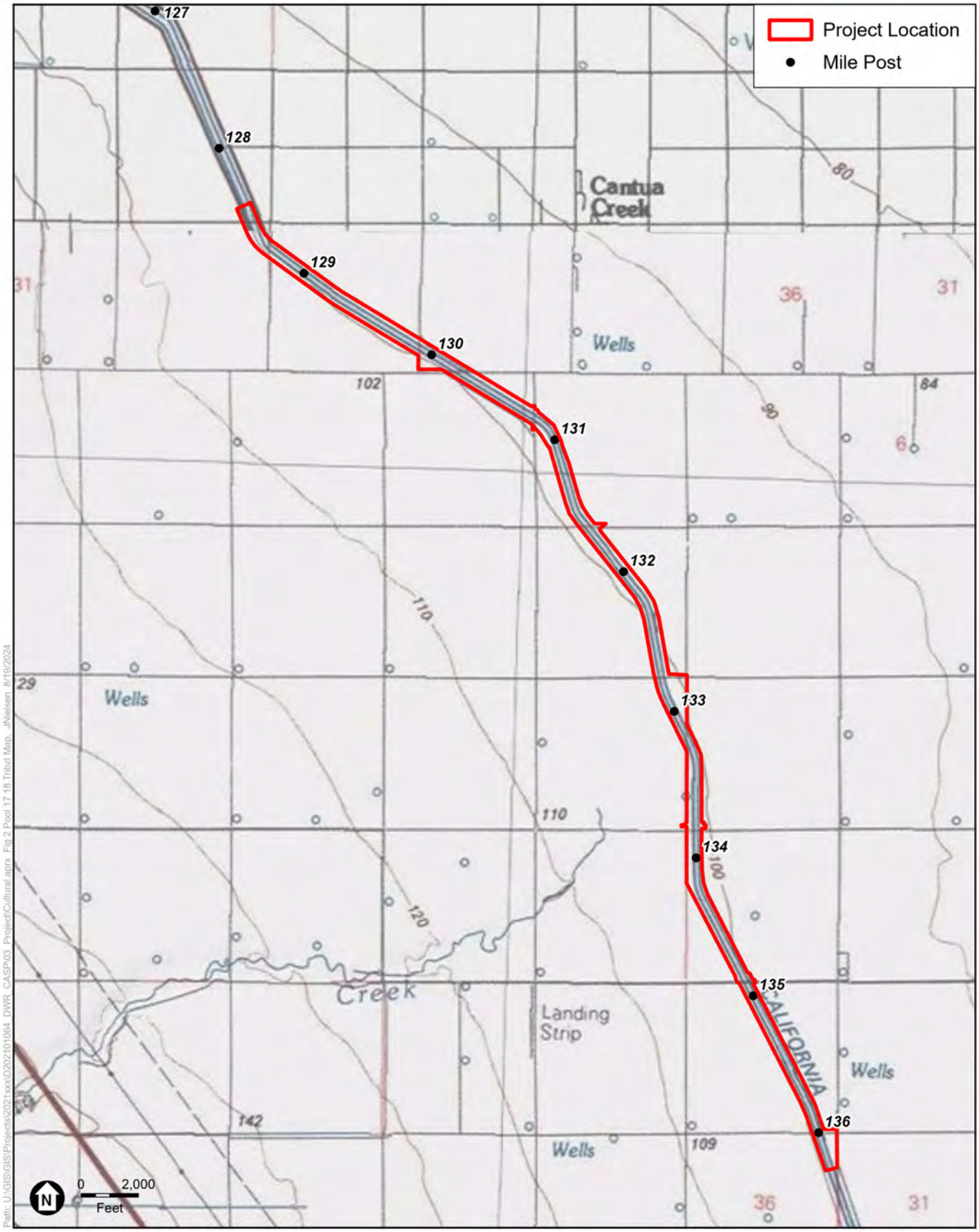

SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

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DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Elizabeth Kipp
Chairperson
Big Sandy Rancheria of Western Mono Indians
P.O. Box 337
Auberry, CA 93602
lkipp@bsrnation.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

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Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

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715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail and email

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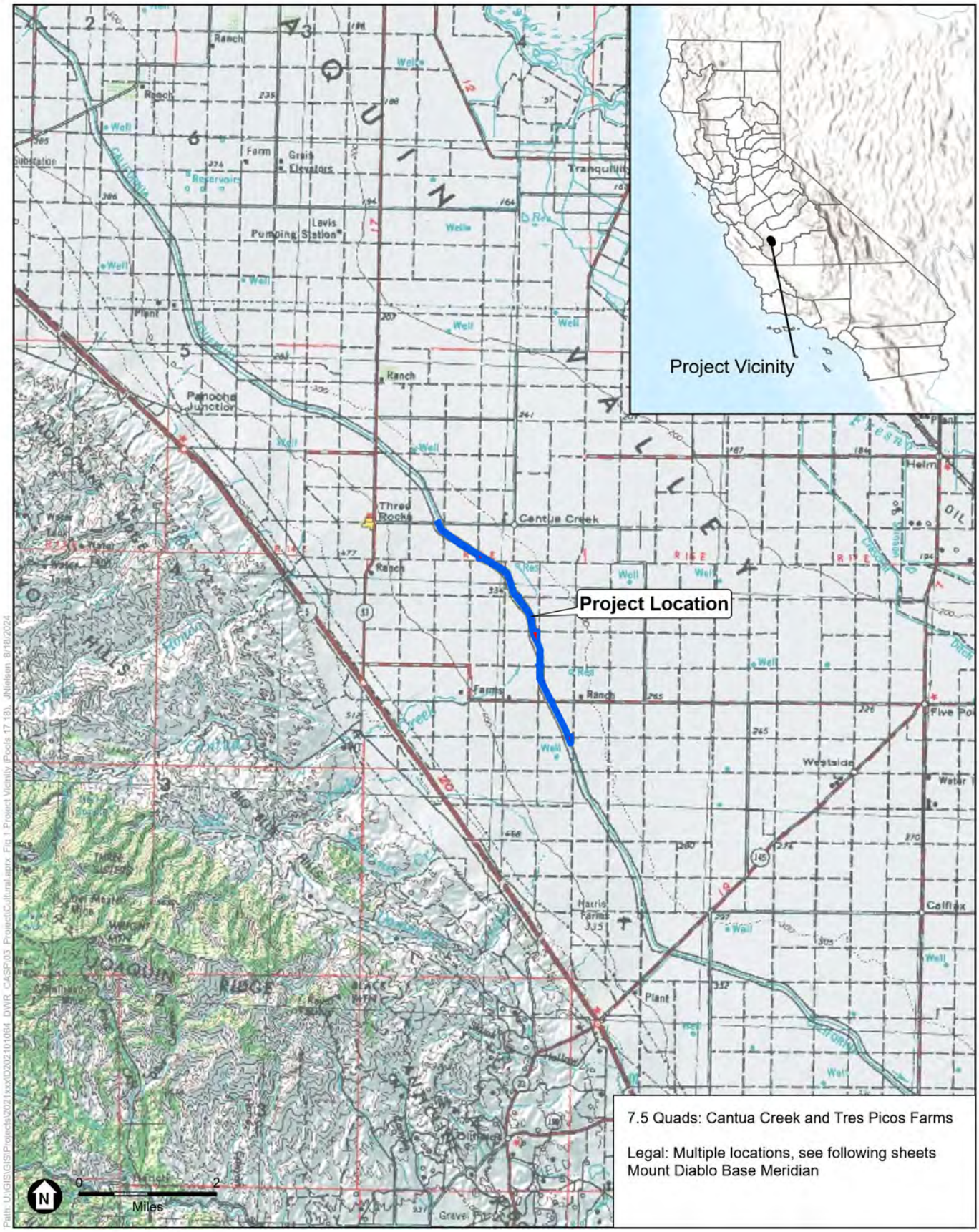

SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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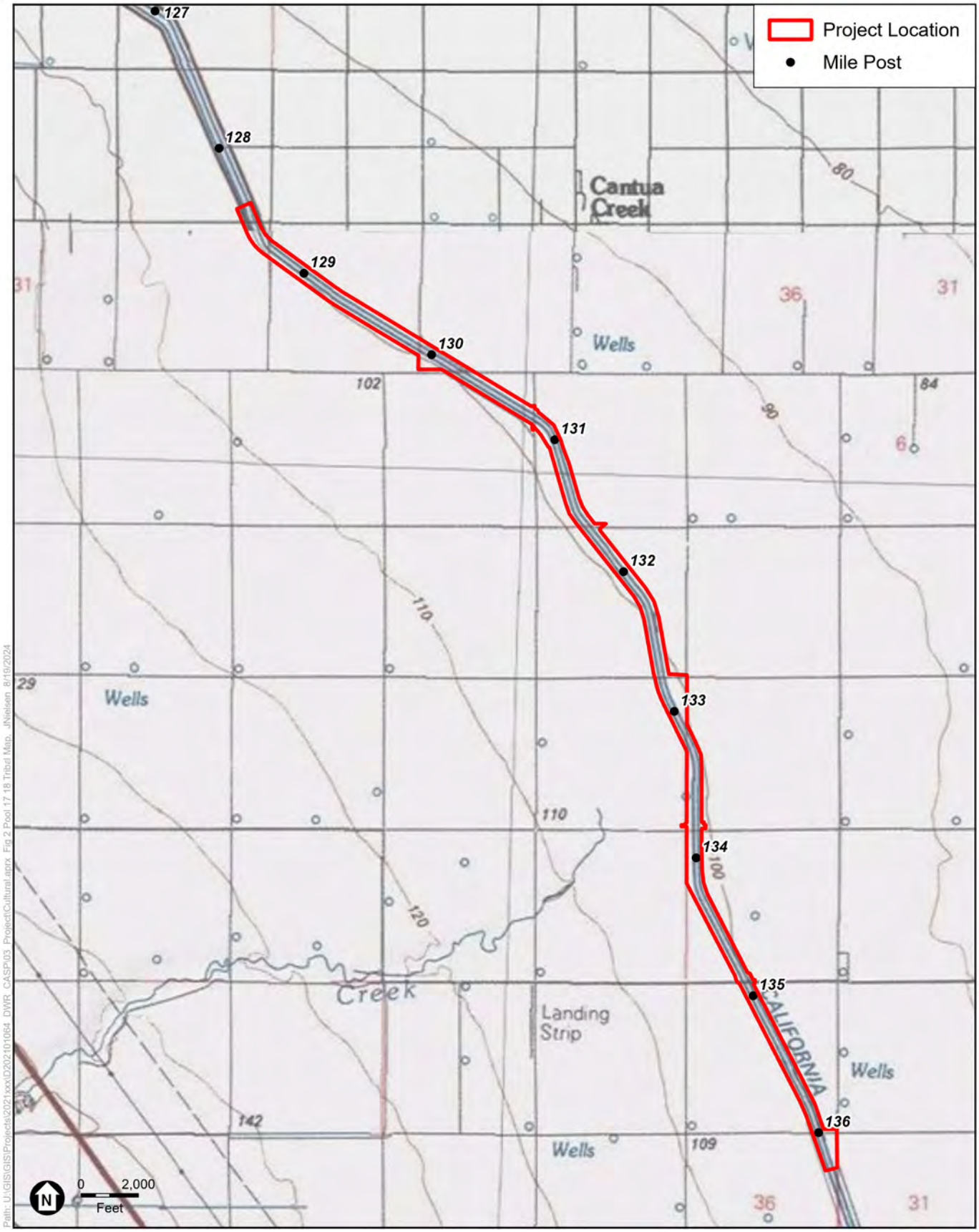

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CASP

Figure 2
Project Location

ESA

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DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Carol Bill
Chairperson
Cold Springs Rancheria of Mono Indians
P.O. Box 209, Tollhouse, CA 93667
csrchair@netptc.net;
coldsprgstribe@netptc.net

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

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DWR – State Water Project: Division of Engineering
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Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Bill,

This letter serves as a formal invitation to the Cold Springs Rancheria of Mono Indians (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

If the Tribe would like to consult under Assembly Bill (AB) 52, this is also notice DWR has not received an AB 52 request for notification from the Tribe and is an opportunity to ensure current and future engagement to consult under AB 52.

Brief Overview of Project Description
The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment of the San Luis Canal located in portions of Pools 17 and 18 (see Attachments 1 and 2), which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing the capacity and operational flexibility that has become limited due to subsidence while improving safety and reliability.

Brief Program Background
The concrete-lined San Luis Canal was constructed as a series of interconnected pools that are operated in coordination to convey water, primarily by gravity, from one pool to the next through check structures and pumping plants. The San Luis Canal traverses portions of the Central Valley that have experienced subsidence, which is defined as a local or regional drop in ground surface elevation. This subsidence has reduced the San

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

Luis Canal's delivery capability and reliability, as well as increased maintenance, repair, and energy costs.

This project is part of a larger CASP program, comprised of short-term (interim) actions and long-term corrective actions aimed to repair the San Luis Canal and the California Aqueduct. Additional information about the program and projects can be found here: https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence

Cultural Resources Investigations To-Date

Cultural resources investigations completed to date for the Project include the activities listed below. An *Archaeological and Architectural Resources Inventory Report* is currently being prepared for the project.

- California Native American Heritage Commission Sacred Lands File search request (no sacred sites identified)
- Records searches of the California Historical Resources Information System for the Project Area and vicinity (six previously recorded cultural resources in the Project Area, all of which are historic-era built environmental resources)
- Intensive-level pedestrian survey of the Project Area (no archaeological resources identified)

CEQA Implementation

DWR is the lead agency under the CEQA and is proposing to prepare an Initial Study/Mitigated Negative Declaration for the Project. As part of the cultural resources review of the Project under CEQA, we are writing to provide the Tribe an opportunity to submit any information the Tribe is willing to share about cultural resources or Tribal cultural resources as defined in California Public Resources Code (PRC) §21074, that may be near the proposed Project Area shown in Attachments 1 and 2. We understand that the locations of these resources are sensitive and resource locations will not be disclosed in public documents and will be kept confidential as provided for under California Government Code §6254.10.

Because the Project is being jointly proposed by DWR and Reclamation, it is subject to federal environmental regulations, including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966 (NHPA). Reclamation is the lead federal agency for NEPA/NHPA purposes.

Conclusion

DWR is committed to working collaboratively with the Tribe to properly account for and manage resources important to the Tribe consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*. We welcome any recommendations regarding the appropriate management or treatment of resources, including Tribal cultural resources, that occur within or near the Project Area. This notification does not limit the Tribe's ability to submit information regarding the identification or significance of Tribal cultural resources, the significance of the Project's potential impact on tribal cultural resources, or any appropriate mitigation measures (PRC §21080.3.2(c)(1)).

If the Tribe has any questions or needs additional information, please contact DWR Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR

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Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

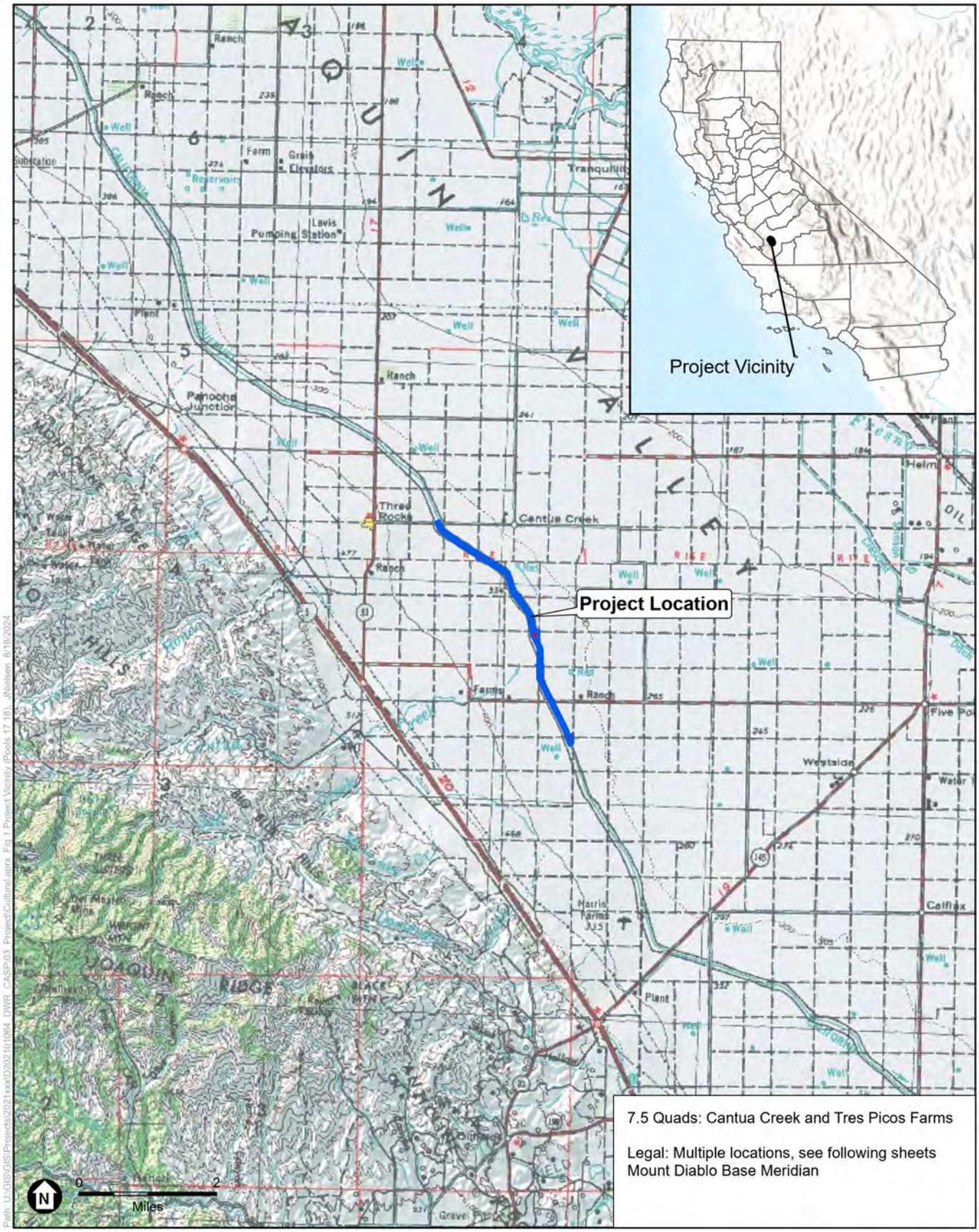
Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC



SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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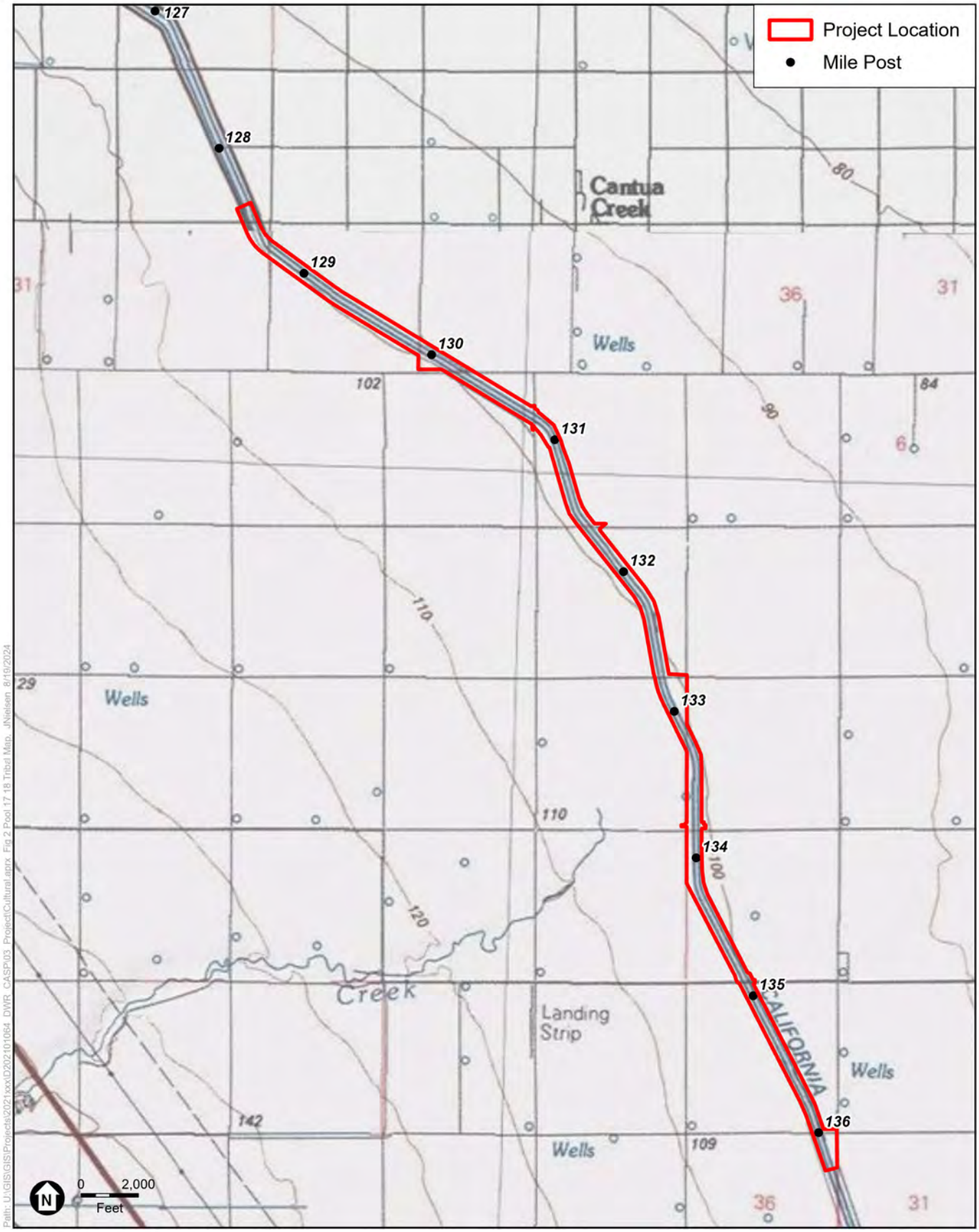

SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Robert Ledger
Chairperson
Dumna Wo-Wah Tribal Government
2191 West Pico Ave.
Fresno, CA 93705
ledgerrobert@ymail.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Ledger,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

The Environmental Coordination Section (ECS) in DOE supports various aspects of environmental compliance of our division's work, including compliance with AB 52, and the DWR *Tribal Engagement Policy*. Currently, DOE's environmental team is supporting multiple projects of which the Dumna Wo-Wah Tribal Government (Tribe) has been identified as possible partner, consulting Tribe, or otherwise interested. For ease of review, and in furtherance of DWR goals of collaboration and transparency, we have consolidated consultation letters different projects into one envelope. My intention is to acknowledge the multiple consultation letters and provide consolidated communication where possible.

The consultation letters enclosed are related to the following projects.

- The Pools 17 and 18 Liner Raise Project is located approximately 12 miles west of Helm, California, within Fresno County, on the San Luis Canal. DWR and Reclamation are proposing to jointly implement this project.

- The Pools 20 and 21 Liner Raise Project is located approximately 3 miles north of Kettleman City, California, within Fresno and Kings Counties, on the San Luis Canal. DWR and Reclamation are proposing to jointly implement this project.

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For ease of reference, helpful contacts are in the list below.

Marea Bell	*Main Point of Contact* Enviro. Planning Lead: • Pools 17&18 • Pools 20&21	Marea.Bell@water.ca.gov (916) 882-2945
Sarah Cannon	ECS Manager	Sarah.Cannon@water.ca.gov (916) 882-2829
Jesse Dillon	CASP Program Manager	Jesse.Dillon@water.ca.gov (916) 699-8403
Anecita Augustinez	DWR Office of Tribal Affairs	Anecita.Augustinez@water.ca.gov (916) 216-8637

Should you have any questions, comments, or concerns at any point, please do not hesitate to contact me directly, reach out to the designated project contact(s), or contact the DWR Tribal Office. We remain committed to partnering with you in a clear and cooperative manner, to properly account for and manage resources important to the Tribe, consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail and email

The Honorable Robert Ledger
Chairperson
Dumna Wo-Wah Tribal Government
2191 West Pico Ave.
Fresno, CA 93705
ledgerrobert@ymail.com

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Ledger,

This letter serves as a formal invitation to the Dumna Wo-Wah Tribal Government (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

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Brief Overview of Project Description
The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment of the San Luis Canal located in portions of Pools 17 and 18 (see Attachments 1 and 2), which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing the capacity and operational flexibility that has become limited due to subsidence while improving safety and reliability.

Brief Program Background
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local or regional drop in ground surface elevation. This subsidence has reduced the San Luis Canal's delivery capability and reliability, as well as increased maintenance, repair, and energy costs.

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Cultural Resources Investigations To-Date
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CEQA Implementation
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Conclusion
DWR is committed to working collaboratively with the Tribe to properly account for and manage resources important to the Tribe consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*. We welcome any recommendations regarding the appropriate management or treatment of resources, including Tribal cultural resources, that occur within or near the Project Area. This notification does not limit the Tribe's ability to submit information regarding the identification or significance of Tribal cultural resources, the significance of the Project's potential impact on tribal cultural resources, or any appropriate mitigation measures (PRC §21080.3.2(c)(1)).

If the Tribe has any questions or needs additional information, please contact DWR

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Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
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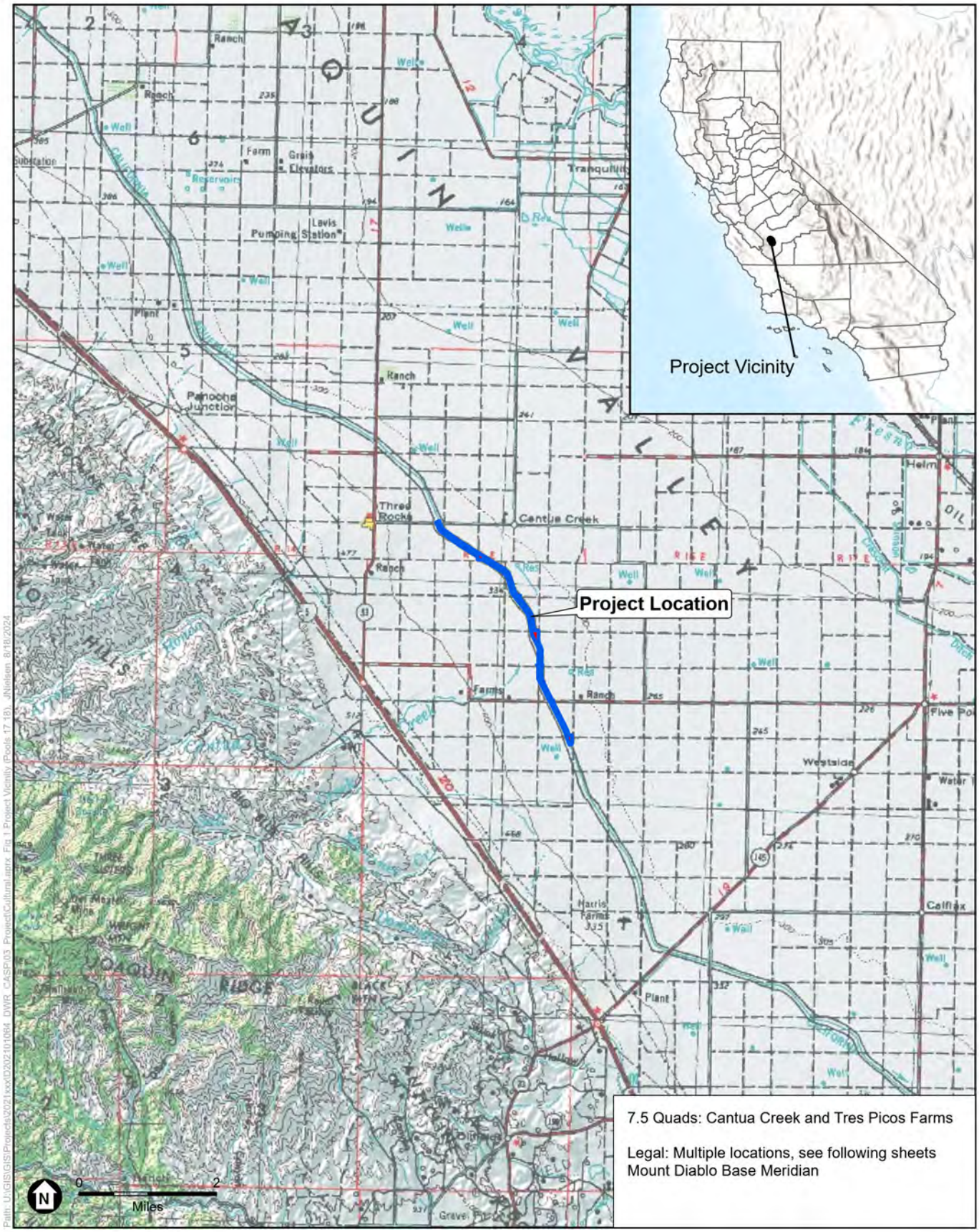

SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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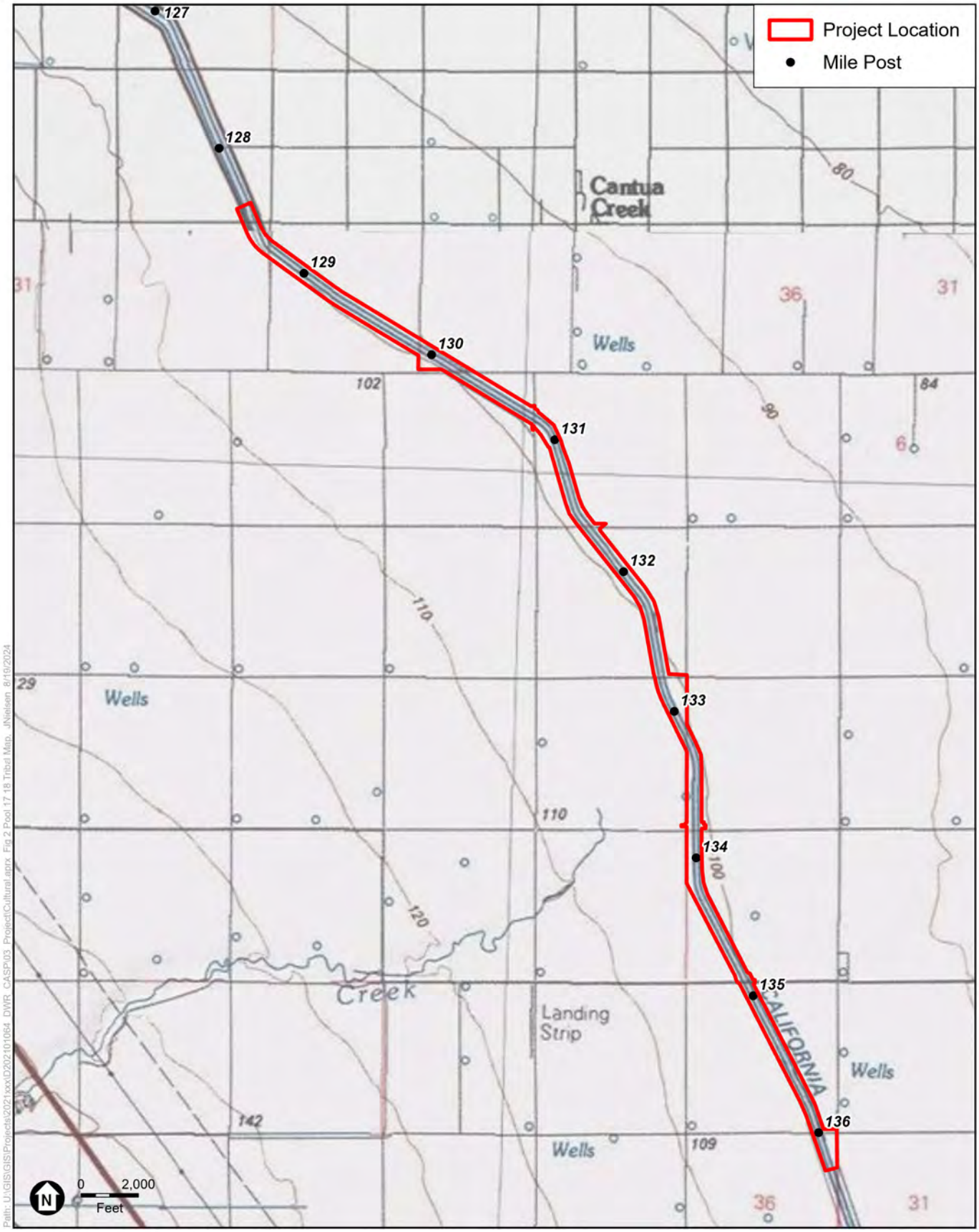

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CASP

Figure 2
Project Location

ESA

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DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

Honorable Benjamin Charley
Chairperson
Dunlap Band of Mono Indians
P.O. Box 14
Dunlap, CA 93621
ben.charley@yahoo.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Charley,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

The Environmental Coordination Section (ECS) in DOE supports various aspects of environmental compliance of our division's work, including compliance with AB 52, and the DWR *Tribal Engagement Policy*. Currently, DOE's environmental team is supporting multiple projects of which the Dunlap Band of Mono Indians (Tribe) has been identified as possible partner, consulting Tribe, or otherwise interested. For ease of review, and in furtherance of DWR goals of collaboration and transparency, we have consolidated consultation letters different projects into one envelope. My intention is to acknowledge the multiple consultation letters and provide consolidated communication where possible.

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Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

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DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail and email

Honorable Benjamin Charley
Chairperson
Dunlap Band of Mono Indians
P.O. Box 14
Dunlap, CA 93621
ben.charley@yahoo.com

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

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Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Dirk Charley, Tribal Secretary, Dunlap Band of Mono Indians
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
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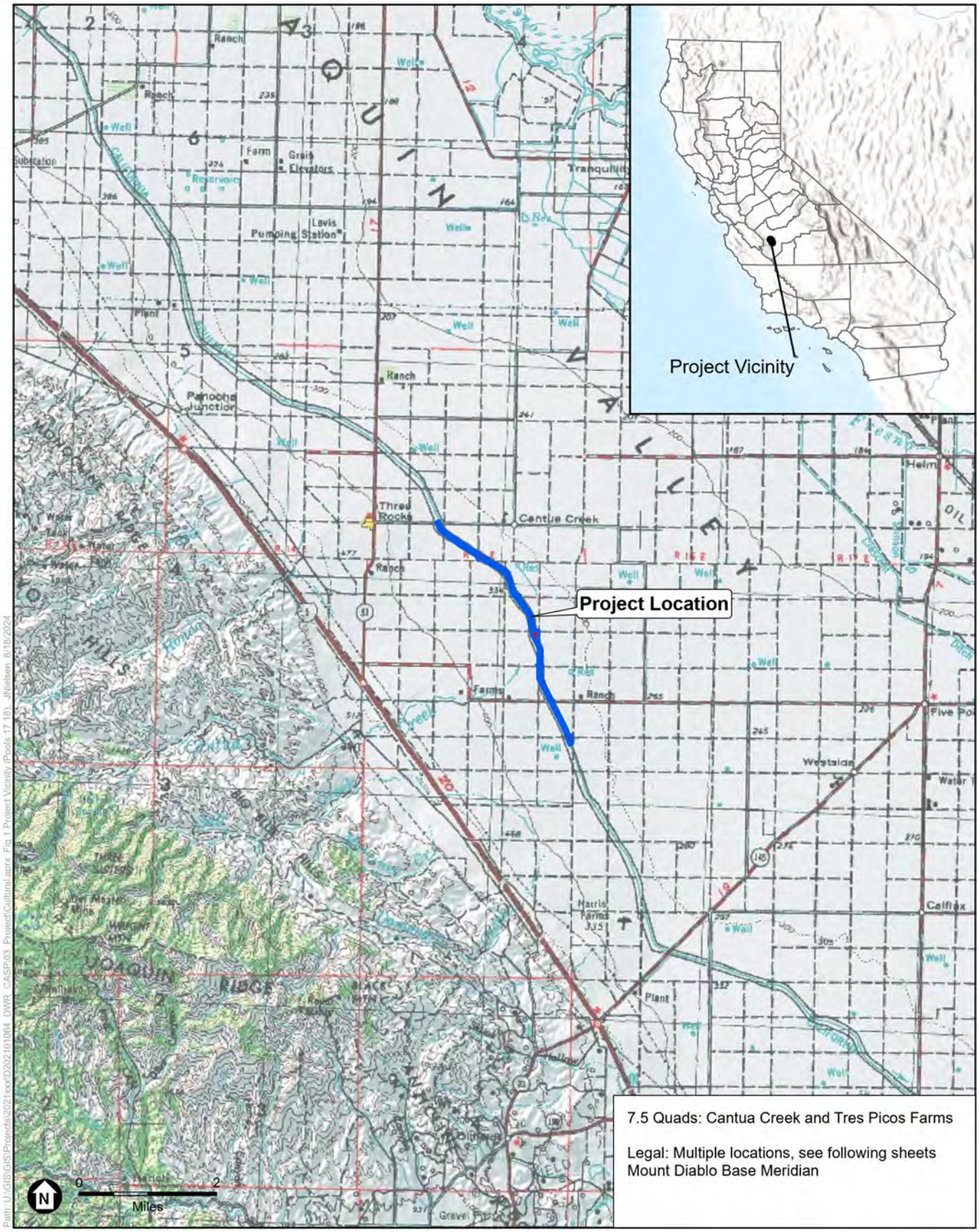


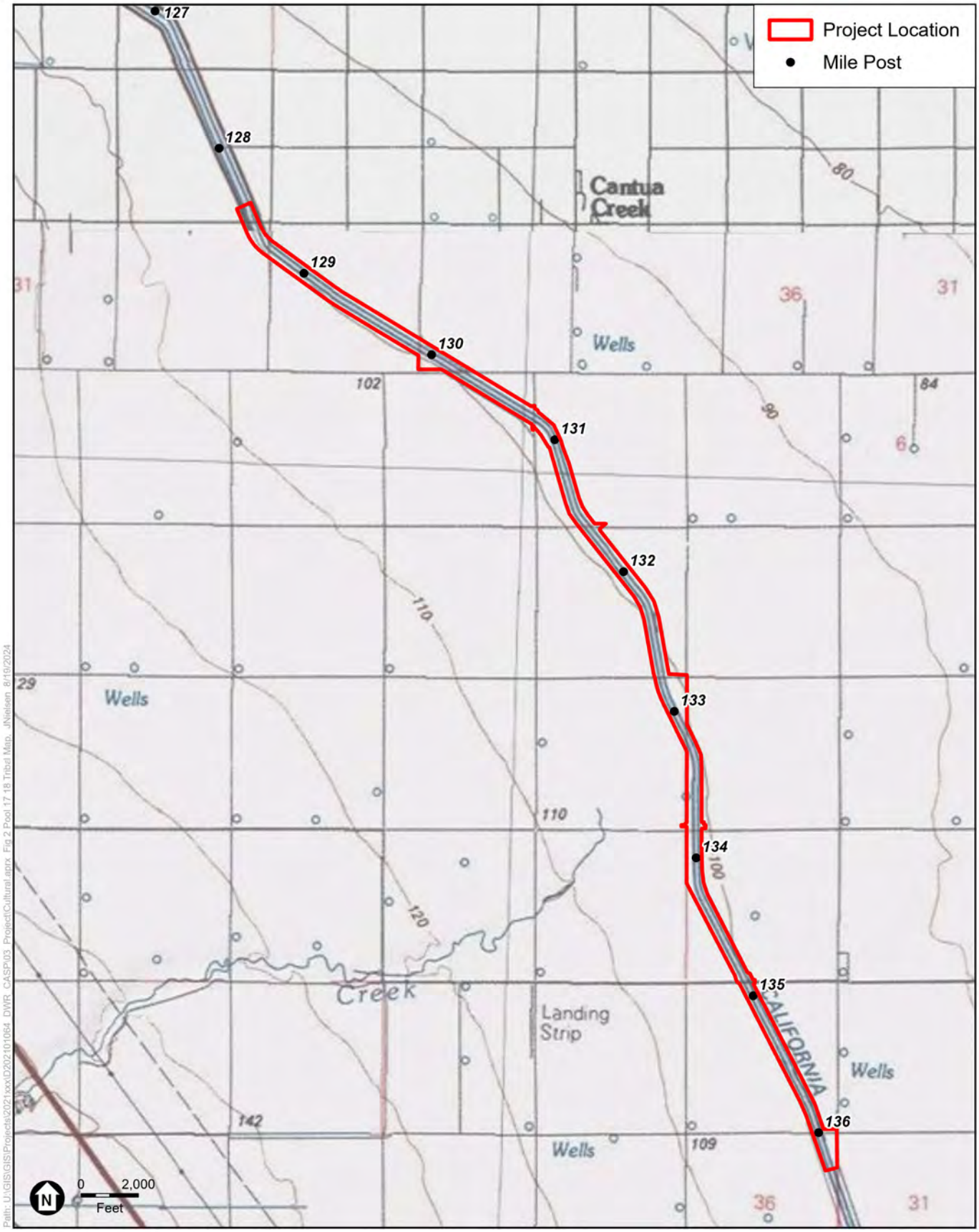
SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC



SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Delia Dominguez,
Chairperson
Kitanemuk & Yowlumne Tejon Indians
115 Radio Street
Bakersfield, CA, 93305
2deedominguez@gmail.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Dominguez,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

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For ease of reference, helpful contacts are in the list below.

Marea Bell	*Main Point of Contact* Enviro. Planning Lead: • Pools 17&18 • Pools 20&21	Marea.Bell@water.ca.gov (916) 882-2945
Todd Wong	*Main Point of Contact* Enviro. Planning Lead: • Pool 24	Todd.Wong@water.ca.gov (916) 694-7811
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Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail and email

The Honorable Delia Dominguez
Chairperson
Kitanemuk & Yowlumne Tejon Indians
115 Radio Street
Bakersfield, CA, 93305
2deedominguez@gmail.com

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Dominguez,

This letter serves as a formal invitation to the Kitanemuk & Yowlumne Tejon Indians (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

If the Tribe would like to consult under Assembly Bill (AB) 52, this is also notice DWR has not received an AB 52 request for notification from the Tribe and is an opportunity to ensure current and future engagement to consult under AB 52.

Brief Overview of Project Description
The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment of the San Luis Canal located in portions of Pools 17 and 18 (see Attachments 1 and 2), which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing the capacity and operational flexibility that has become limited due to subsidence while improving safety and reliability.

Brief Program Background
The concrete-lined San Luis Canal was constructed as a series of interconnected pools that are operated in coordination to convey water, primarily by gravity, from one pool to the next through check structures and pumping plants. The San Luis Canal traverses portions of the Central Valley that have experienced subsidence, which is defined as a

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local or regional drop in ground surface elevation. This subsidence has reduced the San Luis Canal's delivery capability and reliability, as well as increased maintenance, repair, and energy costs.

This project is part of a larger CASP program, comprised of short-term (interim) actions and long-term corrective actions aimed to repair the San Luis Canal and the California Aqueduct. Additional information about the program and projects can be found here: https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence

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Because the Project is being jointly proposed by DWR and Reclamation, it is subject to federal environmental regulations, including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966 (NHPA). Reclamation is the lead federal agency for NEPA/NHPA purposes.

Conclusion
DWR is committed to working collaboratively with the Tribe to properly account for and manage resources important to the Tribe consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*. We welcome any recommendations regarding the appropriate management or treatment of resources, including Tribal cultural resources, that occur within or near the Project Area. This notification does not limit the Tribe's ability to submit information regarding the identification or significance of Tribal cultural resources, the significance of the Project's potential impact on tribal cultural resources, or any appropriate mitigation measures (PRC §21080.3.2(c)(1)).

If the Tribe has any questions or needs additional information, please contact DWR

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Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

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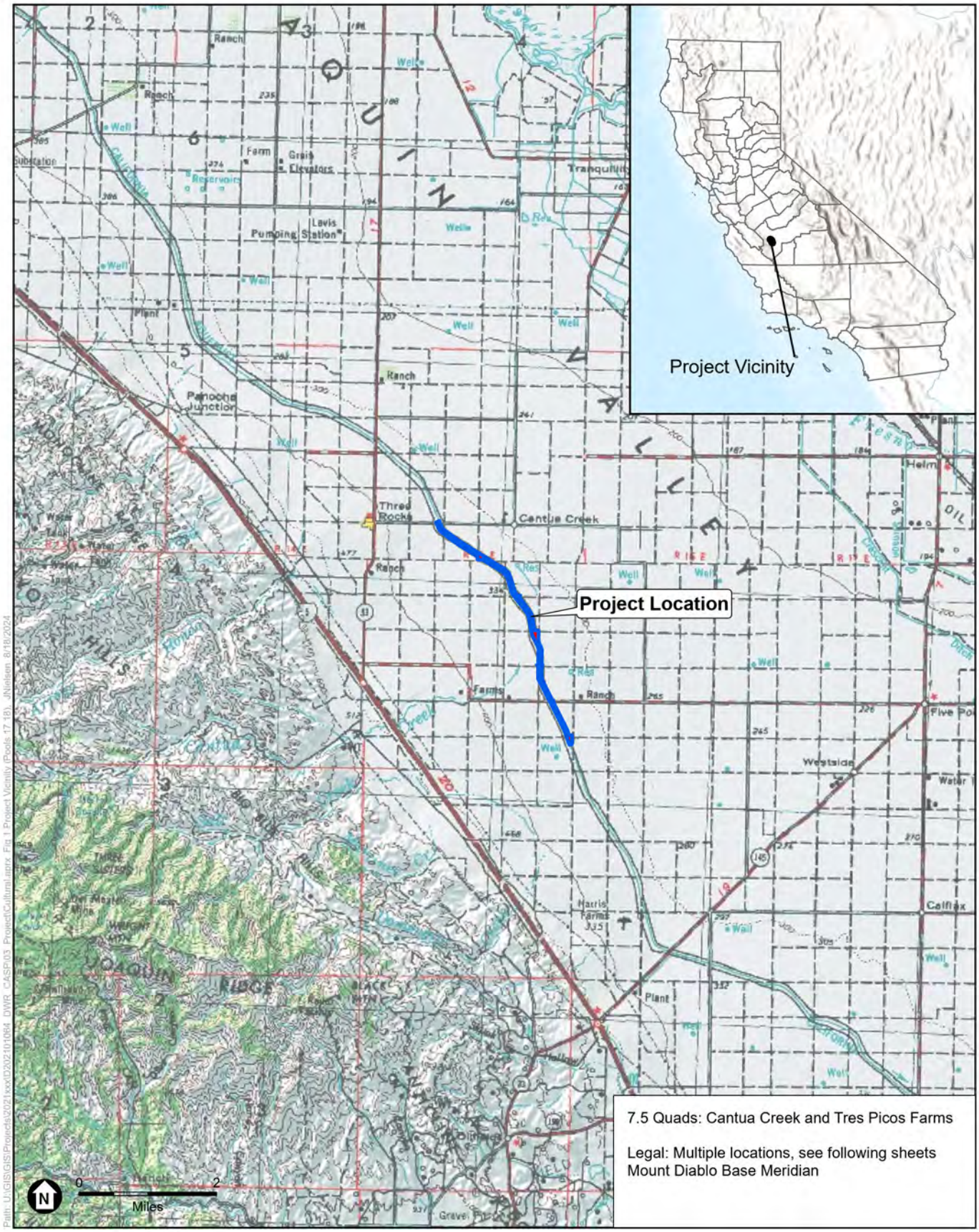

SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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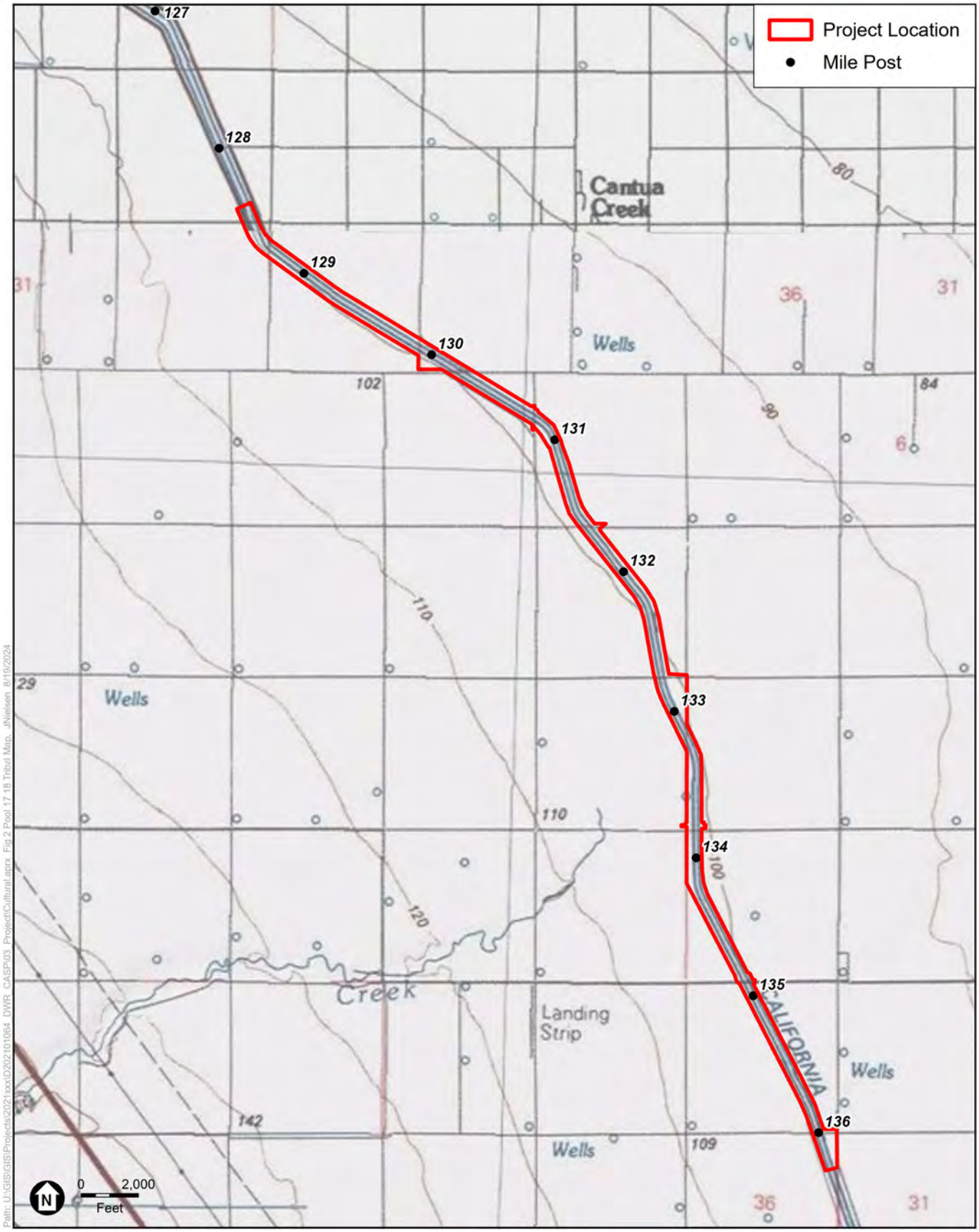

SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

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DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

Mr. Timothy Perez
Tribal Compliance Officer
Northern Valley Yokut / Ohlone Tribe
P.O. Box 717
Linden, CA, 95236
huskanam@gmail.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Mr. Perez,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

The Environmental Coordination Section (ECS) in DOE supports various aspects of environmental compliance of our division's work, including compliance with AB 52, and the DWR *Tribal Engagement Policy*. Currently, DOE's environmental team is supporting multiple projects of which the Northern Valley Yokut / Ohlone Tribe (Tribe) has been identified as possible partner, consulting Tribe, or otherwise interested. For ease of review, and in furtherance of DWR goals of collaboration and transparency, we have consolidated consultation letters different projects into one envelope. My intention is to acknowledge the multiple consultation letters and provide consolidated communication where possible.

The consultation letters enclosed are related to the following projects.

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Sarah Cannon	ECS Manager	Sarah.Cannon@water.ca.gov (916) 882-2829
Jesse Dillon	CASP Program Manager	Jesse.Dillon@water.ca.gov (916) 699-8403
Anecita Augustinez	DWR Office of Tribal Affairs	Anecita.Augustinez@water.ca.gov (916) 216-8637

Should you have any questions, comments, or concerns at any point, please do not hesitate to contact me directly, reach out to the designated project contact(s), or contact the DWR Tribal Office. We remain committed to partnering with you in a clear and cooperative manner, to properly account for and manage resources important to the Tribe, consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

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Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Katherine Perez, Chairperson, Northern Valley Yokut / Ohlone Tribe
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
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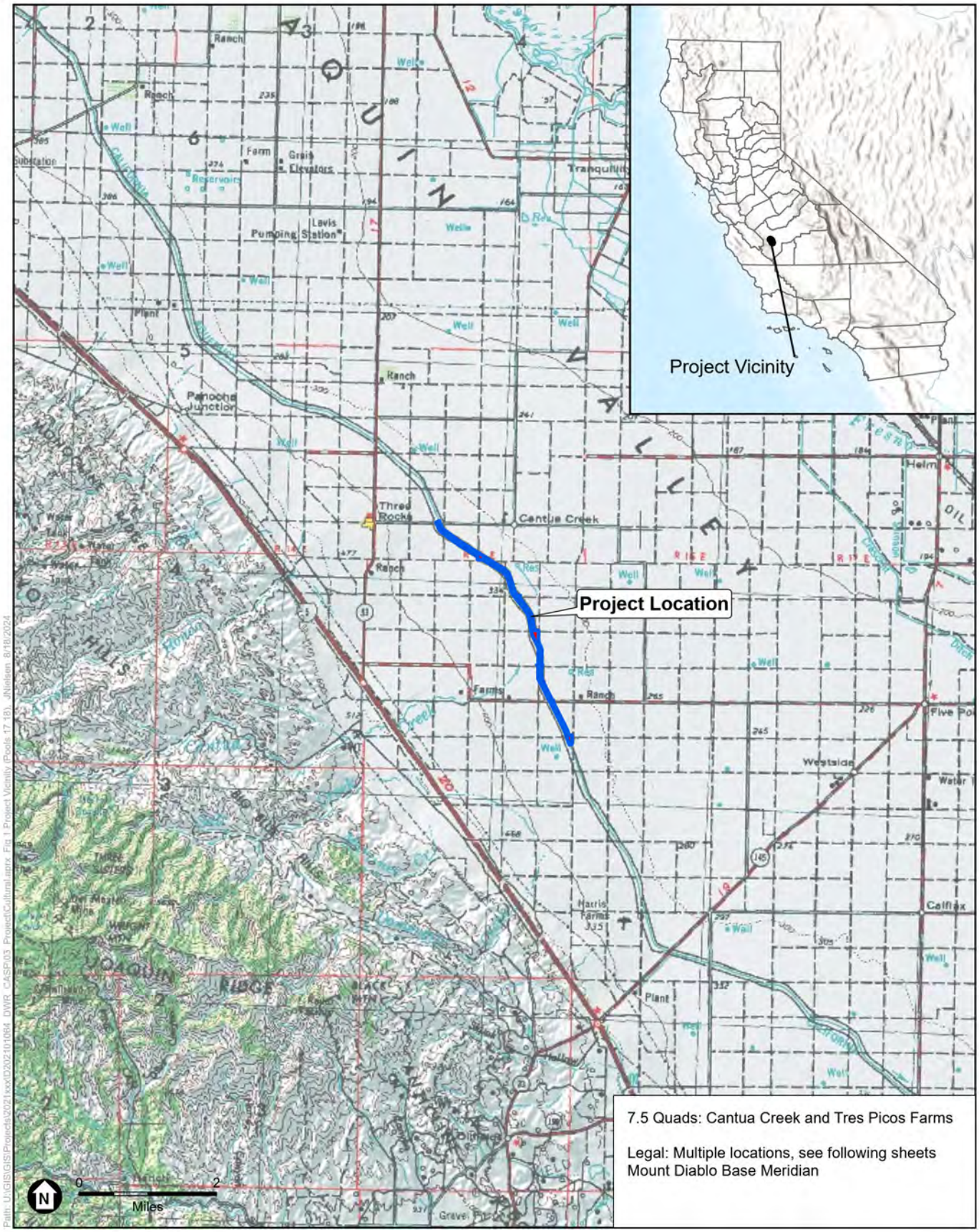

SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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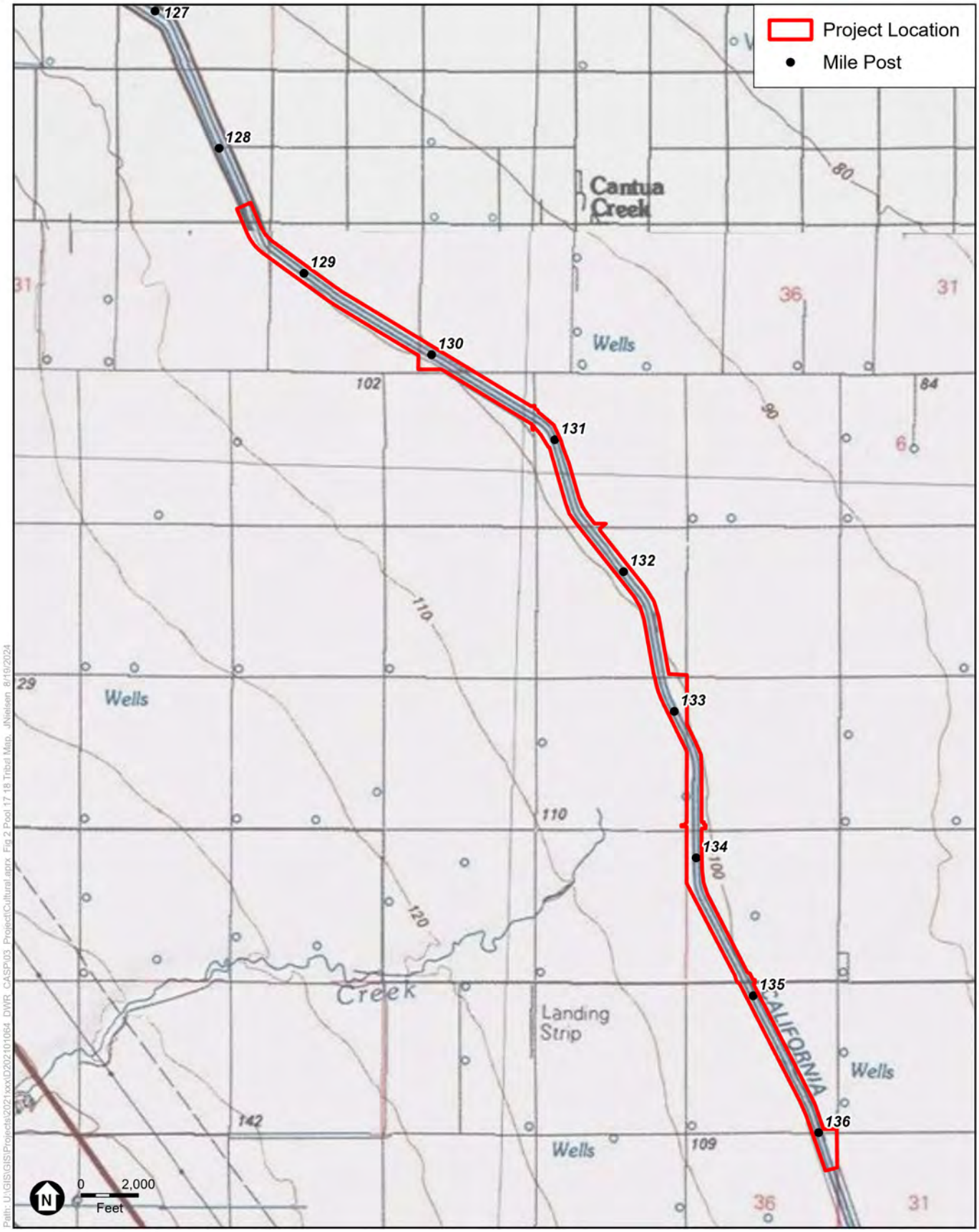

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CASP

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Project Location

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DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

Ms. Patti Dunton
Tribal Administrator
Salinan Tribe of Monterey and San Luis Obispo Counties
8270 Morro Rd.
Atascadero, CA, 93422
info@salinantribe.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Ms. Dunton,

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Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Robert Piatti, Cultural Protection Lead, Salina Tribe of Monterey and San Luis Obispo Counties
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
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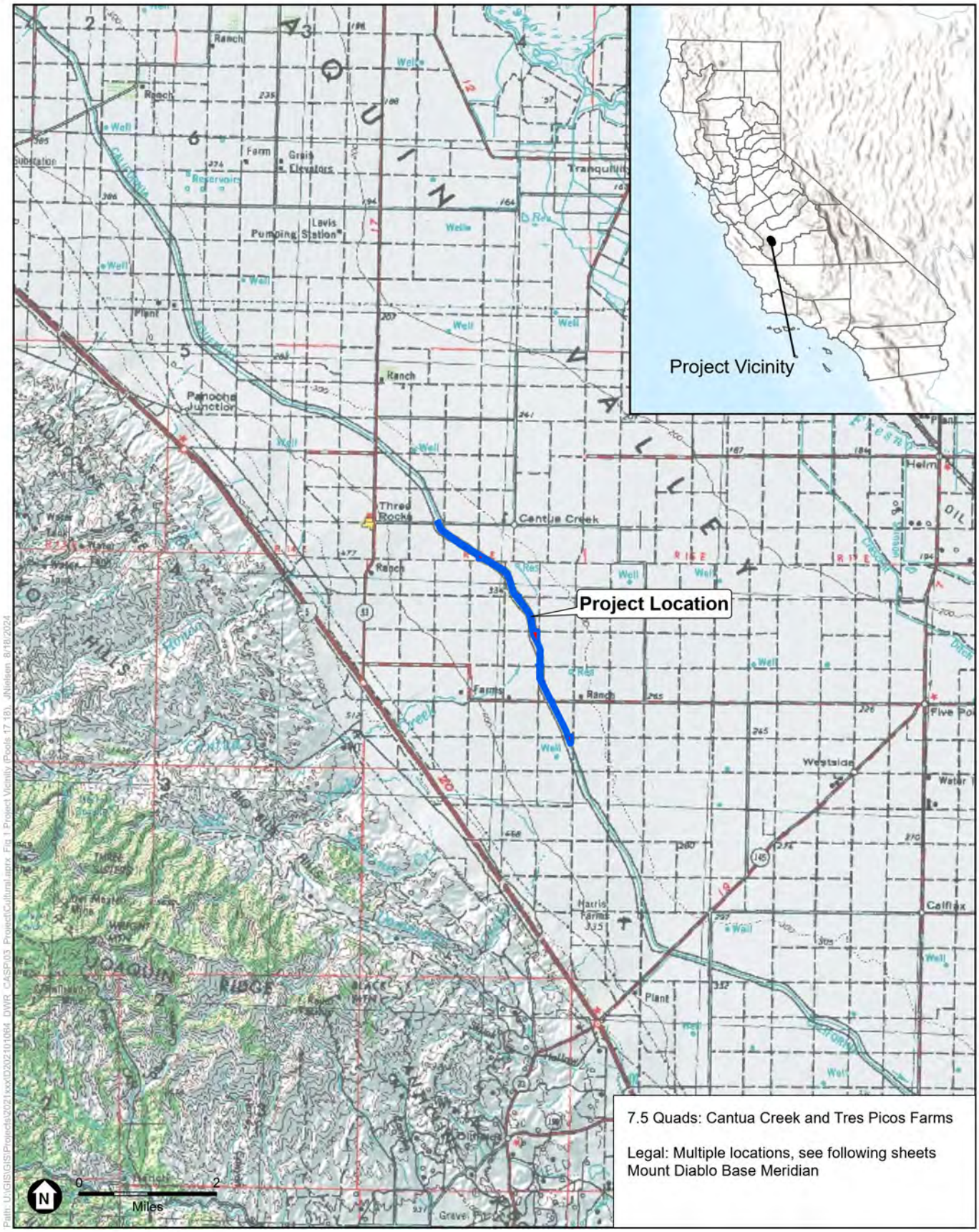

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CASP

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Project Vicinity

ESA

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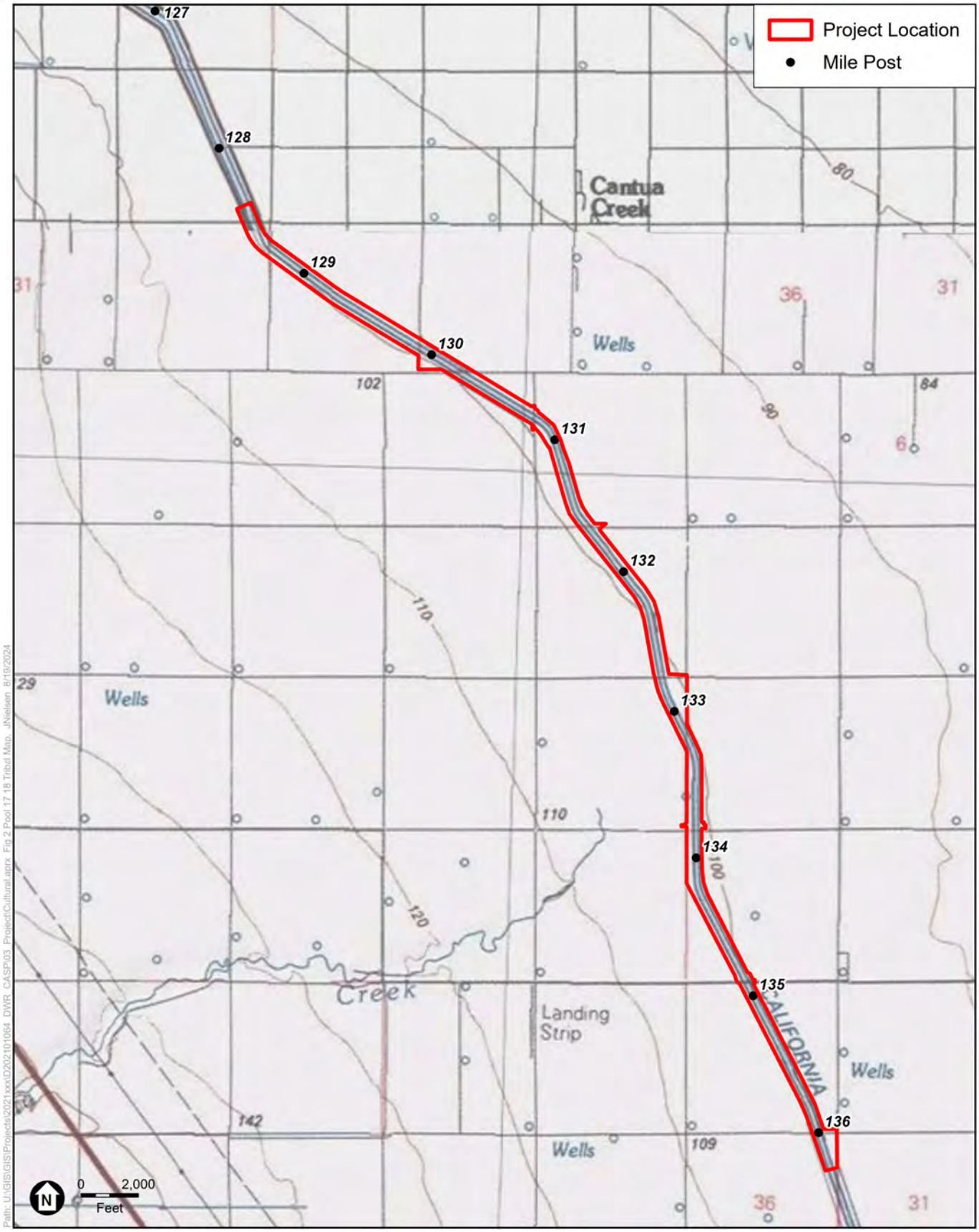

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Project Location

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P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Leo Sisco
Chairperson
Santa Rosa Rancheria Tachi Yokut Tribe
P.O. Box 8
Lemoore, CA, 93245

Subject: DWR Tribal Consultation Letters Enclosed

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Sarah Cannon	ECS Manager	Sarah.Cannon@water.ca.gov (916) 882-2829
Jesse Dillon	CASP Program Manager	Jesse.Dillon@water.ca.gov (916) 699-8403
Anecita Augustinez	DWR Office of Tribal Affairs	Anecita.Augustinez@water.ca.gov (916) 216-8637

Should you have any questions, comments, or concerns at any point, please do not hesitate to contact me directly, reach out to the designated project contact(s), or contact the DWR Tribal Office. We remain committed to partnering with you in a clear and cooperative manner, to properly account for and manage resources important to the Tribe, consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail and email

The Honorable Leo Sisco
Chairperson
Santa Rosa Rancheria Tachi Yokut Tribe
P.O. Box 8
Lemoore, CA, 93245

Subject: AB 52 Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Sisco,

This letter serves as a formal invitation to the Santa Rosa Rancheria Tachi Yokut Tribe (Tribe) to begin government-to-government consultation with the Department of Water Resources (DWR) under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) §21080.3.1, on the proposed San Luis Canal Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

Brief Overview of Project Description
The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment of the San Luis Canal located in portions of Pools 17 and 18 (see Attachments 1 and 2), which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing the capacity and operational flexibility that has become limited due to subsidence while improving safety and reliability.

Brief Program Background
The concrete-lined San Luis Canal was constructed as a series of interconnected pools that are operated in coordination to convey water, primarily by gravity, from one pool to the next through check structures and pumping plants. The San Luis Canal traverses portions of the Central Valley that have experienced subsidence, which is defined as a local or regional drop in ground surface elevation. This subsidence has reduced the San Luis Canal's delivery capability and reliability, as well as increased maintenance, repair, and energy costs.

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

This project is part of a larger CASP program, comprised of short-term (interim) actions and long-term corrective actions aimed to repair the San Luis Canal and the California Aqueduct. Additional information about the program and projects can be found here: https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence

Cultural Resources Investigations To-Date

Cultural resources investigations completed to date for the Project include the activities listed below. An *Archaeological and Architectural Resources Inventory Report* is currently being prepared for the project.

- California Native American Heritage Commission Sacred Lands File search request (no sacred sites identified)
- Records searches of the California Historical Resources Information System for the Project Area and vicinity (six previously recorded cultural resources in the Project Area, all of which are historic-era built environmental resources)
- Intensive-level pedestrian survey of the Project Area (no archaeological resources identified)

CEQA Implementation

DWR is the lead agency under the CEQA and is proposing to prepare an Initial Study/Mitigated Negative Declaration for the Project. As part of the cultural resources review of the Project under CEQA, we are writing to provide the Tribe an opportunity to submit any information the Tribe is willing to share about cultural resources or Tribal cultural resources as defined in California Public Resources Code (PRC) §21074, that may be near the proposed Project Area shown in Attachments 1 and 2. We understand that the locations of these resources are sensitive and resource locations will not be disclosed in public documents and will be kept confidential as provided for under California Government Code §6254.10.

Because the Project is being jointly proposed by DWR and Reclamation, it is subject to federal environmental regulations, including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966 (NHPA). Reclamation is the lead federal agency for NEPA/NHPA purposes.

Conclusion

DWR is committed to working collaboratively with the Tribe to properly account for and manage resources important to the Tribe. If the Tribe wishes to engage in formal government-to-government consultation with DWR for the proposed Project under AB 52 and PRC §21080.3.1, please respond within 30 calendar days of this notice in writing with the Tribe's designated Point of Contact(s) for consultation to DWR Office of Tribal Affairs Executive Manager Anecita Agustinez at tribalpolicyadvisor@water.ca.gov and DWR Environmental Planning Lead Marea Bell at marea.bell@water.ca.gov.

If a written request for consultation under AB 52 (PRC §21080.3.1) is not received by DWR within 30 calendar days, DWR will proceed with consultation under its *Tribal Engagement Policy* and the California Natural Resources Agency *Tribal Consultation Policy* to work collaboratively with the Tribe. This notification does not limit the ability of the Tribe to submit information to DWR. (PRC §21080.3.2.)

If the Tribe has any questions or needs additional information, please contact DWR

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Environmental Planning Lead Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov, or DWR Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

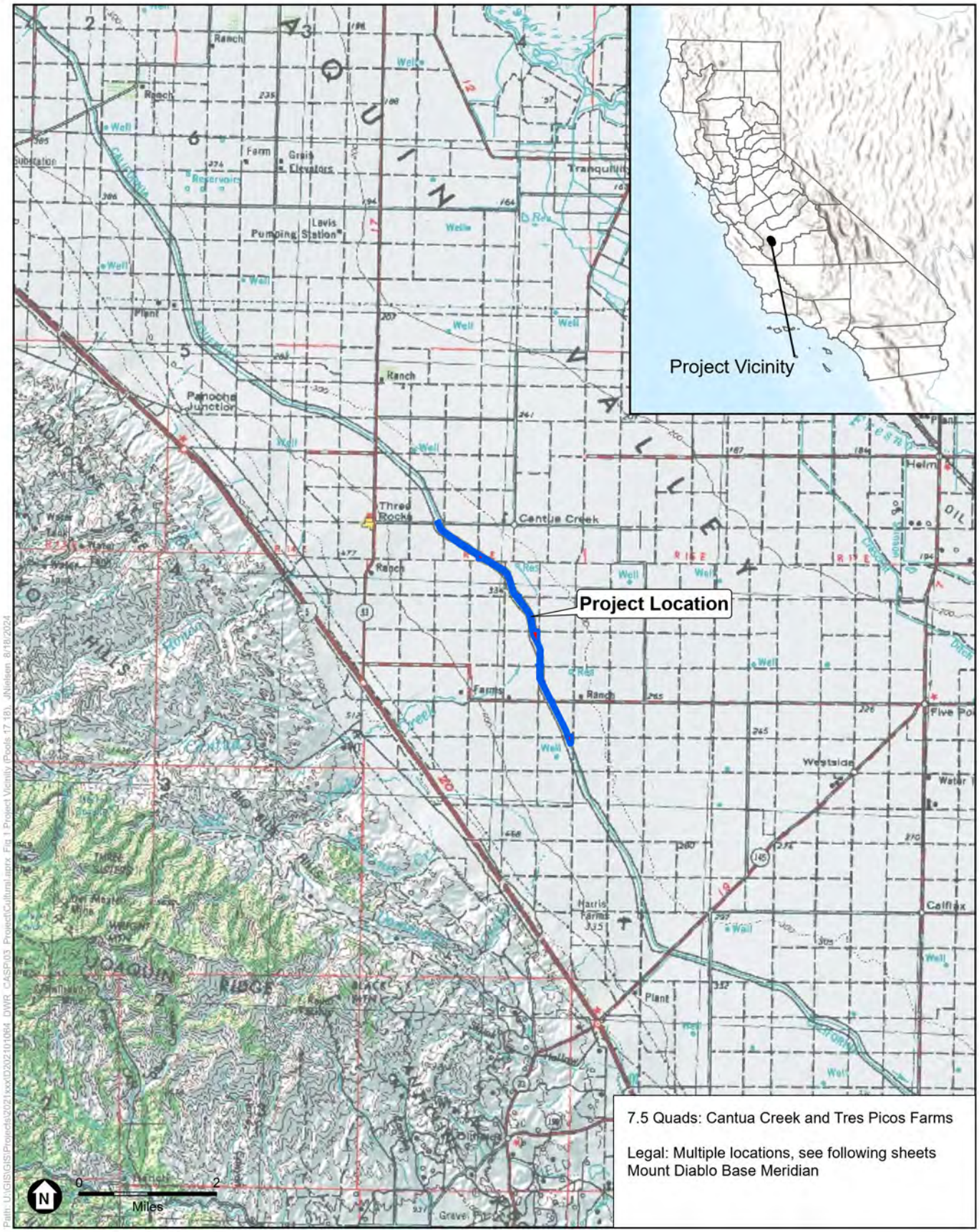
Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR State Water Project: Division of Engineering

cc.
Samantha McCarty, Cultural Specialist II, Santa Rosa Rancheria Tachi Yokut Tribe
Nichole Escalon, Cultural Specialist I, Santa Rosa Rancheria Tachi Yokut Tribe
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC



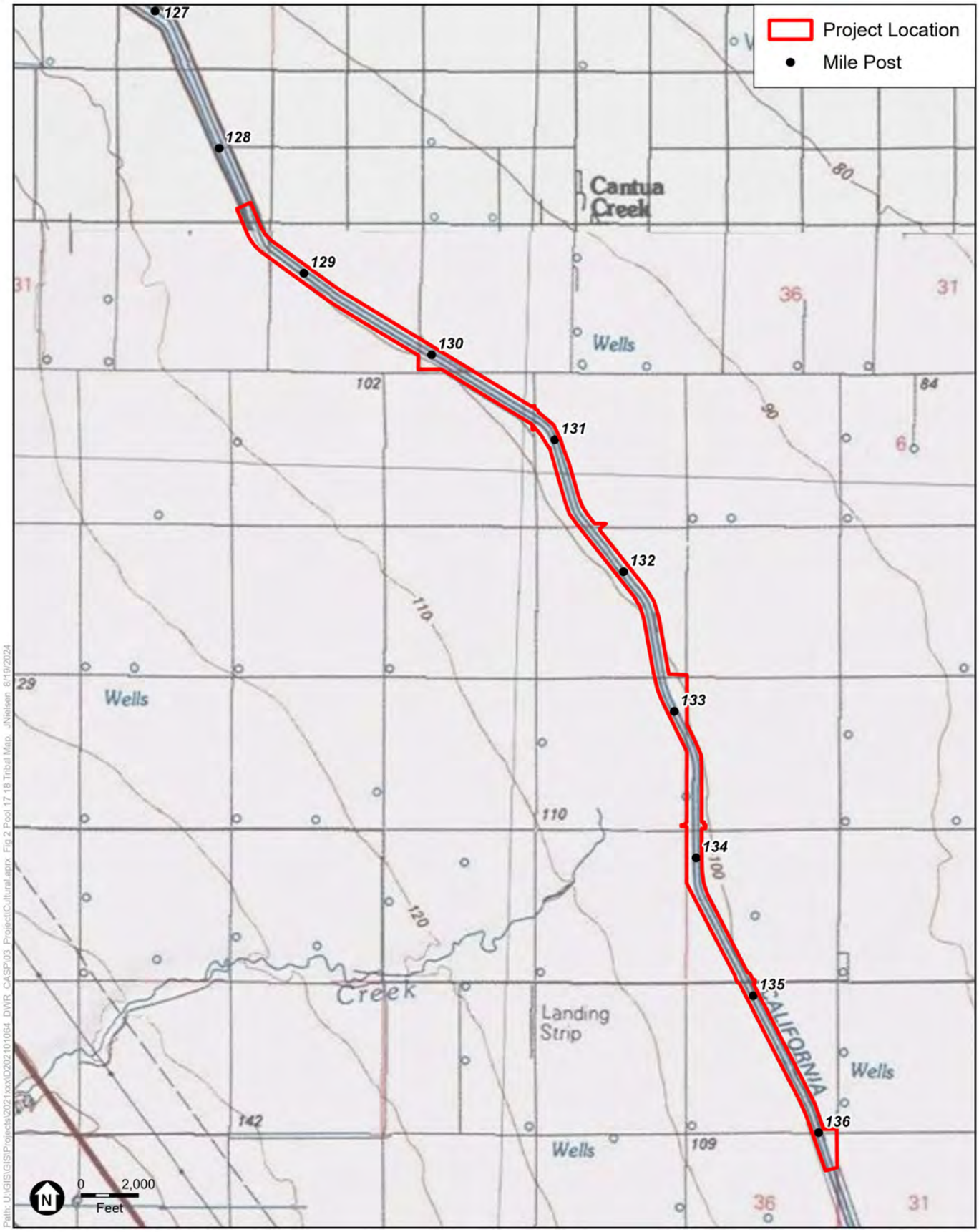
SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC



SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Marie Dominguez
Chairperson
Sierra Foothill Wuksachi Yokuts Tribe
35845 Maxon Road #108
Sanger, CA 93657

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Dominguez,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

The Environmental Coordination Section (ECS) in DOE supports various aspects of environmental compliance of our division's work, including compliance with AB 52, and the DWR *Tribal Engagement Policy*. Currently, DOE's environmental team is supporting multiple projects of which the Sierra Foothill Wuksachi Yokuts Tribe (Tribe) has been identified as possible partner, consulting Tribe, or otherwise interested. For ease of review, and in furtherance of DWR goals of collaboration and transparency, we have consolidated consultation letters different projects into one envelope. My intention is to acknowledge the multiple consultation letters and provide consolidated communication where possible.

The consultation letters enclosed are related to the following projects.

- The Pools 17 and 18 Liner Raise Project is located approximately 12 miles west of Helm, California, within Fresno County, on the San Luis Canal. DWR and Reclamation are proposing to jointly implement this project.

- The Pools 20 and 21 Liner Raise Project is located approximately 3 miles north of Kettleman City, California, within Fresno and Kings Counties, on the San Luis Canal. DWR and Reclamation are proposing to jointly implement this project.

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

For ease of reference, helpful contacts are in the list below.

Marea Bell	*Main Point of Contact* Enviro. Planning Lead: • Pools 17&18 • Pools 20&21	Marea.Bell@water.ca.gov (916) 882-2945
Sarah Cannon	ECS Manager	Sarah.Cannon@water.ca.gov (916) 882-2829
Jesse Dillon	CASP Program Manager	Jesse.Dillon@water.ca.gov (916) 699-8403
Anecita Augustinez	DWR Office of Tribal Affairs	Anecita.Augustinez@water.ca.gov (916) 216-8637

Should you have any questions, comments, or concerns at any point, please do not hesitate to contact me directly, reach out to the designated project contact(s), or contact the DWR Tribal Office. We remain committed to partnering with you in a clear and cooperative manner, to properly account for and manage resources important to the Tribe, consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail

The Honorable Marie Dominguez
Chairperson
Sierra Foothill Wuksachi Yokuts Tribe
35845 Maxon Road #108
Sanger, CA 93657

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Dominguez,

This letter serves as a formal invitation to the Sierra Foothill Wuksachi Yokuts Tribe (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

If the Tribe would like to consult under Assembly Bill (AB) 52, this is also notice DWR has not received an AB 52 request for notification from the Tribe and is an opportunity to ensure current and future engagement to consult under AB 52.

Brief Overview of Project Description
The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment of the San Luis Canal located in portions of Pools 17 and 18 (see Attachments 1 and 2), which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing the capacity and operational flexibility that has become limited due to subsidence while improving safety and reliability.

Brief Program Background
The concrete-lined San Luis Canal was constructed as a series of interconnected pools that are operated in coordination to convey water, primarily by gravity, from one pool to the next through check structures and pumping plants. The San Luis Canal traverses portions of the Central Valley that have experienced subsidence, which is defined as a local or regional drop in ground surface elevation. This subsidence has reduced the San

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

Luis Canal's delivery capability and reliability, as well as increased maintenance, repair, and energy costs.

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Cultural Resources Investigations To-Date

Cultural resources investigations completed to date for the Project include the activities listed below. An *Archaeological and Architectural Resources Inventory Report* is currently being prepared for the project.

- California Native American Heritage Commission Sacred Lands File search request (no sacred sites identified)
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CEQA Implementation

DWR is the lead agency under the CEQA and is proposing to prepare an Initial Study/Mitigated Negative Declaration for the Project. As part of the cultural resources review of the Project under CEQA, we are writing to provide the Tribe an opportunity to submit any information the Tribe is willing to share about cultural resources or Tribal cultural resources as defined in California Public Resources Code (PRC) §21074, that may be near the proposed Project Area shown in Attachments 1 and 2. We understand that the locations of these resources are sensitive and resource locations will not be disclosed in public documents and will be kept confidential as provided for under California Government Code §6254.10.

Because the Project is being jointly proposed by DWR and Reclamation, it is subject to federal environmental regulations, including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966 (NHPA). Reclamation is the lead federal agency for NEPA/NHPA purposes.

Conclusion

DWR is committed to working collaboratively with the Tribe to properly account for and manage resources important to the Tribe consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*. We welcome any recommendations regarding the appropriate management or treatment of resources, including Tribal cultural resources, that occur within or near the Project Area. This notification does not limit the Tribe's ability to submit information regarding the identification or significance of Tribal cultural resources, the significance of the Project's potential impact on tribal cultural resources, or any appropriate mitigation measures (PRC §21080.3.2(c)(1)).

If the Tribe has any questions or needs additional information, please contact DWR Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

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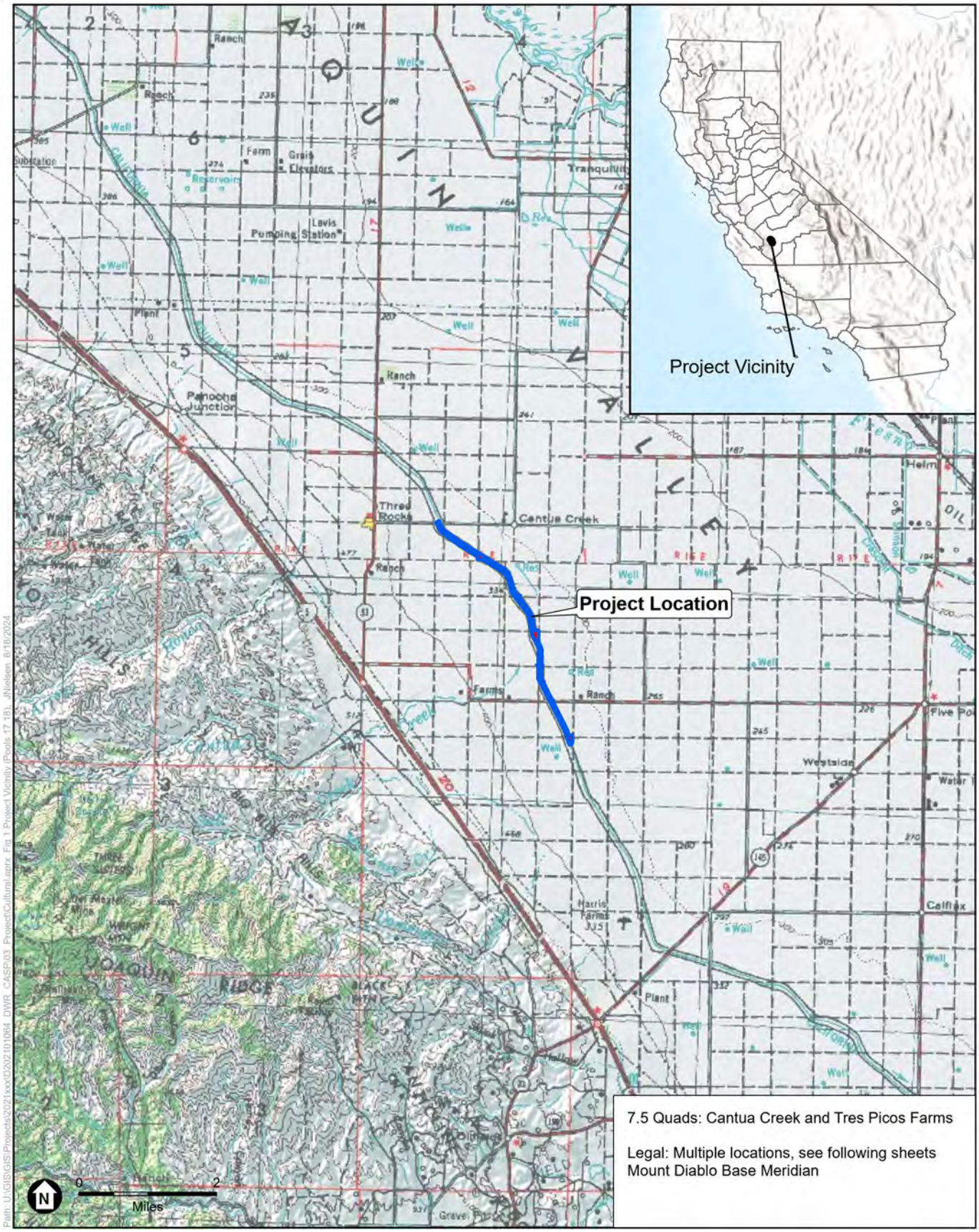


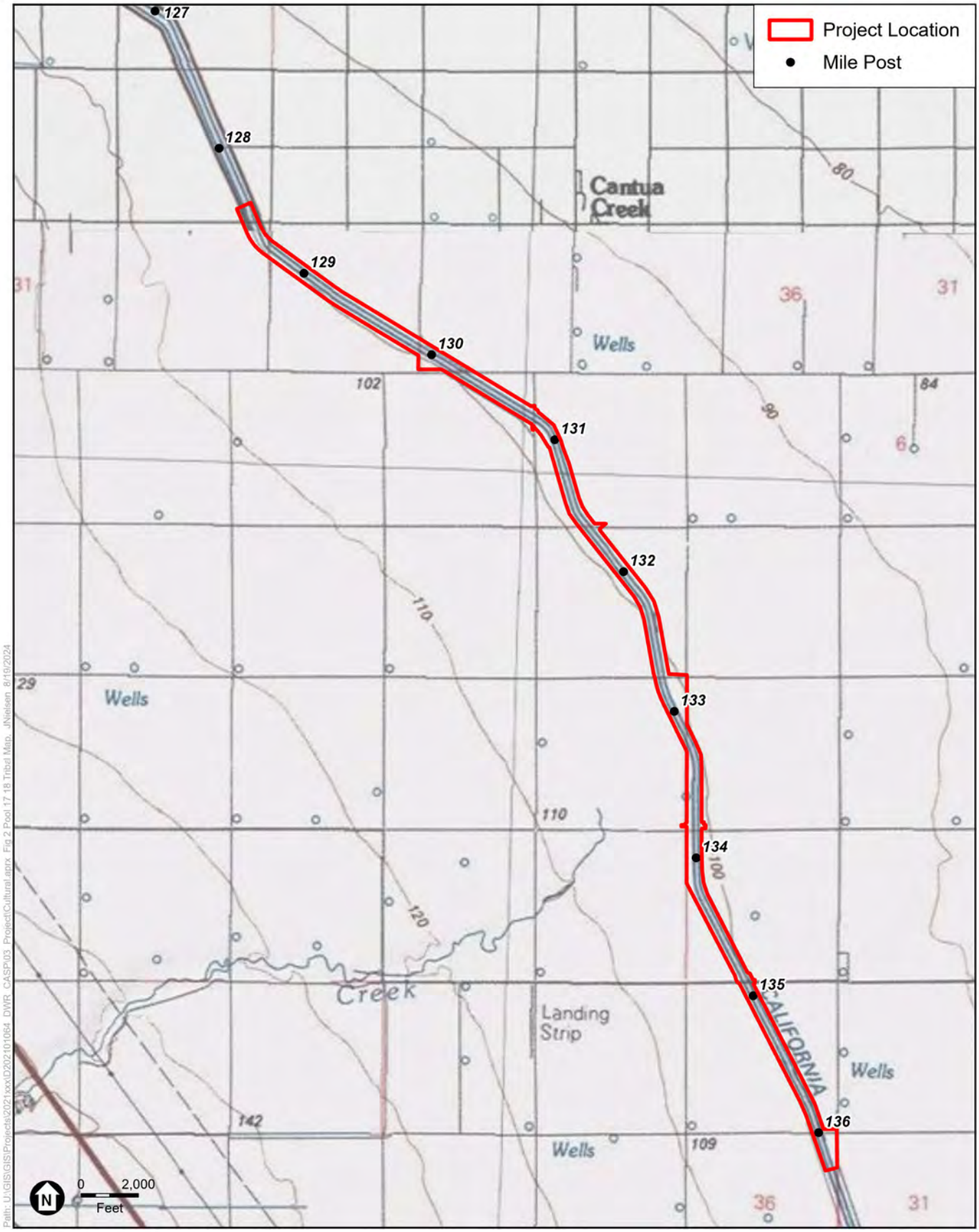
SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC



SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Michelle Heredia-Cordova
Chairperson
Table Mountain Rancheria
P.O. Box 410
Friant, CA, 93626
mhcordova@tmr.org

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Heredia-Cordova,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

The Environmental Coordination Section (ECS) in DOE supports various aspects of environmental compliance of our division's work, including compliance with AB 52, and the DWR *Tribal Engagement Policy*. Currently, DOE's environmental team is supporting multiple projects of which the Table Mountain Rancheria (Tribe) has been identified as possible partner, consulting Tribe, or otherwise interested. For ease of review, and in furtherance of DWR goals of collaboration and transparency, we have consolidated consultation letters different projects into one envelope. My intention is to acknowledge the multiple consultation letters and provide consolidated communication where possible.

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- The Pools 20 and 21 Liner Raise Project is located approximately 3 miles north of Kettleman City, California, within Fresno and Kings Counties, on the San Luis Canal. DWR and Reclamation are proposing to jointly implement this project.

- The Pool 24 Liner Raise Project is located adjacent to and to the north of Lost Hills, California, within Kern County, on the California Aqueduct.

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For ease of reference, helpful contacts are in the list below.

Marea Bell	*Main Point of Contact* Enviro. Planning Lead: • Pools 17&18 • Pools 20&21	Marea.Bell@water.ca.gov (916) 882-2945
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Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

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DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail and email

The Honorable Michelle Heredia-Cordova
Chairperson
Table Mountain Rancheria
P.O. Box 410
Friant, CA, 93626
mhcordova@tmr.org

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Heredia-Cordova,

This letter serves as a formal invitation to the Table Mountain Rancheria (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

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If the Tribe has any questions or needs additional information, please contact DWR

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Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Bob Pennell, Cultural Resource Director, Table Mountain Rancheria
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

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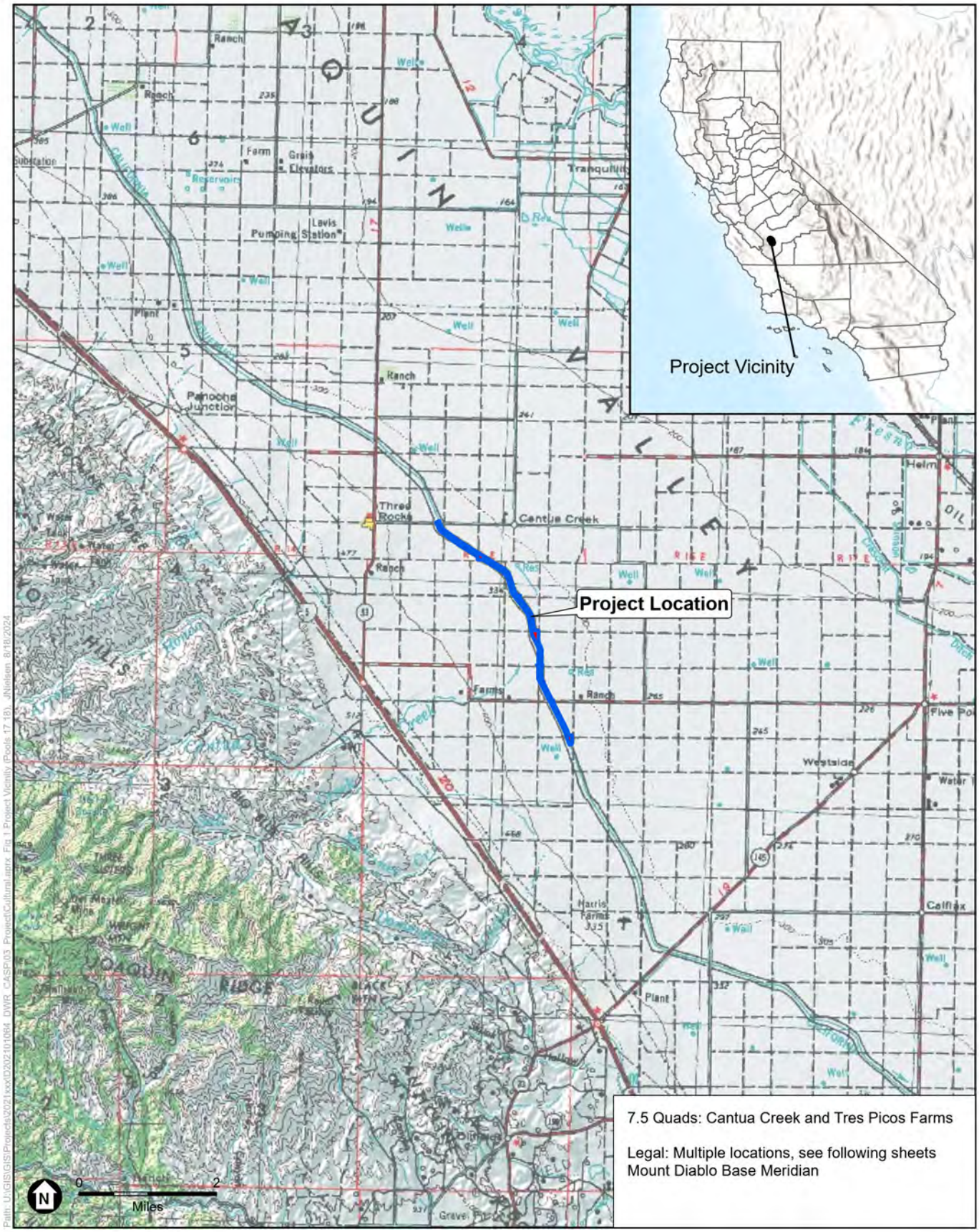


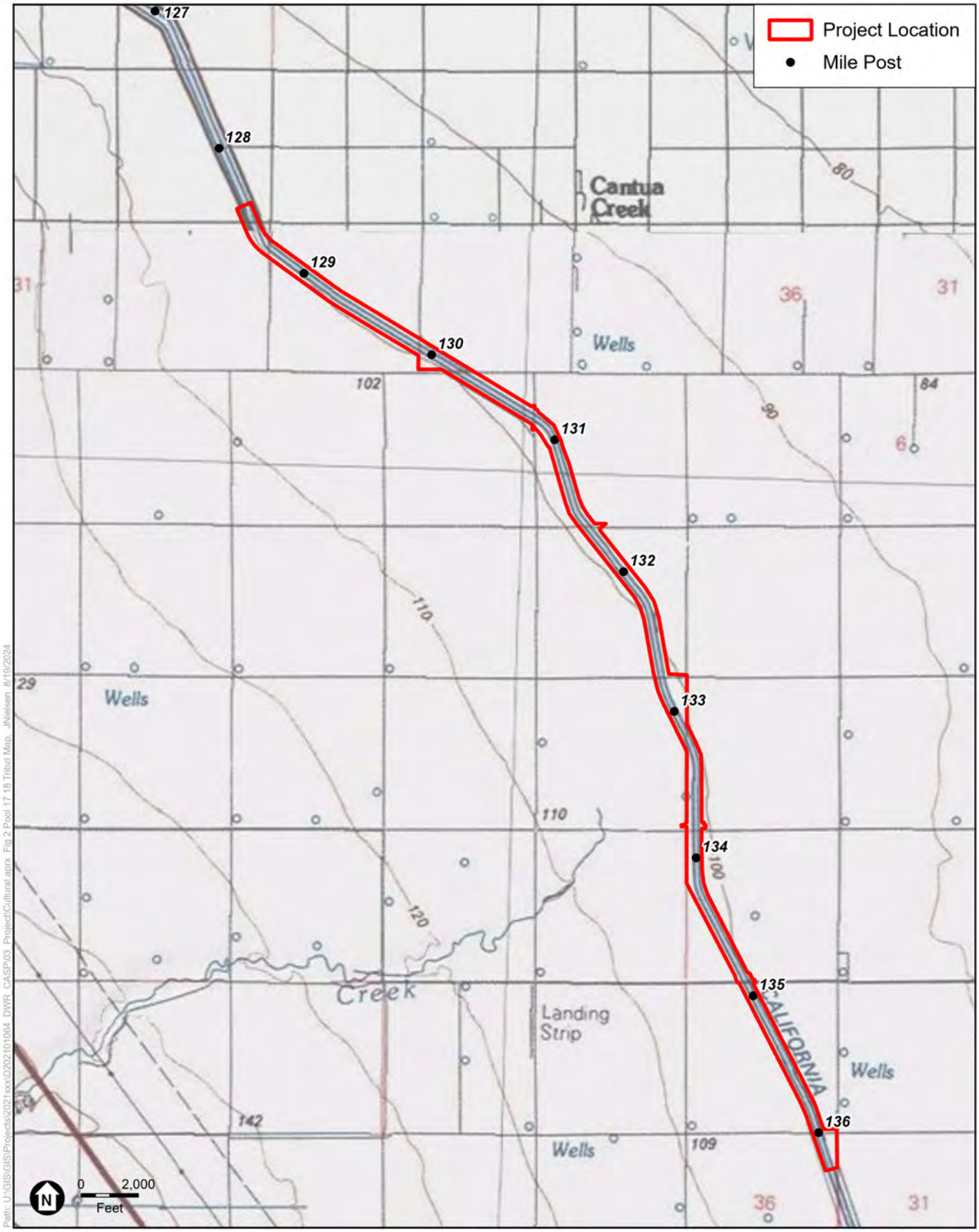
SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC



SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

Honorable David Alvarez
Chairperson
Traditional Choinuymni Tribe
2415 E. Houston Ave.
Fresno, CA 93720
davealvarez@sbcglobal.net

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Alvarez,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

The Environmental Coordination Section (ECS) in DOE supports various aspects of environmental compliance of our division's work, including compliance with AB 52, and the DWR *Tribal Engagement Policy*. Currently, DOE's environmental team is supporting multiple projects of which the Traditional Choinuymni Tribe (Tribe) has been identified as possible partner, consulting Tribe, or otherwise interested. For ease of review, and in furtherance of DWR goals of collaboration and transparency, we have consolidated consultation letters different projects into one envelope. My intention is to acknowledge the multiple consultation letters and provide consolidated communication where possible.

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Marea Bell	*Main Point of Contact* Enviro. Planning Lead: • Pools 17&18 • Pools 20&21	Marea.Bell@water.ca.gov (916) 882-2945
Sarah Cannon	ECS Manager	Sarah.Cannon@water.ca.gov (916) 882-2829
Jesse Dillon	CASP Program Manager	Jesse.Dillon@water.ca.gov (916) 699-8403
Anecita Augustinez	DWR Office of Tribal Affairs	Anecita.Augustinez@water.ca.gov (916) 216-8637

Should you have any questions, comments, or concerns at any point, please do not hesitate to contact me directly, reach out to the designated project contact(s), or contact the DWR Tribal Office. We remain committed to partnering with you in a clear and cooperative manner, to properly account for and manage resources important to the Tribe, consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

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DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail and email

Honorable David Alvarez
Chairperson
Traditional Choinuymni Tribe
2415 E. Houston Ave.
Fresno, CA 93720
davealvarez@sbcglobal.net

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Alvarez,

This letter serves as a formal invitation to the Traditional Choinuymni Tribe (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

If the Tribe would like to consult under Assembly Bill (AB) 52, this is also notice DWR has not received an AB 52 request for notification from the Tribe and is an opportunity to ensure current and future engagement to consult under AB 52.

Brief Overview of Project Description
The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment of the San Luis Canal located in portions of Pools 17 and 18 (see Attachments 1 and 2), which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing the capacity and operational flexibility that has become limited due to subsidence while improving safety and reliability.

Brief Program Background
The concrete-lined San Luis Canal was constructed as a series of interconnected pools that are operated in coordination to convey water, primarily by gravity, from one pool to the next through check structures and pumping plants. The San Luis Canal traverses portions of the Central Valley that have experienced subsidence, which is defined as a

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Cultural Resources Investigations To-Date
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Because the Project is being jointly proposed by DWR and Reclamation, it is subject to federal environmental regulations, including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966 (NHPA). Reclamation is the lead federal agency for NEPA/NHPA purposes.

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If the Tribe has any questions or needs additional information, please contact DWR

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Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

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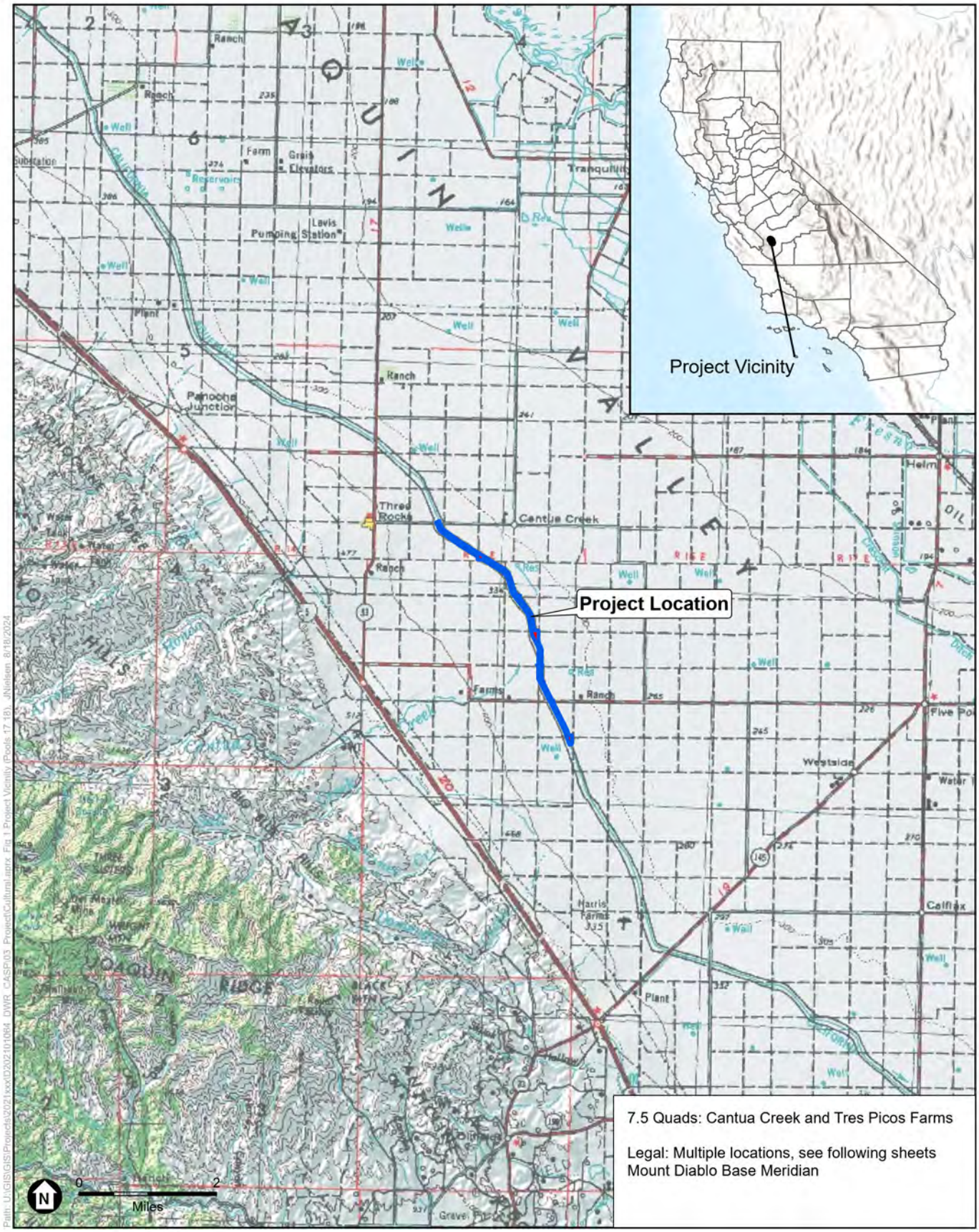

SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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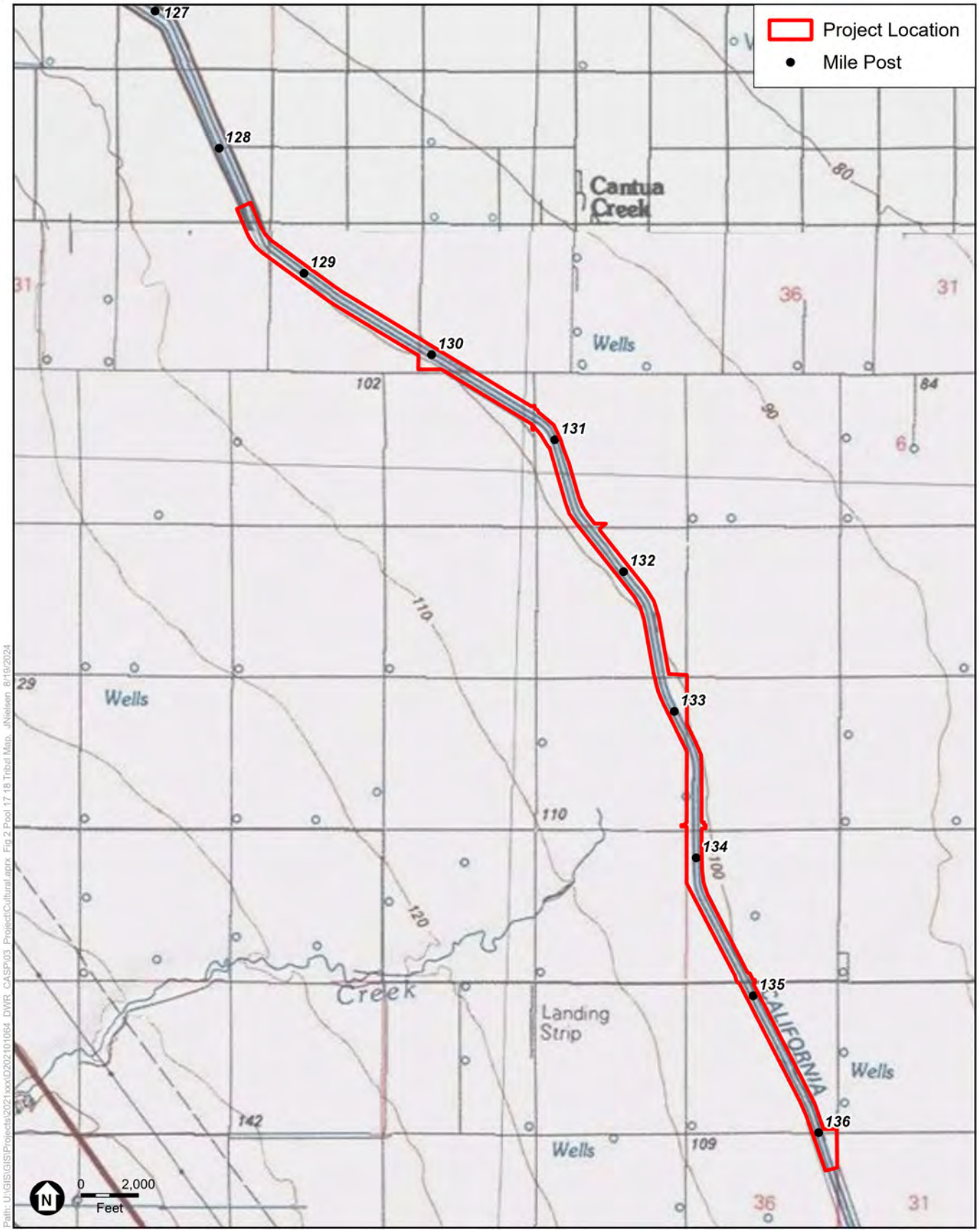

SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

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DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Neil Peyron
Chairperson
Tule River Indian Tribe
P.O. Box 589
Porterville, CA, 93258
neil.peyron@tulerivertribe-nsn.gov

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Peyron,

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Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

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Chairperson
Tule River Indian Tribe
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neil.peyron@tulerivertribe-nsn.gov

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Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Kerri Vera, Environmental Department, Tule River Indian Tribe
Joey Garfield, Tribal Archaeologist, Tule River Indian Tribe
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
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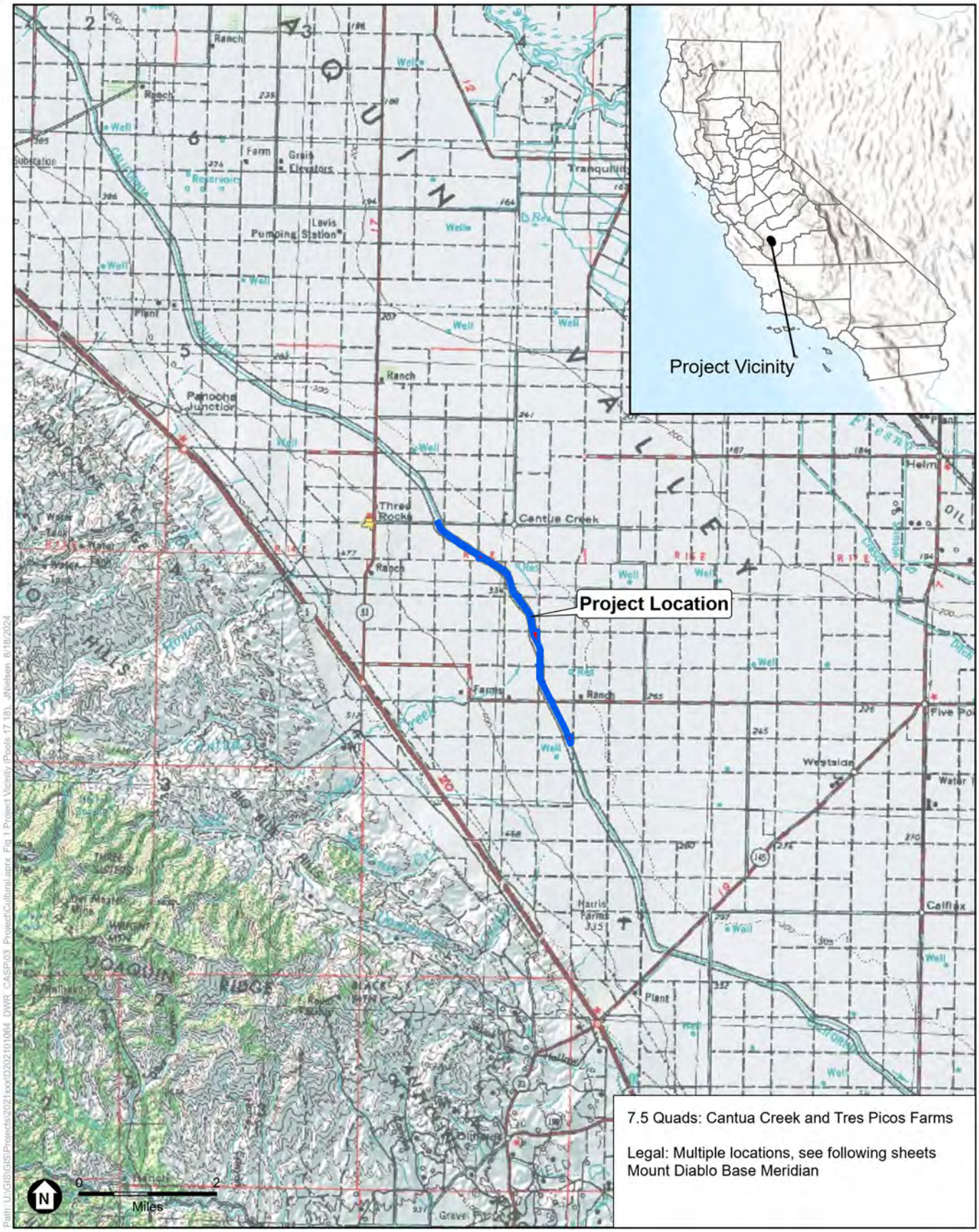

SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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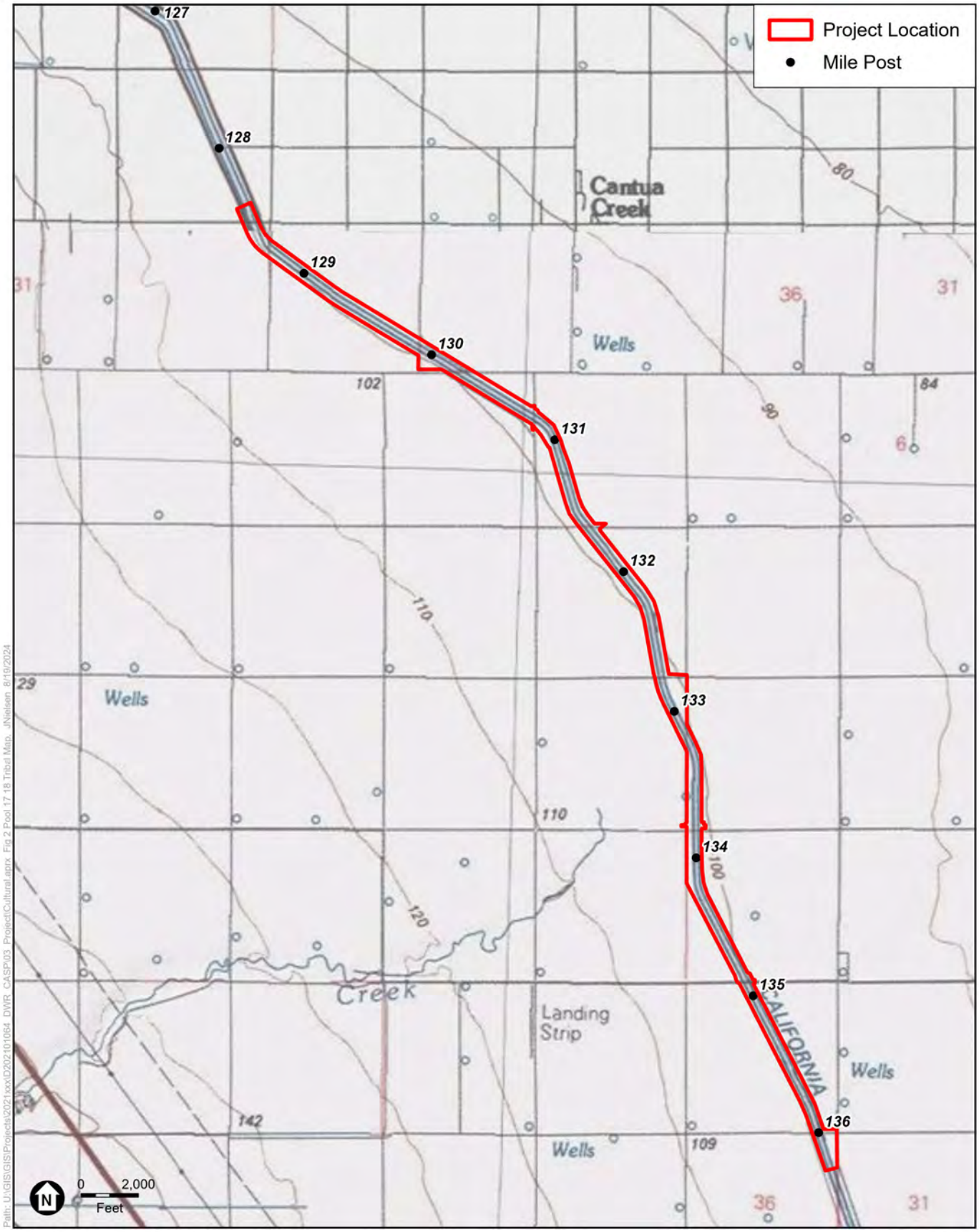

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CASP

Figure 2
Project Location

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DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Karen White
Chairperson
Xolon-Salinan Tribe
P.O. Box 7045
Spreckels, CA, 93962
xolon.salinan.heritage@gmail.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson White,

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DWR – State Water Project: Division of Engineering
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DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

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The Honorable Karen White
Chairperson
Xolon-Salinan Tribe
P.O. Box 7045
Spreckels, CA, 93962
xolon.salinan.heritage@gmail.com

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cc.
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Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
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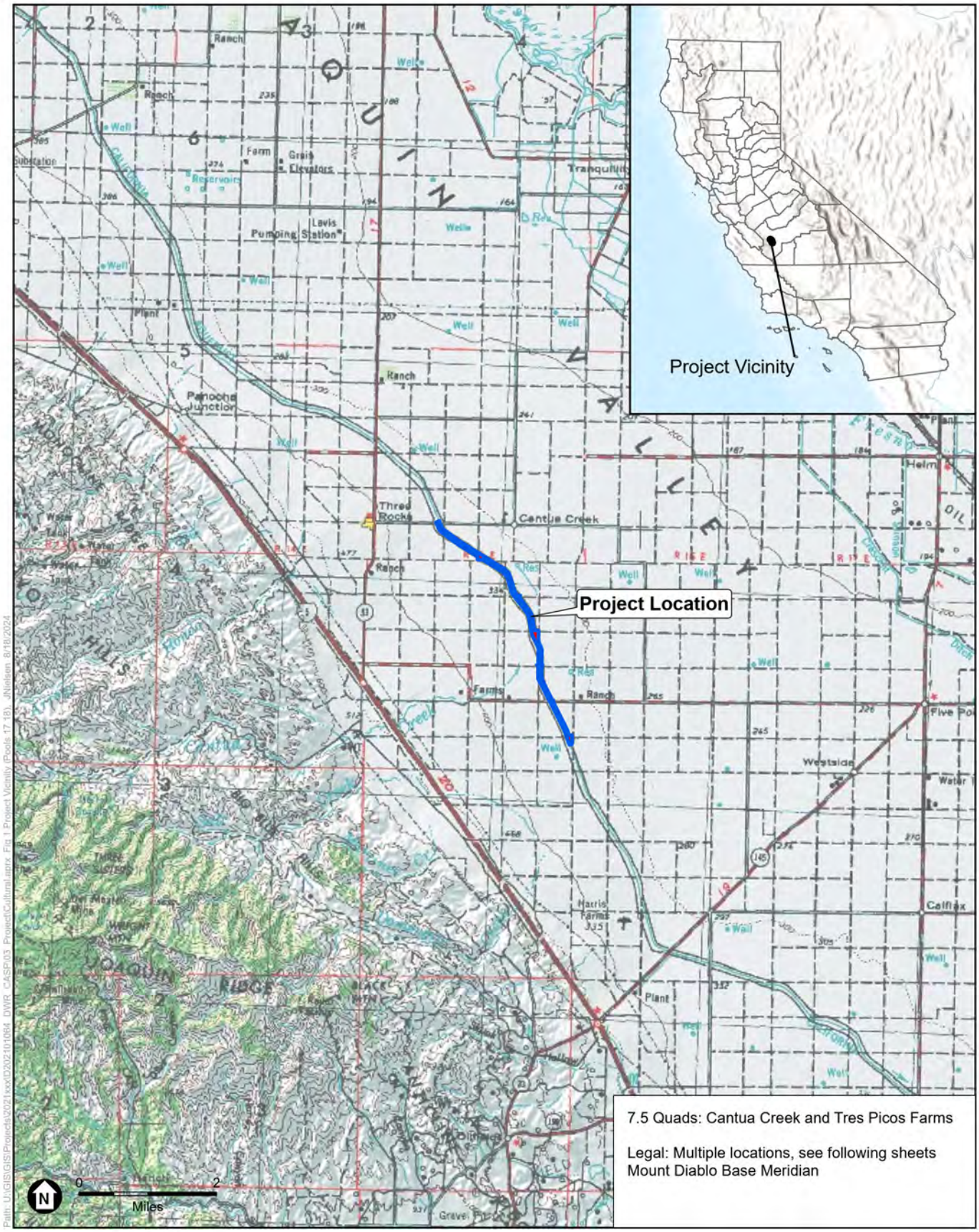

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CASP

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Project Vicinity

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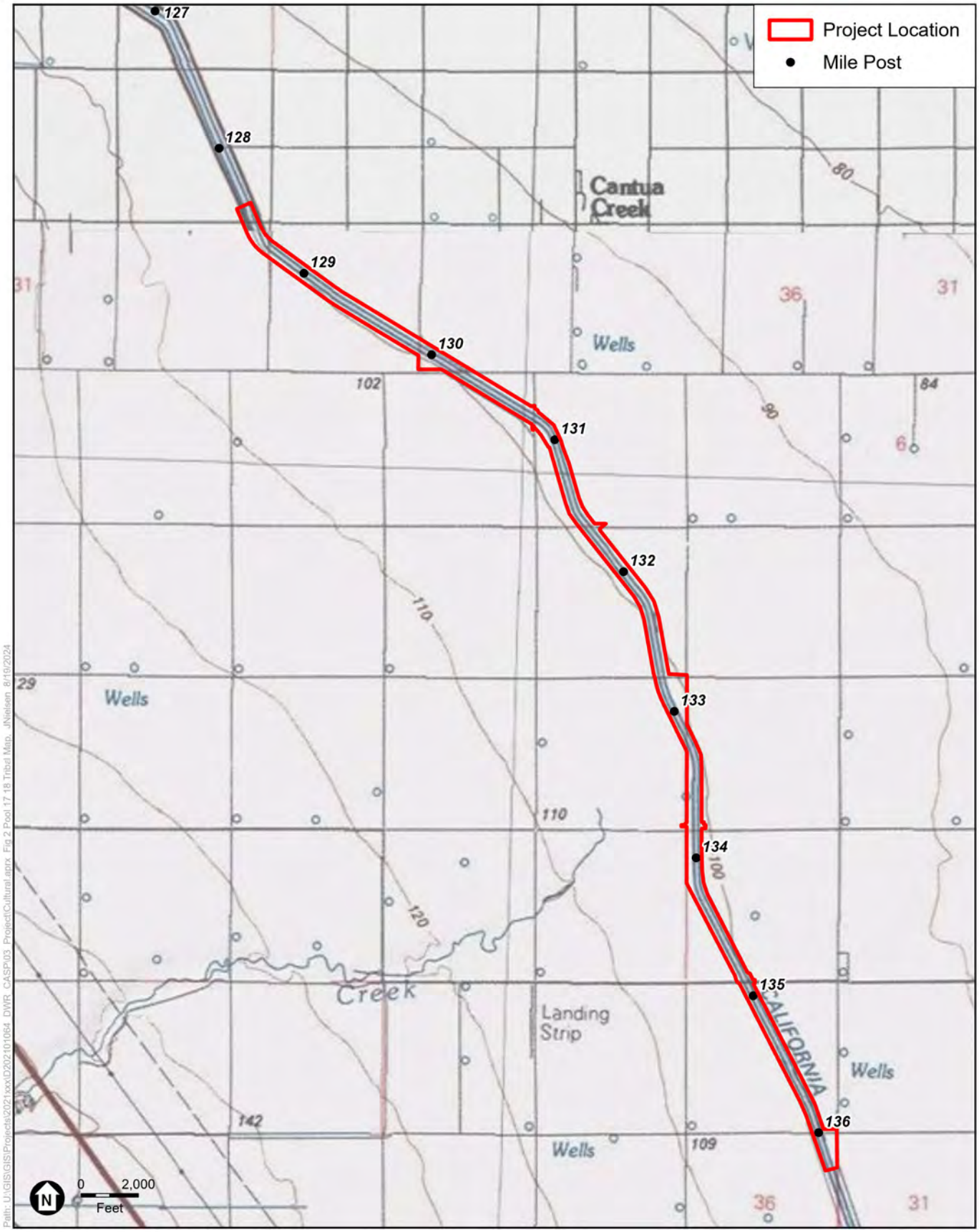

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CASP

Figure 2
Project Location

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P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Kenneth Woodrow
Chairperson
Wuksachi Indian Tribe/Eshom Valley Band
1179 Rock Haven Ct.
Salinas, CA, 93906
kwood8934@aol.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Woodrow,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

The Environmental Coordination Section (ECS) in DOE supports various aspects of environmental compliance of our division's work, including compliance with AB 52, and the DWR *Tribal Engagement Policy*. Currently, DOE's environmental team is supporting multiple projects of which the Wuksachi Indian Tribe/Eshom Valley Band (Tribe) has been identified as possible partner, consulting Tribe, or otherwise interested. For ease of review, and in furtherance of DWR goals of collaboration and transparency, we have consolidated consultation letters different projects into one envelope. My intention is to acknowledge the multiple consultation letters and provide consolidated communication where possible.

The consultation letters enclosed are related to the following projects.

- The Pools 17 and 18 Liner Raise Project is located approximately 12 miles west of Helm, California, within Fresno County, on the San Luis Canal. DWR and Reclamation are proposing to jointly implement this project.

- The Pools 20 and 21 Liner Raise Project is located approximately 3 miles north of Kettleman City, California, within Fresno and Kings Counties, on the San Luis Canal. DWR and Reclamation are proposing to jointly implement this project.

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

For ease of reference, helpful contacts are in the list below.

Marea Bell	*Main Point of Contact* Enviro. Planning Lead: • Pools 17&18 • Pools 20&21	Marea.Bell@water.ca.gov (916) 882-2945
Sarah Cannon	ECS Manager	Sarah.Cannon@water.ca.gov (916) 882-2829
Jesse Dillon	CASP Program Manager	Jesse.Dillon@water.ca.gov (916) 699-8403
Anecita Augustinez	DWR Office of Tribal Affairs	Anecita.Augustinez@water.ca.gov (916) 216-8637

Should you have any questions, comments, or concerns at any point, please do not hesitate to contact me directly, reach out to the designated project contact(s), or contact the DWR Tribal Office. We remain committed to partnering with you in a clear and cooperative manner, to properly account for and manage resources important to the Tribe, consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail and email

The Honorable Kenneth Woodrow
Chairperson
Wuksachi Indian Tribe/Eshom Valley Band
1179 Rock Haven Ct.
Salinas, CA, 93906
kwood8934@aol.com

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Woodrow,

This letter serves as a formal invitation to the Wuksachi Indian Tribe/Eshom Valley Band (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

If the Tribe would like to consult under Assembly Bill (AB) 52, this is also notice DWR has not received an AB 52 request for notification from the Tribe and is an opportunity to ensure current and future engagement to consult under AB 52.

Brief Overview of Project Description
The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment of the San Luis Canal located in portions of Pools 17 and 18 (see Attachments 1 and 2), which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing the capacity and operational flexibility that has become limited due to subsidence while improving safety and reliability.

Brief Program Background
The concrete-lined San Luis Canal was constructed as a series of interconnected pools that are operated in coordination to convey water, primarily by gravity, from one pool to the next through check structures and pumping plants. The San Luis Canal traverses portions of the Central Valley that have experienced subsidence, which is defined as a

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local or regional drop in ground surface elevation. This subsidence has reduced the San Luis Canal's delivery capability and reliability, as well as increased maintenance, repair, and energy costs.

This project is part of a larger CASP program, comprised of short-term (interim) actions and long-term corrective actions aimed to repair the San Luis Canal and the California Aqueduct. Additional information about the program and projects can be found here: https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence

Cultural Resources Investigations To-Date
Cultural resources investigations completed to date for the Project include the activities listed below. An *Archaeological and Architectural Resources Inventory Report* is currently being prepared for the project.

- California Native American Heritage Commission Sacred Lands File search request (no sacred sites identified)
- Records searches of the California Historical Resources Information System for the Project Area and vicinity (six previously recorded cultural resources in the Project Area, all of which are historic-era built environmental resources)
- Intensive-level pedestrian survey of the Project Area (no archaeological resources identified)

CEQA Implementation
DWR is the lead agency under the CEQA and is proposing to prepare an Initial Study/Mitigated Negative Declaration for the Project. As part of the cultural resources review of the Project under CEQA, we are writing to provide the Tribe an opportunity to submit any information the Tribe is willing to share about cultural resources or Tribal cultural resources as defined in California Public Resources Code (PRC) §21074, that may be near the proposed Project Area shown in Attachments 1 and 2. We understand that the locations of these resources are sensitive and resource locations will not be disclosed in public documents and will be kept confidential as provided for under California Government Code §6254.10.

Because the Project is being jointly proposed by DWR and Reclamation, it is subject to federal environmental regulations, including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966 (NHPA). Reclamation is the lead federal agency for NEPA/NHPA purposes.

Conclusion
DWR is committed to working collaboratively with the Tribe to properly account for and manage resources important to the Tribe consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*. We welcome any recommendations regarding the appropriate management or treatment of resources, including Tribal cultural resources, that occur within or near the Project Area. This notification does not limit the Tribe's ability to submit information regarding the identification or significance of Tribal cultural resources, the significance of the Project's potential impact on tribal cultural resources, or any appropriate mitigation measures (PRC §21080.3.2(c)(1)).

If the Tribe has any questions or needs additional information, please contact DWR

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

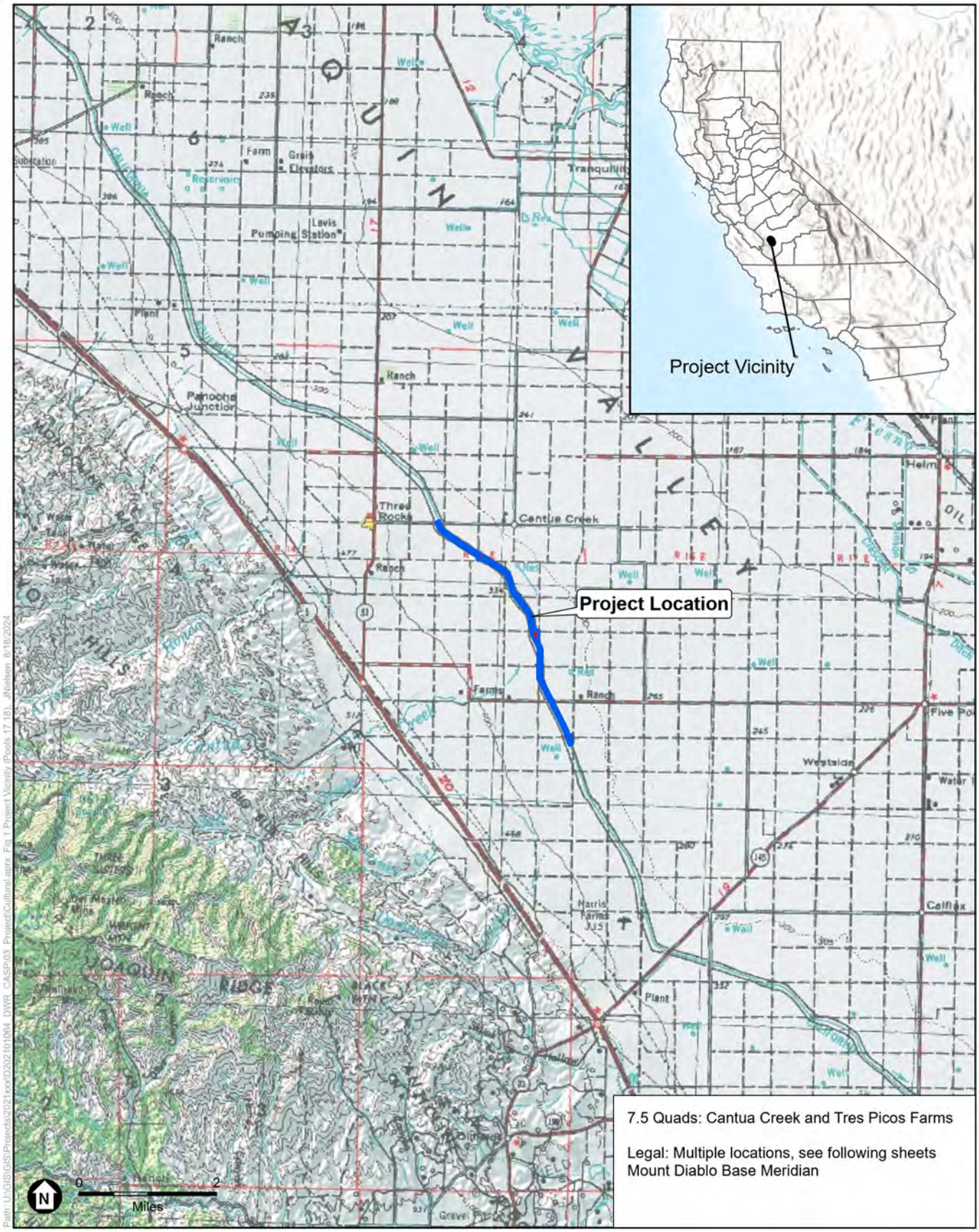
Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC



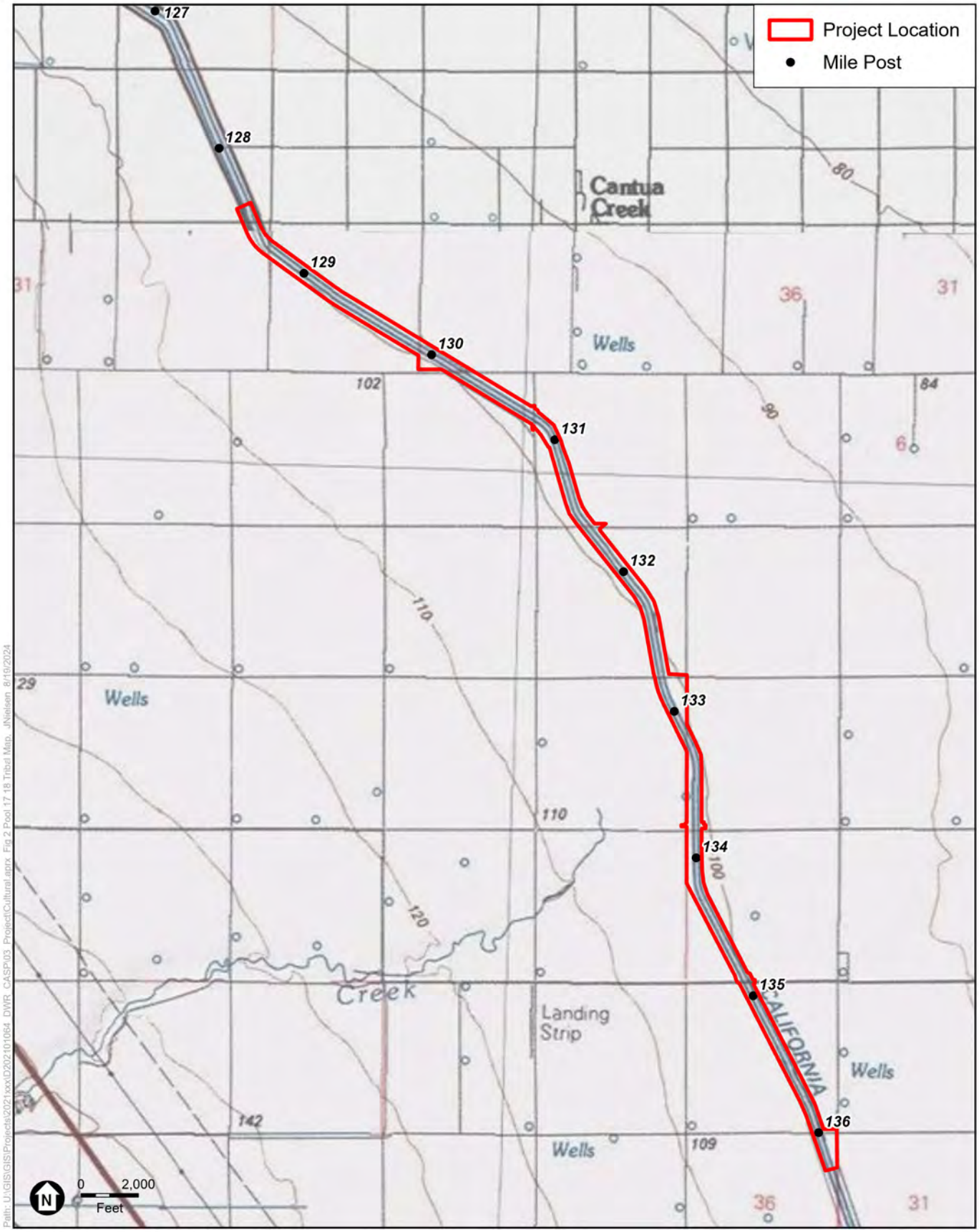
SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC



SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: vjltestingcenter@aol.com
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR; aerieways@aol.com
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: AmahMutsun_CASP-Pools17-18_Letter.pdf

Dear Chairperson Lopez,

This letter serves as a formal invitation to the Amah Mutsun Tribal Band (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: lkipp@bsrnation.com
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: BigSandyRancheria_CASP-Pools17-18_Letter.pdf

Dear Chairperson Kipp,

This letter serves as a formal invitation to the Big Sandy Rancheria of Western Mono Indians (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: csrchair@netptc.net; coldsprgstribe@netptc.net
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: ColdSpringsRancheria_CASP-Pools17-18_Letter.pdf

Dear Chairperson Bill,

This letter serves as a formal invitation to the Cold Springs Rancheria of Mono Indians (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: ledgerrobert@ymail.com
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: DumnaWoWah_CASP-Pools17-18_Letter.pdf

Dear Chairperson Ledger,

This letter serves as a formal invitation to the Dumna Wo-Wah Tribal Government (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: ben.charley@yahoo.com
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR; dcharley2016@gmail.com
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: DunlapBand_CASP-Pools17-18_Letter.pdf

Dear Chairperson Charley,

This letter serves as a formal invitation to the Dunlap Band of Mono Indians (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: 2deedominguez@gmail.com
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: KitanemukYowlumne_CASP-Pools17-18_Letter.pdf

Dear Chairperson Dominguez,

This letter serves as a formal invitation to the Kitanemuk & Yowlumne Tejon Indians (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: huskanam@gmail.com
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: NVYOT_CASP-Pools17-18_Letter.pdf

Dear Mr. Perez,

This letter serves as a formal invitation to the Northern Valley Yokut / Ohlone Tribe (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: info@salinantribe.com
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR; quiggyllynn@gmail.com
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: SalinanTribe_CASP-Pools17-18_Letter.pdf

Dear Ms. Dunton,

This letter serves as a formal invitation to the Salinan Tribe of Monterey, San Luis Obispo Counties (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: smccarty@tachi-yokut-nsn.gov
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR
Subject: AB 52 Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: SR-Rancheria_CASP-Pools17-18_Letter.pdf

Dear Chairperson Sisco,

This letter serves as a formal invitation to the Santa Rosa Rancheria Tachi Yokut Tribe (Tribe) to begin government-to-government consultation with the Department of Water Resources (DWR) under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) §21080.3.1, on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: mhcordova@tmr.org
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR; rpennell@tmr.org
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: TableMtRancheria_CASP-Pools17-18_Letter.pdf

Dear Chairperson Heredia-Cordova,

This letter serves as a formal invitation to the Table Mountain Rancheria (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Wednesday, November 13, 2024 12:21 PM
To: vlopez@amahmutsun.org
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR; aerieways@aol.com; vjltestingcenter@aol.com
Subject: RE: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: AmahMutsun_CASP-Pools17-18_Letter.pdf

Dear Chairperson Lopez,

The California Aqueduct Subsidence Program (CASP) distributed a formal invitation to the Amah Mutsun Tribal Band (Tribe) via email to consult on the Pools 17 and 18 Liner Raise Project on October 10, 2024.

Since that invitation (included below and attached for your reference) we became aware of new contact information for the Tribe and wanted to resend the invitation to the correct contact.
If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

-----Original Message-----
From: Dillon, Jesse@DWR <Jesse.Dillon@water.ca.gov>
Sent: Friday, October 11, 2024 12:07 PM
To: vjltestingcenter@aol.com
Cc: Agustinez, Anecita S.@DWR <Anecita.Agustinez@water.ca.gov>; Cannon, Sarah@DWR <Sarah.Cannon@water.ca.gov>; Bell, Marea@DWR <Marea.Bell@water.ca.gov>; Falke, Mariko@DWR <Mariko.Falke@water.ca.gov>; aerieways@aol.com
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project

Dear Chairperson Lopez,

This letter serves as a formal invitation to the Amah Mutsun Tribal Band (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,

Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

November 06, 2024 Sent via certified mail and email

The Honorable Charmaine McDarment
Chairperson
Tule River Indian Tribe
340 N. Reservation Road
Porterville, CA, 93258
Charmaine.McDarment@tulerivertribe-nsn.gov

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson McDarment,

This letter serves as a formal invitation to the Tule River Indian Tribe (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

If the Tribe would like to consult under Assembly Bill (AB) 52, this is also notice DWR has not received an AB 52 request for notification from the Tribe and is an opportunity to ensure current and future engagement to consult under AB 52.

Brief Overview of Project Description
The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment of the San Luis Canal located in portions of Pools 17 and 18 (see Attachments 1 and 2), which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing the capacity and operational flexibility that has become limited due to subsidence while improving safety and reliability.

Brief Program Background
The concrete-lined San Luis Canal was constructed as a series of interconnected pools that are operated in coordination to convey water, primarily by gravity, from one pool to the next through check structures and pumping plants. The San Luis Canal traverses portions of the Central Valley that have experienced subsidence, which is defined as a

local or regional drop in ground surface elevation. This subsidence has reduced the San Luis Canal's delivery capability and reliability, as well as increased maintenance, repair, and energy costs.

This project is part of a larger CASP program, comprised of short-term (interim) actions and long-term corrective actions aimed to repair the San Luis Canal and the California Aqueduct. Additional information about the program and projects can be found here: https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence

Cultural Resources Investigations To-Date
Cultural resources investigations completed to date for the Project include the activities listed below. An *Archaeological and Architectural Resources Inventory Report* is currently being prepared for the project.

- California Native American Heritage Commission Sacred Lands File search request (no sacred sites identified)
- Records searches of the California Historical Resources Information System for the Project Area and vicinity (six previously recorded cultural resources in the Project Area, all of which are historic-era built environmental resources)
- Intensive-level pedestrian survey of the Project Area (no archaeological resources identified)

CEQA Implementation
DWR is the lead agency under the CEQA and is proposing to prepare an Initial Study/Mitigated Negative Declaration for the Project. As part of the cultural resources review of the Project under CEQA, we are writing to provide the Tribe an opportunity to submit any information the Tribe is willing to share about cultural resources or Tribal cultural resources as defined in California Public Resources Code (PRC) §21074, that may be near the proposed Project Area shown in Attachments 1 and 2. We understand that the locations of these resources are sensitive and resource locations will not be disclosed in public documents and will be kept confidential as provided for under California Government Code §6254.10.

Because the Project is being jointly proposed by DWR and Reclamation, it is subject to federal environmental regulations, including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966 (NHPA). Reclamation is the lead federal agency for NEPA/NHPA purposes.

Conclusion
DWR is committed to working collaboratively with the Tribe to properly account for and manage resources important to the Tribe consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*. We welcome any recommendations regarding the appropriate management or treatment of resources, including Tribal cultural resources, that occur within or near the Project Area. This notification does not limit the Tribe's ability to submit information regarding the identification or significance of Tribal cultural resources, the significance of the Project's potential impact on tribal cultural resources, or any appropriate mitigation measures (PRC §21080.3.2(c)(1)).

If the Tribe has any questions or needs additional information, please contact DWR

Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Kerri Vera, Environmental Department, Tule River Indian Tribe
Joey Garfield, Tribal Archaeologist, Tule River Indian Tribe
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Wednesday, November 13, 2024 12:17 PM
To: lsisco@tachi-yokut-nsn.gov
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR; smccarty@tachi-yokut-nsn.gov; nescalon@tachi-yokut-nsn.gov
Subject: RE: AB 52 Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: SR-Ranch_CASP-Pools17-18_Letter.pdf

Dear Chairperson Sisco,

The California Aqueduct Subsidence Program (CASP) distributed a formal invitation to the Santa Rosa Rancheria Tachi Yokut Tribe (Tribe) to begin government-to-government consultation with the Department of Water Resources (DWR) under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) §21080.3.1, on the proposed Pools 17 and 18 Liner Raise Project on October 10, 2024.

Since that invitation (included below and attached for your reference) we became aware of new contact information for the Tribe and wanted to resend the invitation to the correct contact.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

-----Original Message-----
From: Dillon, Jesse@DWR <Jesse.Dillon@water.ca.gov>
Sent: Friday, October 11, 2024 12:07 PM
To: smccarty@tachi-yokut-nsn.gov
Cc: Agustinez, Anecita S.@DWR <Anecita.Agustinez@water.ca.gov>; Cannon, Sarah@DWR <Sarah.Cannon@water.ca.gov>; Bell, Marea@DWR <Marea.Bell@water.ca.gov>; Falke, Mariko@DWR <Mariko.Falke@water.ca.gov>
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project

Dear Chairperson Sisco,

This letter serves as a formal invitation to the Santa Rosa Rancheria Tachi Yokut Tribe (Tribe) to begin government-to-government consultation with the Department of Water Resources (DWR) under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) §21080.3.1, on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the

Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program
California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, November 15, 2024 2:55 PM
To: Bell, Marea@DWR; Wong, Todd@DWR
Subject: FW: Re:Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project

Please log the following response.
Thank you,

Jesse J. Dillon, P.E.

Program Manager – California Aqueduct Subsidence Program
Ca. Dept. of Water Resources, State Water Project, Div. of Engineering
715 P Street, 4th Floor, Sacramento 95814
Cell Phone: (916) 699-8403

jesse.dillon@water.ca.gov

From: Amah Mutsun Tribal Band <culturalresources_amtb@amahmutsun.org>
Sent: Friday, November 15, 2024 11:42 AM
To: Dillon, Jesse@DWR <Jesse.Dillon@water.ca.gov>
Subject: Re:Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project

> You don't often get email from culturalresources_amtb@amahmutsun.org. Learn why this is important

Dear Jesse Dillon,

Thank you for this notice regarding the San Luis Field Division Pools.

Since this project is outside the territory of Amah Mutsun, they will decline to participate in this consultation.

Thank you,

Notice of Intent to Adopt a Mitigated Negative Declaration for the
San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project

The California Department of Water Resources (DWR) has released a draft Initial Study (IS) and intends to adopt a Mitigated Negative Declaration (MND) for the proposed San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project (proposed project). The draft IS and proposed MND have been prepared in accordance with the California Environmental Quality Act to provide agencies, the public, and interested parties an opportunity to review the environmental analysis for the proposed project.

The proposed project is located at Pools 17 and 18 of the California Aqueduct in Fresno County between Aqueduct Milepost (MP) 128.4 and MP 135.6. The northernmost pool, Pool 17 at MP 128.4, is approximately 1.4 miles west of the town of Cantua Creek. The southernmost pool, Pool 18 at MP 135.6, is approximately 6.5 miles southeast of Cantua Creek.

Subsidence has reduced available freeboard to 1 foot or less, thereby reducing the Aqueduct's storage and conveyance capacity. The proposed project would maintain functionality in Pools 17 and 18 to avoid future disruptions of water deliveries to the Public Water Agencies, thereby maintaining operational flexibility and improving safety and reliability. The proposed project would raise portions of the concrete liner 1 foot and 9 inches over a total length of approximately 8.9 miles on both sides of Pools 17 and 18.

The IS provides an assessment of the proposed project's potential significant adverse impacts on the environment. The IS concludes the proposed project would not have any significant adverse effects on the environment after implementation of mitigation measures.

The IS is being circulated for public review and comment for the period of 30 days starting November 11, 2025, and ending December 10, 2025. Written comments should be submitted and received no later than 5 PM on December 10, 2025. Submit comments via mail: California Department of Water Resources, Marea Bell, 31770 Gonzaga Road, Gustine, CA 95332, or via email at CASP@water.ca.gov. If comments are provided via email, please include the project title in the subject line and include the commenter's U.S. Postal Service mailing address.

The IS will be available online at https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/CanalEmbankment and a hard copy will be made available upon request. Please contact Marea Bell at CASP@water.ca.gov or (916) 882-2945 for any questions or for distribution of a hard copy of the IS.

San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project

Initial Study/Mitigated Negative Declaration

October 2025

SAN LUIS CANAL (CALIFORNIA AQUEDUCT POOLS 17 AND 18) LINER RAISE PROJECT

Initial Study/Mitigated Negative Declaration

October 2025

Prepared for:
California Department of Water Resources
PO Box 942836
Sacramento, CA 94236

Prepared by:
Environmental Science Associates
2600 Capitol Avenue
Suite 200
Sacramento, CA 95816
916.564.4500
esassoc.com

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1 INTRODUCTION

As lead agency under the California Environmental Quality Act (CEQA), the California Department of Water Resources (DWR) has prepared this Initial Study (IS) and Notice of Intent to Adopt a Mitigated Negative Declaration (MND) to address the environmental consequences of the proposed San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project (proposed project). The proposed project is located at Pools 17 and 18 of the California Aqueduct (Aqueduct) in Fresno County. The proposed project involves modification to the Aqueduct's concrete liner which would be raised over a total length of approximately 8.9 miles on both sides of Pools 17 and 18. The liner raise would require rerouting up to seven road drainage pipes, removing and replacing eight road drains at a higher elevation, and removing one drain inlet pipe that is no longer in service. The proposed project is described in more detail in Chapter 2, "Project Description."

1.1 Document Organization

Chapter 1: Introduction. This chapter provides an introduction to the proposed project, organization of this document, purpose of the IS/MND, and summary of findings.

Chapter 2: Project Description. This chapter describes the proposed project, including project location, project objectives, activities to be conducted under the proposed project, and potential permits and approvals that may be required prior to implementation of the proposed project.

Chapter 3: Initial Study Environmental Checklist. This chapter presents an analysis of potential environmental impacts that may result from implementation of the proposed project for the resource topics included in the CEQA Environmental Checklist (CEQA Guidelines Appendix G). For each resource topic question, the following are provided: (1) environmental setting, (2) discussion of the potential effects of implementing the proposed project, (3) finding of significance, and (4) any mitigation measures to be recommended for incorporation into the proposed project to reduce any identified significant impacts to a less-than-significant level. The references used in preparation of this IS/MND are provided for each resource area.

Following completion of the required 30-day public comment period and before approving the proposed project, DWR will consider the IS/MND together with any comments provided during the public comment period and will adopt the IS/MND if, based on the whole of the record, (1) there is no substantial evidence that the proposed project will have a significant effect on the environment, and (2) it represents DWR's independent judgement and analysis. DWR will also prepare and adopt a Mitigation Reporting and Monitoring Program as part of the approval process as required under Public Resources Code Section 21081.6(c) for mitigation measures identified in the IS/MND.

1.2 Purpose of the IS/MND

This IS/MND was prepared in accordance with Public Resources Code Section 21000 et seq. and California Code of Regulations Title 14, Section 15000 et seq. (CEQA Guidelines). The purposes of this IS/MND are to (1) determine whether project implementation would result in potentially significant or significant effects to the environment, and (2) incorporate mitigation measures into the proposed project design, as necessary, to eliminate potentially significant or significant project effects or reduce them to a less-than-significant level.

1.3 Summary of Findings

Based on the analysis included in Chapter 3, implementation of the proposed project would result in:

- No impact on the following resource topics:
  - Agriculture and Forestry Resources
  - Land Use and Planning
  - Mineral Resources
  - Population and Housing
- Less-than-significant impacts on the following resource topics:
  - Aesthetics
  - Air Quality
  - Energy
  - Greenhouse Gas Emissions
  - Hazards and Hazardous Materials
  - Hydrology and Water Quality
  - Noise
  - Public Services
  - Recreation
  - Transportation
  - Utilities and Service Systems
- Less-than-significant impacts following incorporation of mitigation measures into the proposed project on the following resource topics:
  - Biological Resources
  - Cultural Resources
  - Geology and Soils
  - Tribal Cultural Resources
  - Wildfire
  - Mandatory Findings of Significance

2 PROJECT DESCRIPTION

2.1 Background and Need for Project

2.1.1 Background

Owned, operated, and managed by the California Department of Water Resources (DWR), the State Water Project (SWP) is a complex system of reservoirs, dams, power plants, pumping plants, pipelines, and aqueducts that conveys water from natural stream channels to the Sacramento-San Joaquin Delta and pumps water into the 444-mile-long Aqueduct, supplying water agencies and districts in portions of the San Francisco Bay Area, the San Joaquin Valley, the Central Coast, and Southern California. Water supplies conveyed through the Dos Amigos Pumping Plant and on through the San Luis Canal (SLC) and Aqueduct serve over 1.5 million acres of farmland and approximately 24 million people (California Department of Water Resources 2025). DWR contracts with 29 Public Water Agencies throughout California for the delivery of SWP water. The Public Water Agencies receive water service from the SWP in exchange for paying all costs that are associated with the storage and transportation of the water and with planning, constructing, operating, and maintaining the SWP facilities.

Pools 17 and 18 are segments of the Aqueduct located within the SWP's San Luis Field Division (SLFD) and part of the joint-use conveyance portion of the Aqueduct known as the SLC. The SLC is a federal–State joint-use facility. It was designed and is owned by the U.S. Bureau of Reclamation (Reclamation) but is operated and maintained by the SWP's SLFD. In addition to conveying SWP supplies, the joint-use SLC also delivers Central Valley Project (CVP) water to federal service areas along its route. Reclamation relies on the available hydraulic conveyance capacity of the Aqueduct to convey water supplies for delivery to CVP Cross Valley Canal contractors and to wildlife refuges. The section of the SLC that this project encompasses is approximately 21.2 miles of the concrete-lined canal from the downstream side of Check 16 to the upstream side of Check 18.

There are no turnouts in the SLC for SWP water delivery, but turnouts are provided for the federal service area to deliver CVP irrigation water for approximately one million acres of prime farmland in the San Joaquin Valley. The Aqueduct design capacity in the SLC ranges from 13,100 cubic feet per second (cfs) [6,000 cfs federal and 7,100 cfs State] leaving O'Neill Forebay to 8,350 cfs [1,300 cfs federal and 7,050 cfs State] at Kettleman City.

2.1.2 Need for the Project

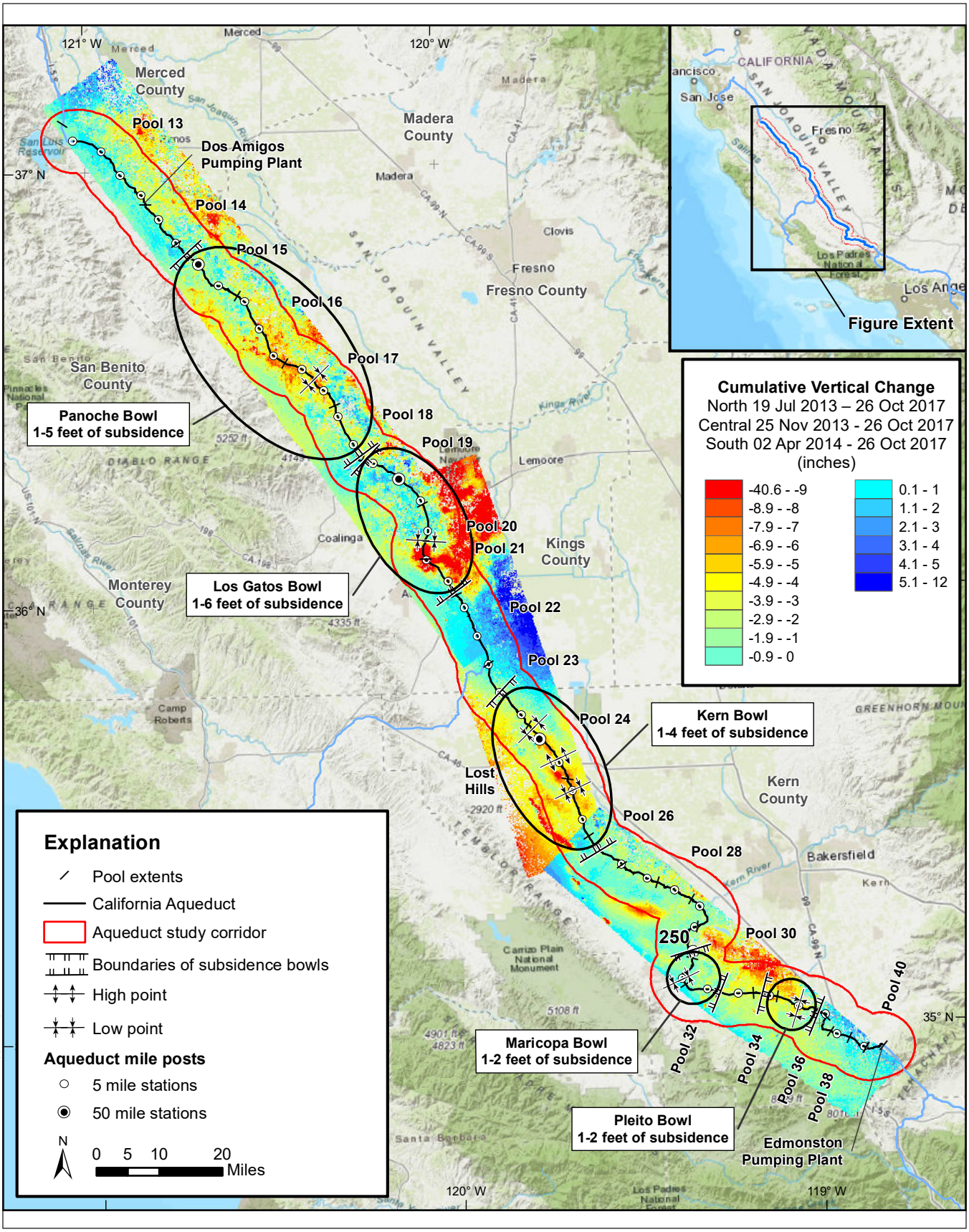
The concrete-lined Aqueduct was constructed as a series of interconnected pools that are operated in coordination to convey water primarily by gravity from one pool to the next through check structures and pumping plants. The Aqueduct traverses the San Joaquin Valley, which has experienced *subsidence*, defined as a local or regional drop in ground surface elevation.

Land subsidence in the San Joaquin Valley was first noted near the Delano area in 1935. Since that time, the San Joaquin Valley has undergone several periods of regional aquifer compaction as a result of groundwater extraction, which has been largely for agricultural uses. In the late 1960s and early 1970s, surface water was imported via canals, and the Aqueduct began importing water to the subsiding areas, reducing groundwater pumping and reducing new land subsidence in the western and southern portions of the San Joaquin Valley Groundwater Basin, a subregion of the Central Valley Aquifer System that underlies the proposed project site (Ireland 1986). By 1981, however, subsidence in the San Joaquin Valley reached nearly 30 feet, the greatest subsidence recorded in the United States (Bertoldi et al. 1991). Reduced surface-water availability during 1976 and 1977, 1986 through 1992, 2007 through 2009, and 2012 through 2015 caused groundwater pumping increases in the San Joaquin Valley, declines in groundwater levels to near or beyond historic lows, and renewed aquifer compaction.

The resulting land subsidence has reduced the freeboard and flow capacity of the Aqueduct and other canals that transport floodwater and deliver irrigation water (U.S. Geological Survey 2018). Freeboard refers to the vertical distance between the design water surface and the top of the concrete canal lining. In the SLC, the Aqueduct was designed with a minimum of 3 feet of freeboard on top of 3 feet of lined and 3 feet of unlined embankment above the water surface elevation. The decrease in lined freeboard has decreased or eliminated the potential to store additional water in some pools. The Aqueduct freeboard is used as a reservoir, storing water during low-cost high-pumping periods (nighttime) and drafting water for downstream delivery during high-cost low-pumping periods (daytime). The reduced storage forces more pumping during more expensive periods to meet direct downstream demand (California Department of Water Resources 2017).

Since 1970, due to continued land subsidence, DWR has implemented numerous liner raises and other rehabilitation projects to maintain adequate freeboard in the Aqueduct (California Department of Water Resources 2017). However, due to ongoing subsidence, the liner needed to be raised in the 1980s and again in the 1990s to maintain adequate freeboard and delivery capacity. In June 2017, DWR prepared the California Aqueduct Subsidence Study, which summarized the magnitude, location, and effects of pre-Aqueduct subsidence, historic-Aqueduct subsidence, and current subsidence on the Aqueduct. The study identified five significant “bowls” of subsidence along the alignment of the Aqueduct (**Figure 2-1**). The largest bowl, Panoche, is located in Pool 15 through Pool 18 in the SLC, where the proposed project is located. A second subsidence bowl, Los Gatos, is located in Pool 19 through Pool 21. Kern, a third bowl, is located in Pool 23 through Pool 25. The 2017 study reported that recent drought has exacerbated the current subsidence of the Aqueduct, reducing available freeboard to 1 foot or less, thereby further reducing the Aqueduct’s storage and conveyance capacity. While subsidence has reduced the amount of freeboard and flow capacity at specific locations, contracted deliveries have not yet been curtailed. To maintain delivery capacity, pumping has increased during high-cost daytime periods. The reduced freeboard has also become a safety and maintenance issue as the water surface reaches the limits of the concrete liner and encroaches on the earthen embankments.

To maintain the Aqueduct’s storage and conveyance capacity and maintain deliveries, those portions of the Aqueduct that have experienced subsidence require retrofit to extend the concrete liner.



SOURCE: DWR, 2019

CASP Enviro Support

Figure 2-1
California Aqueduct Subsidence "Bowls" in the San Joaquin Valley

ESA

2.2 Project Objectives

The objective of the proposed project is to maintain functionality in Pools 17 and 18 to enable DWR to avoid future disruptions of water deliveries to the Public Water Agencies, thereby maintaining operational flexibility and improving safety and reliability.

2.3 Project Location

The proposed project would raise portions of the concrete liner of Pools 17 and 18 in Fresno County, California. The area of the liner raise in Pools 17 and 18 is located along the Aqueduct between Aqueduct Milepost (MP) 128.4 to MP 135.6. The northernmost pool, Pool 17 at MP 128.4, is approximately 1.4 miles west of the town of Cantua Creek. The southernmost pool, Pool 18 at MP 135.6, is approximately 6.5 miles southeast of Cantua Creek. The proposed project site includes the two Aqueduct liner raise sites, borrow and staging areas, and road drain replacement sites (Figure 2-1 through **Figure 2-6**).

2.4 Description of the Proposed Project

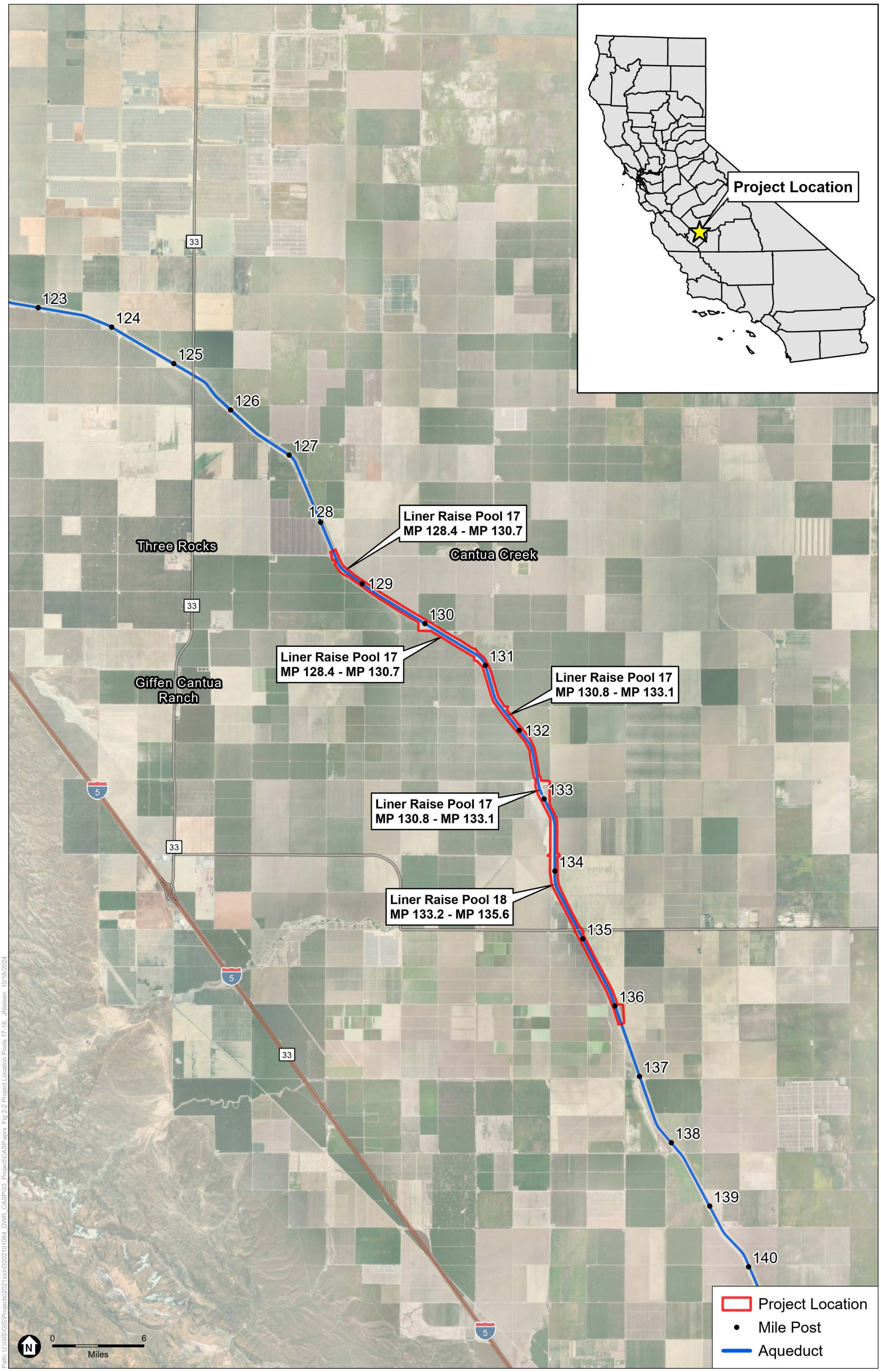
2.4.1 Concrete Liner Raise

The Aqueduct's concrete liner would be raised approximately 1 foot and 9 inches over a total length of approximately 8.9 miles on both sides of Pools 17 and 18. Refer to **Figure 2-3** illustrating a typical cross-section of an Aqueduct liner raise footprint and **Figure 2-4** through Figure 2-6 for the specific locations of the liner raise.

To accommodate the placement of the additional concrete, existing guardrails, road delineators, hand railings, and other features would be removed and salvaged for reuse on-site, if possible. All liner raise construction activities would be completed above the aqueduct water level at the waterside embankment; no in-water work would occur and the Aqueduct would not be dewatered for construction work.

Anticipated ground-disturbing activities would include:

- Vegetation clearing and grubbing of the staging and access areas to a depth of approximately 0.25 feet.
- Excavation of borrow areas up to a depth of approximately 20 feet for use as fill in the canal embankment. This would include vegetation clearing and grubbing of borrow areas prior to excavation.
- Excavation up to a depth of approximately 2.5 feet, placement of fill, and re-compaction at locations where the new liner raise would be installed. This work would take place between the top of the existing liner and the edge of the access road (waterside), within a width of approximately 4 to 6 feet.
- Excavation up to a depth of approximately 12 feet and re-compaction of flood berms (west side) and waste berms (east side) to reroute existing road drainage pipes.



SOURCE: ESRI; DWR, 2024.

CASP Enviro Support

Figure 2-2
Project Location - Pools 17/18

ESA

Path: U:\GIS\GIS\Projects\2021xxxx\D202101064_DWR_CASP\03_Project\CASP.aprx Fig 2-2 Project Location Pools 17-18, JNielsen 10/16/2024

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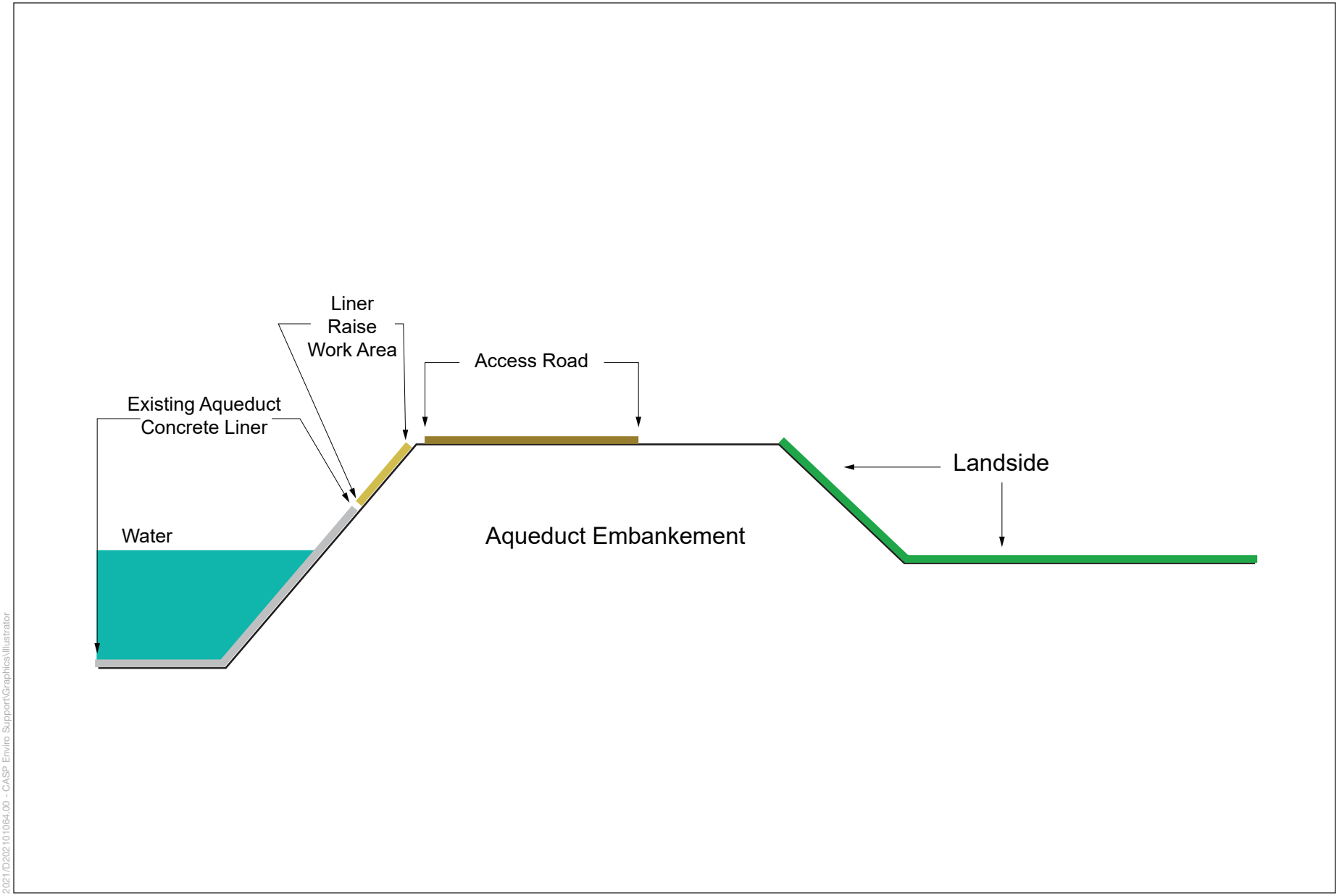

SOURCE: ESA, 2024

CASP Enviro Support

Figure 2-3
Liner Raise Typical Cross Section

2021/D202101064.00 - CASP Enviro Support\Graphics\Illustrator

ESA

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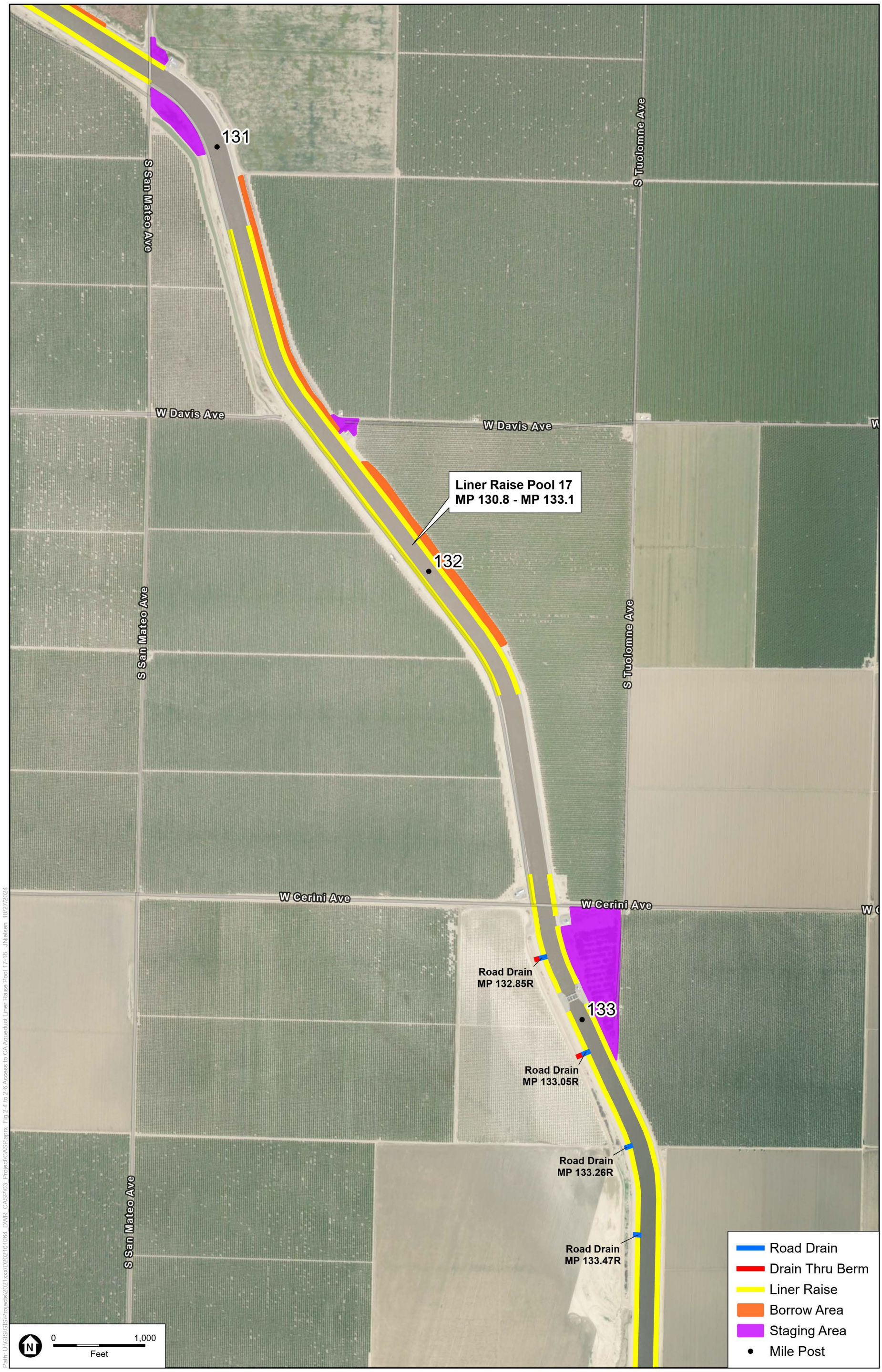
SOURCE: ESRI; DWR, 2024

CASP Enviro Support

Figure 2-4
Access to CA Aqueduct MP 128.4 – 130.7 Liner Raise Pool 17

ESA

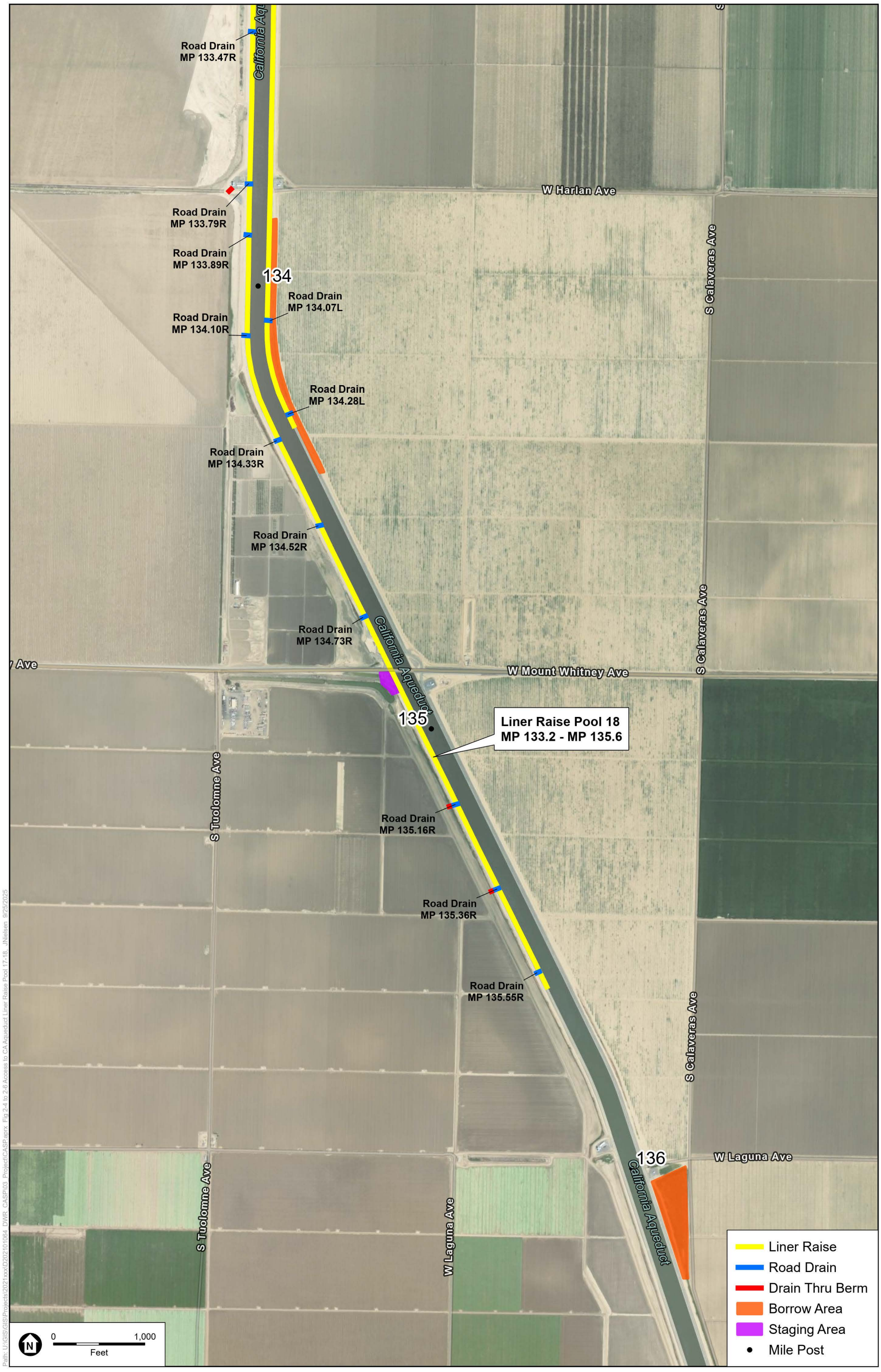


SOURCE: ESRI; DWR, 2024

CASP Enviro Support

Figure 2-5
Access to CA Aqueduct MP 130.8 – 133.1 Liner Raise Pool 17

ESA



SOURCE: ESRI; DWR, 2024

CASP Enviro Support

Figure 2-6
Access to CA Aqueduct MP 133.2 – 135.6 Liner Raise Pool 18

ESA

Intentionally Blank

Borrow sources are identified at six locations along the east side of the Aqueduct in Figure 2-4 through Figure 2-6. All of the material needed for the liner raises would come from these on-site borrow locations. The proposed borrow areas consist of soils excavated during construction of the Aqueduct and serve as spoil stockpiles. These stockpiles are approximately 20 feet higher than the original surface elevation.

Seven existing road drains that drain stormwater that collects between the flood/waste berms and the access road back into the Aqueduct would be rerouted to carry stormwater to the opposite side of the berms (away from the Aqueduct); this includes road drains at MP 132.85, 133.05, 133.79, 134.07, 134.28, 135.16, and 135.36 as shown in Figure 2-5 and Figure 2-6. Eight existing road drains would be removed and replaced at a higher elevation, including at MP 133.26, 133.47, 133.89, 134.10, 134.33, 134.52, 134.73, and 135.55 as shown in Figure 2-5 and Figure 2-6. One 36-inch drain inlet pipe that is approximately 125 feet long at a depth of about 6.5 feet below the access road at MP 134.87 would be removed; this drain is no longer in service, and it would not be replaced as drainage is now conveyed by the Salt Creek Weir, just downstream of the location.

The waterside embankment would be prepared by excavating approximately 2.5 feet behind the existing liner. The void would then be backfilled with the excavated material combined with borrow material to achieve a uniform and compact embankment slope at a maximum ratio of 2H:1V.

Polyvinyl chloride waterstop material would be installed at expansion and contraction joints, and strip waterstop material would be installed at longitudinal contraction joints prior to concrete placement. Contraction joints, which are small grooves cut into the concrete while it is drying to force the concrete to crack in those locations when it shrinks, would be hand tooled in new liner panels. Concrete curing compound would be applied on the fresh concrete surface using a spray nozzle, per manufacturer recommendations, and allowed to cure for approximately two days. After curing, joints would be cleaned by sandblasting to remove all mortar, scale, soil, foreign materials, and curing compound. Sealant primer and polyurethane-type joint sealant would be hand placed in all joints. Joint sealant would be approximately 0.25 to 0.5 inches thick, applied to ensure full contact with the joint walls and to remove air entrapment.

2.4.2 Schedule

Construction of the proposed project is anticipated to begin in 2027 and conclude within nine months. Construction activities would generally be limited to the hours of 6:00 a.m. to 6:00 p.m., Monday through Friday, to the greatest extent possible. Work on the liner raises in Pools 17 and 18 would run concurrently. Construction activities would last approximately 8 weeks per linear mile. The work would be completed in a single phase and would consist of the following activities:

- Mobilization/Stormwater Pollution Prevention Plan (SWPPP) installation.
- Staging and borrow area preparations/fence preparation.
- Earthwork (embankment preparation).
- Concrete liner.
- Drainage work.

- Miscellaneous installations (e.g., replacing existing fencing in kind along the left side of the Clarkson Avenue bridge ramps, left side of MP 128.6, and both sides downstream of Check 17; safety ladders; delineators; AB windrows).
- Closeout/punch list.

2.4.3 Construction Considerations

During all work, the Aqueduct flow and water levels would be operated normally or temporarily reduced to accommodate construction. All work would be completed above water and operational flexibility within the system would allow water deliveries to be made without disruption.

Specific to the concrete liner raise, which is the activity that would require the most construction workers and vehicle trips per day, up to 30 construction workers are anticipated to be required for the concrete liner raise and approximately four truck trips per day for 29 weeks would be needed to deliver concrete to the site. Anticipated labor force and truck trips for all project activities are listed below in **Table 2-1** and **Table 2-2**, respectively.

The north (upstream) access road to enter/exit the proposed project site would be Clarkson Avenue at approximately MP 128.5. The south (downstream) access road to enter/exit the proposed project site would be Mt. Whitney Avenue at approximately MP 134.9. Access to the construction areas would occur on existing roadways and service roads, including access roads on top of both sides of the Aqueduct embankments as indicated in Figure 2-4 through Figure 2-6, and would stay within DWR's right-of-way. No new roads would be required to access the construction areas; however, toe and embankment access roads that have not been maintained or have been encroached on may need work to make them usable.

Table 2-1 Anticipated Labor Force Required for Construction

Activity	Duration (weeks)	Labor Force (worker/day)	Vehicle Trips per Day	Origin Location
Mobilization/Stormwater Pollution Prevention Plan	3	10	5	Fresno
Borrow/Fence Preparation	3	10	5	Fresno
Earthwork (embankment)	22	15	8	Fresno
Concrete Liner	29	30	15	Fresno
Drainage Work	6	10	5	Fresno
Miscellaneous Installations	5	5	3	Fresno
Closeout/Punch List	2	10	5	Fresno

Source: Data compiled by the California Department of Water Resources in 2024

Table 2-2 Anticipated Truck Trips Required for Construction

Activity	Duration (weeks)	Truck Trips per Day*	Approximate Miles per Day per Trip	Origin Location
Mobilization/Stormwater Pollution Prevention Plan	3	2	100	Fresno
Borrow/Fence Preparation	3	0	--	--
Earthwork (embankment)	22	0	--	--
Concrete Liner	29	4	70	Coalinga
Drainage Work	6	1	100	Fresno
Miscellaneous Installations	5	3	70	Coalinga
Closeout/Punch List	2	1	100	Fresno

Source: Data compiled by the California Department of Water Resources in 2024

Note: *Trucks per day includes off-site material deliveries (on-site hauling is captured in Equipment section below).

The liner raise would occur on the waterside of the Aqueduct embankments. Staging of equipment and temporary stockpiling of materials would occur adjacent to the Aqueduct along the access road and road aprons (Figure 2-4 through Figure 2-6). Upon completion of the proposed project, all construction areas, including access roads, would be regraded to match pre-project conditions. Any remaining stockpiles or materials would be removed from the site and would be disposed of in an approved location according to contractor specifications.

Approximately 3,530 cubic yards of concrete would be used for the liner raise, sourced from a local supplier. Anticipated construction materials and equipment are listed in **Table 2-3** and **Table 2-4**, respectively.

Table 2-3 Anticipated Materials Required for Construction

Construction Materials	Approximate Volume
Aggregate Base	1,340 tons
Concrete	3,530 cubic yards
Soil (On-site Borrow)	3,305 cubic yards

Source: Data compiled by the California Department of Water Resources in 2024

Table 2-4 Anticipated Equipment Required for Construction

Construction Equipment	Maximum Number per Activity	Duration (hours) per Day
CAT Excavator 311C	2	6
Pickup Truck, F250	4	3
CAT Gradall Forklift	2	4
CAT 259 D Skid Steer Loader	2	4
Dump Truck, Transfer	3	8
Dump Truck, Haul	2	8
Concrete Mixer Truck	2	8
Mini Roller Compacter	2	6
Mobile Generator	2	6

Source: Data compiled by the California Department of Water Resources in 2024

2.4.4 Operation and Maintenance

Short-term maintenance activities (e.g., mowing, vegetation management) in the area of construction would be temporarily postponed during construction. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules.

2.5 Project Approvals

Table 2-5 presents a preliminary list of the agencies in addition to DWR that would use this IS/MND in their consideration during permit submittals and other approvals that may apply to the proposed project. This IS/MND is intended to provide these agencies with information to support their decision-making processes.

Table 2-5 Anticipated Regulatory Permits and Approvals

Agency	Permits and Authorizations Potentially Required
Bureau of Reclamation	National Environmental Policy Act (NEPA) Compliance
California Office of Historic Preservation	National Historic Preservation Act Section 106 Consultation
California Department of Fish and Wildlife	Incidental Take Permit
Regional Water Quality Control Board	Construction General Permit, National Pollutant Discharge Elimination System (NPDES) Permit SWPPP

2.6 References

Bertoldi, GL, RH Johnston, and KD Evenson

1991 *Ground Water in the Central Valley, California: A Summary Report*. U.S. Geological Survey Professional Paper 1401-A. Viewed online at: https://doi.org/10.3133/pp1401A. Accessed: September 20, 2024.

California Department of Water Resources

2017 *California Aqueduct Subsidence Study*. Viewed online at: https://cawaterlibrary.net/document/california-aqueduct-subsidence-study/. Accessed: September 20, 2024.

2025 *California Aqueduct Subsidence Program: Draft San Luis Canal Extraordinary Maintenance Planning Report*. May 2025.

Ireland, RL.

1986 *Land Subsidence in the San Joaquin Valley, California, as of 1983*. U.S. Geological Survey Water Resources Investigations Report 85-4196. Viewed online at: https://doi.org/10.3133/wri854196. Accessed: September 20, 2024.

U.S. Geological Survey

2018 Land Subsidence in the San Joaquin Valley. Viewed online at: https://www.usgs.gov/centers/land-subsidence-in-california/science/land-subsidence-san-joaquin-valley. Accessed: September 20, 2024.

3 INITIAL STUDY AND ENVIRONMENTAL CHECKLIST

1. **Project Title:** San Luis Canal (California Aqueduct Pools 17 and 18) Liner Raise Project
2. **Lead Agency Name and Address:** California Department of Water Resources 715 P Street, Sacramento, CA, 95814
3. **Contact Person and Phone Number:** Marea Bell, (916) 882-2945
4. **Project Location:** Pools 17 and 18 of the California Aqueduct, Fresno County
5. **Project Sponsor's Name and Address:** Same as Lead Agency
6. **General Plan Designation(s):** Agriculture
7. **Zoning:** Exclusive Agriculture (AE-20)
8. **Description of Project** (describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation; attach additional sheets if necessary)**:**

The proposed project would raise portions of the Aqueduct's concrete liner on both sides of Pools 17 and 18 over a total length of approximately 8.9 miles. No new roads would be required to access the construction areas. Liner raise construction would occur on the waterside of the Aqueduct embankments and all work would be completed above water. Borrow sources are identified at six locations along the east side of the Aqueduct. All of the material needed for the liner raises would come from these on-site borrow locations. Staging of equipment and temporary stockpiling of materials would occur adjacent to the Aqueduct along the access road and road aprons.

9. **Surrounding Land Uses and Setting** (briefly describe the project's surroundings)**:**

The surrounding vicinity is largely rural and undeveloped except for agricultural uses.

10. **Other public agencies whose approval is required** (e.g., permits, financing approval, or participation agreement)**:**

- U.S. Bureau of Reclamation - NEPA Compliance
- California Office of Historic Preservation - National Historic Preservation Act Section 106 Consultation
- California Department of Fish and Wildlife - Incidental Take Permit
- Regional Water Quality Control Board – Construction General Permit; NPDES Permit SWPPP

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code Section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

See Section 3.2.18, “Tribal Cultural Resources,” for details on Tribal consultation.

Docusign Envelope ID: 23C2E1D0-C035-4B31-BD21-DDBFC5E19D9A

3.1 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages:

- ☐ Aesthetics
- ☒ Biological Resources
- ☒ Geology/Soils
- ☐ Hydrology/Water Quality
- ☐ Noise
- ☐ Recreation
- ☐ Utilities/Service Systems
- ☐ Agriculture and Forestry Resources
- ☒ Cultural Resources
- ☐ Greenhouse Gas Emissions
- ☐ Land Use/Planning
- ☐ Population/Housing
- ☐ Transportation
- ☒ Wildfire
- ☐ Air Quality
- ☐ Energy
- ☐ Hazards & Hazardous Materials
- ☐ Mineral Resources
- ☐ Public Services
- ☒ Tribal Cultural Resources
- ☒ Mandatory Findings of Significance

Determination (to be completed by the Lead Agency):

On the basis of this initial study:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an environmental impact report is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	10/30/2025 Date
Signature	Date

3.2 Environmental Checklist

3.2.1 Aesthetics

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
I. AESTHETICS — Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	☐	☐	☒	☐

Environmental Setting

Pools 17 and 18 of the Aqueduct are located in Fresno County. The proposed project site is characterized by the concrete-lined Aqueduct canal, the Aqueduct embankments, compacted soils that serve as access roads, road aprons, and vacant lands within the DWR right-of-way adjacent to the Aqueduct. The area of proposed project site is largely uninhabited and surrounded by agricultural crop fields. Agricultural uses near the proposed project site include limited associated infrastructure, such as barns, warehouses, equipment, and storage areas. The primary roadways providing access to the proposed project site include Interstate 5 (I-5) located approximately 2.7 miles west of the proposed project and State Route 33 (SR 33) located approximately 1 mile west of the proposed project.

A highway is officially designated as a State Scenic Highway when a local jurisdiction adopts a scenic corridor protection program, applies to Caltrans for scenic highway approval, and receives notification from the California Department of Transportation (Caltrans) that the highway has been designated as an official State Scenic Highway. While portions of I-5 are designated as a State scenic highway by Caltrans, the nearest segment is located approximately 50 miles to the north.

The nearest highway eligible for State Scenic Highway designation is a collocated segment of SR 33 and SR 198, approximately 10 miles southwest of the proposed project site (California Department of Transportation 2024).

The topography of the proposed project site and surrounding vicinity is relatively flat. The Coastal Foothills, which are gentle rolling hills with scattered oak trees, are visible to the west on the other side of I-5 (County of Fresno 2024).

Discussion

Issue I.a

The construction site would be accessed using existing roadways and service roads, including along both sides of the Aqueduct embankments. All liner raise construction would occur on the waterside of the Aqueduct embankments. Staging of equipment and temporary stockpiling of materials would occur adjacent to the Aqueduct along the access road and road aprons (Figure 2-4 through Figure 2-6).

Short-term maintenance activities (e.g., mowing, vegetation management) in the area of construction would be temporarily postponed during construction. Once construction is complete, there would be no additional operation and maintenance activities as part of the project, and normal operations and maintenance would resume, similar to existing conditions. Therefore, due to the limited presence of construction equipment and the short-term temporary nature of project activities, project implementation would not significantly impact surrounding scenic vistas or resources. Impacts on scenic vistas would be considered **less than significant**.

Issue I.b

Scenic vistas are defined as expansive views of distant landforms and aesthetic features from public vantage points, including areas designated as official scenic vistas along roadway corridors or otherwise designated by local jurisdictions. The proposed project site is not located in the vicinity of an officially designated scenic vista as determined by Fresno County (County of Fresno 2023). However, the proposed project site is adjacent to agricultural lands, which are considered scenic to the County of Fresno. Further, natural landforms such as surrounding hillsides and mountains may be seen in the far-off distance surrounding the proposed project site.

Based on a review of the local General Plans and Caltrans List of Scenic Highways, the proposed project site is not located along a State Scenic Highway (California Department of Transportation 2024; County of Fresno 2024). Construction activities associated with the proposed project would not be visible to motorists traveling along the eligible portion of SR 33 and 198 due to the distance and intervening topography. Therefore, the proposed project would not impact scenic resources, which include rock outcroppings, trees, or historic buildings within a designated State Scenic Highway corridor, and **no impact** would occur.

Issue I.c

The surrounding vicinity is largely uninhabited and rural. Public views of the area are provided very briefly to motorists traveling along local roadways and to visitors who may fish in the area. Construction activities associated with the proposed project include vegetation clearing and grubbing of the staging and access areas, excavation of borrow areas, excavation, placement of fill, and re-compaction at locations where the new liner raise would be installed; excavation and re-compaction of flood berms and waste berms to reroute existing road drainage pipes; and equipment staging and temporary material stockpiling adjacent to the Aqueduct along the access road and road aprons by Pools 17 and 18. Excavated areas, stockpiled soils, and other materials generated during construction could temporarily change the visual character of the surrounding environment. These changes would be temporary, occurring over the nine-month construction period, and would not permanently affect the existing visual character of the Aqueduct or surrounding area. Once construction is completed, all construction areas would be re-graded to match pre-project conditions. Further, operation activities would not change with the proposed project and would continue to be conducted in accordance with existing water delivery schedules. Therefore, impacts to the visual character and quality of public views in the proposed project site would be **less than significant**.

Issue I.d

The proposed project site is located within a rural setting where primary sources of nighttime light and daytime glare are limited to agricultural structures, agricultural activities, and passing vehicles. The proposed project would not install or add new permanent sources of light or glare to the project vicinity. Furthermore, construction activities would generally be limited to the daylight hours of 6:00 a.m. to 6:00 p.m., Monday through Friday, to the greatest extent possible. Therefore, no nighttime lighting is anticipated and impacts related to light and glare would be **less than significant**.

References

California Department of Transportation

2024 California Scenic Highway System Map. Viewed online at: https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa Accessed: July 9, 2024.

County of Fresno

2023 *Fresno County General Plan Background Report*. Viewed online at: https://www.fresnocountyca.gov/files/sharedassets/county/v/2/public-works-and-planning/development-services/planning-and-land-use/general-plan/fcgpr-background-report-2023-05-10.pdf. Accessed: September 12, 2024.

2024 *The 2024 Fresno County General Plan*. Open Space and Conservation Element. Viewed online at: https://www.fresnocountyca.gov/files/sharedassets/county/v/1/public-works-and-planning/development-services/planning-and-land-use/general-plan/fcgpr_general-plan_county_final_2024_02.pdf Accessed: September 23, 2024.

3.2.2 Agriculture and Forestry Resources

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
II. AGRICULTURE AND FORESTRY RESOURCES—In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Environmental Setting

The proposed project site is within the Aqueduct right-of-way and the area is dominated by the concrete-lined Aqueduct, Aqueduct levees, gravel access roads, and vacant lands adjacent to the Aqueduct; surrounding land uses include agricultural lands. There are no agricultural or forestry lands within the proposed project site; however, there are vacant lands adjacent to the Aqueduct within the DWR right-of-way that would be used for borrow and staging. Surrounding areas consist of land designated as Prime and Unique Farmland (California Department of Conservation 2022). There are also multiple parcels of land that are enrolled in Williamson Act contracts adjacent to the

proposed project site (California Department of Conservation 2023). The proposed project site is zoned entirely as Exclusive Agriculture (AE-20) with the nearby towns of Three Rocks and Cantua Creek located approximately 2 miles to the west and 1.4 miles to the east zoned as Residential, Trailer Park Residential, Agriculture, and Agricultural Commercial Center (County of Fresno 2024).

Discussion

Issue II.a, b

Construction of the proposed project would occur within the Aqueduct right-of-way; staging would occur along the access road and road aprons in previously disturbed areas; borrow sites are located along road aprons within previously disturbed areas and vacant lands within the DWR right-of-way adjacent to the Aqueduct; and road drain sites are located within and run through the existing Aqueduct embankment, access roads, and road aprons. The proposed project site does not include lands designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance or lands enrolled under a Wiliamson Act contract in the proposed project site (California Department of Conservation 2022, 2023). Therefore, the proposed project would not result in the conversion of farmland to a non-agricultural use or conflict with existing zoning for agricultural use or a Williamson Act contract. Thus, **no impact** would occur.

Issue II.c, d

There are no forestry resources within the proposed project site; therefore, there would be no conflict with existing zoning of forest land and the proposed project would not cause rezoning of forest land, timberland, or timberland zoned for Timberland Production or result in the conversion of forest land to a non-forest use. Thus, **no impact** would occur.

Issue II.e

As described in Issue II.a,b, the proposed project site does not include agricultural lands; therefore, the proposed project would have no impact on land zoned as farmland. Furthermore, the proposed project site is not located in or near land zoned as forest land. The proposed project would not permanently alter the environment in such a way that would result in the conversion of farmland to non-agricultural use or conversion of forest land to non-forest use. Given that there would be no indirect conversion of land zoned as forestland or farmland to other land uses due to the proposed project, **no impact** would occur.

References

California Department of Conservation

2022 California Important Farmland Finder. Viewed online at: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed: July 10, 2024.

2023 California Williamson Act Enrollment Finder. Viewed online at: https://maps.conservation.ca.gov/dlrp/WilliamsonAct/. Accessed: July 10, 2024.

County of Fresno
2024 Zoning. Viewed online at: https://gisportal.co.fresno.ca.us/portal/apps/webappviewer/index.html?id=b921843d343d4df998b5b3c6a301756a Accessed: July 11, 2024.

3.2.3 Air Quality

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
III. AIR QUALITY—Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	☒

Environmental Setting

The proposed project site is located along the Aqueduct in Fresno County within the San Joaquin Valley Air Basin (SJVAB), which is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The topography and meteorology of the SJVAB provide ideal conditions for trapping air pollution for long periods of time and producing harmful levels of air pollutants. Low precipitation levels, cloudless days, high temperatures, and light winds during the summer in the SJVAB are conducive to high ozone levels resulting from the photochemical reaction of ozone precursors nitrogen oxides (NO_x) and volatile organic compounds in the presence of sunlight.

The federal Clean Air Act (CAA) requires that the U.S. Environmental Protection Agency set ambient air quality standards for the following seven criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter with a diameter of up to ten microns (PM_{10}), particulate matter with a diameter of up to 2.5 microns ($PM_{2.5}$), and lead (Pb). Standards are set at levels of air quality deemed necessary, with an adequate margin of safety, to protect public

health. In addition, the California Air Resources Board has established ambient air quality standards for these and other pollutants, which are typically more stringent than the federal standards.

Under amendments to the federal CAA, the U.S. Environmental Protection Agency has classified air basins or portions thereof as either “attainment” or “non-attainment” for each criteria air pollutant, based on whether or not the national standards have been achieved. The California CAA, which is patterned after the federal CAA, also requires areas to be designated as “attainment” or “non-attainment” for the State standards. Thus, areas in California have two sets of attainment/non-attainment designations: one set with respect to the national standards and one set with respect to the State standards. The SJVAB is currently designated as a non-attainment area for State and national ozone standards, State and national $PM_{2.5}$ standards, and the State PM_{10} standard. SJVAB is designated as “attainment” or “unclassified” with respect to all other criteria air pollutant standards (San Joaquin Valley Air Pollution Control District 2019).

Discussion

Issue III.a

As discussed above, the SJVAB is currently designated as a non-attainment area for federal and State standards with regard to $PM_{2.5}$ and ozone, and the State PM_{10} standard. The SJVAPCD is responsible for implementing programs and regulations required by the federal CAA and the California CAA within the SJVAB. In this capacity, the SJVAPCD has prepared plans to attain federal and State ambient air quality standards for which it has been designated as non-attainment. Current air quality plans for the SJVAB include:

- 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ standards;
- 2022 Plan for the 2015 ozone 8-hour standard; and
- 2014 Reasonably Available Control Technology demonstration for the 8-Hour Ozone State Implementation Plan.

The air quality plans include emissions inventories that identify sources of air pollutants, evaluations for feasibility of implementing potential opportunities to reduce emissions, sophisticated computer modeling to estimate future levels of pollution, and a strategy for how air pollution will be further reduced. In addition, the SJVAPCD has adopted a guidance document, *Guidance for Assessing and Mitigating Air Quality Impacts*, to assist in the evaluation of air quality impacts of projects proposed within its jurisdiction (San Joaquin Valley Air Pollution Control District 2015). This guidance document provides recommended procedures for evaluating potential air quality impacts during the environmental review process consistent with CEQA requirements and includes recommended thresholds of significance, mitigation measures, and background air quality information. It also includes recommended assessment methodologies for air toxins, odors, and greenhouse gas (GHG) emissions.

Based on the SJVAPCD’s guidance document, a project’s air quality impacts during construction would be considered significant if emissions generated exceed any of the following:

- 100 tons per year of CO;

- 10 tons per year of reactive organic gases or NO_x;
- 27 tons per year of SO_x ; or
- 15 tons per year of PM_{10} or $PM_{2.5}$.

These thresholds of significance are based on the SJVAPCD's New Source Review (NSR) offset requirements and are applied to evaluate regional impacts of project-specific emissions of air pollutants and their impact on the region's ability to reach attainment (San Joaquin Valley Air Pollution Control District 2015). The NSR is also known as District Rule 2201 and contains requirements for best available air pollution control technology and emission offsets. The purpose of NSR is to review new and/or modified stationary sources and modifications and to provide no net increase in emissions above specified thresholds for nonattainment pollutants and their precursors (San Joaquin Valley Air Pollution Control District 2023). The SJVAPCD's attainment plans demonstrate that project-specific emissions below the offset thresholds would have a less-than-significant impact on air quality (San Joaquin Valley Air Pollution Control District 2015). Thus, the SJVAPCD concludes that use of NSR offset thresholds as its thresholds of significance for criteria pollutants is an appropriate and effective means of promoting consistency in significance determinations within the environmental review process. Therefore, projects with emissions below the thresholds of significance for criteria pollutants would be determined to not conflict or obstruct implementation of SJVAPCD's air quality plans.

Construction

Construction of the proposed project would include mobilization, staging and borrow area preparations, canal embankment earthwork and concrete liner raise, drainage work, replacing existing fencing in kind, and other miscellaneous installations described in Chapter 2, "Project Description." Proposed project construction activities would result in emissions of ozone precursors (reactive organic gases and NO_x) and PM in the form of dust (fugitive dust) and exhaust (e.g., vehicle tailpipe emissions). Emissions of ozone precursors and PM are primarily a result of the combustion of fuel from on-road vehicles and off-road construction equipment. Pollutant emissions would be generated from the following construction activities: (1) material import from borrow sources; (2) vehicle trips from workers traveling to and from the construction areas; (3) trips associated with delivery of construction supplies to and from the construction areas; and (4) fuel combustion by on-site construction equipment. These activities would temporarily generate air pollutant emissions in addition to dust and fumes. The amount of construction-related emissions generated on a daily basis would vary depending on the intensity and types of construction activities occurring simultaneously. Overall, proposed project construction activities are expected to last nine months.

PM is among the pollutants of greatest localized concern with respect to construction activities. Construction emissions of PM can vary greatly depending on the level of activity, the specific operations taking place, the number and types of equipment operated, local soil conditions, weather conditions, and the amount of earth disturbance. Fugitive dust emissions from construction activities would be regulated by SJVAPCD's Rule VIII, which limits fugitive dust emissions from construction,

demolition, excavation, extraction, and other earthmoving activities. The project would be required to comply with these limits.

Construction emissions for the proposed project were estimated using the California Emissions Estimator Model (CalEEMod), version 2022.1.1, and are presented in **Table 3-1**. Project-specific information was used for model inputs for construction schedule, phase durations, off-road equipment types and numbers, imported material quantities, and trip numbers for worker and contractor trips per phase. Where project-specific data was unavailable, CalEEMod defaults were used as inputs, which provide assumed values consistent with standard practice. CalEEMod assumptions and a detailed output can be found in **Appendix A**. The table shows the project's estimated construction emissions by year and compares them to the SJVAPCD significance thresholds for construction emissions.

Table 3-1 Project Construction Emissions

Construction Year	Estimated Annual Construction Emissions (tons/year)					
	ROG	NOx	CO	SOx	PM_{10}	$Pm_{2.5}$
2027	0.29	2.14	1.94	0.01	0.13	0.08
2028	0.16	1.13	0.93	>0.01	0.07	0.05
SJVAPCD Significance Threshold	10	10	100	27	15	15
Exceeds Threshold?	No	No	No	No	No	No

Source: Data compiled by ESA in 2025

Notes: ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter with a diameter of up to ten microns; $PM_{2.5}$ = particulate matter with a diameter of up to 2.5 microns

As shown in Table 3-1, annual construction emissions of ROG, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ would not exceed the SJVAPCD significance thresholds for construction emissions. In addition, proposed project construction would be required to comply with the requirements of SJVAPCD Rule VIII, which aims to limit fugitive dust emissions from construction, demolition, excavation, extraction, and other earthmoving activities (San Joaquin Valley Air Pollution Control District 2004). Control measures required and enforced by the SJVAPCD under Regulation VIII would further reduce the PM emissions shown in Table 3-1.

Based on the SJVAPCD's approach to air quality planning, proposed project construction emissions would be below applicable SJVAPCD thresholds for construction and the proposed project would be consistent with the region's air quality plans.

Operation

Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing water delivery schedules. The liner raise project would not have any

operational activities associated with it. Once the proposed liner raise is completed, the proposed project would not create any new sources of air pollutant emissions associated with operation and maintenance activities. No new diesel-powered equipment would be required for project operations. Therefore, no new emissions would be generated as a result of project operation, and project operation would not conflict with or obstruct implementation of the regional air quality plan.

Construction and operation of the proposed project would result in a **less-than-significant impact**.

Issue III.b

CEQA defines cumulative impacts as two or more individual impacts which, when considered together, are either significant or "cumulatively considerable," meaning they add considerably to a significant environmental impact. An adequate cumulative impact analysis considers a project over time and in conjunction with other past, present, and reasonably foreseeable future projects whose impacts might compound those of the project being assessed.

By its very nature, air pollution is largely a cumulative impact. No single project would likely be sufficient in size, by itself, to result in non-attainment of the regional air quality standards. Instead, a project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development within the SJVAB. The non-attainment status of the SJVAB with respect to regional pollutants is a result of past and present development. Future attainment of State and federal ambient air quality standards is a function of successful implementation of SJVAPCD's attainment plans. Consequently, the SJVAPCD's application of thresholds of significance for criteria pollutants is a relevant way to determine whether a project's individual emissions would have a cumulatively significant impact on air quality.

Per CEQA Guidelines Section 15064(h)(3), a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program, including but not limited to an air quality attainment or maintenance plan that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located (San Joaquin Valley Air Pollution Control District 2015). The SJVAPCD has established thresholds of significance for criteria pollutant emissions which are based on New Source Review offset requirements for stationary sources. Emissions reductions achieved through implementation of offset requirements are a major component of the SJVAPCD's air quality plans. Thus, projects with emissions below the thresholds of significance for criteria pollutants would be determined to comply with the SJVAPCD's air quality plans and would not contribute a cumulatively considerable increase for these criteria pollutants (San Joaquin Valley Air Pollution Control District 2015).

As shown in Table 3-1, proposed project emissions would be less than the SJVAPCD-recommended thresholds of significance for construction emissions, and proposed project operations would not generate new air emissions. Therefore, the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or State ambient air quality standard. The impact with respect to criteria air pollutant emissions would be **less than significant**.

Issue III.c

Sensitive receptors are defined as facilities and land uses that include members of the population who are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of facilities and land uses are schools, hospitals, and daycare centers. Residential areas are also considered sensitive to poor air quality because people usually stay home for extended periods of time, which results in greater exposure to ambient air quality.

The section of Aqueduct in which the proposed project is located primarily runs through agricultural fields and undeveloped land (Figure 2-2). The area is rural and predominately uninhabited, and there are no sensitive receptors within 1,000 feet of the proposed project site. Additionally, construction activities would occur alongside the linear alignment of the Aqueduct and therefore would not be anticipated to occur at any one area for an extended period of time. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing water delivery schedules. The liner raise project does not have any operational activities associated with it; therefore, the proposed project would not result in any new emissions from operations. As a result, the proposed project would not expose sensitive receptors to substantial criteria pollutants due to the lack of receptors near the proposed project site and the short-term nature of construction activity. Therefore, impacts would be **less than significant**.

Issue III.d

Diesel-powered construction equipment can generate short-term, non-persistent odors due to engine exhaust, but these dissipate quickly and would likely not be noticeable beyond the work site. Additionally, as discussed above, the area surrounding the proposed project site is largely uninhabited and rural. Operation of the Aqueduct after the proposed project is complete would be similar to existing conditions and would not introduce any new sources that would generate odorous emissions. Therefore, the proposed project would not create odors that could impact a substantial number of people, and **no impact** would occur.

References

San Joaquin Valley Air Pollution Control District

2004 Regulation VIII: Fugitive PM10 Prohibition. Viewed online at: http://www.valleyair.org/rules/1ruleslist.htm#reg8. Accessed: October 2024.

2015 Guidance for Assessing and Mitigating Air Quality Impacts. March 19, 2015. Viewed online at: https://ww2.valleyair.org/media/g4nl3p0g/gamaqi.pdf. Accessed: October 2024.

2019 Ambient Air Quality Standards & Valley Attainment Status. Viewed online at: https://www.valleyair.org/aqinfo/attainment.htm. Accessed: October 2024.

2023 Rule 2210 New and Modified Stationary Source Review Rule. Viewed online at: https://ww2.valleyair.org/media/zzslqswt/rule-2201.pdf. Accessed: July 2025.

3.2.4 Biological Resources

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES—Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on state or federally protected wetlands (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Environmental Setting

The following discussion of the environmental setting is based on the Pool 17 and Pool 18 Liner Raise Project Biological Resources Technical Report prepared in 2025 (**Appendix B**). The proposed project site is located entirely within DWR's right-of-way. The habitats and land types on the site consist of existing paved and unpaved road surfaces as well as previously disturbed land with sparse vegetation. There are native and non-native vegetation communities immediately adjacent to the Aqueduct between the access road and agricultural fields within DWR's right-of-way.

The information provided in this section was obtained from both a desktop-level review and field surveys for biological resources (**Table 3-2**). Sensitive biological resources, including special-status plant and animal species, sensitive natural communities, and aquatic resources that may occur within the proposed project site were determined, in part, by reviewing natural resource agency databases, relevant literature, and historic survey data. DWR biologists have conducted countless surveys over the past several decades that have contributed to the body of knowledge regarding the protection and distribution of species and habitat presence in the proposed project site (Table 3-2). A review of this information allowed for initial determinations of the distribution of sensitive resources and the probability of their occurrence within the proposed project site (Appendix B and California Department of Water Resources 2025a, 2025b, and 2025c).

Table 3-2 Surveys Conducted Near Pools 17 and 18 from 2015 to 2024

Pools 17 and 18 Project/Activity	Year(s)	Survey Type
Erosion Repair and Aqueduct Maintenance	2015−2024	Biological Resources Assessment
Access Road Maintenance, Mowing, and Grading	2015−2024	Biological Resources Assessment
Cantua Stream Group Improvements Project	2016	Habitat Assessment
Cantua Stream Group Improvements Project	2016	Protocol Level Burrowing Owl Survey
Cantua Stream Group Improvements Project	2016−2017	Burrowing Owl Construction Monitoring
Irrigation Crossing Pipe Inspections and Repair Project	2019	Reconnaissance Den and Burrow Survey
Irrigation Crossing Pipe Inspections and Repair Project	2019	Pre-construction Survey and Monitoring
California Aqueduct Subsidence Program	2020	Vegetation Mapping
California Aqueduct Subsidence Program	2020	Land Use Ground-truthing Surveys
California Aqueduct Subsidence Program	2020	Small Mammal Habitat Survey
California Aqueduct Subsidence Program	2020	Reconnaissance Den and Burrow Survey
California Aqueduct Subsidence Program Geotechnical Explorations	2021	Pre-construction Surveys and Monitoring
California Aqueduct Subsidence Program	2023−2024	Survey Known Sensitive Resources
California Aqueduct Subsidence Program	2024	Western Spadefoot Habitat Assessment
California Aqueduct Subsidence Program	2025	Crotch's Bumble Bee Habitat Assessment and Survey
California Aqueduct Subsidence Program	2025	Western Spadefoot Biological Assessment
California Aqueduct Subsidence Program	2025	Burrowing Owl Biological Assessment

Table 3-2 Surveys Conducted Near Pools 17 and 18 from 2015 to 2024

Pools 17 and 18 Project/Activity	Year(s)	Survey Type

Source: Data compiled by Environmental Science Associates in 2025

Note: This table does not include discrete maintenance projects in which special-status species observations may have been made but were not detected during a focused survey. However, any species observations collected during other projects not shown in this table have been included in this report.

Vegetation Communities and Land Cover Types

"Sensitive" natural communities and habitats are defined by the California Department of Fish and Wildlife (CDFW) as those natural communities that have a reduced range or are imperiled because of various forms of development and other anthropogenic stressors, including residential and commercial expansion, various forms of agriculture, energy production, and mining. The ecological status of these communities is determined using the NatureServe Heritage Methodology, which considers the range, distribution, and ecological integrity of vegetation types at global (G) rank and California State (S) rank levels (ranks 1−5, critically imperiled to demonstrably secure) (Faber-Langendoen et al. 2012). According to CFDW, communities with a State rank of S1 through S3 are classified as sensitive natural communities and may require review when evaluating environmental impacts.

The proposed project site contains seven vegetation communities, as defined by the *Manual of California Vegetation* (Manual) (Sawyer et al. 2009), or as characterized by dominant species present, including fiddleneck-filaree fields, wild oats and annual brome grassland, quailbush scrub, allscale scrub, mesquite thickets, tamarisk thickets, as well as bare land (disturbed). As defined by the California Wildlife Habitat Relationships, these vegetation alliances can be categorized into four habitat types: annual grassland, alkali desert scrub, desert riparian, and barren. A description of each of these vegetation communities/land cover types and associated California Wildlife Habitat Relationships habitat types is included in **Table 3-3**, as well as the total acreage of each habitat type present in the proposed project site. Locations of each habitat type within the proposed project site are shown in **Figure 3-1** through **Figure 3-7**.

None of the vegetation communities or land cover types present within the proposed project site are listed as sensitive or rare natural communities.

Table 3-3 Vegetation Communities/Land Cover Types and Habitat Types within the Proposed Project Site and Study Area

Vegetation Community/ Land Cover Type (State Rank) [a]	California Wildlife Habitat Relationships Habitat Type [b]	Description	Proposed Project Site Acreage					Study Area Acreage [c]
			Liner Raise	Road Drain Replacement Sites		Staging Areas	Borrow Areas	
				Drain Thru Berms	Road Drains			
Fiddleneck-filaree fields (S5)	Annual grassland	Characterized by open grasslands composed of annual grasses and forbs. Often occur as an understory to other habitats. Species diversity and structure depends largely on weather patterns and grazing. Great physical differences are observed between seasons.	0.03	0.04	0.02	2.22	2.80	44.49
Wild oats and annual brome grassland (SNA)			--	--	0.01	0.57	11.52	29.86
Atriplex scrub [d]	Alkali desert scrub	Characterized by open stands of very low to moderately high (0.25–2.0 m; 0.8–6.6 ft) grayish, spinescent, eptophyllous to microphyllous subshrubs and shrubs, which are physically uniform, widely spaced, and occur on relatively dry soils.	--	--	--	0.08	--	4.56
Mesquite thickets	Desert riparian	Characterized as dense groves of low shrublike trees. These habitats are found adjacent to permanent surface water (e.g., streams, springs) or in naturally subirrigated areas. Usually, an abrupt transition occurs between this and adjacent shorter and more open desert habitats.	--	--	--	8.30	0.23	23.12
Tamarisk thickets*			--	--	--	--	--	1.63

Table 3-3 Vegetation Communities/Land Cover Types and Habitat Types within the Proposed Project Site and Study Area

Vegetation Community/ Land Cover Type (State Rank) [a]	California Wildlife Habitat Relationships Habitat Type [b]	Description	Proposed Project Site Acreage					Study Area Acreage [c]
			Liner Raise	Road Drain Replacement Sites		Staging Areas	Borrow Areas	
				Drain Thru Berms	Road Drains			
Bare land (Disturbed)	Barren	Characterized by the absence of vegetation. Any habitat with <2% total vegetation cover by herbaceous, desert, or non-wildland species and <10% cover by tree or shrub species is defined this way. May consist of sparse growth, rock, gravel, and soil.	0.25	0.02	0.03	14.37	10.17	140.80
Developed			10.77	--	0.04	--	--	60.55
		Total	**11.04**	**0.06**	**0.09**	**25.55**	**24.72**	**305.02**

Source: Data compiled by the California Department of Water Resources in 2024

Notes:

* Alliances that have sufficient data to propose the vegetation type, but not enough research and regional information to be confident about its status in California's vegetation.

a. State Rank (Faber-Langendoen et al. 2012)
SNA = Semi-natural Alliances − strongly dominated by non-native plants that have become naturalized in the State.
S1 = Critically Imperiled – At very high risk of extirpation due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.
S2 = Imperiled – At high risk of extirpation due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
S3 = Vulnerable – At moderate risk of extirpation due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
S4 = Apparently Secure – At a fairly low risk of extirpation due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
S5 = Secure – At very low or no risk of extirpation due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.

b. California Department of Fish and Game 1988

c. The study area is the Aqueduct right-of-way in the vicinity of Pools 17 and 18, including the proposed project site components, minus the open water portion of the Aqueduct.

d. The Atriplex scrub community consists of quailbush scrub (*Atriplex lentiformis*) and/or allscale scrub (*Atriplex polycarpa*).

Path: U:\GIS\GIS\Projects\2021xxx\D202101064_DWR_CASP\03_Project\CASP.aprx Fig X Access to CA Aqueduct Liner Raise Pool 17-18 Habitat Types_ jmckay 6/13/2025

SOURCE: ESRI; DWR, 2025

CASP Enviro Support

Figure 3-1
Habitat Types

ESA

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SOURCE: ESRI; DWR, 2025

CASP Enviro Support

Figure 3-2
Habitat Types

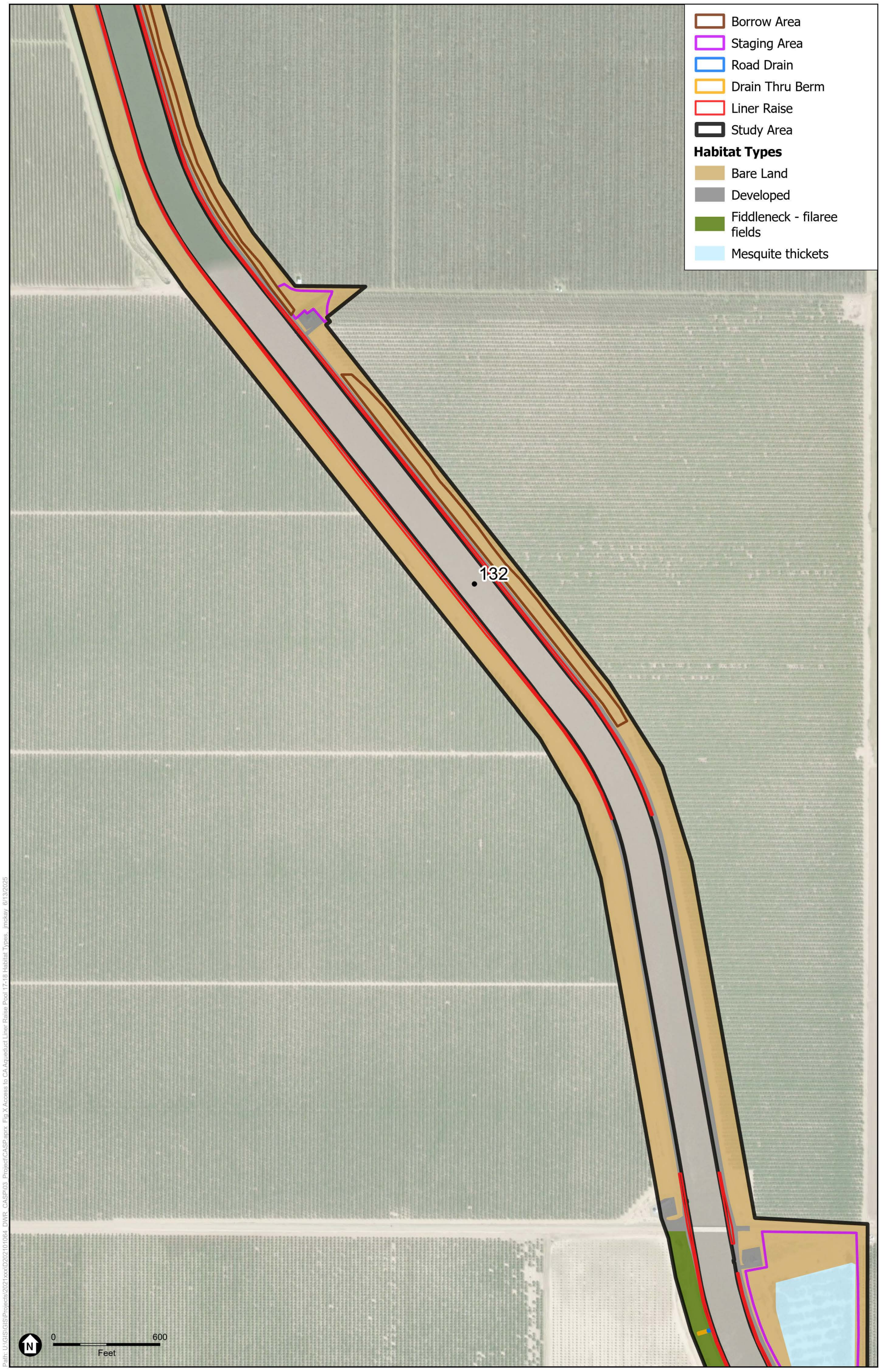
ESA

SOURCE: ESRI; DWR, 2025

CASP Enviro Support

Figure 3-3
Habitat Types

ESA



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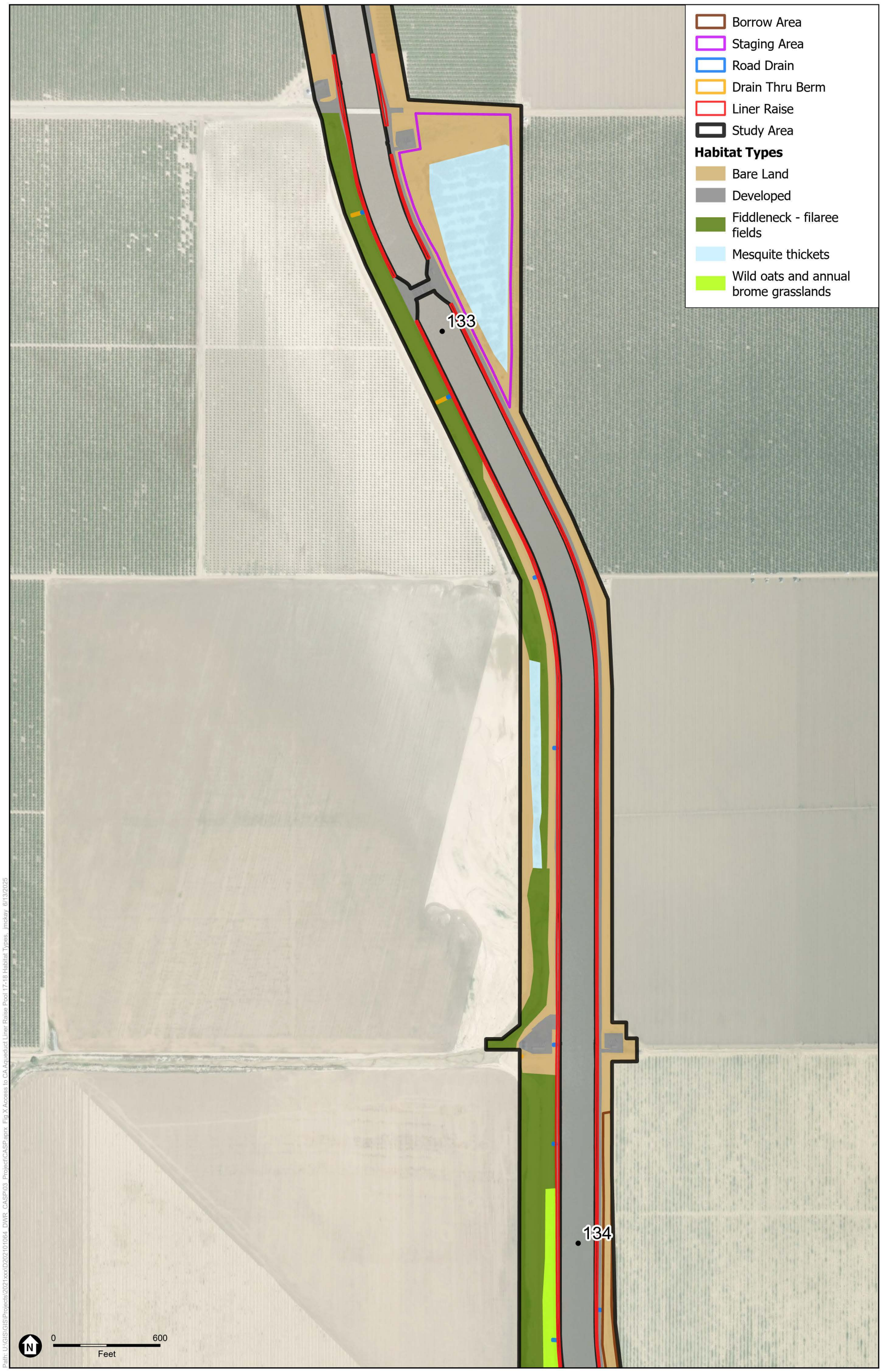
SOURCE: ESRI; DWR, 2025

CASP Enviro Support

Figure 3-4
Habitat Types

ESA



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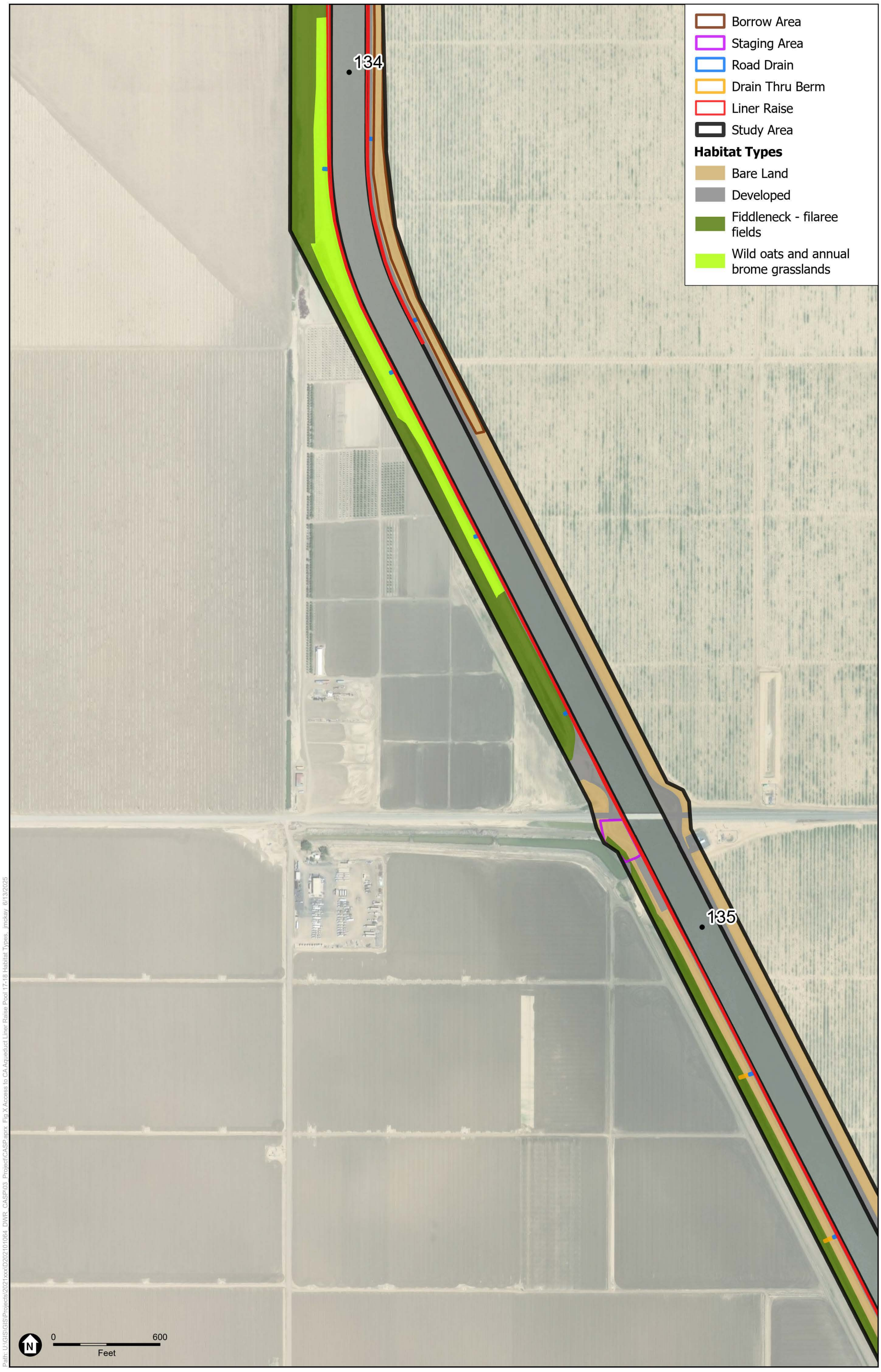
SOURCE: ESRI; DWR, 2025

CASP Enviro Support

Figure 3-5
Habitat Types

ESA



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SOURCE: ESRI; DWR, 2025

CASP Enviro Support

Figure 3-6
Habitat Types

ESA

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SOURCE: ESRI; DWR, 2025

CASP Enviro Support

Figure 3-7
Habitat Types

ESA

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Special-Status Species

The term *special-status species* refers to plant and wildlife species that are considered sufficiently rare that they require special consideration and/or protection and should be, or currently are, listed as rare, threatened, or endangered by the federal and/or State governments. Such species are legally protected under FESA, the California Endangered Species Act (CESA), or other regulations, or are species that are considered sufficiently rare by the regulatory and scientific community to qualify for protection.

Special-status plant species include plants that are (1) listed or proposed for listing as threatened or endangered, or are candidates for possible future listing as threatened or endangered, under CESA or FESA; (2) meet the definitions of rare or endangered under CEQA Guidelines Section 15380; (3) considered by the CNPS and CDFW to be rare, threatened, or endangered (California Rare Plant Rank [CNPR] 1A, 1B, 2A, and 2B plants) in California; and (4) listed as rare under the California Native Plant Protection Act (Fish and Game Code 1900 et seq.), defined as:

- California Rare Plant Rank 1A: Plants presumed extirpated in California and either rare or extinct elsewhere.
- California Rare Plant Rank 1B: Plants rare, threatened, or endangered in California and elsewhere.
- California Rare Plant Rank 2A: Plants presumed extirpated in California but common elsewhere.
- California Rare Plant Rank 2B: Plants rare, threatened, or endangered in California but common elsewhere.
- California Rare Plant Rank 3: Plants about which more information is needed, a review list.
- California Rare Plant Rank 4: Plants of limited distribution, a watch list.

In addition to the above rankings, the California Rare Plant Rank extensions are:

- .1 – Seriously threatened in California (greater than 80 percent of occurrences are threatened and/or have a high degree and immediacy of threat).
- .2 – Moderately threatened in California (20 to 80 percent of occurrences are threatened and/or have a moderate degree and immediacy of threat).
- .3 – Not very threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known).

Special-status wildlife species include species that are (1) listed as threatened or endangered under CESA or FESA; (2) proposed for federal listing as threatened or endangered; (3) State or federal candidate species; and (4) identified by CDFW as species of special concern (SSC) or fully protected (FP) species.

A comprehensive list of special-status plant and wildlife species that could occur within the proposed project site was compiled based on a database search and literature review to assess the likelihood

of species occurrence. The potential for a special-status species to occur within the proposed project site is based on the following criteria:

- **High:** The species has been recently (since 2015) documented in the vicinity of the proposed project site, and suitable habitat for the species is present.
- **Moderate:** The proposed project site is located within the current range of the species, or there are nearby documented occurrences, and suitable habitat for the species is present.
- **Low:** The proposed project site is located within the current range of the species, and low-quality (marginal) habitat is present.
- **None:** The proposed project site is located outside of the species' current range or suitable habitat to support the species is not present.

Special-Status Plant Species

Special-status plant species as reported in the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (iPaC) Online System (U.S. Fish and Wildlife Service 2024), CDFW's California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife 2024), and CNPS's Rare Plant Inventory (California Native Plant Society 2024) were evaluated for their potential to occur within the proposed project site and are listed in **Table 3-4**, which includes listing statuses, brief descriptions of habitat requirements, and a determination of the potential for the species to occur within the proposed project site.

Table 3-4 Special-Status Plant Species Potential to Occur

Common Name *Scientific Name*	Listing Status and California Rare Plant Rank	Flowering Period	Habitat Requirements	Potential for Occurrence
Asteraceae (Sunflower Family)				
Hall's tarplant *Deinandra halliana*	1B.2	Apr.–May	Chenopod scrub, cismontane woodland, and valley and foothill grassland. Elevation range extends from 260 to 950 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2017 more than 9 miles west of the proposed project site.
Pale-yellow layia *Layia heterotricha*	1B.1	Mar.–Jun.	Cismontane woodland, coastal scrub, pinyon and juniper woodland, and valley and foothill grassland. Elevation range extends from 300 to 1,705 meters amsl.	Low. Marginal habitat is present in the right-of-way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1994 more than 8 miles west of the proposed project site.

Table 3-4 Special-Status Plant Species Potential to Occur

Common Name *Scientific Name*	Listing Status and California Rare Plant Rank	Flowering Period	Habitat Requirements	Potential for Occurrence
Munz's tidy-tips *Layia munzii*	1B.2	Mar.–Apr.	Chenopod scrub, valley and foothill grassland (alkaline clay). Elevation range extends from 150 to 700 meters amsl.	Low. Marginal habitat is present in the right-of-way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1940 more than 6 miles west of the proposed project site.
Showy golden madia *Madia radiata*	1B.1	Mar.–May	Cismontane woodland and valley and foothill grassland. Elevation range extends from 25 to 1,215 meters amsl.	Low. Marginal habitat is present in the right-of-way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1935 more than 3 miles west of the proposed project site.
Sylvan microseris *Microseris sylvatica*	4.2	Mar.–Jun.	Chaparral, cismontane woodland, Great Basin scrub, pinyon and juniper woodland, valley and foothill grassland. Elevation range extends from 45 to 1,500 meters amsl.	Low. Marginal habitat is present within the right-of-way; however, the only nearby occurrence was last confirmed in the adjacent Joaquin Rocks quad in 1996.
San Joaquin woollythreads *Monolopia congdonii*	Federally Endangered 1B.2	Feb.–May	Chenopod scrub and valley and foothill grassland (sandy). Elevation range extends from 60 to 800 meters amsl.	Low. Marginal habitat is present in the right-of-way, however, the species has not been observed within 3 miles of the proposed project site since the 1940's. A revisit in 1988 by CDFW did not observe the species and noted no native habitat remained at the site.

Table 3-4 Special-Status Plant Species Potential to Occur

Common Name *Scientific Name*	Listing Status and California Rare Plant Rank	Flowering Period	Habitat Requirements	Potential for Occurrence
Boraginaceae (Forget-Me-Not Family)				
Forked fiddleneck *Amsinckia furcata*	4.2	Feb.–May	Cismontane woodland, valley and foothill grassland. Elevation range extends from 50 to 1,000 meters amsl.	Low. Marginal habitat is present in the right-of-way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1937 more than 2 miles west of the proposed project site.
Brassicaceae (Cabbage Family)				
Panoche pepper-grass *Lepidium jaredii* ssp. *album*	1B.2	Feb.–Jun.	Valley and foothill grassland with clay, steep slopes, and sometimes alkaline soils. Elevation range extends from 185 to 745 meters amsl.	Low. Marginal habitat is present in the right-of-way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 2023 more than 8 miles west of the proposed project site.
Chenopodiaceae (Goosefoot Family)				
Lost Hills crownscale *Atriplex coronata* var. *vallicola*	1B.2	Apr.–Sep.	Chenopod scrub, valley and foothill grassland, and vernal pools. Elevation range extends from 50 to 635 meters amsl.	Low. Marginal habitat is present within the proposed project site but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation from 2016 occurred more than 7 miles west of the proposed project site.
Crownscale *Atriplex coronata* var. *coronata*	4.2	Mar.–Oct.	Chenopod scrub, valley and foothill grassland, and vernal pools. Elevation range extends from 1 to 590 meters amsl.	Low. Marginal habitat is present in the right-of-way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 2005 more than 9 miles west of the proposed project site.

Table 3-4 Special-Status Plant Species Potential to Occur

Common Name *Scientific Name*	Listing Status and California Rare Plant Rank	Flowering Period	Habitat Requirements	Potential for Occurrence
Lamiaceae (Mint Family)				
San Benito thorn-mint *Acanthomintha obovata* ssp. *obovata*	4.2	Apr.–Jul.	Chaparral, cismontane woodland, valley and foothill grassland. Elevation range extends from 395 to 1,500 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2015 more than 15 miles west of the proposed project site.
San Benito monardella *Monardella antonina* ssp. *benitensis*	4.3	Apr.–Sep.	Chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Elevation range extends from 500 to 1,570 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2004 more than 11 miles west of the proposed project site.
San Joaquin bluecurls *Trichostema ovatum*	4.2	Jul.–Oct.	Chenopod scrub, valley and foothill grassland. Elevation range extends from 65 to 320 meters amsl.	Low. Marginal habitat is present in the right-of-way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1937 more than 10 miles northeast of the proposed project site.
Liliaceae (Lily Family)				
Stinkbells *Fritillaria agrestis*	4.2	Mar.–Jun.	Chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland. Elevation range extends from 10 to 1,555 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2015 more than 15 miles west of the proposed project site.

Table 3-4 Special-Status Plant Species Potential to Occur

Common Name *Scientific Name*	Listing Status and California Rare Plant Rank	Flowering Period	Habitat Requirements	Potential for Occurrence
Papaveraceae (Poppy Family)				
San Benito poppy *Eschscholzia hypecoides*	4.3	Mar.–Jun.	Chaparral, cismontane woodland, valley and foothill grassland. Elevation range extends from 200 to 1,500 meters amsl.	Low. Marginal habitat is present in the right-of-way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1988 more than 5 miles west of the proposed project site.
Polemoniaceae (Phlox Family)				
Panoche navarretia *Navarretia panochensis*	1B.3	Apr.–Aug.	Chenopod scrub, valley and foothill grassland. Elevation range extends from 330 to 860 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2019 more than 10 miles west of the proposed project site.
Prostrate vernal pool navarretia *Navarretia prostrata*	1B.2	Apr.–Jul.	Coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), vernal pools. Elevation range extends from 3 to 1,210 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2004 more than 12 miles west of the proposed project site.
Polygonaceae (Buckwheat Family)				
Cottony buckwheat *Eriogonum gossypinum*	4.2	Mar.–Sep.	Chenopod scrub and valley and foothill grassland. Elevation range extends from 100 to 550 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2003 more than 7 miles west of the proposed project site.

Table 3-4 Special-Status Plant Species Potential to Occur

Common Name *Scientific Name*	Listing Status and California Rare Plant Rank	Flowering Period	Habitat Requirements	Potential for Occurrence
Protruding buckwheat *Eriogonum nudum var. indictum*	4.2	May–Oct.	Chaparral, chenopod scrub, and cismontane woodland. Elevation range extends from 150 to 1,463 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2020 more than 8 miles west of the proposed project site.
Idria buckwheat *Eriogonum vestitum*	4.3	Apr.–Aug.	Valley and foothill grassland. Elevation range extends from 235 to 900 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 1995 more than 10 miles north of the proposed project site.
Primulaceae (Primrose Family)				
California androsace *Androsace elongata* ssp. *acuta*	4.2	Mar.–Jun.	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley and foothill grassland. Elevation range extends from 150 to 1,305 meters amsl.	Low. Marginal habitat is present in the right-of-way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2010 more than 7 miles west of the proposed project site.

Source: Data compiled by the California Department of Water Resources in 2024

Notes:

amsl = above mean sea level

CRPR = California Rare Plant Rank

1B = Plants Rare, Threatened, or Endangered in California and Elsewhere

2B = Plants Rare, Threatened, or Endangered in California and Elsewhere but Are More Common Elsewhere

4B = Watch List: Plants of Limited Distribution

0.1 = Seriously Threatened in California (over 80 percent of occurrences threatened/high degree and immediacy of threat)

0.2 = Moderately Threatened in California (20-80 percent occurrences threatened/moderate degree and immediacy of threat)

0.3 = Not Very Threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known)

As shown in Table 3-4, all special-status plant species were determined to have low potential to occur within the proposed project site due to lack of suitable habitat or other considerations and are not discussed further. Species with no potential to occur are also not discussed in this document.

Special-Status Wildlife Species

Special-status wildlife species as reported in the USFWS's iPaC and CDFW's CNDDB are listed in **Table 3-5**, which includes listing statuses, brief descriptions of habitat requirements, and a determination of the potential for the species to occur within the proposed project site.

Table 3-5 Special-Status Wildlife Species Potential to Occur

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
AMPHIBIANS			
Spadefoot Toads (Scaphiopodidae)			
Western spadefoot *Spea hammondii*	FPT, CDFW SSC	Mixed woodland, grasslands, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Prefers washes and other sandy areas with patches of brush and rocks. Rain pools or shallow temporary pools, which do not contain bullfrogs, fish, or crayfish are necessary for breeding. Perennial plants are a major food source.	Low. Marginal suitable aquatic habitat and suitable upland habitat is present within and surrounding the proposed project site. This species has been observed in two areas near but outside of the proposed project site. Beyond these locations, presence is unlikely, as surveys conducted in 2024 and 2025 did not detect spadefoot within the proposed project site (California Department of Water Resources 2025b). Additionally, spadefoot has not been incidentally recorded along this section of the Aqueduct during any of the numerous past surveys conducted in the region. Furthermore, there is no habitat mapped as suitable upland, occupied habitat, suitable breeding, or potential breeding located in any staging areas or borrow areas so the possible risks to western spadefoot are low.

Table 3-5 Special-Status Wildlife Species Potential to Occur

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
REPTILES			
Legless Lizards (Anniellidae)			
Northern California legless lizard *Aniella pulchra*	CDFW SSC	Found in the San Joaquin Valley in loose sandy soils with moisture. Often found in coastal areas with sandy soils.	Low. Sparse marginal habitat is present within the project. The species has not been detected during surveys conducted from 2015 to 2024 (Table 3-2). One recorded occurrence has been documented in CNDDB within 3 miles of the proposed project site.
Egg-Laying Snakes (Colubridae)			
California glossy snake *Arizona elegans occidentalis*	CDFW SSC	Inhabits arid scrub, rocky washes, grasslands, and chaparral habitats. Appears to prefer microhabitats of open areas with friable soils for burrowing.	Low. Marginal habitat is present within the proposed project site. No occurrence has been recorded within the 3-mile search radius of the proposed project site.
San Joaquin coachwhip *Masticophis flagellum ruddocki*	CDFW SSC	Inhabits open, dry, treeless areas with little or no cover, including valley grassland and saltbush scrub. Takes refuge in rodent burrows, under shaded vegetation, and under surface objects.	High. Suitable habitat is present within the proposed project site. The species has been detected north and south of the proposed project site during surveys. There are no recorded occurrences within 3 miles of the proposed project site in CNDDB.
Freshwater Turtles (Emydidae)			
Western pond turtle *Actinemys marmorata*	FPT, CDFW SSC	Permanent and intermittent waterways. Terrestrial habitat is also important for basking and egg-laying.	Low. Marginal habitat is present within the proposed project site. This species uses aquatic habitats primarily for foraging, thermoregulation, and avoidance of predators. Turtles prefer habitats with large areas for cover (logs, algae, vegetation) and basking sites (boulders or other substrates) and have been observed to avoid areas of open water lacking these habitat features. The SLC does not offer these features because it is a concrete-lined canal, it is open with zero cover, and little to no foraging habitat is available. Marginal habitat may be present in the form of drainage basins and canals on the adjacent properties. No CNDDB

Table 3-5 Special-Status Wildlife Species Potential to Occur

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
			occurrence has been recorded within the 3-mile search radius of the proposed project site.
BIRDS			
Hawks, Kites, Harriers, & Eagles (Accipitridae)			
Golden eagle *Aquila chrysaetos*	CDFW FP, CDFW WL	Found in a variety of habitats including shrublands, grasslands, farmland, and areas along rivers and streams. Prefer partially or completely open country, especially around mountains, hills, and cliffs.	Low. Only foraging habitat is present in the proposed project site. No occurrence has been recorded within the 3-mile search radius of the proposed project site.
Swainson's hawk *Buteo swainsoni*	ST	Found in Great Basin grassland, riparian forest, riparian woodland, valley and foothill grassland. Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannas, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, alfalfa, or grain fields supporting rodent populations.	High. Foraging, breeding, and nesting habitat are present within the proposed project site. This species has been observed during past surveys and documented within 3 miles of the proposed project site in CNDDB.
Northern harrier *Circus hudsonius*	CDFW SSC, USFWS BCC	Nests and forages in meadows, marshes, and grasslands.	High. Foraging and breeding habitat are present within the proposed project site. This species has been observed during past surveys and documented within 3 miles of the proposed project site in CNDDB.
White-tailed kite *Elanus leucurus*	CDFW FP	Found year-round in coastal and valley lowlands; rarely found away from agricultural areas. Inhabits herbaceous and open stages of most habitats mostly in cismontane California.	High. Suitable habitat is present within the proposed project site. The species has been historically observed foraging in the vicinity of the project; however, there are no recorded occurrences of nesting within 3 miles of the proposed project site on CNDDB.

Table 3-5 Special-Status Wildlife Species Potential to Occur

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
Falcons (Falconidae)			
Prairie falcon *Falco mexicanus*	CDFW WL	Found from annual grasslands to alpine meadows, but is associated primarily with perennial grasslands, savannahs, rangeland, agricultural fields, and desert scrub areas.	High. Suitable habitat is present within the proposed project site. Historic detections have been made during surveys; however, there are no recorded occurrences within 3 miles of the proposed project site on CNDDB.
True Owls (Strigidae)			
Burrowing owl *Athene cunicularia*	SC, CDFW SSC, USFWS BCC	Found in open grasslands with low vegetation, golf courses, and disturbed and ruderal habitat in urban areas. Usually nests in old burrows of ground squirrels or other small mammals.	High. Marginal habitat for the species is present along portions of the embankments bordering the Aqueduct roads of the proposed project site. However, nine occupied burrows have been recorded in our dataset, two of which are typically active each year (California Department of Water Resources 2025a).
Short-eared owl *Asio flammeus*	CDFW SSC, USFWS BCC	Found in prairies, grasslands, meadows, and agricultural areas. Prefers large, open areas with low vegetation.	Moderate. Suitable habitat is present in the proposed project site, but no detections have been made during surveys. One recorded occurrence was documented in CNDDB approximately 3 miles from the northern end of the proposed project site.
Shrikes (Laniidae)			
Loggerhead shrike *Lanius ludovicianus*	CDFW SSC	Found in broken woodlands, savanna, pinyon-juniper, Joshua tree, riparian forests, desert oases, scrub, and washes. Prefers open country for hunting, with perches for scanning and dense shrubs and brush for nesting.	High. Suitable habitat is present within the project site. Detections have been made during surveys and there are recorded occurrences in CNDDB within 3 miles of the proposed project site.

Table 3-5 Special-Status Wildlife Species Potential to Occur

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
Larks (Alaudidae)			
California horned lark *Eremophila alpestris actia*	CDFW WL	Found in prairies and heavily grazed pastures. Prefers bare, dry ground and areas of short, sparse vegetation.	High. Suitable habitat is present within the proposed project site. This species has been observed north and south of the proposed project site, but not within; there are recorded occurrences in CNDDB within 3 miles of the proposed project site.
Blackbirds (Icteridae)			
Tricolored blackbird *Agelaius tricolor*	ST, CDFW SSC, USFWS BCC	Largely endemic to California; most numerous in the Central Valley and nearby vicinity. Typically requires open water, protected nesting substrate, and foraging grounds within vicinity of the nesting colony. Nests in dense thickets of cattails, tules, willow, blackberry, wild rose, and other tall herbs near fresh water. Also nests in agricultural crops (e.g., silage), where colonies may be threatened during harvest.	Low (Nesting), Moderate (Foraging). Although sparse marginal nesting habitat for the species occurs on site, this species has been observed foraging north of the proposed project site and recorded observations are documented in CNDDB within 3 miles of the proposed project site. This species was not observed during focused surveys conducted for the species in 2024. Although this species is unlikely to nest on site, it could be observed foraging in the area on occasion.
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	CDFW SSC	Breeds almost exclusively in marshes with tall emergent vegetation, such as tule or cattail stands, generally in open areas and edges over relatively deep water. During migration and winter, prefers open cultivated lands, fields, and pastures.	Moderate. Suitable nesting habitat is sparse in the proposed project site. However, historic detections have been made during surveys and recorded observations are documented in CNDDB within 3 miles of the proposed project site. This species is unlikely to nest on-site but could forage in the area on occasion.
Sandpipers and Allies (Scolopacidae)			
Long-billed curlew *Numenius americanus*	CDFW WL	Found in lowland areas near agriculture in the interior of California. The Central and Imperial Valleys are important areas for wintering and migrating.	Low. Although suitable habitat is present within the proposed project site, there are no recent recorded occurrences within 3 miles of the proposed project site in CNDDB.

Table 3-5 Special-Status Wildlife Species Potential to Occur

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
MAMMALS			
Kangaroo Rats, Pocket Mice, & Kangaroo Mice (Heteromyidae)			
Giant kangaroo rat *Dipodomys ingens*	FE, SE	Inhabits fine sandy loam soils supporting sparse annual grass/forb vegetation and marginally found in low-density alkali desert scrub.	Low. Suitable habitat is not present within the proposed project site. However, the species has recorded occurrences documented 3 miles west of the proposed project site.
Foxes, Wolves, Coyotes (Canidae)			
San Joaquin kit fox *Vulpes macrotis mutica*	FE, ST	Grassland or grassy open stages with scattered shrubby vegetation; requires loose textured sandy soils for burrowing; requires suitable prey base of small rodents.	Low. Suitable habitat is present within the proposed project site. Detections have not been made during surveys, but the area has been documented as a corridor for the species in the past. There are no recorded occurrences within 3 miles of the proposed project site in CNDDB.
Weasels & Relatives (Mustelidae)			
American badger *Taxidea taxus*	CDFW SSC	Found in dry, open grasslands, fields, and pastures. Most abundant in drier open stages of most shrub, forest, and herbaceous habitats with friable soils.	Low. Although suitable habitat is present within the proposed project site and this species has been observed north of the project, this species was not observed during surveys conducted for the species in 2024.
Free-Tailed Bats (Molossidae)			
Western mastiff bat *Eumops perotis californicus*	CDFW SSC	Known to occur in habitat consisting of extensive open areas within dry desert washes, flood plains, chaparral, cismontane oak woodland, coastal scrub, open ponderosa pine forest, and grasslands. Roosts primarily in crevices in rock outcrops and buildings.	Moderate. Suitable roosting a foraging habitat is present within the proposed project site. The Aqueduct may provide a corridor for bats, facilitating movement of various species that roost and/or hibernate in surrounding areas. This species was detected at MP 132.95 during acoustic monitoring. Given the time of night that this species was recorded, approximately two hours past sunset, and the scarcity of detection on any other audio files at this site, it is likely that this species was using the Aqueduct for movement.

Table 3-5 Special-Status Wildlife Species Potential to Occur

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
Evening Bats (Vespertilionidae)			
Pallid bat *Antrozous pallidus*	CDFW SSC	Occurs in a wide variety of habitats including chaparral, coastal scrub, desert wash, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, riparian woodland, Sonoran desert scrub, upper montane coniferous forest, valley and foothill grasslands. Most common in open, dry habitats with rocky areas for roosting. For roosting, prefers rocky outcrops, cliffs and crevices with access to open habitats for foraging. Roosts must protect species from high temperatures. Very sensitive to disturbance of roosting sites.	Moderate. Suitable roosting a foraging habitat is present within the proposed project site. The Aqueduct may provide a corridor for bats, facilitating movement of various species that roost and/or hibernate in surrounding areas. This species was detected at MP 139.35 during acoustic monitoring. Given the time of night that this species was recorded, approximately two hours past sunset, and the scarcity of detection on any other audio files at this site, it is likely that this species was using the Aqueduct for movement.
Western red bat *Lasiurus frantzii*	CDFW SSC	Prefers edges or habitat mosaics that have trees for roosting and open areas for foraging. Requires nearby water source. Roosting habitat includes forests and woodlands from sea level up through mixed conifer forests. Feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands. Not found in desert areas.	Moderate. Suitable roosting a foraging habitat is present within the proposed project site. The Aqueduct may provide a corridor for bats, facilitating movement of various species that roost and/or hibernate in surrounding areas. This species was detected at MP 132.95 during acoustic monitoring. Given the time of night that this species was recorded, approximately two hours past sunset, and the scarcity of detection on any other audio files at this site, it is likely that this species was using the Aqueduct for movement.
INSECTS			
Bumble Bees (Bombus)			
Crotch's bumble bee *Bombus crotchii*	SC	Occurs primarily in California. Prefers grassland and scrub area within drier climates. Overwinters in leaf litter and soft soil.	Moderate. The 2025 habitat assessment and surveys resulted in the identification of suitable nesting and foraging habitat (California Department of Water Resources 2025c).

Source: Data compiled by the California Department of Water Resources in 2024

Notes: CDFW FP= California Fully Protected; CDFW SSC = California Species of Special Concern; FE = Federally Endangered; FPT = Federally Proposed Threatened; FT = Federally Threatened; SE = Federally Endangered; ST = State Threatened; SC = State Candidate for Listing; USFWS BCC = Birds of Conservation Concern.

As shown in Table 3-5, eight special-status wildlife species were determined to have a high potential to occur within the proposed project site: San Joaquin coachwhip (*Masticophis flagellum ruddocki*), burrowing owl (*Athene cunicularia*), California horned lark (*Eremophila alpestris actia*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus hudsonius*), prairie falcon (*Falco mexicanus*), Swainson's hawk (*Buteo swainsoni*), and white-tailed kite (*Elanus leucurus*). Seven special-status wildlife species were determined to have a moderate potential to occur on the proposed project site: pallid bat (*Antrozous pallidus*), western mastiff bat (*Eumops perotis californicus*), western red bat (*Lasiurus frantzii*), short-eared owl (*Asio flammeus*), yellow-headed blackbird (*Xanthocephalus xanthocephalus*), tricolored blackbird (*Agelaius tricolor*), and Crotch's bumble bee (*Bombus crotchii*).

All other special-status wildlife species were determined to have low potential to occur within the proposed project site due to lack of suitable habitat or other considerations and are not discussed further. Species with no potential to occur are also not discussed.

Critical Habitat for Plant and Wildlife Species

The USFWS defines the term *critical habitat* as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection.

There is no critical habitat present within or adjacent to the proposed project site, and there is no critical habitat within 10 miles of the proposed project site.

Jurisdictional Resources

An aquatic resources delineation and mapping was conducted on June 22, 23, and 24 and September 28, 2021 (Appendix C within Appendix B). The delineation and mapping were completed following the protocols described in the *1987 Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (U.S. Army Corps of Engineers 2008). Aquatic habitats in the proposed project site were classified using the *Classification of Wetlands and Deepwater Habitats of the United States* ("Cowardin Classification") (Federal Geographic Data Committee 2013). All aquatic features were analyzed in the field to determine whether they may be considered jurisdictional.

Under the Revised Definition of waters of the U.S., there are five categories that are considered jurisdictional waters of the U.S. These categories include (a)(1) territorial seas and waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters which are subject to the ebb and flow of the tide, and interstate waters, including interstate wetlands; (a)(2) impoundments of waters of the U.S; (a)(3) tributaries of waters of the U.S that meet the relatively permanent standard; (a)(4) wetlands adjacent to certain waters that meet the relatively permanent standard; and (a)(5) intrastate lakes and ponds that meet the relatively permanent standard.

Aquatic resources identified within the proposed project site include Cantua Creek at MP 133.67 and Salt Creek at MP 137.06. Ephemeral drainage channels were identified along both Cantua Creek and Salt Creek; however, these ephemeral drainage channels do not meet the relatively permanent standard or otherwise do not meet definitions of one of the (a)(1) through (a)(5) waters categories. The aquatic resources delineation identified approximately 4.53 acres of aquatic resources within the proposed project site, including seasonal wetland and ephemeral drainage, described further below.

Seasonal Wetland

Seasonal wetlands in California are temporary water bodies that hold water long enough during the growing season to promote anaerobic soil conditions and support hydrophytic vegetation. These wetlands are distinguished by their predictable seasonal drying, typically occurring within the same year.

Seasonal wetland SW-1 is hydrologically connected to Cantua Creek; this wetland totals 0.45 acre in the proposed project site and is at MP 133.8 right (**Table 3-6**, Figure 4-2 in Appendix B). In the proposed project site, vegetation included Bermuda grass (*Cynodon dactylon*) (FACU), California sunflower (*Helianthus californicus*) (OBL), Italian rye grass (*Lolium multiflorum*) (FAC), tall flatsedge (*Cyperus eragrostis*) (FACW), perennial pepperweed (*Lepidium latifolium*) (FAC), sheep sorrel (*Rumex acetosella*) (FAC), curly dock (*Rumex crispus*) (FAC), and Baltic rush (*Juncus balticus*) (FACW).[1] The wetland contains a rock gabion that serves as a sediment screening device surrounding a concrete drain inlet structure. A small patch of broadleaf cattail (*Typha latifolia*) (OBL) and Mexican fan palm (*Washingtonia robusta*) (FACW) saplings too small to warrant a separate wetland type was observed immediately adjacent to the drain inlet structure at the lowest point of seasonal wetland SW-1.

Table 3-6 Aquatic Resources in the Proposed Project Site

Aquatic Resources (Map ID)	Rapanos Waters Type	Waters of the U.S. (acres)	Isolated (acres)	Rationale
Seasonal Wetland (SW-1)	Isolated waters	--	0.448	Seasonal wetlands are isolated from any downstream connection to jurisdictional waters.
Waters				
Channels (ED-1 – ED-4) (Cantua Creek)	Isolated waters	--	3.716	Ephemeral drainages are isolated from any downstream connection to jurisdictional waters.
Channels (ED-5 – ED-9) (Salt Creek)	Isolated waters	--	0.370	

Source: Data compiled by the California Department of Water Resources in 2024

[1] Virtually all plants in the United States are given an indicator status reflecting how likely they are to be found in wetlands; these classifications were taken from the Arid West supplement. “FACU” refers to facultative upland species, which are more likely to be found in uplands; “FAC” refers to facultative species, which are equally likely to be found in wetlands and uplands; “FACW” refers to facultative wetland species, which are more likely to be found in wetlands; and “OBL” refers to obligate wetland species, which are always found in wetlands.

Ephemeral Drainage

Ephemeral drainages have flowing water immediately following precipitation when rainfall or groundwater provides water for channel flow. During dry periods, ephemeral drainages do not have flowing water. Within the proposed project site, ephemeral drainages periodically flow following precipitation during the winter season and are dry during other times of the year.

Four ephemeral drainage segments (ED-1 through ED-4), totaling approximately 3.72 acres, were identified in the proposed project site along Cantua Creek near MP 133.8 right (Table 3-6 and Figure 4-1 and Figure 4-2 in Appendix B). In addition, five ephemeral drainage segments (ED-5 through ED-9), totaling 0.37 acres, were identified along Salt Creek at MP 136.0 right and MP 137.0 right (Table 3-6 and Figure 4-3 and Figure 4-4 in Appendix B). All ephemeral drainages have been realigned to varying degrees within the proposed project site and convey substantial sediment from upstream reaches. Due to extensive historic and ongoing disturbances from the surrounding agricultural activities, the ordinary high-water mark in these drainage segments is primarily identified by physical indicators such as shelving and scour, occasional water staining, changes in the plant community, and/or drift deposits. Vegetation is sparse or absent within the drainage segments.

Due to the high degree of historic and ongoing disturbance in much of the surrounding uplands by ongoing agricultural activities, the ordinary high-water mark is primarily marked by areas of shelving and scour, occasional water staining, a change in the plant community, and/or drift deposits. Very little vegetation is supported in these drainage segments.

The ephemeral drainage channels in the proposed project site are isolated and are not tributary to jurisdictional waters and are therefore not expected to be waters of the U.S. pursuant to the Supreme Court's decision in the consolidated cases of *Rapanos v. United States* and *Carabell v. United States* (referred to hereafter as *Rapanos*).

Raptors and Migratory and Nesting Birds

The proposed project site supports a diversity of raptors and migratory birds. Power poles and trees, as well as exposed I-beams on bridges and check structures, provide cavities or ledges for birds to build nests. Approximately 26 active nest sites of migratory birds have been detected over the past five years in the area of the proposed project site.

Wildlife Corridors

Wildlife corridors or habitat corridors are natural or semi-natural lands (e.g., rural, agricultural, ruderal, or barren) that connect populations of wildlife and larger habitat areas across the landscape. While resources such as a dry culvert under a roadway or bridge may be used strictly for travel purposes, a corridor such as a creek can also contain natural vegetation and habitats that support foraging, roosting, and breeding activities as well.

Wildlife movement corridors are critical for the long-term health of ecological systems for several reasons. Corridors are connections that provide wildlife with access to water, food, and cover sources, spatially linking these three resources with wildlife in different areas. In addition, wildlife

movement between habitat areas provides for genetic exchange between populations of wildlife in otherwise separated natural areas. This is especially critical for small populations that are subject to loss of variability and effects of inbreeding.

Habitat connectivity in relation to the Aqueduct in the SLC can be considered in three main aspects—north to south along the Aqueduct, east to west across the Aqueduct, and the open water environment within the Aqueduct:

- **North to South.** The Aqueduct runs generally north to south along California's Central Valley and can be considered a link between habitats dispersed throughout the Central Valley. The north to south connection along both sides of the Aqueduct is open and can provide temporary habitat for traveling wildlife.
- **East to West.** The habitat connectivity from east to west is less open due to the aquatic nature of the Aqueduct. Periodic bridges, overchutes, and utility crossings over the canal provide terrestrial passage from one side to the other. Structures and crossings may also be used for bird or bat nesting and roosting.
- **Open Water.** Waterfowl and coastal bird species often use the Aqueduct as a resting area during the spring and fall migratory periods. Bats and birds forage for insects over the open water.

Discussion

Issue IV.a

Construction

Construction activities associated with the proposed project could result in permanent and temporary direct impacts to suitable habitat for special-status species as outlined in **Table 3-7** and detailed below.

Table 3-7 Potential Direct Impacts to Special-Status Species Habitat

Impact Type	Atriplex Scrub (acres)	Fiddleneck-Filaree Fields (acres)	Mesquite Thickets (acres)	Wild Oats and Annual Brome Grassland (acres)	Disturbed (acres)	Total (acres)
San Joaquin Coachwhip						
Temporary	0.08	5.11	--	12.10	--	17.29
Burrowing Owl						
Temporary (burrows and burrow habitat)	--	--	--	--	24.84	24.84
Temporary (foraging)	--	5.11	--	12.10	--	17.29

Table 3-7 Potential Direct Impacts to Special-Status Species Habitat

Impact Type	Atriplex Scrub (acres)	Fiddleneck-Filaree Fields (acres)	Mesquite Thickets (acres)	Wild Oats and Annual Brome Grassland (acres)	Disturbed (acres)	Total (acres)
Swainson's Hawk						
Temporary (nesting)	--	--	8.53	--	--	8.53
Temporary (foraging)	--	5.11	--	12.10	24.84	42.05
White-Tailed Kite						
Temporary (foraging)	--	5.11	--	12.10	24.84	42.05
Tricolored Blackbird						
Temporary (foraging)	0.08	5.11	--	12.10	24.84	42.13
Bats (Pallid Bat, Western Mastiff Bat, and Western Red Bat)						
Temporary (foraging)	0.08	5.11	--	12.10	24.84	42.13
Crotch's Bumble Bee						
Temporary (foraging)	0.08	5.11	8.53	12.10	24.84	50.66
Total Project Impacts	***0.08***	***5.11***	***8.53***	***12.10***	***24.84***	***50.66***
Total Surrounding Study Area [a]	***4.48***	***39.38***	***14.59***	***17.76***	***115.96***	***192.17***

Source: Data compiled by Environmental Science Associates in 2025

Note: Several species share the same habitat requirements. Therefore, impact acreages per habitat type may match for multiple species.

a. The total surrounding study area is the Aqueduct right-of-way in the vicinity of Pools 17 and 18, excluding the proposed project site components and the open water portion of the Aqueduct.

Special-Status Plants

As described above, there are no special-status plants with a moderate to high potential to occur or that have been observed within the proposed project site. Therefore, construction of the proposed project would have **no impact** on any special-status plants identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.

Special-Status Amphibians

No special-status amphibians were determined to have a moderate or high potential to occur or were identified within the proposed project site. Therefore, construction of the proposed project would have **no impact** on any special-status amphibians identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.

Special-Status Reptiles

One special-status reptile, San Joaquin coachwhip (CDFW SSC), has a high potential to occur within the proposed project site. Although this species has not been documented within the proposed project site, ancillary observations of this species have been documented along the Aqueduct right-of-way and suitable habitat for this species (i.e., upland annual grassland and alkali desert scrub habitats) is present within the proposed project site.

Construction activities associated with the proposed project could result in direct injury or mortality to San Joaquin coachwhip, if present within the proposed project site. The project may also result in temporary removal of suitable habitat for this species including Atriplex scrub, fiddleneck-filaree fields, and wild oats and annual brome grassland (Table 3-7). In addition, increased noise, artificial light, increased human presence, or introduction of invasive non-native weed species during construction activities may result in temporary indirect impacts to San Joaquin coachwhip within the proposed project site. Therefore, impacts to San Joaquin coachwhip from construction of the proposed project would be potentially significant.

To avoid or minimize construction-related impacts to special-status reptiles, DWR would implement **Mitigation Measure BIO-1** (Biological Monitor), requiring that a qualified biologist be on-site to conduct clearance surveys and monitor ground-disturbing activities and exclusion buffers to help minimize and fully mitigate or avoid the incidental take of individual special-status animals through relocation and to minimize disturbance of special-status species habitat. **Mitigation Measure BIO-2** (Worker Environmental Awareness Program [WEAP]), would require that all personnel undergo WEAP training prior to the start of construction activities to reduce potential impacts by informing crews about of the biology and general behavior of special-status species with potential to occur on-site; providing information about the distribution and habitat needs of the special-status species; describing the sensitivity of the special-status species to human activities; and providing the species' status pursuant to CESA, including legal protection, recovery efforts, penalties for violations and project-specific protective measures. Furthermore, implementation of **Mitigation Measure BIO-3** (Invasive Plant Species Control Measures), providing measures that must be implemented to control the spread of invasive plants to reduce impacts to native plants; **Mitigation Measure BIO-4** (General Construction Best Management Practices), providing general measures to reduce vehicle speeds, avoid potential wildlife entrapment, trash abatement, minimize and delineate work areas, reduce dust, nighttime work requirements, and noise limitations; and **Mitigation Measure BIO-5** (Revegetation Plan), requiring the preparation of a revegetation plan to ensure that temporary impacts are restored to pre-construction conditions, would minimize potential direct and/or indirect impacts to San Joaquin coachwhip. With implementation of these mitigation measures, impacts to special-status reptiles would be reduced to **less than significant with mitigation incorporated**.

Special-Status Birds

Ten special-status bird species have a moderate or high potential to occur within the proposed project site: burrowing owl (SC, CDFW SSC, USFWS BCC), California horned lark (CDFW WL), loggerhead shrike (CDFW SSC), northern harrier (CDFW SSC, USFWS BCC), prairie falcon (CDFW WL), short-eared owl (CDFW SSC, USFWS BCC), Swainson's hawk (ST), tricolored blackbird (ST, CDFW SSC, USFWS BCC), white-tailed kite (CDFW FP), and yellow-headed blackbird (CDFW SSC). Four of these special-status bird species (burrowing owl, Swainson's hawk, tricolored blackbird, and white-tailed kite) are State listed and are discussed in detail below.

Burrowing Owl

Habitat for this species is present along portions of the embankments bordering the Aqueduct roads along the proposed project site, and a total of nine active burrows have been recorded within the proposed project site, with an average of two active burrows documented in a given year. Only one active burrowing owl burrow was observed at MP 134.17 in 2024. No burrowing owl pairs were identified during the 2025 surveys and individual burrowing owls were only observed in the vicinity of the proposed project site from January 2025 to March 2025 (California Department of Water Resources 2025a). After March 2025, no burrowing owls were observed during burrowing owl surveys or site visits to the area for other projects (not related to the proposed project). DWR biologists theorize that burrowing owls may use sections of the Aqueduct as overwintering sites and disperse to their breeding sites by spring. Thus, this species has a high potential to occur within the upland annual grassland and disturbed habitats throughout the proposed project site. Construction activities have the potential to result in direct mortality to burrowing owls, including potential vehicle strikes, if the species is present breeding or foraging within the proposed work areas during project activities. The proposed project may result in the temporary removal of suitable burrows and burrow habitat along the Aqueduct embankments and may result in temporary removal of suitable foraging habitat for the species, including fiddleneck-filaree fields and wild oats and annual brome grassland. Additionally, construction activities, which would last approximately 8 weeks per linear mile, may result in indirect impacts or the temporary loss of suitable habitat for burrowing owl within the proposed project site due to increased noise, artificial light, increased human presence, ground vibration, or introduction of non-native weed species. Therefore, impacts to burrowing owl from construction of the proposed project would be potentially significant.

The implementation of **Mitigation Measure BIO-6** (Burrowing Owl), requiring focused pre-construction burrowing owl surveys and the implementation of avoidance buffers, agency consultation, exclusion plans, and consultation for unavoidable impacts would reduce potential impacts to burrowing owl. Additionally, implementation of **Mitigation Measure BIO-1** (Biological Monitor), **Mitigation Measure BIO-2** (WEAP), **Mitigation Measure BIO-3** (Invasive Plant Species Control Measures), and **Mitigation Measure BIO-4** (General Construction Best Management Practices), would further reduce direct and/or indirect impacts to burrowing owl by requiring a biological monitor during ground-disturbing activities and periodic checks, providing environmental training to all personnel, implementing invasive plant species control measures, and using best management practices to control vehicle speeds, manage trash, prevent wildlife entrapment,

delineate work areas, noise and artificial lighting requirements, restrict nighttime activities. The implementation of **Mitigation Measure BIO-5** (Revegetation Plan) and **Mitigation Measure BIO-7** (Impacts to Federally and State-Listed Species Habitat) would reduce impacts to species habitat in the proposed project site by requiring the restoration of temporarily impacted areas to pre-construction conditions and/or compensatory habitat replacement for permanent impacts to federally and State-listed species habitat. With implementation of these mitigation measures, impacts to burrowing owl would be reduced to **less than significant with mitigation incorporated**.

Swainson's Hawk

Active Swainson's hawk nests were observed in 2021 and 2024 during protocol-level surveys conducted in accordance with the Swainson's Hawk Technical Advisory Committee's *Recommended Timing and Methodology* (2000), and the proposed project site provides suitable habitat for this species to nest and forage. Two active Swainson's hawk nest sites were identified in 2021; a Swainson's hawk nest was located in a mesquite tree on the right side of the Aqueduct at MP 133.60, and an active nest was observed in a cottonwood tree on the right side of the Aqueduct at MP 138.40. The Swainson's hawk nest in the cottonwood tree at MP 138.40 was also confirmed to be active in 2024. Thus, Swainson's hawk nesting is known to occur within 0.25 mile of the proposed project site and potential impacts to the species may occur.

The annual grassland and scattered trees throughout the proposed project site provide suitable nesting and foraging habitat for this species. The project may result in temporary direct impacts to suitable nesting habitat within mesquite thickets. Construction activities have the potential to result in the loss of nesting success, take of individuals due to vehicle strikes, and the temporary removal of foraging habitat within the proposed work areas (i.e., staging and borrow areas). The project may result in temporary direct impacts to suitable foraging habitat including bare land (disturbed), fiddleneck-filaree fields, and wild oats and annual brome grassland. In addition, increased noise, human presence, altered hydrology, and the introduction of non-native weed species during construction activities may temporarily result in indirect impacts to Swainson's hawk due to the proposed project. Therefore, impacts to Swainson's hawk from construction of the proposed project would be potentially significant.

The implementation of **Mitigation Measure BIO-8** (Swainson's Hawk), requiring focused presence/absence Swainson's hawk surveys prior to construction during the nesting season and the implementation of avoidance buffers and consultation for unavoidable impacts, would reduce potential impacts to Swainson's hawk. Additionally, implementation of **Mitigation Measure BIO-1** (Biological Monitor), **Mitigation Measure BIO-2** (WEAP), **Mitigation Measure BIO-3** (Invasive Plant Species Control Measures), and **Mitigation Measure BIO-4** (General Construction Best Management Practices), would further reduce direct and/or indirect impacts to Swainson's hawk by requiring a biological monitor during ground-disturbing activities and periodic checks, providing WEAP training to all personnel, implementing invasive plant species control measures, and using best management practices to control vehicle speeds, manage trash, prevent wildlife entrapment, delineate work areas, reduce noise, and avoid impacts to drainage features. The implementation of **Mitigation Measure BIO-5** (Revegetation Plan) and **Mitigation Measure BIO-7** (Impacts to

Federally and State-Listed Species Habitat) would reduce impacts to species habitat in the proposed project site by requiring the restoration of temporarily impacted areas to pre-construction conditions and/or compensatory habitat replacement for permanent impacts to federally and State-listed species habitat. With implementation of these mitigation measures, impacts to Swainson's hawk would be reduced to **less than significant with mitigation incorporated**.

White-Tailed Kite

While suitable foraging habitat for white-tailed kite is present throughout the proposed project site, the species has only been historically observed foraging in the vicinity. Given the limited presence of dense-canopied trees and the absence of dense broadleaf deciduous groves typically used for nesting and roosting, nesting by white-tailed kite is not likely to occur within the proposed project site. White-tailed kite has the potential to occasionally forage within the open annual grassland and agricultural areas throughout the proposed project site and surrounding areas. The project may result in temporary direct impacts to suitable foraging habitat including bare land (disturbed), fiddleneck-filaree fields, and wild oats and annual brome grassland. Although suitable foraging habitat is present, direct construction impacts would be confined to minimal and concentrated areas, primarily within previously disturbed portions of the Aqueduct and adjacent work areas. Furthermore, ample foraging habitat would remain available in the areas surrounding the project both during and after construction, minimizing the overall impact on the species. Despite these minimization efforts, indirect impacts such as increased noise, human presence, altered hydrology, and the introduction of non-native weed species during construction could still affect foraging white-tailed kites. Consequently, impacts to white-tailed kite foraging habitat from the proposed project are considered potentially significant.

Impacts to suitable white-tailed kite foraging habitat would be reduced with the implementation of **Mitigation Measure BIO-1** (Biological Monitor), requiring a biological monitor during ground-disturbing activities and periodic checks; **Mitigation Measure BIO-2** (WEAP), providing environmental training about how to avoid and minimize impacts to special-status resources to all personnel; **Mitigation Measure BIO-3** (Invasive Plant Species Control Measures), implementing invasive plant species control measures; and **Mitigation Measure BIO-4** (General Construction Best Management Practices), using best management practices to control vehicle speeds, manage trash, reduce noise, delineate work areas, and avoid impacts to drainage features. In addition, the implementation of **Mitigation Measure BIO-5** (Revegetation Plan) would reduce impacts to habitat in the proposed project site by requiring the restoration of temporarily impacted areas to pre-construction conditions. With implementation of these mitigation measures, impacts to white-tailed kite foraging habitat would be reduced to **less than significant with mitigation incorporated**.

Tricolored Blackbird

Tricolored blackbirds typically nest near open fresh water in dense, tall vegetation like cattails (*Typha* spp.), tule (*Schoenoplectus* sp.), willows (*Salix* spp.), blackberry (*Rubus* spp.), and wild rose (*Rosa* spp.); however, they will also use crops like grain or silage for nesting. Potentially suitable nesting habitat, identified through data analysis and field verification in May 2021, was present in

areas partially or fully meeting these requirements. In 2021, tricolored blackbirds were observed on the proposed project site at MP 141.90 right in an agricultural canal and a single calling individual at MP 126.70 right in a wheat field. However, a 2024 survey found no tricolored blackbirds, and only sparse, marginal nesting habitat was observed within the proposed project site. Consequently, the potential for nesting within the proposed project site is low, but there is a moderate potential for this species to occasionally forage or occur onsite.

Suitable nesting habitat for tricolored blackbird is limited within the proposed project site. Therefore, direct impacts to the species resulting from construction are expected to be less than significant. Temporary direct impacts to the species foraging habitat could result from removal of the habitat within the proposed work areas (i.e., staging and borrow areas). The proposed project may result in temporary direct impacts to suitable foraging habitat including Atriplex scrub, bare land (disturbed), fiddleneck-filaree fields, and wild oats and annual brome grassland. Additionally, indirect impacts such as increased noise, human presence, altered hydrology, artificial lighting, and the introduction of non-native weed species during construction activities may temporarily affect tricolored blackbirds. Therefore, impacts to tricolored blackbird foraging habitat from construction of the proposed project would be potentially significant.

Impacts to foraging tricolored blackbird would be reduced with the implementation of several mitigation measures. Incorporation of **Mitigation Measure BIO-9** (Tricolored Blackbird), requiring protocol surveys and the implementation of avoidance buffers, exclusion plans, and consultation for unavoidable impacts would reduce potential impacts to tricolored blackbird. Additionally, incorporation of **Mitigation Measure BIO-1** (Biological Monitor), requiring a biological monitor during ground-disturbing activities and periodic checks; **Mitigation Measure BIO-2** (WEAP), providing environmental training to all personnel; **Mitigation Measure BIO-3** (Invasive Plant Species Control Measures), implementing invasive plant species control measures; and **Mitigation Measure BIO-4** (General Construction Best Management Practices), using best management practices to control vehicle speeds, manage trash, delineate work areas, reduce noise, restrict nighttime work, nighttime lighting restrictions, and avoid impacts to drainage features, which would reduce potential direct and/or indirect impacts due to project activities. Furthermore, the implementation of **Mitigation Measure BIO-5** (Revegetation Plan) and **Mitigation Measure BIO-7** (Impacts to Federally and State-Listed Species Habitat) would reduce impacts to species habitat in the proposed project site by requiring the restoration of temporarily impacted areas to pre-construction conditions and/or compensatory habitat replacement for permanent impacts to federally and State-listed species habitat. With implementation of these mitigation measures, impacts to tricolored blackbird would be reduced to **less than significant with mitigation incorporated**.

Other Migratory Birds and Raptors

In addition to the special-status bird species discussed previously, the proposed project site supports a diversity of other migratory birds, including special-status non-listed bird species, protected under the federal Migratory Bird Treaty Act of 1918 and Sections 3503.5, 3505, and 3511 of the California Fish and Game Code. Surveys have identified active nests, primarily in available trees (such as eucalyptus and large mesquite stands) and on power poles along the right-of-way. Commonly

observed bird species include common raven (*Corvus corax*), northern mockingbird (*Mimus polyglottos*), mourning dove (*Zenaida macroura*), western kingbird (*Tyrannus verticalis*), and cliff swallow (*Petrochelidon pyrrhonota*). Special-status non-listed birds with potential to nest on site include California horned lark, loggerhead shrike, northern harrier, and short-eared owl. Nesting migratory birds and raptors have the potential to nest on bridges, structures, power poles, and vegetation (i.e., trees, shrubs, and on the ground) throughout the proposed project site. Potential impacts to nesting birds may occur if project activities are conducted during the active nesting season (February 15 through August 31 for songbirds, and as early as January 15 for raptors).

Construction activities associated with the proposed project could result in direct injury or mortality to special-status birds, if present within the proposed project site. These activities could cause direct mortality to adults sitting on the nests, direct mortality of eggs or young, adult abandonment of nests, and/or reproductive failure. In addition, increased noise, artificial light, increased human presence, or introduction of non-native weed species during construction activities may temporarily result in a loss of suitable habitat for special-status birds within the proposed project site. Therefore, impacts to nesting migratory birds and raptors from construction of the proposed project would be potentially significant.

The implementation of **Mitigation Measure BIO-10** (Nesting Birds), requiring a nesting bird survey prior to construction during the nesting season, along with the implementation of avoidance buffers and agency consultation, would reduce potential impacts to protected nesting birds. Additionally, impacts to nesting birds would be reduced with the implementation of several mitigation measures. These include **Mitigation Measure BIO-1** (Biological Monitor), requiring a biological monitor during ground-disturbing activities and periodic checks; **Mitigation Measure BIO-2** (WEAP), providing environmental training to all personnel; **Mitigation Measure BIO-3** (Invasive Plant Species Control Measures), implementing invasive plant species control measures; and **Mitigation Measure BIO-4** (General Construction Best Management Practices), using best management practices to control vehicle speeds, manage trash, delineate work areas, reduce noise, restrict nighttime activities, and avoid impacts to drainage features, which would reduce potential direct and/or indirect impacts due to project activities. With implementation of these mitigation measures, impacts on nesting birds and raptors and special-status birds would be reduced to **less than significant with mitigation incorporated**.

Special-status non-listed bird species, such as California horned lark, loggerhead shrike, prairie falcon, short-eared owl, and yellow-headed blackbird have the potential to occasionally forage within the open annual grassland and agricultural areas throughout the proposed project site and surrounding areas. Although suitable foraging habitat is present, direct temporary construction impacts would be confined to minimal and concentrated areas, primarily within previously disturbed portions of the Aqueduct and adjacent work areas and will be restored to its pre-existing condition following construction. Furthermore, ample foraging habitat would remain available in the areas surrounding the project both during and after construction, minimizing the overall impact on the species. As such, impacts on special-status non-listed bird foraging habitat would be **less than significant**.

Special-Status Mammals

Three special-status bat species—pallid bat, western mastiff bat, and western red bat—were detected during bat surveys in 2024. However, no visual evidence of roosting was observed such as urine stains or piles of guano. Therefore, these special-status bats are determined to have a moderate potential to occur within the proposed project site.

Construction activities associated with the proposed project could result in direct injury or mortality to special-status mammal species, if present within the proposed project site. However, no impacts to potentially suitable roosting habitat would result from this project. The proposed project may result in the temporary loss of suitable foraging habitat including Atriplex scrub, bare land (disturbed), fiddleneck-filaree fields, and wild oats and annual brome grassland. In addition, increased noise, artificial light, increased human presence, or introduction of non-native weed species during construction activities may temporarily result in a loss of suitable habitat for special-status mammals within the proposed project site. Therefore, impacts on special-status mammals from construction of the proposed project could be potentially significant.

The implementations of **Mitigation Measure BIO-11** (Special-Status Bats), requiring a bat roosting habitat assessment prior to construction, along with preparation of a Bat Exclusion Plan if roosting special-status bat species are identified, would reduce potential impacts to special-status bat species. Additionally, impacts on roosting and foraging bats would be reduced with the implementation of several mitigation measures. These include **Mitigation Measure BIO-1** (Biological Monitor), requiring a biological monitor during ground disturbing activities and periodic checks; **Mitigation Measure BIO-2** (WEAP), providing environmental training to all personnel; **Mitigation Measure BIO-3** (Invasive Plant Species Control Measures), implementing invasive plant species control measures; and **Mitigation Measure BIO-4** (General Construction Best Management Practices), using best management practices to control vehicle speeds, manage trash, delineate work areas, reduce noise, restrict nighttime activities, nighttime lighting restrictions, and avoid impacts to drainage features, which would reduce potential direct and/or indirect impacts due to project activities. With implantation of these mitigation measures, impacts on special-status mammals would be reduced to **less than significant with mitigation incorporated**.

Special-Status Invertebrates

One special-status invertebrate species, Crotch's bumble bee, was determined to have a moderate potential to occur within the proposed project site following the 2025 habitat assessment and surveys for the species within and surrounding the proposed project site (California Department of Water Resources 2025c). The 2025 habitat assessment and surveys resulted in the identification of suitable habitat for nesting and foraging. The site either contains continual coverage of flowers throughout the active period or there are flowers that are continuously in bloom in the lands directly adjacent to the site. There is the potential for flowers to bloom continuously within 3 miles of the site. However, no visual evidence of the species resulted from the 2025 habitat assessment and surveys. Therefore, Crotch's bumble bee is determined to have a moderate potential to occur within the proposed project site.

Construction activities associated with the proposed project could result in direct injury or mortality to Crotch's bumble bee, if present within the proposed project site. The proposed project may result in the temporary loss of suitable foraging habitat including Atriplex scrub, bare land (disturbed), fiddleneck-filaree fields, mesquite thickets, and wild oats and annual brome grassland. In addition, during construction activities increased noise, increased dust, increased human presence, and/or introduction of nonnative weed species may temporarily result in a loss of suitable habitat for Crotch's bumble bee within the proposed project site. Therefore, impacts on Crotch's bumble bee from construction of the proposed project could be potentially significant.

The implementation of **Mitigation Measure BIO-12** (Crotch's Bumble Bee), requiring pre-activity surveys prior to ground-disturbing activities, seasonal work window avoidance, pre-activity nesting surveys if ground disturbing activities will occur during the nesting season, nest avoidance, and consultation for unavoidable impacts would reduce potential impacts to the species. Additionally, impacts on Crotch's bumble bee would be reduced with the implementation of several mitigation measures. These include **Mitigation Measure BIO-1** (Biological Monitor), requiring a biological monitor during ground disturbing activities and periodic checks; **Mitigation Measure BIO-2** (WEAP), providing environmental training to all personnel; **Mitigation Measure BIO-3** (Invasive Plant Species Control Measures), implementing invasive plant species control measures; and **Mitigation Measure BIO-4** (General Construction Best Management Practices), using best management practices to control vehicle speeds, delineate work areas, reduce noise, hazardous material storage requirements, reduce dust, and reduce trash, which would reduce potential direct and indirect impacts due to project activities. With implantation of these mitigation measures, impacts on Crotch's bumble bee would be reduced to **less than significant with mitigation incorporated**.

Operation

Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. Therefore, operation of the proposed project would have a **less-than-significant impact** on special-status plants and wildlife species, and no mitigation would be required.

Impact Conclusion

As discussed above, **Mitigation Measures BIO-1 through BIO-5** would reduce impacts to special-status species by requiring biological monitors, implementation of a WEAP program, invasive species control measures, construction BMPs, and a post-construction revegetation plan, thereby reducing impacts from construction activities. In addition, **Mitigation Measure BIO-7** would protect State and federally endangered species through compensatory mitigation, in coordination with CDFW and USFWS, should impacts occur.

Additionally, implementation of **Mitigation Measures BIO-6 and BIO-8 through BIO-10** would reduce impacts on special-status birds through specific measures for burrowing owl, Swainson's hawk, tricolored blackbird, and nesting birds by requiring pre-construction surveys, establishment of species-specific no-disturbance buffers, and coordination with wildlife agencies to avoid or minimize impacts during critical breeding or nesting periods. Further, impacts to special-status mammals

would be reduced to a less-than-significant level through implementation of **Mitigation Measure BIO-11**, which protects special-status bat species by requiring pre-construction surveys by a qualified biologist to identify active day or maternity roosts and implementing appropriate measures to avoid direct mortality or disturbances. Finally, impacts to special-status invertebrates would be reduced to a less-than-significant level through implementation of **Mitigation Measure BIO-12**, which protects Crotch's bumble bee by requiring pre-activity surveys prior to ground-disturbing activities, seasonal work window avoidance, pre-activity nesting surveys if ground disturbing activities will occur during the nesting season, nest avoidance, and consultation for unavoidable impacts.

These mitigation measures reduce impacts to less than significant by ensuring that sensitive species and habitats are identified, avoided, or protected through surveys, monitoring, and buffers. Coordination with biologists and agencies ensures proper implementation and compliance with environmental regulations. Therefore, impacts to candidate, sensitive, or special-status species would be **less than significant with mitigation incorporated**.

Issue IV.b

As described above, none of the vegetation communities/land cover types present on the proposed project site are listed as sensitive or rare natural communities. Therefore, construction and operation of the proposed project would have **no impact** on riparian habitat, or other sensitive or rare natural communities identified in local or regional plans, policies, or regulations, or by CDFW or USFWS.

Issue IV.c

As described above, none of the aquatic resources identified within the proposed project site are considered to be waters of the U.S. Furthermore, the proposed project is not proposed to impact waters of the State or CDFW jurisdiction. To reduce potential indirect impacts to aquatic resources, the proposed project would implement **Mitigation Measure BIO-1** (Biological Monitor), which would require that a biological monitor be on-site during all ground-disturbing activities. In addition to implementation of **Mitigation Measure BIO-4** (General Construction Best Management Practices) and **Mitigation Measure BIO-2** (WEAP) and incorporation of **Mitigation Measure BIO-13** (Aquatic Resources), indirect impacts to potentially jurisdictional features would be reduced with implementation of best management practices, such as the use of silt fences, fiber rolls, and/or gravel bags. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. Therefore, the construction and operation of the proposed project would have a **less-than-significant impact with mitigation incorporated** on State protected aquatic resources.

Issue IV.d

Wildlife Movement

Terrestrial wildlife species or migratory birds may temporarily avoid foraging or wading in the Aqueduct immediately adjacent to the proposed project site during construction activities due to

increased noise, artificial light, and increased human presence. However, construction activities associated with the proposed project would not prevent terrestrial or avian species from using other portions of the Aqueduct for these purposes. Construction of the proposed project would not impede wildlife movement throughout the region, nor would it prevent terrestrial wildlife or migratory birds from using the Aqueduct. Following construction, operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. Implementation of **Mitigation Measure BIO-4** (General Construction Best Management Practices) requires speed limits, off-road vehicle limitations, trash abatement, minimizing the work area footprint and duration, dush control, wildlife protection, nighttime lighting restrictions, noise restrictions, and species injury/mortality reporting, would reduce potential indirect impacts due to project activities. Therefore, construction and operation of the proposed project would have a **less-than-significant impact** on local or regional wildlife movement.

Nesting Birds and Native Wildlife Nursery Sites

Construction

Native resident and migratory bird species protected under the Migratory Bird Treaty Act and the California Fish and Game Code Section 3500 may nest within and near the proposed work areas. Cliff swallows are known to nest on the bridges and check structures in the area of the proposed project site, while common ravens often nest on power poles, bridges, and structures in the area of the proposed project site. Other migratory birds and raptors, including northern harrier, loggerhead shrike, California horned lark, and prairie falcon have been observed and may also nest within the proposed project site.

Potential impacts on nesting birds may occur during construction that overlaps with the general avian nesting season (i.e., from February 15 to September 1 for songbirds, January 15 to August 31 for raptors). Impacts may include direct and indirect impacts to individuals, eggs, or nests due to disturbance from human activities and construction noise and vibration, as well as habitat loss. Impacts to nesting birds would be potentially significant. Therefore, implementation of **Mitigation Measure BIO-10** (Nesting Birds), requiring a nesting bird survey prior to construction during the nesting season and the implementation of avoidance buffers and agency consultation, would reduce potential impacts to protected nesting birds. Additionally, implementation of **Mitigation Measure BIO-4** (General Construction Best Management Practices), requiring speed limits, off-road vehicle limitations, trash abatement, minimizing the work area footprint and duration, dush control, wildlife protection, nighttime lighting restrictions, noise restrictions, and species injury/mortality reporting,, would reduce potential indirect impacts due to project activities. With implementation of this mitigation measure, impacts to nesting birds during construction would be reduced to **less than significant with mitigation incorporated**.

Operation

Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. Therefore, operation of the proposed project would have a **less-than-significant impact** on migratory birds.

Impact Conclusion

Although construction activities may cause temporary avoidance of the immediate project area by terrestrial wildlife and migratory birds due to increased noise, lighting, and human presence, these impacts would be short-term and localized and would not impede regional wildlife movement or use of the Aqueduct. Potentially significant impacts to nesting birds during the breeding season would be avoided or minimized through pre-construction surveys, establishment of protective buffers, and coordination with regulatory agencies as required by **Mitigation Measure BIO-10**. Additionally, limiting construction to daylight hours and minimizing light spillover through shielding and directional lighting under **Mitigation Measure BIO-4** would further reduce indirect effects. Therefore, the project would not substantially interfere with wildlife movement or nesting activities, and overall impacts would be **less than significant with mitigation incorporated**.

Issue IV.e

To the extent feasible, implementation of the proposed project would comply with applicable adopted county ordinances protecting biological resources; however, State agencies such as DWR are not subject to local biological ordinances. Therefore, **no impact** would occur.

Issue IV.f

The proposed project site is located within the proposed Plan Area for the Southwest San Joaquin Valley Habitat Conservation Plan and Natural Community Conservation Plan in preparation. These documents have not yet been adopted and are not applicable to the proposed project. No other proposed or existing Habitat Conservation Plan or Natural Community Conservation Plan is applicable to the proposed project site; therefore, the proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan and there would be **no impact**.

Mitigation Measures

Mitigation Measure BIO-1: Biological Monitor. DWR shall retain a qualified biological monitor(s) with relevant experience with biological resources and regulations. The qualified biologist(s) shall be on-site during all ground-disturbing and vegetation removal activities. The qualified biologist(s) shall conduct daily clearance surveys of all equipment, vehicles, and stockpiled materials at the beginning of each day and regularly throughout the workday, and during ground-disturbing activities. The qualified biologist(s) shall also monitor any implemented exclusion buffers for work occurring near sensitive biological resources weekly or as needed, and check potential, atypical, and known burrows/burrow complexes/dens every two weeks while construction activities are occurring within suitable habitat for special-status species. The qualified biologist(s) shall recommend appropriate setback buffers for protection of sensitive biological resources, where necessary, and shall have the authority to temporarily stop work if special-status species are observed that may be impacted by construction activities.

Mitigation Measure BIO-2: Worker Environmental Awareness Program (WEAP). A qualified biologist shall conduct pre-construction WEAP training for all personnel working at the construction site. The training will include a review of environmental laws, regulations, and resource agency permit requirements that must be followed. Additional topics that will be covered include special-status species and protection measures, site contamination prevention, spill prevention, emergency response, best management practices (BMPs), and appropriate work practices. The WEAP training will be provided to all workers prior to construction and updated trainings will be provided as applicable. A list of employees who attend the training sessions will be maintained by DWR.

Mitigation Measure BIO-3: Invasive Plant Species Control Measures. Construction activities shall be conducted in a manner that prevents the introduction, transfer, and spread of invasive species, including plants, animals, and microbes (e.g., algae, fungi, parasites, bacteria), from one work area to another. Prevention best practices and guidelines for controlling the spread of invasive plants can be found on the California Invasive Plant Council's website. DWR shall require construction contractors to ensure that equipment is free of invasive plant seeds, propagules, and any other material which may contain them (e.g., soil). For purposes of this mitigation measure, invasive plant species shall include all species with a Cal-IPC rating of moderate or high. Prior to entering the work areas, equipment shall be inspected to confirm it is free of mud, dirt, and debris. For larger work areas that would be accessed via non-paved roads, tire track stations shall be installed at the work area entrances and exits, where appropriate. Staging areas and access routes shall avoid weed infestations, and infestations within the work area(s) shall be flagged and avoided to the maximum extent feasible. Only certified weed-free materials (e.g., fiber rolls and straw) shall be used during construction.

Mitigation Measure BIO-4: General Construction Best Management Practices. DWR shall require construction contractors to adhere to the following general construction best management practices during construction of the proposed project:

- *Speed Limits.* Vehicles travelling within the project site will not exceed a speed limit of 35 miles per hour on primary or paved roads, except on county roads and highways, and 20 miles per hour on gravel or unpaved roads. Emergency vehicles are exempt from these restrictions in emergency situations.
- *Vehicle Parking, Equipment Staging, and Stockpile.* Vehicle parking, equipment staging, and stockpiling will be limited to established roads, paved areas, and previously disturbed areas to the extent practicable. BMPs, such as silt fences, erosion control mats, and biodegradable weed-and-rice-free wattles, will be implemented around staging and stockpile locations to reduce runoff into waterways and suitable habitat for special-status species.
- *Off-Road Vehicles.* Off-road-vehicle travel may be necessary to access infrastructure in limited areas of the project site. Off-road-vehicle travel will be limited to the extent practicable. If necessary, vehicles will be inspected and dirt/mud will be cleaned prior to

driving into off-road work locations to prevent the spread of noxious weeds. In addition, any vehicles traveling off-road will avoid wetlands and waterways.

- *Erosion Control.* The project will be conducted in a manner to stabilize soils and minimize erosion to the greatest extent possible. Upland soils exposed by the project will be seeded and stabilized using erosion control fabric or hydroseeding. Erosion control measures and BMPs, such as silt fences, natural fiber mats, geotextile fabrics, jute, and biodegradable weed-and-rice-free wattles, will be implemented to reduce runoff from work areas into waterways and suitable habitats. No plastics or other non-porous material will be used for erosion control. If used, silt fencing will be removed upon completion of work activities. Non-entangling erosion control materials (e.g., fiber netting with mesh size less than 0.25 inches [0.64 centimeters] or similar, no monofilament) will be used when required.
- *Firearms and Dogs.* All dogs, pets, firearms, open fires, and hunting will be prohibited at the project site, except for those firearms or dogs held by/associated with authorized security personnel or law enforcement officials.
- *Trash Abatement.* All food items, trash, and debris will be secured in animal-proof containers and removed on a regular basis to avoid attracting opportunistic predators, such as ravens, coyotes, and feral dogs. Plastic water bottles and plastic bags will be picked up and removed daily.
- *Vehicle and Equipment Maintenance.* Vehicles and equipment will be kept clean to prevent excessive build-up of oil and grease and regularly inspected for leaks. Fueling, cleaning, and maintenance of vehicles and equipment will occur in designated upland locations and not within wetlands, streams, or waterways, or within any areas where an accidental discharge to these features may occur. Materials and heavy equipment will be stored outside of the active flow of creeks and other waterways.
- *Storage and Hazardous Materials.* Hazardous and toxic materials will be stored at designated upland locations and in watertight containers to prevent contamination of waterways and suitable habitat. All equipment will be properly maintained and cleaned to prevent spills and leaks. If any spills or leaks of petroleum or other toxic materials are detected, work in the immediate area will stop, the issue will be reported, and the area will be cleaned up in accordance with applicable local, state, and federal regulations. For small spills on impervious surfaces, absorbent materials will be used to remove the spill instead of washing it down with water. Absorbent materials will be collected and disposed of properly. For small spills on previous surfaces, such as soil, the area will be excavated and the materials properly disposed of rather than burying the contaminated area. Significant spills, including oil, will be reported immediately to 911, local emergency response teams, and the Governor's Office of Emergency Services Warning Center at (800) 852-7550.
- *Minimizing Work Area Footprint and Duration.* The project site footprints and the duration of the project will be minimized to the extent feasible to reduce the potential for take of special-status species.

- *Temporary Ground Disturbance.* All temporary ground disturbance areas will be stabilized and allowed to naturally return to pre-activity conditions within 12 months of the disturbance. Erosion control measures (e.g., mulching, seeding, biodegradable weed-and-rice-free waddles) will be used in all disturbance areas where sedimentation has potential to enter waterways and suitable habitats.
- *Equipment Clearance Survey.* All pipes, culverts, equipment, and similar structures that are stored at a work area for one or more overnight periods will be inspected for special-status species before the pipe, culvert, equipment, or structure is subsequently buried, capped, or otherwise used or moved.
- *Excavations Inspections.* All pipes, culverts, open holes, sumps, trenches, and similar structures within each work area will be inspected at the beginning of each day to ensure wildlife are not trapped. All excavations with sidewalls steeper than a 1:1 slope will be covered when workers or equipment are not actively working in the excavation, or will have an escape ramp of earth or a non-slip material with a 1:3 slope. In addition, all installed fence posts will be capped to ensure birds do not enter and get trapped within posts.
- *Dust Control.* To reduce fugitive dust resulting from Covered Activities, DWR will employ dust control measures in accordance with applicable air pollution control districts that limit the amount of fugitive dust generated during work activities. Water will be added to the surface to soften the soil and control dust, where needed.
- *Work Area Delineation.* The perimeter of work areas will be clearly delineated on work area maps, flagged, and/or fenced, as appropriate, to ensure work activities avoid adjacent riparian habitats, waterways, and suitable habitat outside of the work area. In situations where work activities are limited to developed, disturbed, or otherwise unsuitable habitat, flagging and fencing may not be necessary. However, in situations where work activities will occur in close proximity to waterways or suitable habitat, DWR will implement appropriate measures to ensure the avoidance and minimization of impacts to those resources and special-status species, such as on-site biological monitoring of activities or placement of exclusion fencing after biological clearance surveys.
- *Wildlife Protection.* Any wildlife encountered during the project will be allowed to leave the area on their own without harm or will be moved out of harm's way by an approved biologist or as specified in the species-specific mitigation measures.
- *Work Hours.* Access to the construction areas shall be limited to established work hours.
- *Nighttime Work Requirements.* Construction activities shall not be conducted at night (i.e., between dusk and dawn) within 500 feet of sensitive biological resources or wildlife corridors. Any nighttime lighting needed (e.g., security lighting) shall be shielded and directed downwards to minimize light spillover or glare.
- *Noise.* Construction contractors shall equip construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards to reduce construction equipment noise to the maximum extent possible. The construction

contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive biological resources, and stage equipment in areas that will create the greatest distance between construction-related noise sources and sensitive biological resources.

- *Species Injury/Mortality Reporting.* Any worker who inadvertently injures or kills a special-status species or finds one dead, injured, or entrapped shall immediately report the incident to the construction supervisor. The construction supervisor shall immediately notify DWR personnel or the DWR inspector, who then shall immediately inform CDFW.

Mitigation Measure BIO-5: Revegetation Plan. For temporary impacts on natural communities, a Revegetation Plan shall be prepared by a qualified biologist(s) prior to starting construction and shall be implemented by DWR following completion of construction. The Revegetation Plan shall guide and ensure successful restoration to pre-project conditions and shall include, at a minimum, the following:

- A native planting palette appropriate for each vegetation type being restored and appropriate to local conditions.

Mitigation Measure BIO-6: Burrowing Owl.

- *Pre-Activity Survey.* To avoid project-related impacts to burrowing owls potentially occurring on or in the vicinity of the project site, a pre-construction presence/absence survey for burrowing owls shall be conducted by a qualified biologist within suitable burrowing owl habitat in accordance with current CDFW guidelines (e.g., the 2012 CDFG Staff Report on Burrowing Owl Mitigation). The survey shall be conducted within 30 days prior to the commencement of any ground disturbing activities, including vegetation clearing, grubbing, or grading. The survey shall identify occupied breeding and non-breeding burrowing owl burrows within 500 feet (152 meters) of project activities. In addition, a final pre-construction survey to avoid active burrowing owl individuals and burrows shall be conducted within three (3) days prior to the initiation of project activities, with the findings immediately reported to CDFW. Additionally, if ground-disturbing activities have previously occurred, but the site is left undisturbed for more than 30 days, a new pre-construction survey shall be conducted to minimize the possibility of burrowing owls having colonized the site since it was last disturbed. If burrowing owls are not present during the survey(s), site preparation and construction activities may begin. A final report shall be prepared by a qualified biologist and submitted to CDFW within 30 days of completion of the survey documenting the results of the burrowing owl surveys and detailing avoidance, minimization, and mitigation measures.
- *Avoidance.* If burrowing owl is present within the 500-foot survey area, then avoidance shall be implemented to avoid impacts to burrowing owl individuals and active burrows. Avoidance of burrowing owls can be achieved through the implementation of the

following measures, consistent with the CDFW Staff Report on Burrowing Owl Mitigation (2012), most recent guidelines, or consultation with CDFW:

- A qualified biologist establishing a no-disturbance buffer (i.e., a minimum 165-foot no-disturbance buffer for low level disturbance activities during the non-breeding season [September 1 through January 31] and a minimum 500-foot no-disturbance buffer for low level disturbance activities during the breeding season [February 1 through August 31]) based on the project activities.
- Regular monitoring of the active burrow by a qualified biologist with the authority to adjust the buffer size if the burrowing owl exhibits signs of disturbance (i.e., agitation or stress behavior).
- Buffer distances may be reduced in specific locations where avoidance measures (such as noise attenuation buffers, visual screens, or speed-limit reductions) are placed between the occupied burrow and construction activities in coordination with CDFW.
- Construction avoidance will occur within the no-disturbance buffer until a qualified biologist determines the burrowing owl is no longer present or until a CDFW-approved Burrowing Owl Plan has been implemented.
- If active burrowing owl nests are identified during the pre-construction survey, project activities must not commence within 500 feet of the active nest until no sign is present that the burrows are being used by adult or juvenile owls or following CDFW approval of a Burrowing Owl Plan as described below.
- If owl presence is difficult to determine, a qualified biologist shall monitor the burrows with motion-activated trail cameras for at least 24 hours to evaluate burrow occupancy.

- *Burrowing Owl Plan.* Prior to construction, if impacts to burrowing owl individuals or active burrows cannot be avoided, the qualified biologist and DWR shall coordinate with CDFW to develop a Burrowing Owl Plan to be approved by CDFW prior to commencement of project activities in the buffer zone. The Burrowing Owl Plan shall describe proposed avoidance, relocation, monitoring, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the number and location of occupied burrow sites and details on proposed buffers if avoiding the burrowing owls or information on the adjacent or nearby suitable habitat available to owls for relocation. DWR shall implement the Burrowing Owl Plan following CDFW review and approval.

  If burrowing owls are observed within the project site during project implementation and construction, CDFW shall be notified immediately in writing within 48 hours of detection. If avoidance is not feasible, a Burrowing Owl Plan shall be submitted to CDFW for review and approval within two weeks of detection and project activity shall be halted within a minimum of 165-feet for low level disturbance activities during the non-breeding season [September 1 through January 31] or a minimum 500-feet for low level disturbance activities during the breeding season [February 1 through August 31] of the burrowing

owls without CDFW approval. DWR shall be responsible for implementing appropriate avoidance, minimization, and mitigation measures, including burrow avoidance, passive relocation, or other appropriate mitigation measures (i.e., noise attenuation, speed restrictions, biological monitoring, etc.) as identified in the Burrowing Owl Plan.

If impacts cannot be feasibly avoided and construction could result in potential direct or indirect impacts to burrowing owl and/or occupied habitats, DWR shall consult with CDFW to ensure compliance with the California Endangered Species Act (CESA), which may include obtaining a "take" permit (e.g., CESA Section 2081 Incidental Take Permit) and mitigation for impacts to habitat (i.e., on-site restoration of temporarily impacted areas, on-site or off-site habitat preservation/restoration for permanently impacted areas, or purchase of credits from an approved bank).

Mitigation Measure BIO-7: Impacts on Federally and State-Listed Species Habitat. If direct impacts on federally or State-listed species habitat would be affected by the project, a compensatory mitigation plan shall be developed and implemented in coordination with USFWS and CDFW, as appropriate. Unavoidable effects would be compensated through a combination of creation, preservation, and restoration of habitat or purchase of credits at an approved mitigation bank at a minimum 1:1 ratio or equivalent. Temporary impacts shall be returned to similar conditions to those that existed prior to project-related activities (consistent with **Mitigation Measure BIO-5, Revegetation Plan**).

Mitigation Measure BIO-8: Swainson's Hawk.

- *Pre-Activity Survey.* A qualified biologist will conduct a pre-activity survey for Swainson's hawk when project activities will occur within suitable habitat. The survey will determine if existing or potential nesting sites are present within 0.25 mile (0.4 kilometer) of work areas.
- *Pre-Activity Nesting Survey.* If suitable potential nesting sites are located within 0.25 mile (0.4 kilometer) of project activities, a qualified biologist will conduct a pre-activity nesting bird survey if work occurs during the nesting season (February 15 through August 31) prior to any work, site preparation, mowing, vegetation removal, and/or staging activities. Surveys will be conducted no more than 7 days prior to the initiation of project activities.
- *Active Nest Avoidance.* If active nests are identified within 0.25 mile (0.4 kilometer) of any project activities, a 0.25 mile (0.4 kilometer) temporary no-work buffer will be established around the active nest until the nest is vacated, young have fledged, and there is no evidence of a second nesting attempt. An approved biologist may temporarily reduce the no-work buffer distance if it can be determined that project activities will not negatively affect nesting behavior and a biological monitor is present. A qualified biologist will monitor the status of the nest throughout the season to determine when young have fledged or the nest is no longer active. If the biologist does not find any nests but suitable habitat would be removed, the biologist will conduct a final survey of such habitat and areas within 100 feet (30.5 meters) of the habitat within 48 hours of the activity to confirm the absence of nests.

- *Monitoring.* If project activities must occur within 0.25 mile (0.4 kilometer) of an identified active Swainson's hawk nest, a qualified biologist must be on site daily to monitor the nests for signs of agitated behavior. The biological monitor will hold stop-work authority.

Mitigation Measure BIO-9: Tricolored Blackbird.

- *Pre-Activity Survey.* A qualified biologist will conduct a pre-activity survey for tricolored blackbirds when activities will occur within suitable habitat. The survey will determine if existing or potential nesting sites are present within 250 feet (76 meters) of the work area.
- *Pre-Activity Nesting Survey.* If suitable potential nesting sites are located within 250 feet (76 meters), a qualified biologist will conduct a pre-activity nesting bird survey if work occurs during the nesting season (February 15 through August 31) prior to any work, site preparation, mowing, vegetation removal, and/or staging activities. Surveys will be conducted no more than 7 days prior to the initiation of project activities.
- *Active Nest Avoidance and Monitoring.* If active nests are identified within 250 feet (76 meters) of any project activities, a 250-foot (76-meter) temporary no-work buffer will be established around the active nest until the young have fledged. A qualified biologist may reduce the no-work buffer distance if it can be determined that project activities will not negatively affect nesting behavior and a biological monitor is present to monitor nesting behavior during project activities. No work buffers will remain established until the nest is vacated, juveniles have fledged, and there is no evidence of a second nesting attempt.

Mitigation Measure BIO-10: Nesting Birds. To avoid and minimize impacts to nesting birds, a qualified biologist will conduct pre-activity surveys for nesting birds no more than 7 days prior to any vegetation removal (i.e., upland vegetation management, grading and scraping for new road work, grubbing and removal of ground vegetation, removal of trees or shrubs) that begins from February 15 to August 31, and as early as January 15 for raptors. A resurvey will be needed if there is a 7-day or more lapse in work activities during this period. Surveys will cover the work area footprint and suitable habitat within 100 feet (30.5 meters) for all birds, 250 feet (76 meters) for raptors and tricolored blackbirds, and 0.25 mile (0.4 kilometer) for Swainson's hawks. If nests are located during pre-activity surveys, impacts will be minimized by establishing an appropriate non-disturbance buffer zone around active nests or vegetation patches supporting nesting birds. The size of the buffer will be determined by the biologist based on the species' sensitivity to disturbance, time of year, and planned work activities in the area. A biologist will monitor the behavior of the nesting birds to verify that they are not displaying evidence of disturbance from the project. The buffer will remain in effect and monitored until the nest is no longer active. Buffers for Swainson's hawk nests will be based on the guidance in the Swainson's Hawk Technical Advisory Committee's Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley, published in 2000 or more recent version.

Mitigation Measure BIO-11: Special-Status Bats. Prior to commencement of construction activities, within or outside of the maternity roosting season, a qualified biologist shall conduct a pre-construction clearance survey throughout the project site in areas that have the potential to provide suitable bat roosting habitat to determine if any special-status bat species are roosting on-site. If bats are determined to be using trees specifically for roosting, the biologist will determine whether a day roost (non-breeding) or maternity roost (lactating females and dependent young) is present.

- If a day roost is determined to be present, the biologist shall ensure that direct mortality to roosting individuals will not occur. In general, disturbances to day roosts as a result of noise or other indirect impact is not generally considered significant, as it would not cause direct mortality of individuals and would not be expected to reduce populations to below self-sustaining levels. If removal of any trees supporting a day roost would occur, the biologist shall ensure that all roosting individuals disperse from the location prior to removal of the vegetation to prevent direct mortality.
- If a maternity roost is observed, the biologist will determine whether construction activities are likely to disturb breeding activities. If it is determined that the vegetation supporting the roost must be removed or activities are expected to disturb the breeding activities, a Bat Exclusion Plan shall be prepared in consultation with CDFW. At a minimum, the plan shall include avoidance and minimization measures to reduce potential impacts on breeding bats during construction activities and prescribed methods to safely and humanely evict bats from the roost to minimize any potential impacts.
    - Exclusion devices may be installed to discourage bats from occupying the work areas outside of the maternity season in consultation with CDFW. Netting shall not be used as an exclusion material. If a roost is determined by a qualified biologist(s) to be used by a large number of bats (large hibernaculum), bat boxes shall be installed near the work areas prior to installing exclusion devices. The number of bat boxes installed will depend on the size of the hibernaculum and shall be determined through consultations with the CDFW. If a maternity colony has become established, all construction activities shall be postponed within a 500-foot buffer around the maternity colony until it is determined by a qualified biologist(s) that the young have dispersed. Once it has been determined that the roost is clear of bats, the roost shall be removed immediately.
    - Any exclusion devices shall be designed to avoid entrapment of birds or bats and allow exit from, but not entry to, the exclusion area. Exclusion devices shall be installed between September 30 and February 1 and removed at the end of construction. A qualified bat biologist(s) shall be present upon exclusion installation and repair to survey for and ensure that birds and bats are not trapped behind exclusion devices.
    - Exclusion monitoring shall occur daily by a qualified biologist(s) to determine effectiveness of devices. Any exclusion repair must be completed within three days

of observation under supervision of a qualified biologist(s) to ensure that bat entrapment does not occur.

Mitigation Measure BIO-12: Crotch's Bumble Bee.

- *Pre-Activity Survey.* A pre-activity survey for Crotch's bumble bee will occur prior to initiation of ground-disturbing activities in suitable habitat. The pre-activity survey will include a habitat assessment that evaluates historical and current species occurrences and documents potential nesting habitat in the work area.
- *Seasonal Work Window and Avoidance.* Ground-disturbing activities will occur November 1 to January 31, outside of the nesting season within suitable habitat, or pre-activity nest surveys will be conducted and, if applicable, nest avoidance will be implemented.
- *Pre-Activity Nest Survey.* If ground-disturbing activities will occur during the nesting season (February 1 through October 31), a pre-activity nest survey will be conducted within 30 days of initiation of activities to evaluate whether an active nest is present within work areas. Bee identification will be documented using photos of bees on vegetation taken from multiple angles. Only approved biologists are allowed to handle, capture, or net bees if needed for identification, as described in the California Department of Fish and Wildlife's 2023 Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species, or most recent version.
- *Nest Avoidance.* If an active Crotch's bumble bee nest is detected within a work area, an avoidance buffer of 100 feet (30.5 meters) will be established. The buffer may be reduced if determined by a qualified biologist that, based on bee behavior, a reduced buffer will not affect nesting individuals. Ground-disturbing activities will avoid active nest resources during the Crotch's bumble bee nesting period (February 1 through October 31), to the maximum extent feasible, or until the nest is determined to no longer be active by a qualified biologist. If impacts cannot be feasibly avoided and construction could result in potential direct or indirect impacts to Crotch's bumble bee and/or occupied habitats, DWR shall consult with CDFW to ensure compliance with the California Endangered Species Act, which may include obtaining a "take" permit (e.g., CESA Section 2081 Incidental take Permit from CDFW) and mitigation for permanent impacts to habitat.

Mitigation Measure BIO-13: Aquatic Resources. To avoid indirect impacts on potentially jurisdictional features, best management practices, such as the use of silt fences, fiber rolls, and/or gravel bags, shall be implemented. No equipment maintenance or fueling shall be performed within or near the drainage channels where petroleum products or other pollutants from the equipment may enter this area.

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3.2.5 Cultural Resources

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
V. CULTURAL RESOURCES—Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☐	☒	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

This section relies on the information and findings presented in the cultural resources technical report prepared for the proposed project:

California Aqueduct Subsidence Program (CASP) Pools 17–18 Liner Raise Project, San Luis Field Division, Fresno County, California: Cultural Resources Inventory Report (Hoffman et al. 2025).

The technical report included an overview of the environmental, ethnographic, and historic background of the proposed project site, with an emphasis on aspects related to human occupation. More detailed information regarding the results of the cultural resources study can be found in the technical report (Confidential **Appendix C**).

Environmental Setting

California Historical Resources Information System Records Search

A records search covering the proposed project site and areas within 0.25-mile was conducted on May 1, 2024, by staff at California Historical Resources Information System's (CHRIS's) Southern San Joaquin Valley Information Center (SSJVIC), housed at California State University, Bakersfield. The SSJVIC records search included a review of all recorded cultural resources and previous studies.

The SSJVIC records search indicates that six cultural resources, all historic-era built environment resources, have been previously recorded within the proposed project site. One of these, P-10-006207/P-15-015820/P-16-000266 (California Aqueduct [Aqueduct]), runs the length of the entire proposed project site. The others consist of four bridges (P-10-006209, P-10-006246, P-10-007343, P-10-007349) and one road (P-10-006345). No previously recorded cultural resources are present outside but within 0.25-mile of the proposed project site. The SSJVIC has record of two previous cultural resources studies that have been conducted in or within 0.25 mile of the proposed project site. Cumulatively, these reports covered approximately 99 percent of the proposed project site.

Archaeological Sensitivity Analysis

While geoarchaeological modeling indicates that the portion of the proposed project site from MP 133.5 to 134.5 has moderate sensitivity for buried pre-contact resources, previous disturbances associated with construction of the Aqueduct have likely removed any intact land surfaces within the proposed project site that had the potential to contain archaeological deposits. The proposed project would consist of excavation within the Aqueduct embankments (engineered fill sediment) and a vacant field (southernmost borrow area); the borrow areas all consist of stockpiled sediment previously excavated as part of the original Aqueduct construction with heights of 20 feet above the original ground surface and the proposed project would only excavate to a maximum of 20 feet below the top of these stockpiles, thus not disturbing any non-stockpiled sediment. These areas have low archaeological sensitivity, further limiting the potential for project implementation to affect any archaeological resources. Therefore, the overall potential for the proposed project to encounter intact significant pre-contact archaeological resources is considered low. Also, the proposed project site's sensitivity for historic-era archaeological resources is low, as any historic-era archaeological resources in the proposed project site would likely be associated with the Aqueduct and would probably not qualify as contributors to the Aqueduct, as existing engineering plans would likely provide any information potential on the resources.

Ethnographic Literature Research

There are no clearly documented ethnographic village sites in the vicinity of the proposed project site. The nearest such village sites are the *Pitkachi* (Northern Valley Yokut) village *Gewachiu*, approximately 18 miles north-northeast of the proposed project site along the south side of the San Joaquin River, and the *Apiachi* (Southern Valley Yokut) village *Wohui*, approximately 20 miles east of the proposed project site along the north side of Murphy Slough (Kroeber 1976 [1925]; Wallace 1978).

Native American Correspondence

The California Native American Heritage Commission (NAHC) maintains a confidential Sacred Lands File (SLF), which contains sites of traditional, cultural, or religious value to the Native American community. The NAHC was contacted on July 19, 2024, to request a search of the SLF for the proposed project site and vicinity. The NAHC replied on July 23, 2024, stating that the SLF has no record of any resources in or near the proposed project site. The response also provided contact information for 14 individuals representing seven California Native American Tribes (Tribes) that may be traditionally and culturally affiliated with the proposed project site.

In support of required Native American consultation for the proposed project pursuant to Public Resources Code Section 21080.3.1, as well as in accordance with the California Natural Resources Agency's *Final Tribal Consultation Policy* and DWR's *Tribal Engagement Policy*, on October 10, 2024, DWR sent a letter via certified mail to the Santa Rosa Rancheria Tachi Yokut Tribe providing information on the proposed project and requesting that the Tribe notify DWR if they would like to consult pursuant to Public Resources Code Section 21080.3.1. On October 11, 2024, DWR sent an email with attachments to the Santa Rosa Rancheria Tachi Yokut Tribe with the same project-related information and request as the letter. DWR sent a follow-up email to the Tribe regarding the proposed project on November 13, 2024, and left a voicemail message on May 5, 2025. To date, the Santa Rosa Rancheria Tachi Yokut Tribe has not provided any response to this outreach.

In accordance with the California Natural Resources Agency's *Final Tribal Consultation Policy* and DWR's *Tribal Engagement Policy*, on October 10, 2024, DWR sent letters via certified mail to the other Tribes identified by the NAHC besides the Santa Rosa Rancheria Tachi Yokut Tribe:

- Amah Mutsun Tribal Band.
- Big Sandy Rancheria of Western Mono Indians.
- Cold Springs Rancheria of Mono Indians.
- Dumna Wo-Wah Tribal Government.
- Dunlap Band of Mono Indians.
- Kitanemuk & Yowlumne Tejon Indians.
- Northern Valley Yokut/Ohlone Tribe.
- Salinan Tribe of Monterey, San Luis Obispo Counties.
- Sierra Foothill Wuksachi Yokuts Tribe.
- Table Mountain Rancheria.
- Traditional Choinumni Tribe.
- Tule River Indian Tribe.
- Wuksachi Indian Tribe/Eshom Valley Band.
- Xolon-Salinan Tribe.

The letters provided information on the proposed project and requested that the recipients provide information on cultural resources that may be impacted by the proposed project, if they would like to do so. On October 11, 2024, DWR sent emails with attachments to these same Tribes with the same project-related information and request as the letters. On October 16, 2024, the Chairperson of the Traditional Choinumni Tribe contacted DWR by telephone stating that his Tribe did not wish to consult on the proposed project. Upon receipt of updated contact information, on November 6, 2024, DWR sent a follow-up letter, via certified mail, to the Tule River Indian Tribe. DWR sent a follow-up email with attachments to the Amah Mutsun Tribal Band on November 13, 2024, receiving a reply, via email, on November 15, 2024, stating that the Tribe did not wish to consult on the proposed project. To date, no other communications with Tribes regarding the proposed project have occurred. Documentation of the project correspondence with Tribes to date is included in **Appendix D**.

Field Survey

In June 2024, ESA conducted a cultural resources field survey of the entire proposed project site. The surveys consisted of an intensive-level archaeological pedestrian survey and a reconnaissance-level historic-era built environment survey. For the archaeological pedestrian survey, flat areas with visible ground surface were subject to a systematic intensive pedestrian survey with transects spaced at intervals no more than 15 meters apart. Areas with limited ground visibility, such as densely vegetated or inundated areas, were subject to an opportunistic survey, wherein areas with some ground visibility were targeted. Paved areas, such as Aqueduct access roads, were not surveyed. Berms were visually inspected during the survey. Pre-contact resources were documented in metric units while historic-era resources were documented in imperial units, per industry conventions. Pre-contact archaeological sites were defined as three or more artifacts within a 30-by-30-meter area, or the presence of at least one feature. Historic-era archaeological sites were defined as three or more artifacts with at least one diagnostic item more than 45 years in age within an approximately 100-by-100-foot area. Pre-contact archaeological isolates were defined as fewer than three artifacts within a 30-by-30-meter area and would be recorded. Historic-era archaeological isolates consisting of fewer than three artifacts, unless considered exceptional, and non-diagnostic historic-era artifacts, would not be recorded. The historic-era built environment survey consisted of inspecting any historic-era built environment resources 45 years or older in the proposed project site identified through archival research, engineering plans, and historic and modern maps and aerial photographs. In addition, contextual photos were taken at MP markers to document the present condition of the Aqueduct (P-10-006207/P-15-015820/P-16-000266).

No archaeological resources were identified in the proposed project site during the survey. During the archaeological survey, ground visibility for the majority of the proposed project site was good, ranging from 70 to 100 percent, though portions of the embankments and borrow areas presented poor ground visibility, ranging from 0 to 25 percent. Six historic-era built environment resources, all previously recorded, were identified in the proposed project site during the survey. One of these, P-10-006207/P-15-015820/P-16-000266 (Aqueduct), runs the extent of the proposed project site. The other resources consist of four bridges (P-10-006209, P-10-006246, P-10-007343, P-10-007349), and one road segment (P-10-006345).

Summary of Cultural Resources Identified

As a result of background research and previous survey efforts, six cultural resources, all of which were historic-era built environment resources, were identified in the proposed project site: the Aqueduct (P-10-006207/P-15-015820/P-16-000266), four bridges (P-10-006209, P-10-006246, P-10-007343, P-10-007349), and one road segment (P-10-006345). During the field survey conducted for the proposed project, all six of these historic-era built environment resources were observed within the proposed project site. No archaeological resources or previously unrecorded built environment resources were identified as a result of this study.

P-10-006207/P-15-015820/P-16-000266 (Aqueduct) is listed in the California Register of Historical Resources (California Register) under Criteria 1 and 3. P-10-006209 (Clarkson Avenue Bridge) and P-10-006246 (Mount Whitney Avenue Bridge) are listed in the California Register under Criteria 1 and 3 as contributors to the Aqueduct. P-10-007343 (Cerini Avenue Bridge) and P-10-007349 (San Mateo Avenue Bridge) were both previously evaluated and recommended as California Register-eligible under Criteria 1 and 3 as contributors to the Aqueduct (Ehringer et al. 2023). P-10-006345 (West Clarkson Avenue) was previously evaluated and recommended not eligible for the California Register (Anderson 2013).

DWR agrees with the previous determinations of eligibility and recommendations of eligibility, concluding that five of the cultural resources identified in the proposed project site (P-10-006207/P-15-015820/P-16-000266, P-10-006209, P-10-006246, P-10-007343, P-10-007349) qualify as historical resources for CEQA purposes, and that one (P-10-006345) does not qualify as an historical resource for CEQA purposes.

Discussion

The following analysis describes archaeological resources, both as historical resources (according to CEQA Guidelines Section 15064.5) and as unique archaeological resources (as defined in Public Resources Code Section 21083.2[g]) under Issue V.b.

Issue V.a

Under CEQA, a significant impact could occur if the proposed project results in a substantial adverse change in the significance of an historical resource, as defined in CEQA Guidelines Section 15064.5, or a unique archaeological resource, as defined in Public Resources Code Section 21083.2.
A “substantial adverse change in the significance” of an historical resource means “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of [the] historical resource would be materially impaired” (CEQA Guidelines Section 15064.5[b][1]). An historical resource or unique archaeological resource is materially impaired through the demolition or alteration of the resource’s physical characteristics that convey its historical significance and that justify its inclusion in (or eligibility for inclusion in) the California Register or a qualified local register (CEQA Guidelines Section 15064.5[b][2]). Therefore, material impairment of historical resources and unique archaeological resources constitutes a significant impact.

The proposed project would not alter the Aqueduct's alignment, nor its open trapezoidal design, which facilitates the conveyance of higher volumes of water. Upon project completion, the modifications to backfill the embankment in preparation for new concrete liners would further reinforce the Aqueduct's open trapezoidal design and would not involve its demolition or removal. The concrete lining is a character-defining feature of the Aqueduct, and the proposed project does not propose removing the existing concrete liners, nor does the project propose to damage or destroy any parts of the Aqueduct. Instead, new material would be added above the existing liners, and this new material would match the original liner portions in design, unreinforced concrete material, texture, thickness, height, and color.

The proposed project has the potential to cause alterations to the Aqueduct that are not consistent with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* (SOI Standards) (Code of Federal Regulations Title 36 Part 68) due to modifications to the Aqueduct's character-defining features, including limited excavation and backfill at existing concrete liners, and the introduction of new concrete liner panels atop existing concrete liner panels. The SOI Standards Rehabilitation treatment allows for alterations and construction of new additions, if necessary, for the continuation or new use of a built environment resource. This treatment allows for greater flexibility to ensure the continued use of an historical resource. Under CEQA, a project that may impact an historical resource but that follows the SOI Standards is considered to have a less-than-significant impact on the historical resource. Due to damage of ongoing subsidence on the existing concrete panels, the proposed alterations to the Aqueduct are necessary for the continued function of the resource. The proposed new panels would match the original design, size, scale, massing, and materials of the original panels.

The proposed project would allow for the continuous use of the Aqueduct by maintaining functionality in Pools 17 and 18, which would maintain operational flexibility and result in improvements to safety and reliability. While there would be limited changes to select contributing features of the resource, these modifications would not alter the resource's use as an aqueduct, alignment, location, setting, or association with the SWP, which are the character-defining features of the Aqueduct under California Register Criterion 1. Under California Register Criterion 3, the alterations proposed by the proposed project would maintain the Aqueduct's functionality. The access roads along the embankment that are currently used by maintenance and service vehicles would be used for the movement of heavy equipment during construction of the proposed project and would not be altered or destroyed as a part of the proposed project; the access roads would continue to operate for their intended purpose during and after project completion. Additionally, even with implementation of the proposed project, the Aqueduct would continue to exhibit most construction methods, materials, and engineering details associated with its period of significance.

The Aqueduct would not be removed from its historic location. There would be no introduction of visual, atmospheric, or audible elements that diminish the integrity of the resource. The proposed project would not result in the neglect of the Aqueduct, nor would the proposed project result in the transfer, lease, or sale of the Aqueduct. The proposed project would not remove or otherwise alter any of the other character-defining features or contributing elements of the Aqueduct, including the planned and engineered route or ancillary infrastructure. Any alterations to the immediate

surroundings of the Aqueduct resulting from the proposed project would be temporary, or short-term, since the proposed project does not include the construction of any new structures, facilities, or infrastructure.

Therefore, the proposed project would not materially impair the Aqueduct (P-10-006207/P-15-015820/P-16-000266) such that it would no longer convey its historical significance for its eligibility for inclusion in the California Register. Upon project completion, the Aqueduct (P-10-006207/P-15-015820/P-16-000266) would still retain its integrity.

The proposed project would occur adjacent to the bridges along the Aqueduct embankment, but would not modify, destroy, or otherwise alter any bridges, including P-10-006209, P-10-006246, P-10-007343, and P-10-007349. The modifications to prepare the proposed project site for the panel installation and the installation and curing of the panels would not involve work on these bridges as part of the proposed project.

Because no physical alteration of these bridges would occur as a result of the proposed project, the resources' significance would not be materially impaired, and they would continue to be able to convey the significance that justifies their inclusion, or eligibility for inclusion, in the California Register. The proposed project would not result in a change of setting to the bridges due to the minimal visual changes that are proposed (i.e., liner raise of the Aqueduct). There would be no introduction of visual, atmospheric, or audible elements that would diminish the integrity of the resources. Therefore, the proposed project would not materially impair any of the four bridges identified in the proposed project site that qualify as historical resources (P-10-006209, P-10-006246, P-10-007343, P-10-007349) such that they would lose their ability to convey their historical significance for their eligibility for inclusion in the California Register. The proposed project would not affect or otherwise modify any aspect of these bridges.

In summary, for CEQA purposes, the proposed project would result in a **less-than-significant impact** on historical resources.

Issue V.b

Through a records search, background research, field survey, and Native American outreach, no archaeological resources, including any that may qualify as historical resources (as defined in CEQA Guidelines Section 15064.5) or as unique archaeological resources (as defined in Public Resources Code Section 21083.2[g]) were identified in or adjacent to the proposed project site. As such, the proposed project is not anticipated to impact any archaeological resources.

Although there is no substantial evidence that any archaeological resources are present in the proposed project site, the proposed project would involve ground-disturbing activities that may extend into undisturbed soil and it is possible that such activities could unearth, expose, or disturb subsurface archaeological resources that have not been identified on the surface. If such resources were found to qualify as archaeological resources pursuant to CEQA Guidelines Section 15064.5, impacts of the proposed project on archaeological resources could be potentially significant. Such

potentially significant impacts would be reduced to **less than significant with mitigation incorporated** by implementing **Mitigation Measure CUL-1**.

Implementing **Mitigation Measure CUL-1** would reduce impacts to less than significant by ensuring that any unanticipated archaeological discoveries are promptly evaluated and appropriately protected or treated by qualified professionals and Tribes, thereby preventing inadvertent damage to potentially significant cultural resources.

Issue V.c

No human remains have been identified in the proposed project site through archival research, field surveys, or Native American outreach. Also, the land-use designations for the proposed project site do not include cemetery uses. Therefore, the proposed project is not anticipated to disturb any human remains.

However, because the proposed project would involve ground-disturbing activities, it is possible that such actions could unearth, expose, or disturb previously unknown human remains. In the event human remains were discovered during project construction activities, impacts on the human remains resulting from the proposed project would be significant if those remains were disturbed or damaged. Such potentially significant impacts would be reduced to **less than significant with mitigation incorporated** by implementing **Mitigation Measure CUL-2**.

Implementing **Mitigation Measure CUL-2** would reduce impacts to less than significant by halting construction should human remains be discovered and ensuring that any discovered human remains are respectfully evaluated by appropriate authorities, protected and documented.

Mitigation Measures

Mitigation Measure CUL-1: Unanticipated Discovery Protocol for Archaeological Resources. If pre-contact or historic-era archaeological resources are encountered during project implementation, all activity within 100 feet of the find shall cease and a qualified archaeologist—defined as one who meets or is under supervision of one who meets the SOI Historic Preservation Professional Qualification Standards for Archeology (48 Federal Register 44738–44739) and has expertise in California archaeology—shall inspect the find within 24 hours of discovery and notify DWR of their initial assessment. Pre-contact archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (midden) containing heat-affected rocks, artifacts, or shellfish remains; ground-stone tools (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include building or structure footings and walls, and deposits of metal, glass, or ceramic refuse.

If DWR determines, based on recommendations from the qualified archaeologist and Tribes (if the resource is indigenous) that the resource is potentially eligible for the California Register (i.e., qualifies as an historical resource, as defined by CEQA), the resource shall be

avoided, if feasible. This may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If avoidance of the resource is not feasible, DWR shall continue to consult with Tribes (if the resource is indigenous) and other appropriate interested parties to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource. This shall include documentation of the resource and may include data recovery, if deemed appropriate, or other actions such as treating the resource with culturally appropriate dignity and protecting the cultural character and integrity of the resource. Any technical report developed to document the implementation of mitigation shall be submitted to CHRIS upon DWR approval, unless the document contains information that Tribes involved in the development of the mitigation deem should not be filed with CHRIS, in which case, the report shall be submitted to the NAHC.

Mitigation Measure CUL-2: Unanticipated Discovery Protocol for Human Remains. If any suspected human remains are discovered during project construction, all project-related construction activities within 100 feet of the find shall cease and appropriate precautions shall be taken to protect the human remains and any associated funerary objects from further disturbance. All human remains and potential human remains shall be treated with respect and dignity at all times. This includes:

- Avoidance of any unnecessary disturbance and handling of human remains and associated funerary objects;
- Avoidance of separation of human remains from associated funerary objects;
- Avoidance of physical modifications of human remains and associated funerary objects; and
- No photographs of human remains and associated funerary objects shall be taken prior to agreement with consulting parties, except for evidentiary purposes by the U.S. Bureau of Reclamation (Reclamation) cultural resources professionals or law enforcement.

The treatment of Native American human remains and associated and unassociated funerary objects discovered during any ground-disturbing activity shall comply with applicable State laws, including Section 7050.5 of the Health and Safety Code. If human remains are discovered during testing, the archeological consultant shall immediately notify the appropriate County Coroner. In the event of the Coroner's determination that the human remains are Native American remains, the Coroner will notify the California State Native American Heritage Commission (NAHC), which will appoint a Most Likely Descendant (MLD). The MLD shall complete their inspection of the remains and make recommendations or preferences for treatment within 48 hours of being granted access to the site (as specified in Public Resources Code [PRC] section 5097.98[a]).

Requirements for responding to discoveries of Native American human remains and associated funerary objects on federal land are addressed under the Native American

Graves Protection and Repatriation Act of 1990 (NAGPRA) (25 USC Sections 3001–3013) and its implementing regulations (43 CFR Part 10). If human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered on federal or tribal lands, the federal agency must determine and consult with the lineal descendants and culturally affiliated Indian Tribes and carry out appropriate treatment and disposition of the discovered remains, including transfer of custody.

All discovered human remains shall be treated initially as a crime scene with cultural resources professionals and the appropriate law enforcement authorities being brought in to assist in the determination of antiquity and manner of death. Geospatial information about the discovery location shall be taken. If this is not possible, the location shall be marked on a topographic map with a photograph of the area around the discovery (but not of the remains), to help relocate the remains later. Initial discovery information shall be recorded including: the name of the person who discovered the remains, the date of the discovery, how the discovery was made, and any other pertinent information about the circumstances surrounding the discovery.

Upon discovery of any human remains, the location of the find with a 100-foot buffer shall be delineated in which project-related construction shall cease, and the construction foreman and Reclamation shall be informed of the find. Reclamation shall immediately notify the appropriate DWR Project Manager. Reclamation shall forward a brief written report describing the discovery to DWR within 24 hours. The Reclamation Mid-Pacific Regional Archaeologist shall also be notified with a description of the nature and extent of the find.

References

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3.2.6 Energy

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
VI. ENERGY—Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

Environmental Setting

The State of California's Commercial Motor Vehicle Idling Regulation and Off-Road Regulation require that construction sites minimize idling and associated emissions, which also minimizes use of fuel. Specifically, during construction, idling of commercial vehicles and off-road equipment is limited to 5 minutes when not in use to comply with State requirements.

Additionally, DWR has adopted the DWR Climate Action Plan-Phase I: Greenhouse Gas Emissions Reduction Plan (GGERP), which details DWR's efforts to reduce its GHG emissions consistent with Executive Order S-3-05 and the Global Warming Solutions Act of 2006 (Assembly Bill 32) (California Department of Water Resources 2024) (refer to Checklist Section 3.2.8, "Greenhouse Gas Emissions"). Section 12 of the GGERP outlines the steps that each DWR project will take to demonstrate consistency with the GGERP. These steps include (1) analysis of GHG emissions from construction of the proposed project, (2) determination that the construction emissions from the project do not exceed the levels of construction emissions analyzed in the GGERP, (3) incorporation into the design of the project DWR's project-level GHG emissions-reduction strategies, (4) determination that the project does not conflict with DWR's ability to implement any of the "Specific Action" GHG emissions-reduction measures identified in the GGERP, and (5) determination that the project would not add electricity demands to the SWP system that could alter DWR's emissions-reduction trajectory in such a way as to impede its ability to meet its emissions-reduction goals.

Discussion

Issue VI.a

A full list of construction equipment anticipated to be used for the proposed project is included in Table 2-4. There would be a temporary increase in fuel demand (gasoline and diesel) that would

result from the use of construction tools and equipment, truck trips to haul concrete and backfill to and from the site, and vehicle trips generated by construction workers commuting to and from the site. A GGERP Consistency Determination Checklist documenting that the proposed project has met each of the required elements is included in Appendix A. All best management practices (BMPs) required by the GGERP for a project of this nature would be implemented as project design features (see Appendix A).

Project implementation would not include wasteful or unnecessary consumption of energy resources because it would be required to meet air quality and GHG emissions criteria that require the use of efficient equipment. In addition, project construction would be completed within the shortest period feasible, expected to be approximately nine months, depending on hydrologic conditions in the San Joaquin River.

Therefore, impacts associated with construction of the proposed project would be **less than significant**.

Once the project is constructed, existing staff would resume regular maintenance and operation of the Aqueduct in accordance with existing maintenance and water delivery schedules. Thus, operation of the proposed project would not result in the wasteful, inefficient, or unnecessary consumption of energy.

Issue VI.b

The proposed project is designed to maintain functionality in Pools 17 and 18. The proposed project would be consistent with applicable energy efficiency policies and standards. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules; therefore, the project would not result in wasteful, inefficient, or unnecessary consumption of energy. There would be **no impact**.

References

California Department of Water Resources

2024 *Climate Action Plan Phase 1 Greenhouse Gas Emissions Reduction Plan*. Updated 2023. Viewed online at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan/Files/Exhibit-C-CAP-Phase-1-Update-2023.pdf. Accessed: April 9, 2025.

3.2.7 Geology and Soils

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
VII. GEOLOGY AND SOILS—Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

Environmental Setting

The proposed project site is located in the portion of Fresno County that is within the Great Valley geomorphic province of California. The Great Valley is an alluvial plain about 50 miles wide and

400 miles long in the central part of California. Its northern part is the Sacramento Valley, which is drained by the Sacramento River, and its southern part is the San Joaquin Valley, which is drained by the San Joaquin River. The Great Valley is a trough in which sediments have been deposited almost continuously since the Jurassic (about 160 million years ago) (California Geological Survey 2002).

The proposed project site is not located in an Earthquake Zone of Required Investigation (California Geological Survey 2024a). The proposed project site is located approximately 6 miles east of the Great Valley thrust fault system, 30 miles east of the San Andreas Fault, and 30 miles south of the San Joaquin Fault (California Geological Survey 2024b). There are no landslides identified in or near the proposed project site. As discussed in Section 2.1.2, “Need for Project,” the proposed project site is located in an area of known land subsidence (U.S. Geological Survey 2025a and 2025b).

Paleontological resources generally would not be present at or immediately under the Aqueduct because these materials would have been excavated and disturbed during construction of the Aqueduct. Paleontological resources that were present at that time, if any, would likely have been removed or destroyed at that time. In addition, the farming activities that predate the construction of the Aqueduct would typically have destroyed any paleontological resources, if any, within the top 2 to 3 feet under the Aqueduct and in the surrounding farm area. Additionally, the proposed borrow areas consists of soils excavated during construction of the Aqueduct and serves as a spoil stockpile. These stockpiles are approximately 20 feet higher than the original surface elevation. As shown in Figure 2-2, Figure 2-4, Figure 2-5, and Figure 2-6, all of the borrow areas are located adjacent to the Aqueduct. The excavation proposed for the borrow areas may extend to as deep as 20 feet, and therefore, any undisturbed materials present would have been likely excavated or disturbed during construction of the Aqueduct and transport of the spoils to the proposed borrow areas at that time.

Geologic mapping of the proposed project site, including the borrow sites, indicates that the underlying deposits consist of Holocene alluvium (U.S. Geological Survey 1971 and 1993). Holocene time is from the present to 11,700 years ago. The Society of Vertebrate Paleontologists defines sedimentary units older than 5,000 years to have the potential to contain paleontological resources (Society of Vertebrate Paleontologists 2010). A search of paleontological records for the proposed project site indicated that paleontological resources have not been encountered in any of the areas of the proposed project site, including the borrow sites (Natural History Museum of Los Angeles County 2024). However, paleontological resources have been encountered from nearby localities and in the same sedimentary deposits that occur in the proposed project site, either at the surface or at depth. The paleontological resources include barnacles, echinoderms, fish, pack rats, eared seals, oysters, bivalves, gastropods, and other mollusks. The geologic mapping and Natural History Museum of Los Angeles County results were used to assign paleontological sensitivity to the geologic units present in the proposed project site following the guidelines of the Society of Vertebrate Paleontologists (2010). The Quaternary Alluvium is considered to have a low potential at the surface but potential increases with depth.

Discussion

Issue VII.a.i–a.iv

The proposed project site is not located within an earthquake fault zone or a liquefaction- or landslide-prone area; therefore, no substantial impacts would occur as a result of rupture of a known earthquake fault. However, in general, Central California is seismically active, with most locations in proximity to active faults that can produce seismic ground shaking. The SLC would likely be subject to strong seismic ground shaking during a substantial seismic event that could result in the concrete canal liner cracking, which could lead to water supply disruptions. However, the liner raise would occur at the top of the existing concrete liner and would provide more lined freeboard that could offset the risk of overtopping in case of shaking, and the proposed project would not significantly affect water supply. Additionally, while the proposed project could be subject to strong seismic ground shaking, the risk would not be more than existing conditions. Further, the area of the proposed project site is largely uninhabited and rural so any localized flooding as a result of liner cracking from strong ground shaking would not result in a significant risk of loss, injury, or death. Impacts would be **less than significant**.

Issue VII.b

Existing soils along the Aqueduct levees and construction areas can be characterized as highly disturbed, compacted mixtures of sediment derived from on-site and off-site sources. Construction of the proposed project would require ground-disturbing activities such as grading and excavation to install the concrete liner and drainage pipes, which would involve the disturbance and exposure of surface soils. Given that the topography of the proposed project site and surrounding vicinity is relatively flat and soils are compacted, substantial soil erosion and loss of topsoil are not anticipated. Further, contractors would follow standard construction specifications to control the potential for any localized erosion from construction activities. There is potential for stormwater to transport sediment to the Aqueduct during construction. Since this project has more than 5 acres of ground disturbance, contractors would be required to comply with NPDES construction general permit with its required preparation and implementation of a SWPPP to control stormwater runoff through the implementation of erosion control BMPs such as installing a silt fence, creating a sediment/desilting basin, installing sediment traps, using fiber rolls, creating gravel bag berms, and creating sandbag or straw bale barriers (refer to Section 3.2.10, “Hydrology and Water Quality”). Upon completion of construction activities, all construction areas, including access roads, would be regraded to match pre-project conditions. Any remaining stockpiles or materials would be removed from the site. Therefore, impacts associated with erosion of soils would be **less than significant**.

Issue VII.c

The proposed project site is located in an area of known subsidence, which has been occurring at varying rates since before the Aqueduct was constructed. After water deliveries from the Aqueduct began, subsidence rates decreased to an average of less than 0.1 inch per year during the average to wet hydrologic years, but during dry to critical hydrologic years, subsidence increased (California Department of Water Resources 2017). Because the Valley in general, and the area surrounding the

proposed project in particular, are dominated by agricultural practices—one of the primary causes of subsidence—subsidence is expected to continue. The proposed project would not result in an increase in subsidence as it does not involve the injection or extraction of groundwater or oil. DWR and its contractors would be required to adhere to all California Division of Occupational Safety and Health requirements for working within active work sites that would ensure the safety of all workers on site. Therefore, relative to existing conditions, the proposed project would not expose people or structures to new potential substantial adverse effects related to unstable soils. Therefore, there would be **no impact** as a result of project implementation.

Issue VII.d

The proposed liner raises would occur on the waterside of the Aqueduct, within a sloped, human-made embankment system where soils consist of compacted mixtures of disturbed sediment, which is uncharacteristic of expansive soils that shrink and swell based on water content. The proposed project would not involve the construction of any structures that would be occupied during operation. Therefore, there would be **no impact** relative to expansive soils.

Issue VII.e

The proposed project would not include the construction or operation of any septic tanks or alternative water disposal system. Therefore, **no impact** would occur.

Issue VII.f

While there are no known fossil localities in the proposed project site, vertebrate and invertebrate fossils have been previously recorded in the regional area from the same sedimentary deposits that occur in the proposed project site. Many of these were encountered at shallow depths close to the ground surface, which suggests that paleontological resources may be encountered at depth. The Quaternary Alluvium deposits (Qa) within the proposed project site have a low paleontological sensitivity at the surface and shallow depths but the sensitivity increases with depth due to the increasing age of the deposits. Although the proposed project site is underlain by geologic units that could contain paleontological resources, the potential to encounter fossiliferous deposits is considered low given the past disturbances associated with construction of the Aqueduct. **Mitigation Measure GEO-1** would implement procedures to follow in the event of a discovery, and protocols for the inadvertent discovery of paleontological resources.

Implementing **Mitigation Measure GEO-1** would reduce impacts to less than significant by requiring work to stop near any unanticipated paleontological discovery so that a qualified paleontologist can assess its significance. This would allow for appropriate recovery or protection of the resource before construction resumes, avoiding potential damage or loss. Therefore, impacts would be **less than significant with mitigation incorporated**.

Mitigation Measures

Mitigation Measure GEO-1: Unanticipated Discoveries of Paleontological Resources. In the event of the unanticipated discovery of paleontological resources, DWR or its contractor shall immediately cease all work activities in the area (within approximately 100 feet) of the discovery until it can be assessed for significance by the Qualified Paleontologist. The Qualified Paleontologist shall assess the find, implement recovery and reporting measures, if necessary, and determine if paleontological monitoring is warranted once work resumes.

References

California Department of Water Resources

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California Geological Survey

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2023 *Geologic Interpretation Report Pools 17-18 & 20-21 Bridge Crossings Western San Joaquin Valley, California*. Project Geology Report No. 52-00-89.

Natural History Museum of Los Angeles County

2024 Paleontological resources for the California Aqueduct Subsidence Program SLFD Interim Projects Pools 17 & 18/ 20 & 21 (D202101064.03).

Society of Vertebrate Paleontologists

2010 *Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources*.

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2024b Areas of Land Subsidence in California. Viewed online at: https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html Accessed September 12, 2024.

3.2.8 Greenhouse Gas Emissions

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
VIII. GREENHOUSE GAS EMISSIONS—Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Environmental Setting

GHG emissions worldwide cumulatively contribute to the significant adverse environmental impacts of global climate change. No single project could generate sufficient GHG emissions on its own to noticeably change the global average temperature. The combination of GHG emissions from past, present, and future projects in the San Joaquin Valley; the entire State of California; across the nation; and around the world contribute cumulatively to the phenomenon of global climate change and its associated environmental impacts.

Discussion

Issue VIII.a

The SJVAPCD does not recommend quantitative significance thresholds for the analysis of the impact of a project's GHG emissions on the environment. Instead, the SJVAPCD's approach relies on the application of performance-based standards to assess project-specific GHG emissions impacts on global climate change. This is based on the principle that projects whose emissions have been reduced or mitigated consistent with Assembly Bill 32, the California Global Warming Solutions Act of 2006, should be considered to have a less-than-significant impact on global climate change (San Joaquin Valley Air Pollution Control District 2015). SJVAPCD's policy provides for the following tiered approach in assessing significance of project-specific GHG emissions increases:

> *Projects complying with an approved GHG emission reduction plan or GHG mitigation program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less-than-significant individual and cumulative impact for GHG emissions. Projects complying with an approved GHG emission reduction plan or GHG mitigation program would not be required to implement best performance standards (BPS).*

Projects implementing BPS would not require quantification of project-specific GHG emissions and would be determined to have a less-than-significant individual and cumulative impact for GHG emissions.

Projects not implementing BPS would require quantification of project-specific GHG emissions and demonstration that project-specific GHG emissions would be reduced or mitigated by at least 29 percent compared to business as usual (BAU), including GHG emission reductions achieved since the 2002–2004 baseline period, consistent with GHG emission reduction targets established in California Air Resources Board's Assembly Bill 32 Scoping Plan. Projects achieving at least a 29 percent GHG emission reduction compared to BAU would be determined to have a less-than-significant individual and cumulative impact for GHG emissions.

In January 2024, DWR adopted the updated GGERP, which details DWR's efforts to reduce its GHG emissions consistent with Executive Order S-3-05 and Assembly Bill 32 (California Department of Water Resources 2024). DWR also adopted the Initial Study/Negative Declaration prepared for the GGERP in accordance with the CEQA Guidelines review and public process. The GGERP provides estimates of historical (back to 1990), current, and future GHG emissions related to operations, construction, maintenance, and business practices (e.g., building-related energy use). The GGERP specifies aggressive 2020 and 2050 emissions-reduction goals and identifies a list of GHG-emissions-reduction measures to achieve these goals.

DWR specifically prepared its GGERP as a "Plan for the Reduction of Greenhouse Gas Emissions" for purposes of CEQA Guidelines Section 15183.5. That section provides that such a document, which must meet certain specified requirements, "may be used in the cumulative impacts analysis of later projects." Because global climate change, by its very nature, is a global cumulative impact, an individual project's compliance with a qualifying GHG Reduction Plan may suffice to mitigate the project's incremental contribution to that cumulative impact to a level that is not "cumulatively considerable." (See CEQA Guidelines, Section 15064[h][3].)

More specifically, "[l]ater project-specific environmental documents may tier from and/or incorporate by reference" the "programmatic review" conducted for the GHG emissions-reduction plan. "An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project" (CEQA Guidelines Section15183.5[b][2]).

Section 12 of the GGERP outlines the steps that each DWR project should take to demonstrate consistency with the GGERP. These steps include (1) analysis of GHG emissions from construction of the proposed project, (2) determination that the construction emissions from the project do not exceed the levels of construction emissions analyzed in the GGERP, (3) incorporation into the design of the project DWR's project level GHG emissions-reduction strategies, (4) determination that the project does not conflict with DWR's ability to implement any of the "Specific Action" GHG emissions-reduction measures identified in the GGERP, and (5) determination that the project would

not add electricity demands to the SWP system that could alter DWR's emissions-reduction trajectory in such a way as to impede its ability to meet its emissions-reduction goals.

Consistent with these requirements, a GGERP Consistency Determination Checklist documenting that the proposed project has met each of the required elements is included in Appendix A.

Based on the analysis provided in the GGERP and the demonstration that the proposed project is consistent with the GGERP (as shown in Appendix A), the project is compliant with the applicable GHG emissions-reduction plan, as is required by the SJVAPCD; therefore, the impact with respect to GHG emissions is **less than significant**.

Issue VIII.b

As discussed under Issue VIII.a, the proposed project would comply with the GGERP and would not conflict with the applicable GHG emissions-reduction plan, as demonstrated by the GGERP Consistency Determination Checklist in Appendix A.

Based on the analysis provided in the GGERP and the demonstration that the proposed project is consistent with the GGERP (as shown in Appendix A), the project is compliant with the applicable GHG emissions-reduction plan; therefore, the proposed project would not conflict with an applicable emissions reduction plan and the impact would be **less than significant**.

References

California Department of Water Resources

2024 *Climate Action Plan, Phase 1: Greenhouse Gas Emissions Reduction Plan Update 2023*. Viewed online at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan/Files/Exhibit-C-CAP-Phase-1-Update-2023.pdf. Accessed: October 2024.

San Joaquin Valley Air Pollution Control District

2015 *Guidance for Assessing and Mitigating Air Quality Impacts*. March 19, 2015. Viewed online at: https://ww2.valleyair.org/media/g4nl3p0g/gamaqi.pdf. Accessed: October 2024.

3.2.9 Hazards and Hazardous Materials

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
IX. HAZARDS AND HAZARDOUS MATERIALS—Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 miles of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☒	☐

Environmental Setting

In California, Government Code Section 65962.5 requires the State Water Resources Control Board (State Water Board) and the Department of Toxic Substance Control (DTSC) to maintain regulatory databases listing hazardous materials sites; the list is also referred to as the Cortese List. The Cortese List identifies sites with suspected and confirmed releases of hazardous materials to the subsurface soil and/or groundwater. The listed sites can be accessed through the State Water

Board's GeoTracker database and the DTSC EnviroStor database. The reporting and statuses of these sites change as identification, monitoring, and clean-up of hazardous materials sites progress.

A database search of both the EnviroStor and GeoTracker identified zero hazardous clean-up sites in the proposed project site (California Department of Toxic Substances Control 2024; State Water Resources Control Board 2024).

The proposed project site is located approximately 6 miles north of the Harris River Ranch Airport and 11 miles east of the San Joaquin Airport. Cantua Elementary School is located approximately 1 mile east of the proposed project site and Westside Elementary is located approximately 8 miles southeast of the proposed project site.

Within California, fire hazard severity zones are designated by the California Department of Forestry and Fire Protection (CAL FIRE). CAL FIRE uses a five-tiered ranking system to assess the threat to people based on fuel hazard, wildland fire potential, and housing density. The proposed project site is not located in a Fire Hazard Severity Zone in a State Responsibility Area; the closest hazard zone Is located in the Ciervo Hills 5.5 miles west across I-5 (California Department of Forestry and Fire Protection 2024).

Discussion

Issue IX.a, b

Construction activities associated with the proposed project would require the use of small qualities of hazardous materials such as diesel fuel, gasoline, oils, grease, equipment fluids, cleaning solutions and solvents, lubricant oils, and adhesives.

During construction, contractors handling, storing, or transporting hazardous materials or wastes would comply with hazardous materials regulations, such as implementation of a SWPPP and BMPs in compliance with the NPDES permitting requirements (refer to Section 3.2.9, "Hazards and Hazardous Materials," Issue X.a for BMP examples), which would reduce the risk of accidental release and provide protocols and notification requirements should an accidental release occur.

Any spills of these substances would be cleaned on-site according to the SWPPP and NPDES permitting requirements. The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction; describe spill prevention measures, equipment inspections, equipment, and fuel storage; describe protocols for responding immediately to spills; and describe BMPs for controlling site run-on and runoff. The SWPPP prepared for the proposed project would also identify BMPs to ensure the lawful transport, use, storage, and disposal of hazardous materials.

By complying with relevant federal, State, and local laws, the proposed project would not result in a significant hazard to the public or to the environment through the routine transport, use, or disposal of hazardous materials and would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials. Therefore, the impacts would be **less than significant**.

Issue IX.c

There are no schools located within 0.25 mile of the proposed project site. Furthermore, fuels, oils, and lubricants used during the proposed liner raise activities would be handled in accordance with DWR material safety storage and handling protocols and BMPs that would contain and prevent spills from occurring on the proposed project site. Therefore, **no impact** would occur.

Issue IX.d

There are no identified hazardous material sites located within the proposed project site (California Department of Toxic Substances Control 2024; State Water Resources Control Board 2024). The proposed project would not be located on a hazardous materials site, and **no impact** would occur.

Issue IX.e

The nearest public airport to the proposed project site is the Harris River Ranch Airport, located approximately 6 miles north of the proposed project. The proposed project is not located within an airport land-use plan or within 2 miles of a public airport or public use airport. **No impact** would occur.

Issue IX.f

During construction, there would be negligible numbers of workers (up to 30 employees) traveling to the proposed project site on a temporary basis. Operation activities would not change with the proposed project. No road closures would be required for the proposed project, and there would not be a permanent substantial increase in the number of people working or residing at or near the proposed project site. The proposed project would not impair implementation of or physically interfere with any adopted emergency response plan or emergency evacuation plan. Therefore, **no impact** would occur.

Issue IX.g

The proposed project site is located within the Aqueduct and DWR right-of-way. According to CAL FIRE, the proposed project is not located in a Fire Hazard Severity Zone in a State Responsibility Area (California Department of Forestry and Fire Protection 2024). No structures are proposed as part of the project and construction activities would occur within the waterside of the Aqueduct embankments and within existing access roads and road aprons. The surrounding vegetation and agricultural land-use types have a low potential for wildland fires. In addition, as a standard DWR safety practice, all vehicles and equipment would have fire prevention equipment on-site, including fire extinguishers and shovels. Therefore, the proposed project would not increase the exposure of people or structures to wildland fires and the impact would be **less than significant**.

References

California Department of Forestry and Fire Protection

2024 Fire Hazard Severity Zones. Viewed online at: https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones. Accessed: July 11, 2024.

California Department of Toxic Substances Control

2024 EnviroStor. Viewed online at: https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=Search Accessed: July 10, 2024.

State Water Resources Control Board

2024 GeoTracker. Viewed online at: https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=Search+GeoTracker. Accessed: July 10, 2024.

3.2.10 Hydrology and Water Quality

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
X. HYDROLOGY AND WATER QUALITY—Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would:				
i) Result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	☒	☐
iii) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv) Impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

Environmental Setting

The proposed project site is within the South Valley Floor Watershed within the Region 5 – Tulare Lake Hydrologic Basin (California Department of Water Resources 2024). Major cities in the Tulare Basin include Fresno, Bakersfield, and Visalia. Major geographic features include Tulare Lake Basin, Kettleman Hills, Kings River, Kern River, Tule River, Tulare Lake, Kern Lake, and Buena Vista Lake.

The Tulare Basin has mild winters and hot dry summers. Despite transient tule marsh areas, the area is predominantly dry and the valley summer heat is high. Less than 5 percent of the basin is urban in nature. The basin has been developed extensively for agriculture and petroleum extraction (U.S. Geological Survey 2024). The Regional Water Board publishes updates to the *Water Quality Control Plan for the Tulare Lake Basin* to improve water quality and maintain beneficial uses in the drainage area of the San Joaquin Valley south of the San Joaquin River. This basin plan describes water quality concerns for the area that include agriculture, forestry, urban land uses, and stormwater runoff (Central Valley Regional Water Quality Control Board 2018).

Portions of the proposed project site are in a 100-year flood zone. The Flood Hazard Zones (Zone A) are located to the east of the Aqueduct, directly adjacent to the entirety of the proposed project site, except for the Aqueduct between West Cerini Avenue and Davis Avenue (Federal Emergency Management Agency 2024).

Discussion

Issue X.a

The proposed project would include construction activities that would require earthwork activities such as site preparation, excavation, grading, and temporary stockpiling of soils, which would involve the disturbance and exposure of surface soils. In addition, construction activities would involve use of chemicals and solvents such as fuel and lubricating grease for motorized heavy equipment, which could accidentally spill and subsequently impact stormwater quality.

There is potential for stormwater to transport sediment or hazardous materials to the Aqueduct. Since project construction activities would disturb an area greater than 5 acres, the proposed project would be subject to a construction general permit under the NPDES permit program of the federal Clean Water Act. As required under the construction general permit, DWR or its contractor would prepare and implement a SWPPP. The objective of a SWPPP is to identify pollutant sources (such as sediment) that may affect the quality of stormwater discharge and to implement BMPs to reduce pollutants in stormwater.

In particular, erosion control BMPs would be used to prevent the degradation of water quality in the Aqueduct. Examples of erosion-control BMPs are installing a silt fence, creating a sediment/desilting basin, installing sediment traps, using fiber rolls, creating gravel bag berms, and creating sandbag or straw bale barriers. BMPs would also include practices for proper handling of chemicals, such as avoidance of fueling at the construction site, overtopping during fueling, and installation of containment pans. Implementation of the construction BMPs would begin with the commencement of construction and continue through to the completion of the project to reduce intrusion of foreign materials into the Aqueduct.

Implementation of the SWPPP and BMPs in compliance with the NPDES permitting requirements would avoid or reduce all erosion and sedimentation impacts to below a level of significance. As a result, impacts on water quality would be **less than significant**.

Issue X.b

The proposed project would not disrupt water deliveries, nor would it require the use of groundwater during construction activities. The Aqueduct is an existing concrete-lined canal; therefore, the proposed project would not change groundwater recharge, nor would it interfere with recharge compared to current conditions. In addition, the proposed project would not create impervious surfaces in the proposed project site that are not already impervious (i.e., the Aqueduct channel). Therefore, the proposed project would not decrease groundwater supplies or interfere with the recharge of groundwater. Therefore, there would be **no impact** on groundwater recharge.

Issue X.c.i

The proposed project would not introduce impervious surfaces or structures where existing impervious areas do not already exist. Temporary earthmoving activities would slightly alter the topography of the proposed project site to facilitate the liner raise activities, which could lead to areas of concentrated runoff or increased erosion. The proposed project also would include rerouting and replacing existing road drains in the proposed project site. Erosion-control measures and BMPs would be implemented during construction to reduce the potential for stormwater-induced erosion or sedimentation off-site during project activities. All construction areas would also be regraded to match pre-project conditions once construction activities are completed, as described in Chapter 2, “Project Description.” Thus, the proposed project would not substantially alter the existing drainage pattern of the proposed project site in a way such that substantial erosion or siltation would occur on-site or off-site. Impacts would be **less than significant**.

Issue X.c.ii

The proposed project would not substantially alter the local drainage pattern of the sites around Pools 17 and 18. Existing road drains in the proposed project site would be rerouted and replaced during project construction. The proposed project would not substantially change the rate or amount of surface runoff from the proposed project site. As such, the proposed project would not result in flooding on-site or off-site. Potential impacts would be **less than significant**.

Issue X.c.iii

An increase in runoff would not occur as a result of the project, considering the liner raise sites would conform to the existing liner surface. Existing road drains in the proposed project site would be rerouted and replaced during project construction. As such, the proposed project would not contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems.

The project would require implementation of a SWPPP, including BMPs for erosion control and for proper handling of chemicals. As such, the proposed project would not provide substantial additional sources of polluted runoff. Impacts would be **less than significant**.

Issue X.c.iv

The Federal Emergency Management Agency National Flood Hazard Layer for the proposed project site shows that the majority of the proposed project site is located within Zone A, or areas with a 1 percent chance of flooding each year (Federal Emergency Management Agency 2024). Therefore, the area is at low risk of experiencing flooding. Further, the proposed project would not involve the creation of large infrastructure or extensive construction activities that would impede or redirect flows. Impacts would be **less than significant**.

Issue X.d

The proposed project site is located far from the nearest ocean, the Pacific, and therefore is not located within the tsunami risk zone. Additionally, the proposed project site is not located near any sizeable bodies of water at risk of forming seiches and therefore is not located within a seiche zone. The proposed project site is in a 100-year flood zone; however, construction would be short-term and conclude within nine months and project equipment would not be stored in areas with potential floodwaters. The project would also involve the routine use of hazardous materials during construction, which could be at risk of release during a flood. However, construction contractors would be required to acquire coverage under the NPDES General Stormwater Permit, which requires the preparation and implementation of a SWPPP for construction activities. The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction; describe spill prevention measures, equipment inspections, equipment and fuel storage; describe protocols for responding immediately to spills; and describe BMPs for controlling site run-on and runoff. The SWPPP prepared for the proposed project would identify BMPs to ensure the lawful transport, use, storage, and disposal of hazardous materials. With the implementation of a SWPPP and the adherence to federal, State, and local regulations related to the handling of hazardous materials, the proposed project would have a **less-than-significant impact**.

Issue X.e

The proposed project would not involve pumping or extraction of groundwater. Erosion-control measures and BMPs would be implemented during construction to reduce the potential for erosion or sedimentation off-site during project activities. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. **No impact** on water quality control plans or sustainable groundwater management plans would occur.

References

California Department of Water Resources

2024 Water Management Planning Tool. Viewed online at: https://gis.water.ca.gov/app/boundaries/. Accessed July 10, 2024.

Central Valley Regional Water Quality Control Board

2018 Water Quality Control Plan for the Tulare Lake Basin Third Edition. Viewed online at: https://www.waterboards.ca.gov/rwqcb5//water_issues/basin_plans/tularelakebp_201805.pdf. Accessed: July 10, 2024.

Federal Emergency Management Agency

2024 FEMA's National Flood Hazard Layer (NFHL) Viewer. Viewed online at: https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd. Accessed: July 10, 2024.

U.S. Geological Survey

2024 The Central Valley: Tulare Basin. Viewed online at: https://ca.water.usgs.gov/projects/central-valley/tulare-basin.html Accessed: July 10, 2024.

3.2.11 Land Use and Planning

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XI. LAND USE AND PLANNING—Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Environmental Setting

The proposed project would raise portions of the concrete liner of Pools 17 and 18 in Fresno County. The liner raise in Pools 17 and 18 are located along the Aqueduct between MP 128.4 to MP 135.6. The northernmost site, Pool 17 at MP 128.4, is approximately 1.4 miles west of the town of Cantua Creek. The southernmost site, Pool 18 at MP 135.6, is approximately 6.5 miles southeast of Cantua Creek and 8.5 miles northwest of Westside. The surrounding land uses include agricultural fields and associated infrastructure and undeveloped land. The proposed project site is zoned entirely as Exclusive Agriculture (AE-20) with the nearby towns of Three Rocks and Cantua Creek located approximately 2 miles to the west and 1.4 miles to the east zoned as Residential, Trailer Park Residential, Agriculture, and Agricultural Commercial Center (County of Fresno 2024).

Discussion

Issue XI.a

Cantua Creek, the community nearest to the proposed project's construction areas, is located approximately 1.4 miles to the east of the northern portion of the proposed project site. The proposed project does not involve building any structures, such as roads or freeways, with the potential to physically divide a community. Therefore, **no impact** would occur.

Issue XI.b

The liner raises would occur on the waterside of the Aqueduct. Access to the construction areas would occur on existing roadways and service roads, including access roads on top of both sides of the Aqueduct embankments. The proposed project is consistent with surrounding land uses; therefore, project construction would not conflict with any land use plan, policy, or regulation. **No impact** would occur.

References

County of Fresno

2024 Zoning. Viewed online at: https://gisportal.co.fresno.ca.us/portal/apps/webappviewer/index.html?id=b921843d343d4df998b5b3c6a301756a Accessed: July 11, 2024.

3.2.12 Mineral Resources

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XII. MINERAL RESOURCES—Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

Environmental Setting

In accordance with the Surface Mining and Reclamation Act of 1975, the California Department of Conservation, Division of Mines and Geology, currently known as the California Geological Survey, has mapped nonfuel mineral resources of the State to show where economically significant mineral deposits are either present or likely to occur based on the best available scientific data. These

resources have been mapped using the California Mineral Land Classification System, which includes the following six Mineral Resource Zones (MRZs):

- MRZ-1: An area where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- MRZ-2a: An area where adequate information indicates that significant measured or indicated mineral reserves are present.
- MRZ-2b: An area where geologic information indicates that significant inferred resources or demonstrated subeconomic resources are present.
- MRZ-3a: An area likely to contain undiscovered mineral deposits similar to known deposits in the same producing district or region (hypothetical resources).
- MRZ-3b: An area judged to be a favorable geologic environment for mineral resource occurrences, but where mineral discoveries have not been made in the region (speculative resources).
- MRZ-4: An area where geologic information does not rule out either the presence or absence of mineral resources.

The California Department of Conservation Geologic Energy Management Division oversees the drilling, operation, maintenance, and plugging and abandonment of oil, natural gas, and geothermal wells in California, and tracks all known oil and gas wells.

The proposed project site is not located in Mineral Land classification/Surface Mining and Reclamation Act−designated areas (California Department of Conservation 2024a). There are no existing mines in the area; the closest is Sierra Pacific Materials, a sand and gravel mine approximately 20 miles south of the proposed project site (California Department of Conservation 2024b).

Discussion

Issue XII.a, b

The proposed project site is not included on any California Geological Survey maps or reports identifying potentially important mineral resources. Fresno County land-use maps also do not identify any locally important mineral resources in the proposed project site. Therefore, **no impact** would occur.

References

California Department of Conservation

2024a CGS Information Warehouse: Mineral Land Classification. Viewed online at: https://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=mlc. Accessed July 11, 2024.

2024b “Mines Online” [Online mapping tool.] Viewed online at: https://maps.conservation.ca.gov/mol/index.html. Accessed Jul. 10, 2024.

3.2.13 Noise

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XIII.NOISE—Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

Environmental Setting

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude. Given that the typical human ear is not equally sensitive to all frequencies of the audible sound spectrum, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes low and extremely high frequencies, referred to as A-weighting, and is expressed in units of A-weighted decibels (dBA).

Noise Exposure and Community Noise

Noise levels rarely persist consistently over a long period. Rather, noise levels at any one location vary with time. Specifically, community noise is the result of many distant noise sources that constitute a relatively stable background noise exposure where the individual contributors are unidentifiable. Throughout the day, short duration single-event noise sources (e.g., aircraft flyovers, motor vehicles, sirens) that are readily identifiable to the individual add to the existing background

noise level. The combination of the slowly changing background noise and single-event noises give rise to a constantly changing community noise environment.

To legitimately characterize a community noise environment and evaluate cumulative noise impacts, community noise levels must be measured over an extended time period. This time-varying characteristic of environmental noise is described using statistical noise descriptors, including the ones described below:

- **Leq:** The equivalent sound level is used to describe noise over a specified period of time, typically 1 hour, in terms of a single numerical value. The Leq is the constant sound level that would contain the same acoustic energy as the varying sound level during the same time period (i.e., the average noise exposure level for the given time period).
- **Lmax:** The instantaneous maximum noise level measured during the measurement period of interest.
- **Ldn:** The day-night average sound level (Ldn) is the energy average of the A-weighted sound levels occurring during a 24-hour period, accounting for the greater sensitivity of most people to nighttime noise by weighting ("penalizing") nighttime noise levels by adding 10 dBA to noise between 10:00 p.m. and 7:00 a.m.

In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise would be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10 dBA change is subjectively heard as approximately a doubling in loudness, and can cause adverse response.

These relationships occur in part because of the logarithmic nature of the decibel system. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Fresno County

The most prevalent individual traffic noise sources in the County are the two primary north-south freeways, I-5 and SR 99, and the many other major roadways within the County, including sections of SRs 33, 41, 43, 63,145, 168, 180, 198, and 269 and Herndon, Shaw, and Clovis Avenues within Fresno and Clovis city limits.

Other expressways and arterials within the unincorporated County also have substantial local influences on noise levels. The most intense traffic noise sources tend to be those with heavy truck traffic or high proportions of nighttime traffic.

The notable noise-generating industrial sources are agricultural processing operations and mining or building/landscaping materials processing, such as cement batch plants (County of Fresno 2023). The proposed project site is located approximately 6 miles north of the Harris River Ranch Airport, and the closest private airstrip is located approximately 1.4 miles west of the proposed project site.

Discussion

Issue XIII.a

The Fresno County General Plan and Noise Ordinance do not establish quantitative noise exposure standards that apply to construction activity. However, for the purposes of due diligence, resultant noise levels from simultaneous operations of the two noisiest pieces of construction equipment were estimated, consistent with the general assessment methodology of the Federal Transit Administration. Using this method and conservatively assuming simultaneous operation of the two nosiest pieces of equipment, concrete mixers and excavators, would result in a noise level of 88 dBA at a reference distance of 50 feet. Accounting for distance attenuation, noise levels at 1,000 feet would be 62 dBA. The closest sensitive receptor is located approximately 4,300 feet (0.8 mile) east of the proposed project site. At this distance, noise levels decrease to 49 dBA and would be virtually imperceptible and indistinguishable from the local noise environment. Therefore, the proposed project would not result in a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies. The proposed project would result in **less-than-significant impacts**.

Issue XIII.b

Groundborne vibration from construction activities in the proposed project site would produce negligible vibration. The types of construction equipment associated with the proposed project include excavators, dump trucks, pickup trucks, forklifts, skid steer loaders, compacters, concrete mixers, and generators (see Table 2-4). This type of equipment is identified by Caltrans (2020) and the Federal Transit Administration (2018) as associated with the generation of continuous vibration. However, construction would not take place near any residences or other noise-sensitive land uses. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. Therefore, vibration associated with proposed project would result in **less-than-significant impacts**.

Issue XIII.c

The proposed project would not establish new noise-sensitive land uses that could be exposed to noise from local airports. The proposed project site is located in a rural area that is distant from commercial or general aviation airports. The proposed project site is located approximately 6 miles

north of the Harris River Ranch Airport, and the closest private airstrip is located approximately 1.4 miles to the west of the proposed project site. The proposed project would not result in any land use or operational changes that would expose people residing or working in the proposed project site to excessive noise levels in relation to airports. There would be a **less-than-significant impact**.

References

California Department of Transportation
2020 Transportation and Vibration Guidance Manual, April 2020; p. 37.

County of Fresno
2023 Fresno County General Plan Backup Report. Viewed online at: https://www.fresnocountyca.gov/files/sharedassets/county/v/2/public-works-and-planning/development-services/planning-and-land-use/general-plan/fcgpr-background-report-2023-05-10.pdf. Accessed: September 19, 2024.

U.S. Department of Transportation, Federal Transit Administration
2018 Transit Noise and Vibration Impact Assessment. September 2018.

3.2.14 Population and Housing

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XIV. POPULATION AND HOUSING—Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Environmental Setting

Fresno County has a population of 1,024,125 as of 2024, indicating a 1.5 percent growth rate when compared to the Fresno County population of 1,008,654 in 2020. As of 2023, Fresno County contained 347,957 housing units with an owner-occupied housing unit rate of 55.4 percent (U.S. Census Bureau 2024).

Discussion

Issue XIV.a

The proposed project would not involve the construction of new homes, businesses, extensions of roads, or other infrastructure that would directly or indirectly induce substantial unplanned population growth. Construction activities associated with the proposed project would generate a minimal number of workers (up to 30 employees) to the proposed project site on a temporary basis (approximately nine months). Construction workers employed for these activities are expected to come from the existing labor pool within the region. Implementation of the proposed project would not directly or indirectly induce substantial population growth. Therefore, **no impact** would occur.

Issue XIV.b

The proposed project would not displace any existing housing or people, and it does not involve the construction of new homes. Therefore, **no impact** would occur.

References

U.S. Census Bureau

2024 Quick Facts Fresno County, California. Viewed online at: https://www.census.gov/quickfacts/fact/table/fresnocountycalifornia/PST045223. Accessed July 11, 2024.

3.2.15 Public Services

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XV. PUBLIC SERVICES—				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:				
i) Fire protection?	☐	☐	☒	☐
ii) Police protection?	☐	☐	☒	☐
iii) Schools?	☐	☐	☐	☒
iv) Parks?	☐	☐	☐	☒
v) Other public facilities?	☐	☐	☐	☒

Environmental Setting

Police Services

The proposed project site is serviced by the Fresno County Sheriff's Office and is in an area designated by the County as Area 1. Area 1 is in the western part of Fresno County and encompasses 2,393 square miles of rural area. Area 1 is bounded by five different counties, contains six incorporated cities (Coalinga, Firebaugh, Huron, Kerman, Mendota, and San Joaquin) and is home to 63 miles of Interstate Highway 5 (Fresno County Sheriff's Office 2019).

Fire Services

The proposed project site is serviced by Battalion 14 of the Fresno-Kings Unit (also known as the Coalinga Battalion) and is one of the largest State Responsibility Areas (SRA) in the State of California.

The Battalion consists of over 1 million acres of State responsibility land under direct CAL FIRE protection. The Coalinga Battalion also includes 151,967 acres of Bureau of Land Management Direct Protection Area. CAL FIRE provides fire protection for most of the Bureau of Land Management land within the Coalinga Battalion. The Battalion is bordered by CAL FIRE units of San Luis Obispo, San Benito, Monterey, Mariposa, Madera, Merced, and Kern counties. The Coalinga

Battalion is also boarded by Local Governments of Kings County, Fresno County Fire Protection District, and the City of Coalinga (Fresno County Fire Protection District 2024).

Other Public Services

The nearest school, Cantua Elementary School, is located approximately 1.4 miles east of the proposed project site. The nearest hospital, United Health Centers – Huron, is located approximately 17 miles south of the proposed project site. The nearest public park, Centennial Park, is located in Coalinga, approximately 17 miles southeast of the proposed project site.

Discussion

Issue XV.a.i, ii

In the event of a fire or other emergency within the proposed project site, it is anticipated that existing fire protection and police services in Fresno County would be able to sufficiently respond to emergencies with existing equipment and staffing capacities. The proposed project would be implemented within existing facilities and access roads, and operation activities would not change with the proposed project. As a result, relative to existing conditions, the proposed project would not introduce new facilities that would require additional emergency response services. Therefore, implementation of the proposed project would not require new fire or police facilities to maintain response ratios, service ratios, or other measures of performance. Impacts would be **less than significant**.

Issue XV.a.iii

The proposed project would not result in an increase in population. As a result, the proposed project would not lead to the construction of new housing, which could prompt a need for additional school services. Therefore, the proposed project would have **no impact** related to school services.

Issue XV.a.iv

The proposed project would not result in an increase in population and would not prompt the need for new parks. Therefore, the proposed project would have **no impact** related to parks.

Issue XV.a.v

The proposed project would not include new housing or bring new businesses to the area that would require any additional services or public facilities, including libraries. Therefore, the proposed project would have **no impact** related to other public facilities.

References

Fresno County Fire Protection District

2024 Fresno County Fire Battalion 14. Viewed online at: https://www.fresnocountyfire.org/fresno-county-fire-battalion-14. Accessed: July 11, 2024.

Fresno County Sheriff's Office
2019 2019 Fresno County Sheriff's Office Annual Review. Viewed online at: https://publicinfo.fresnosheriff.org/docs/DocView.aspx?id=6514&dbid=0&repo=SheriffPublic. Accessed: July 11, 2024.

3.2.16 Recreation

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XVI. RECREATION—				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☒	☐

Environmental Setting

There are no existing neighborhood or regional parks or other recreational facilities in the vicinity of the proposed project site. DWR does allow recreational fishing along segments of the Aqueduct. The closest designated Aqueduct fishing access site is located along the Aqueduct where it crosses West Clarkson Avenue at the northern end of the proposed project site (California Department of Water Resources 2020).

Discussion

Issue XVI.a, b

The proposed project site does include recreational facilities. Construction could temporarily limit access to fishing during construction of the proposed project; however, impacts would be temporary. Access to the fishing site would not be permanently impacted and access would be unchanged from existing conditions following the completion of construction activities. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. The proposed project would not result in substantial population growth, resulting in no increase in the use of recreational facilities and requiring no construction or expansion of recreational facilities. Therefore, **less-than-significant impacts** would occur.

References

California Department of Water Resources

2020 *Fishing along the SWP*. Viewed online at: https://calsport.org/news/wp-content/uploads/DWR_Fishing-Along-the-SWP.pdf. Accessed: September 19, 2024.

3.2.17 Transportation

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XVII. TRANSPORTATION—Would the project:				
a) Conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☒	☐
b) Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	☐	☐	☐	☒
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Result in inadequate emergency access?	☐	☐	☐	☒

Environmental Setting

Fresno County has comprehensive transportation systems that include State highways, local roads, rural highways and streets, bus transit services, freight rail, and airports (primarily private airstrips) (Fresno County Council of Governments 2022). The proposed project site is approximately 4.7 miles east of I-5 and approximately 1 mile east of State Route 33 at its closest point.

I-5 is the primary north-south route for interregional and interstate business, freight, tourist, and recreation travel, linking Southern and Northern California. The rural highway system accommodates not only people but is a particularly vital aspect of the freight-based economy. I-5 is one of the most important roadways in the area due to its connection to nearby counties and carries a significant portion of intra-county traffic (Fresno County Council of Governments 2022).

Discussion

Issue XVII.a

The proposed project would result in the temporary addition of project-related vehicles to local roadways over the nine-month construction period. All equipment and materials would be transported to the site on public highways, local roads, and private driveways, using standard transport vehicles.

Specific to the concrete liner raise, which is the activity that would require the most construction workers and vehicle trips per day, up to 30 construction workers are anticipated to be required for the concrete liner raise and approximately four truck trips per day for 29 weeks would be needed to deliver concrete to the site. Anticipated labor force and truck trips for all project activities are listed in Chapter 2 in Table 2-1 and Table 2-2, respectively.

The majority of traffic would occur from the daily arrival and departure of workers. A maximum of up to 30 workers would be required at the site per day. The addition of 60 worker round trips along local roads would not substantially affect circulation capacity, and therefore, the trips would not substantially affect the capacity of the local roadways. Traffic control is not anticipated to be required along local roadways. DWR would coordinate with the appropriate property owners if private road access is required at any point. All worker parking would be accommodated at the staging area on-site; however, carpooling may be required if up to 30 workers are needed at any given time (which would reduce the number of overall trips). Project-generated traffic and operational maintenance would be temporary, and therefore, would not result in any long-term degradation in operating conditions on local roadways used for the project. Impacts on the local circulation system would be **less than significant**.

Further, the proposed project would not conflict with adopted policies, plans, or programs related to public transit or alternative modes of transportation. The proposed project would not decrease the performance or safety of these facilities, which are sparse within the largely rural proposed project site. Project activities would not disrupt services along local public transit, bicycle, or pedestrian routes.

Issue XVII.b

“Vehicle miles traveled” (VMT) refers to the amount and distance of automobile travel attributed to a project. A maximum of 30 workers and four truck trips would be required during the concrete liner raise, which would be the project activity that would require the most construction workers and vehicle trips per day. These trips would be temporary over the approximately nine-month construction period and would not result in any perceivable increase in vehicle miles traveled.

The CEQA Guidelines and the Governor’s Office of Planning and Research Technical Advisory note that CEQA provides a categorical exemption (Section 15303) for additions to existing structures of up to 10,000 square feet, so long as the project is in an area that is not environmentally sensitive and where public infrastructure is available. The Governor’s Office of Planning and Research determined that “typical project types for which trip generation increases relatively linearly with

building footprint (i.e., general office building, single tenant office building, office park, and business park) generate or attract 110-124 trips per 10,000 square feet." (Governor's Office of Planning and Research 2018). They concluded that, absent substantial evidence otherwise, the addition of 110 or fewer daily trips could be presumed to have a less-than-significant VMT impact.

There are no new permanent vehicle trips associated with the proposed project. Because the proposed project's trips would be below the 110-trip threshold in the Office of Planning and Research guidelines, the proposed project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3(b). **No impact** would occur.

Issue XVII.c

The proposed project would use existing roads for construction activities. The proposed project does not include the construction or design of any roadway infrastructure that would cause a safety risk to vehicle operations. The proposed project would not adversely alter the physical configuration of the existing roadway network serving the area and would not introduce unsafe design features associated with large equipment transport. In addition, the proposed project would not introduce uses (types of vehicles) that are incompatible with existing uses already served by the area's road system. **No impact** would occur.

Issue XVII.d

The proposed project would temporarily add vehicles to the local roadway and circulation system. However, no lane or road closures would be required. The proposed project would not interfere with emergency response access. **No impact** would occur.

References

Fresno County Council of Governments

2022 *Regional Transportation Plan and Sustainable Communities Strategy*. Viewed online at: https://www.planfresno.com/sustainable-communities-strategies-fall-outreach/. Accessed: Sept. 10, 2024. Adopted: Jul. 28, 2022.

Governor's Office of Planning and Research

2018 Technical Advisory On Evaluating Transportation Impacts In CEQA. Viewed online at: https://lci.ca.gov/ceqa/docs/20190122-743_Technical_Advisory.pdf. Accessed: March 27, 2025.

3.2.18 Tribal Cultural Resources

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XVIII. TRIBAL CULTURAL RESOURCES—				
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	☐	☒	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.	☐	☒	☐	☐

This section examines the potential impacts of the proposed project on Tribal cultural resources. Much of the background context and methods used for the analysis of potential impacts from the proposed project on Tribal cultural resources and cultural resources are the same. Therefore, to avoid redundancy, this information, which is presented in Section 3.2.5, “Cultural Resources,” is not repeated here.

Environmental Setting

California Historical Resources Information System Records Search

The methods for the CHRIS records searches are presented in Section 3.2.5, “Cultural Resources”; the following summarizes the results. The SSJVIC records search indicates that six cultural resources, all historic-era built environment resources, have been previously recorded within the proposed project site. No previously recorded cultural resources are present within 0.25 mile of the proposed project site. The SSJVIC has record of two previous cultural resources studies that have

been conducted in or within 0.25 mile of the proposed project site. Cumulatively, these reports covered approximately 99 percent of the proposed project site.

Ethnographic Literature Research

There are no clearly documented ethnographic village sites in the vicinity of the proposed project site. The nearest such village sites are the *Pitkachi* (Northern Valley Yokut) village *Gewachiu*, approximately 18 miles north-northeast of the proposed project site along the south side of the San Joaquin River, and the *Apiachi* (Southern Valley Yokut) village *Wohui*, approximately 20 miles east of the proposed project site along the north side of Murphy Slough (Kroeber 1976 [1925]; Wallace 1978).

Native American Correspondence

The NAHC maintains a confidential SLF, which contains sites of traditional, cultural, or religious value to the Native American community. The NAHC was contacted on July 19, 2024, to request a search of the SLF for the proposed project site and vicinity. The NAHC replied on July 23, 2024, stating that the SLF has no record of any resources in or near the proposed project site. The responses also provided contact information for 14 individuals representing seven California Native American Tribes (Tribes) that may be traditionally and culturally affiliated with the proposed project site.

In support of required Native American consultation for the proposed project pursuant to Public Resources Code Section 21080.3.1, as well as in accordance with the California Natural Resources Agency's *Final Tribal Consultation Policy* and DWR's *Tribal Engagement Policy*, on October 10, 2024, DWR sent a letter, via certified mail, to the Santa Rosa Rancheria Tachi Yokut Tribe, provided information on the proposed project and requesting that the Tribe notify DWR if they would like to consult pursuant to Public Resources Code Section 21080.3.1. On October 11, 2024, DWR sent an email with attachments to the Santa Rosa Rancheria Tachi Yokut Tribe with the same project-related information and request as the letter. DWR sent a follow-up email to the Tribe regarding the proposed project on November 13, 2024, and left a voicemail message on May 5, 2025. To date, the Santa Rosa Rancheria Tachi Yokut Tribe has not provided any response to this outreach.

In accordance with the California Natural Resources Agency's *Final Tribal Consultation Policy* and DWR's *Tribal Engagement Policy*, on October 10, 2024, DWR sent letters, via certified mail, to each Tribe provided in the NAHC reply for the Project other than the Santa Rosa Rancheria Tachi Yokut Tribe (who was also contacted in support of Public Resources Code Section 21080.3.1 [AB 52] as noted in the previous paragraph), as follows:

- Amah Mutsun Tribal Band.
- Big Sandy Rancheria of Western Mono Indians.
- Cold Springs Rancheria of Mono Indians.
- Dumna Wo-Wah Tribal Government.
- Dunlap Band of Mono Indians.
- Kitanemuk & Yowlumne Tejon Indians.

- Northern Valley Yokut/Ohlone Tribe.
- Salinan Tribe of Monterey, San Luis Obispo Counties.
- Sierra Foothill Wuksachi Yokuts Tribe.
- Table Mountain Rancheria.
- Traditional Choinumni Tribe.
- Tule River Indian Tribe.
- Wuksachi Indian Tribe/Eshom Valley Band.
- Xolon-Salinan Tribe.

The letters provided information on the proposed project and requested that the recipients provide information on cultural resources that may be impacted by the proposed project, if they would like to do so. On October 11, 2024, DWR sent emails with attachments to these same Tribes with the same project-related information and request as the letters. On October 16, 2024, the Chairperson of the Traditional Choinumni Tribe contacted DWR by telephone stating that his Tribe did not wish to consult on the proposed project. Upon receipt of updated contact information, on November 6, 2024, DWR sent a follow-up letter, via certified mail, to the Tule River Indian Tribe. DWR sent a follow-up email with attachments to the Amah Mutsun Tribal Band on November 13, 2024, receiving a reply via email on November 15, 2024, stating that the Tribe did not wish to consult on the proposed project. To date, no other communications with Tribes regarding the proposed project have occurred. Documentation of the project correspondence with Tribes to date is included in Appendix D.

Field Survey

The methods for the field survey are presented in Section 3.2.5; the following summarizes the results. No archaeological resources were identified in the proposed project site during the survey. During the archaeological survey, ground visibility for the majority of the proposed project site was good, ranging from 70 to 100 percent, though portions of the embankments and borrow areas presented poor ground-visibility, ranging from 0 to 25 percent.

Summary of Tribal Cultural Resources Identification Efforts

In summary, through background research, Native American consultation and correspondence, and field survey conducted for the proposed project, no Tribal cultural resources, including any indigenous archaeological resources or human remains that could qualify as Tribal cultural resources, were identified in the proposed project site.

Discussion

Issue XVIII.a.i, ii

No Tribal cultural resources, as defined in Public Resources Code Section 21074, have been identified in the proposed project site through archival research, a field survey, or Native American consultation. Therefore, there is no substantial evidence of the presence of any Tribal cultural

resources in the proposed project site and the proposed project is not expected to impact any Tribal cultural resources, as defined in Public Resources Code Section 21074.

Although there is no substantial evidence that any Tribal cultural resources are in the proposed project site, the proposed project would involve ground-disturbing activities that may extend into undisturbed soil. It is possible that such activities could unearth, expose, or disturb subsurface Tribal cultural resources, as defined in Public Resources Code Section 21074, that were not identified on the surface. Any impact of the proposed project on such Tribal cultural resources would be potentially significant. Such potentially significant impacts would be reduced to **less than significant with mitigation incorporated** by implementing **Mitigation Measures CUL-1 and CUL-2** (see Section 3.2.5).

Implementing **Mitigation Measure CUL-1** would reduce impacts to less than significant by ensuring that any unanticipated archaeological discoveries are promptly evaluated and appropriately protected or treated by qualified professionals and Tribes, thereby preventing inadvertent damage to potentially significant cultural resources. Implementing **Mitigation Measure CUL-2** would reduce impacts to less than significant by ensuring that any discovered human remains are respectfully protected, documented, and evaluated by appropriate authorities and halt construction to prevent further disturbance.

References

Kroeber AL.

1976 [1925] *Handbook of the Indians of California. Bureau of American Ethnology* Bulletin 78, Smithsonian Institution, Washington, DC. 1976 reprinted ed., Dover Publications, Inc., New York, NY.

Wallace W.

1978 “Southern Valley Yokuts.” In *California*, RF Heizer, editor. pp. 462–470. *Handbook of North American Indians*, vol. 8, WC Sturtevant, general editor. Smithsonian Institution, Washington, DC.

3.2.19 Utilities and Service Systems

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XIX. UTILITIES AND SERVICE SYSTEMS—Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☒
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

Environmental Setting

The Westlands Water District is the nearest water supplier in the vicinity of the proposed project site. Westlands Water District provides water to more than 1,000 square miles of prime farmland in western Fresno and Kings counties and serves Central Valley Project water to farms through 1,100 miles of underground pipe and more than 3,000 water meters (Westlands Water District 2024). Other local water districts provide municipal water to surrounding areas via pump stations, pipelines, and other water storage and conveyance facilities.

Solid waste that is generated by proposed construction activities along Pools 17 and 18 would likely be sent to American Avenue Disposal Site, which is located approximately 16 miles to the northeast of the proposed project site. The facility offers disposal services for construction/demolition wastes, industrial wastes, agricultural wastes, and other waste types that may be generated by the proposed project. According to the most recent updates in June of 2005, the American Avenue Disposal Site

has a remaining capacity of 29,358,535 cubic yards. (California Department of Resources Recycling and Recovery 2024).

Fresno County is serviced by Pacific Gas and Electric (Pacific Gas and Electric Company 2014a, 2014b) for both electricity and gas needs. Natural gas and electrical services are provided by Pacific Gas and Electric. A natural gas pipeline runs parallel to the Aqueduct, approximately 3 miles to the west of the Aqueduct (U.S. Department of Transportation 2024). There are also overhead electric power lines adjacent to the proposed project site (California Energy Commission 2024).

Discussion

Issue XIX.a

The proposed project would generate a minimal number of workers (up to approximately 30) to the proposed project site on a temporary basis during the approximately nine-month construction window. It is anticipated that these workers would come from the existing labor pool in the region and would not generate an increase in the population relative to the existing conditions. The proposed project may require limited use of potable water during construction activities. No water or wastewater treatment facilities would be installed as part of the proposed project and there are no proposed project activities that would require new electric power, natural gas, or telecommunications facilities. Therefore, the proposed project would not create a need to construct new or modified utilities and service systems.

The proposed project would not substantially alter the local drainage pattern of the proposed project site. The proposed project does not include the construction of new large structures or impervious surfaces that would substantially alter or change the rate or amount of surface runoff from the proposed project site. Therefore, the proposed project would not require the construction or expansion of new stormwater drainage facilities. Therefore, there would be no construction of utility infrastructure associated with the proposed project, and **no impact** would occur.

Issue XIX.b

Water may be needed temporarily during implementation of the proposed project. Water for dust suppression could be pumped from the Aqueduct. If that source of water is insufficient, and other sources cannot be used, the construction contractor would pay for water to be brought to the proposed project site from local water suppliers for dust suppression. Water demand for dust suppression would be temporary, and no new or expanded entitlements would be required. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. Therefore, potential impacts associated with availability of water supplies would be **less than significant**.

Issue XIX.c

The proposed project may result in the generation of wastewater associated with temporary use of portable toilets. During project implementation, DWR or the contractor may have portable toilet facilities available on-site temporarily for use by construction workers. Given the relatively small

construction workforce of a maximum of 30 workers on-site daily for the up to nine-month construction period, this amount of wastewater would be minimal and it would be properly handled and disposed of in accordance with all applicable laws and regulations. Once construction activities are concluded, any portable facilities would be removed. Therefore, the proposed project would not require a wastewater treatment provider to serve the proposed project site. **No impact** would occur.

Issue XIX.d

Implementation of the proposed project would result in nominal solid waste limited to trash and other construction-related materials. The proposed project would not demolish existing facilities on-site but would require materials for the liner raise.

The American Avenue Disposal Site, which is located within 16 miles of the proposed project site, has remaining capacity, should it need to be used (California Department of Resources Recycling and Recovery 2024). The proposed project would result in **less-than-significant impact** related to local infrastructure capacity and would not impair attainment of solid waste reduction goals.

Issue XIX.e

As stated above, implementation of the proposed project would result in nominal solid waste. Statewide policies regarding solid waste have become progressively more stringent, reflecting Assembly Bill 939, which requires local government to develop waste reduction and recycling policies and meet mandated solid waste reduction targets. For the minor amount of solid waste anticipated to be produced by the proposed project, DWR would comply with all laws and regulations related to the disposal and recycling of waste. There would be **no impact**.

References

California Energy Commission

2024 California Electric Transmission Lines. Viewed online at: https://cecgis-caenergy.opendata.arcgis.com/datasets/260b4513acdb4a3a8e4d64e69fc84fee_2/explore?location=36.098202%2C-119.930079%2C10.89. Accessed: July 11, 2024.

California Department of Resources Recycling and Recovery

2024 SWIS Facility/Site Activity Details: American Avenue Disposal Site (10-AA-0009). Viewed online at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/4535?siteID=352. Accessed: July 11, 2024.

Pacific Gas and Electric Company

2014a Electric Service Area Maps. Viewed online at: https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_MAPS_Service%20Area%20Map.pdf Accessed: July 11, 2024.

2014b Gas Service Area Maps. Viewed online at: https://www.pge.com/tariffs/assets/pdf/tariffbook/GAS_MAPS_Service_Area_Map.pdf Accessed: July 11, 2024.

U.S. Department of Transportation

2024 NPMS Public Viewer. Viewed online at: https://pvnpms.phmsa.dot.gov/PublicViewer/. Accessed: July 11, 2024.

Westlands Water District
2024 About Westlands. Viewed online at: https://wwd.ca.gov/about-westlands/. Accessed: July 11, 2024.

3.2.20 Wildfire

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XX. WILDFIRE—If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☒	☐	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

Environmental Setting

The proposed project site is not located in a State responsibility area or designated moderate, high, or very high Fire Hazard Severity Zone. The proposed project site is located in a Local Responsibility Area (California Department of Forestry and Fire Protection 2024).

Discussion

Issue XX.a

Implementation of the proposed project is not anticipated to substantially impair an adopted emergency response plan or evacuation plan or interfere with emergency response access to the project vicinity because there would be negligible numbers of workers (up to 30 employees) traveling to the proposed project site on a temporary basis. Operation activities would not change with the

proposed project. No road closures would be required for the proposed project, and there would not be a permanent substantial increase in the number of people working or residing at or near the proposed project site. **No impact** would occur.

Issue XX.b

The proposed project site is located within a Local Responsibility Area and is not in a State fire hazard severity zone. The proposed project site does not include slopes that surround the Aqueduct that are susceptible to prevailing winds. No structures are proposed as part of the project and construction activities would occur within the waterside of the Aqueduct embankments and within existing access roads and road aprons. Further, the surrounding vegetation and land use types have a low potential for fires. As a standard DWR safety practice, all vehicles and equipment would have fire prevention equipment on-site, including fire extinguishers and shovels, if a fire were to occur. Therefore, construction of the proposed project is not expected to expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. Further, the proposed project would not involve operation of facilities that would exacerbate fire conditions within the area or require permanent workers or occupants in the proposed project site. As a result, the impact would be **less than significant**.

Issue XX.c

The proposed project includes liner raise construction activities. Operation activities would not change with the proposed project and would continue to be conducted in accordance with existing maintenance and water delivery schedules. The proposed project would not require the installation or maintenance of infrastructure that would exacerbate wildfire risks or that may result in temporary or ongoing impacts to the environment, as discussed in Section 3.2, “Environmental Checklist.”

All of the potential direct and indirect impacts of the proposed project were determined to be fully avoided or reduced to less than significant with incorporation of **Mitigation Measures BIO-1 through BIO-13**, **CUL-1 and CUL-2**, and **GEO-1**.

Implementing **Mitigation Measures BIO-1 through BIO-13** would require qualified biologists to monitor construction activities, conduct targeted surveys, and enforce protective buffers for sensitive species, while also incorporating comprehensive worker training, invasive plant species control measures, habitat revegetation, and construction BMPs to minimize impacts on biological resources. Implementing **Mitigation Measures CUL-1 and CUL-2** would prevent inadvertent damage to potentially significant cultural resources by ensuring that any unanticipated archaeological discoveries and discovered human remains are promptly evaluated and appropriately protected or treated by qualified professionals and Tribes. Implementing **Mitigation Measure GEO-1** would require work to stop near any unanticipated paleontological discovery so that a qualified paleontologist can assess its significance. This allows for appropriate recovery or protection of the resource before construction resumes, avoiding potential damage or loss. As a result, impacts would be **less than significant with mitigation incorporated**.

Issue XX.d

The proposed concrete liner raises would occur on the waterside of the Aqueduct, within a human-made concrete embankment system. The proposed project would not involve the construction of any structures that would be occupied during operation and operation activities would not change with the proposed project. Therefore, post-fire, the proposed project would not expose people or structures to significant risks. **No impact** would occur.

References

California Department of Forestry and Fire Protection

2024 Fire Hazard Severity Zones. Viewed online at: https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones. Accessed: July 11, 2024.

3.2.21 Mandatory Findings of Significance

Issues	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XXI. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion

Issue XXI.a

Construction activities associated with the proposed project would be temporary in nature. Once constructed, the liner raise would maintain functionality in Pools 17 and 18 to enable DWR to avoid future disruptions of water deliveries to the Public Water Agencies, thereby maintaining operational flexibility and improving safety and reliability. The proposed project would not substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; reduce or restrict the range of rare or endangered plants or animals; or eliminate important examples of the major periods of California history or prehistory. As discussed in the analyses provided in this Initial Study, adherence to federal, State, and local regulations, and implementation of **Mitigation Measures BIO-1 through BIO-13**, **CUL-1 and CUL-2**, and **GEO-1** would reduce all potentially significant impacts to biological, cultural and geologic resources as well as to other issue areas analyzed, to **less-than-significant levels with mitigation incorporated**.

Implementing **Mitigation Measures BIO-1 through BIO-13** would require qualified biologists to monitor construction activities, conduct targeted surveys, and enforce protective buffers for sensitive species, while also incorporating comprehensive worker training, invasive plant species control measures, habitat revegetation, and construction BMPs to minimize impacts on biological resources. Implementing **Mitigation Measures CUL-1 and CUL-2** would prevent inadvertent damage to potentially significant cultural resources by ensuring that any unanticipated archaeological discoveries and discovered human remains are promptly evaluated and appropriately protected or treated by qualified professionals and Tribes. Implementing **Mitigation Measure GEO-1** would require work to stop near any unanticipated paleontological discovery so that a qualified paleontologist can assess its significance. This allows for appropriate recovery or protection of the resource before construction resumes, avoiding potential damage or loss.

Issue XXI.b

As noted throughout this document, the potential impacts of the proposed project are primarily temporary and short-term construction-related impacts and are site-specific. As noted above, all of the potential direct and indirect impacts of the proposed project were determined to be fully avoided or reduced to less than significant with incorporation of **Mitigation Measures BIO-1 through BIO-13**, **CUL-1 and CUL-2**, and **GEO-1**. As a result, the potential impacts of the proposed project are not considered cumulatively considerable, and impacts would be **less than significant with mitigation incorporated**.

Issue XXI.c

The potential impacts of the proposed project are temporary, short-term, and site-specific. These impacts are all localized to the proposed project site and include limited adverse effects on biological resources, cultural resources, geology and soils, Tribal cultural resources, and wildfire. However, the proposed project would not include any activities or uses that may cause substantial adverse effects

on human beings, either directly or indirectly, or on the physical environment. As discussed above, compliance with applicable local, State, and federal standards, as well as incorporation of project mitigation measures, including **Mitigation Measures BIO-1 through BIO-13**, **CUL-1 and CUL-2**, and **GEO-1**, would result in **less-than-significant impacts with mitigation incorporated**.

APPENDIX A

Air Quality Modeling Results and Greenhouse Gas Emissions Reduction Plan Consistency Determination Checklist

Greenhouse Gas Emissions Reduction Plan Consistency Determination

For Projects Using Contractors or Other Outside Labor

This form is to be used by DWR Project Managers to document a CEQA project's consistency with the DWR Greenhouse Gas Emissions Reduction Plan (GGERP). This form is to be used only when DWR is the Lead Agency and when contractors or outside labor and equipment are used to implement the project.

Additional Guidance on filling out this form can be found at:
https://cawater.sharepoint.com/teams/prog/icc/SitePages/ClimateActionPlan.aspx

The DWR Greenhouse Gas Emissions Reduction Plan can be accessed at:
https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan/Files/CAP-I-GGERP-Update-2020.pdf

Project Name:	San Luis Canal (CA Aqueduct) Pools 17&18 Liner Raise Project
Environmental Document Type:	Initial Study/Mitigated Negative Declaration
Project Manager's Name:	Bal Sah
Project Manager's E-mail:	Bal.Sah@water.ca.gov
Division:	Division of Engineering
Office, Branch, or Field Division:	Project Management and Coordination

Short Project Description:
The objective of the proposed project is to restore functionality and original design capacity in Pools 17 and 18 to enable DWR to complete water deliveries to public water agencies. The Aqueduct's concrete liner would be raised approximately 1 foot and 9 inches for a total length of approximately 8.9 miles on both sides of Pools 17 and 18. To accommodate the placement of the additional concrete, existing guardrails, road delineators, hand railings and other features would be removed and salvaged for reuse on-site, if possible.

Project Greenhouse Gas (GHG) Emissions Summary:		
Total Construction Emissions	904.3	$mtCO_2e$
Maximum Annual Construction Emissions	904.3	$mtCO_2e$ (For construction lasting 12 months or less the total and maximum annual construction emissions will be the same)

☐ All other emissions from the project not accounted for above will occur as ongoing operational, maintenance, or business activity emissions and therefore have already been accounted for and analyzed in the GGERP.

Extraordinary Construction Project Determination:	
Do total project construction emissions exceed 25,000 $mtCO_2e$ for the entire construction phase or exceed 12,500 $mtCO_2e$ in any single year of construction?	
☐ No – Additional analysis not required	☐ Yes – Project specific emissions mitigation measures have been included in the environmental analysis document for the project

Project GHG Reduction Plan Checklist:
☒ All Project Level GHG Emissions Reduction Measures have been incorporated into the design or implementation plan for the project. (Project Level GHG Emissions Reduction Measures) Or ☐ All feasible Project Level GHG Emissions Reduction Measures have been incorporated into the design or implementation plan for the project and Measures not incorporated have been listed and determined not to apply to the proposed project (include as an attachment)
☒ Project does not conflict with any of the Specific Action GHG Emissions Reduction Measures (Specific Action GHG Emissions Reduction Measures)
Would implementation of the project result in additional energy demands on the SWP system of 15 GWh/yr or greater? ☐ Yes ☒ No If you answered Yes, attach a letter documenting that the project has consulted with the DWR SWP Power and Risk Office regarding the additional power requirements of the project. Is there substantial evidence that the effects of the proposed project may be cumulatively considerable notwithstanding the proposed project's compliance with the requirements of the DWR GHG Reduction Plan? ☐ Yes ☒ No If you answered Yes, the project is not eligible for streamlined analysis of GHG emissions using the DWR GHG Emissions Reduction Plan. (See CEQA Guidelines, section 15183.5, subdivision (b)(2).)

Project Manager Signature: Bal Sahi Date: 8/25/2025

After the Project Manager has reviewed and signed above please use DocuSign to forward this form to the DWR Climate Change Program at ceqaclimatechange@water.ca.gov for final approval.

For DWR Climate Change Program Use Only:
Based on the information provided above and information provided in associated environmental documentation completed pursuant to the above referenced project, the DWR Climate Change Program has determined that:

☒ The entire proposed project is consistent with the DWR GGERP and the GHGs emitted by the project are covered by the plan's analysis.

☒ The operational and maintenance phase of the project is consistent with the DWR GGERP and the GHGs emitted by the project are covered by the plan's analysis. Emissions from the construction phase of the project are not covered by the DWR GGERP and will be mitigated as part of the project.

Climate Change Program Approval Signature: Tyler Anthony Date: 8/27/2025

Attachments:

☒ GHG Emissions Inventory ☐ List and Explanation of excluded Project level GHG Emissions Reduction Measures ☐ SWP Power and Risk Office Consultation Letter

Links:
https://cawater.sharepoint.com/teams/prog/icc/SitePages/HomePage.aspx
https://water.ca.gov/Programs/All-Programs/Climate-Change-Program

Pools 17 & 18 Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Pools 17 & 18
Construction Start Date	7/28/2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.50
Precipitation (days)	21.2
Location	36.45540167599968, -120.3029946145293
County	Fresno
City	Unincorporated
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2525
EDFZ	5
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.30

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Linear	8.90	Mile	350	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	15.0	12.4	90.1	59.8	0.21	3.31	1.60	4.27	3.05	0.41	3.30	—	19,405	19,405	0.73	0.65	9.50	19,576
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.85	5.70	41.5	36.9	0.12	1.48	1.12	2.49	1.37	0.29	1.62	—	12,556	12,556	0.46	0.44	0.16	12,685
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.95	1.63	11.8	10.7	0.03	0.42	0.30	0.72	0.39	0.08	0.46	—	3,696	3,696	0.13	0.12	0.75	3,735
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.36	0.30	2.15	1.96	0.01	0.08	0.05	0.13	0.07	0.01	0.08	—	612	612	0.02	0.02	0.12	618

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	9.12	7.63	53.4	54.2	0.18	1.88	1.60	3.49	1.74	0.41	2.15	—	19,345	19,345	0.69	0.65	9.50	19,564

2028	15.0	12.4	90.1	59.8	0.21	3.31	0.96	4.27	3.05	0.25	3.30	—	19,405	19,405	0.73	0.49	5.62	19,576
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	6.85	5.70	41.5	36.9	0.12	1.48	1.01	2.49	1.37	0.26	1.62	—	12,556	12,556	0.46	0.39	0.15	12,685
2028	6.75	5.61	40.1	36.6	0.12	1.42	1.12	2.43	1.31	0.29	1.57	—	12,503	12,503	0.46	0.44	0.16	12,632
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	1.95	1.63	11.8	10.7	0.03	0.42	0.30	0.72	0.39	0.08	0.46	—	3,696	3,696	0.13	0.12	0.75	3,735
2028	1.05	0.88	6.17	5.09	0.02	0.22	0.17	0.39	0.20	0.04	0.25	—	1,957	1,957	0.07	0.07	0.42	1,981
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.36	0.30	2.15	1.96	0.01	0.08	0.05	0.13	0.07	0.01	0.08	—	612	612	0.02	0.02	0.12	618
2028	0.19	0.16	1.13	0.93	< 0.005	0.04	0.03	0.07	0.04	0.01	0.05	—	324	324	0.01	0.01	0.07	328

3. Construction Emissions Details

3.1. Mobilization / SWPPP installation (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.92	0.77	4.32	5.85	0.02	0.16	—	0.16	0.15	—	0.15	—	2,313	2,313	0.09	0.02	—	2,321
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.18	0.24	< 0.005	0.01	—	0.01	0.01	—	0.01	—	95.1	95.1	< 0.005	< 0.005	—	95.4
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.03	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	15.7	15.7	< 0.005	< 0.005	—	15.8
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	0.04	0.63	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	116	116	< 0.005	< 0.005	0.37	118
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.04	0.01	1.34	0.21	0.01	0.03	0.37	0.40	0.03	0.10	0.13	—	1,311	1,311	0.02	0.20	2.95	1,375

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.39	4.39	< 0.005	< 0.005	0.01	4.47
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.06	0.01	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	53.9	53.9	< 0.005	0.01	0.05	56.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.73	0.73	< 0.005	< 0.005	< 0.005	0.74
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.92	8.92	< 0.005	< 0.005	0.01	9.34

3.3. Borrow area preparations / fence removal (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.13	0.95	6.26	9.48	0.03	0.22	—	0.22	0.20	—	0.20	—	2,874	2,874	0.12	0.02	—	2,884
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.26	0.39	< 0.005	0.01	—	0.01	0.01	—	0.01	—	118	118	< 0.005	< 0.005	—	119
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	19.6	19.6	< 0.005	< 0.005	—	19.6
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	0.04	0.63	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	116	116	< 0.005	< 0.005	0.37	118
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.39	4.39	< 0.005	< 0.005	0.01	4.47

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.73	0.73	< 0.005	< 0.005	< 0.005	0.74
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Misc. installations (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	5.46	4.52	32.8	21.0	0.07	1.22	—	1.22	1.12	—	1.12	—	6,027	6,027	0.24	0.05	—	6,048
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	5.46	4.52	32.8	21.0	0.07	1.22	—	1.22	1.12	—	1.12	—	6,027	6,027	0.24	0.05	—	6,048

Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.37	0.31	2.25	1.44	< 0.005	0.08	—	0.08	0.08	—	0.08	—	413	413	0.02	< 0.005	—	414
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.06	0.41	0.26	< 0.005	0.02	—	0.02	0.01	—	0.01	—	68.4	68.4	< 0.005	< 0.005	—	68.6
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.02	0.29	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	57.0	57.0	< 0.005	< 0.005	0.17	57.9
Vendor	0.03	0.02	1.02	0.21	0.01	0.02	0.35	0.37	0.02	0.10	0.12	—	1,189	1,189	0.02	0.18	2.45	1,244
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.24	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	50.6	50.6	< 0.005	< 0.005	< 0.005	51.5
Vendor	0.03	0.02	1.09	0.21	0.01	0.02	0.35	0.37	0.02	0.10	0.12	—	1,189	1,189	0.02	0.18	0.06	1,242
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.59	3.59	< 0.005	< 0.005	< 0.005	3.65
Vendor	< 0.005	< 0.005	0.07	0.01	< 0.005	< 0.005	0.02	0.03	< 0.005	0.01	0.01	—	81.4	81.4	< 0.005	0.01	0.07	85.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.59	0.59	< 0.005	< 0.005	< 0.005	0.60
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.5	13.5	< 0.005	< 0.005	0.01	14.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Closeout (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	8.35	6.91	51.1	30.9	0.10	1.90	—	1.90	1.75	—	1.75	—	8,424	8,424	0.34	0.07	—	8,453
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	0.19	1.40	0.85	< 0.005	0.05	—	0.05	0.05	—	0.05	—	231	231	0.01	< 0.005	—	232
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.26	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	38.2	38.2	< 0.005	< 0.005	—	38.3
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.03	0.59	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	114	114	< 0.005	< 0.005	0.33	116
Vendor	0.01	0.01	0.48	0.09	< 0.005	0.01	0.17	0.18	0.01	0.05	0.06	—	565	565	0.01	0.08	1.17	592
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.87	2.87	< 0.005	< 0.005	< 0.005	2.92
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.5	15.5	< 0.005	< 0.005	0.01	16.2
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.48	0.48	< 0.005	< 0.005	< 0.005	0.48
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.56	2.56	< 0.005	< 0.005	< 0.005	2.68
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Earthwork (embankment prep) (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.99	4.14	31.4	24.3	0.07	1.16	—	1.16	1.07	—	1.07	—	6,281	6,281	0.25	0.05	—	6,302
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	4.99	4.14	31.4	24.3	0.07	1.16	—	1.16	1.07	—	1.07	—	6,281	6,281	0.25	0.05	—	6,302
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.36	1.13	8.55	6.62	0.02	0.32	—	0.32	0.29	—	0.29	—	1,708	1,708	0.07	0.01	—	1,714
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.25	0.21	1.56	1.21	< 0.005	0.06	—	0.06	0.05	—	0.05	—	283	283	0.01	< 0.005	—	284
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.11	0.06	0.95	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	174	174	< 0.005	0.01	0.56	177
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.10	0.07	0.77	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	155	155	0.01	0.01	0.01	157
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.02	0.21	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	43.6	43.6	< 0.005	< 0.005	0.07	44.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.22	7.22	< 0.005	< 0.005	0.01	7.34
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Earthwork (embankment prep) (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	4.96	4.12	31.0	24.3	0.07	1.13	—	1.13	1.04	—	1.04	—	6,283	6,283	0.25	0.05	—	6,305

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.91	0.71	< 0.005	0.03	—	0.03	0.03	—	0.03	—	184	184	0.01	< 0.005	—	185
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.17	0.13	< 0.005	0.01	—	0.01	0.01	—	0.01	—	30.5	30.5	< 0.005	< 0.005	—	30.6
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.06	0.71	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	152	152	0.01	0.01	0.01	154

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.62	4.62	< 0.005	< 0.005	0.01	4.69
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.76	0.76	< 0.005	< 0.005	< 0.005	0.78
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Drainage work (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	0.76	4.18	6.05	0.02	0.15	—	0.15	0.13	—	0.13	—	2,349	2,349	0.10	0.02	—	2,357
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.91	0.76	4.18	6.05	0.02	0.15	—	0.15	0.13	—	0.13	—	2,349	2,349	0.10	0.02	—	2,357
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.06	0.34	0.50	< 0.005	0.01	—	0.01	0.01	—	0.01	—	193	193	0.01	< 0.005	—	194
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	32.0	32.0	< 0.005	< 0.005	—	32.1
Dust From Material Movement	—	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.03	0.59	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	114	114	< 0.005	< 0.005	0.33	116
Vendor	0.01	0.01	0.48	0.09	< 0.005	0.01	0.17	0.18	0.01	0.05	0.06	—	565	565	0.01	0.08	1.17	592

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.04	0.48	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	101	101	< 0.005	0.01	0.01	103
Vendor	0.01	0.01	0.51	0.09	< 0.005	0.01	0.17	0.18	0.01	0.05	0.06	—	565	565	0.01	0.08	0.03	591
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.62	8.62	< 0.005	< 0.005	0.01	8.75
Vendor	< 0.005	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	46.5	46.5	< 0.005	0.01	0.04	48.6
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.43	1.43	< 0.005	< 0.005	< 0.005	1.45
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.69	7.69	< 0.005	< 0.005	0.01	8.04
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.15. Concrete liner (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.49	1.25	7.86	9.89	0.04	0.29	—	0.29	0.26	—	0.26	—	3,972	3,972	0.16	0.03	—	3,986
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.49	1.25	7.86	9.89	0.04	0.29	—	0.29	0.26	—	0.26	—	3,972	3,972	0.16	0.03	—	3,986
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.41	0.34	2.14	2.69	0.01	0.08	—	0.08	0.07	—	0.07	—	1,080	1,080	0.04	0.01	—	1,084
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.06	0.39	0.49	< 0.005	0.01	—	0.01	0.01	—	0.01	—	179	179	0.01	< 0.005	—	179
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.23	0.23	0.11	1.90	0.00	0.00	0.33	0.33	0.00	0.08	0.08	—	349	349	0.01	0.01	1.12	354
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.06	0.02	1.91	0.32	0.01	0.04	0.52	0.56	0.04	0.14	0.18	—	1,839	1,839	0.03	0.29	4.13	1,929
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.21	0.19	0.14	1.54	0.00	0.00	0.33	0.33	0.00	0.08	0.08	—	310	310	0.01	0.02	0.03	315

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.06	0.02	2.04	0.33	0.01	0.04	0.52	0.56	0.04	0.14	0.18	—	1,839	1,839	0.03	0.29	0.11	1,925
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.03	0.42	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	87.3	87.3	< 0.005	< 0.005	0.13	88.7
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	< 0.005	0.54	0.09	< 0.005	0.01	0.14	0.15	0.01	0.04	0.05	—	500	500	0.01	0.08	0.49	524
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	14.4	14.4	< 0.005	< 0.005	0.02	14.7
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.10	0.02	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	82.8	82.8	< 0.005	0.01	0.08	86.8

3.17. Concrete liner (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.44	1.21	6.94	9.82	0.04	0.25	—	0.25	0.23	—	0.23	—	3,973	3,973	0.16	0.03	—	3,987
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	0.18	0.15	0.88	1.25	< 0.005	0.03	—	0.03	0.03	—	0.03	—	505	505	0.02	< 0.005	—	507
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.16	0.23	< 0.005	0.01	—	0.01	0.01	—	0.01	—	83.7	83.7	< 0.005	< 0.005	—	84.0
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.20	0.18	0.13	1.43	0.00	0.00	0.33	0.33	0.00	0.08	0.08	—	304	304	0.01	0.02	0.03	309
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.06	0.02	1.98	0.33	0.01	0.04	0.52	0.56	0.04	0.14	0.18	—	1,792	1,792	0.03	0.29	0.10	1,878
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.01	0.19	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	40.0	40.0	< 0.005	< 0.005	0.06	40.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.25	0.04	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	228	228	< 0.005	0.04	0.21	239
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.63	6.63	< 0.005	< 0.005	0.01	6.73
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	37.7	37.7	< 0.005	0.01	0.03	39.6

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Mobilization / SWPPP installation	Linear, Grubbing & Land Clearing	7/28/2027	8/17/2027	5.00	15.0	—
Borrow area preparations / fence removal	Linear, Grubbing & Land Clearing	7/28/2027	8/17/2027	5.00	15.0	—
Misc. installations	Linear, Grubbing & Land Clearing	3/12/2028	4/15/2028	5.00	25.0	—
Closeout	Linear, Grubbing & Land Clearing	4/15/2028	4/28/2028	5.00	10.0	—
Earthwork (embankment prep)	Linear, Grading & Excavation	8/15/2027	1/15/2028	5.00	110	—
Drainage work	Linear, Drainage, Utilities, & Sub-Grade	3/5/2028	4/15/2028	5.00	30.0	—
Concrete liner	Linear, Paving	8/15/2027	3/5/2028	5.00	145	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Mobilization / SWPPP installation	Off-Highway Trucks	Diesel	Average	4.00	3.00	400	0.38
Mobilization / SWPPP installation	Forklifts	Diesel	Average	2.00	4.00	100	0.20
Borrow area preparations / fence removal	Excavators	Diesel	Average	2.00	6.00	82.0	0.38
Borrow area preparations / fence removal	Off-Highway Trucks	Diesel	Average	4.00	3.00	400	0.38
Borrow area preparations / fence removal	Forklifts	Diesel	Average	2.00	4.00	100	0.20
Borrow area preparations / fence removal	Skid Steer Loaders	Diesel	Average	1.00	4.00	74.0	0.37
Misc. installations	Off-Highway Trucks	Diesel	Average	4.00	3.00	400	0.38
Misc. installations	Forklifts	Diesel	Average	1.00	4.00	100	0.20
Misc. installations	Dumpers/Tenders	Diesel	Average	3.00	8.00	325	0.38
Misc. installations	Generator Sets	Diesel	Average	1.00	6.00	12.0	0.74
Closeout	Off-Highway Trucks	Diesel	Average	4.00	3.00	400	0.38
Closeout	Forklifts	Diesel	Average	1.00	4.00	100	0.20
Closeout	Dumpers/Tenders	Diesel	Average	4.00	8.00	400	0.38
Closeout	Generator Sets	Diesel	Average	1.00	6.00	12.0	0.74
Earthwork (embankment prep)	Excavators	Diesel	Average	2.00	6.00	82.0	0.38
Earthwork (embankment prep)	Off-Highway Trucks	Diesel	Average	4.00	3.00	400	0.38
Earthwork (embankment prep)	Skid Steer Loaders	Diesel	Average	2.00	4.00	74.0	0.37
Earthwork (embankment prep)	Dumpers/Tenders	Diesel	Average	2.00	8.00	400	0.38

Earthwork (embankment prep)	Rollers	Diesel	Average	2.00	6.00	75.0	0.38
Drainage work	Off-Highway Trucks	Diesel	Average	4.00	3.00	400	0.38
Drainage work	Forklifts	Diesel	Average	1.00	4.00	100	0.20
Drainage work	Skid Steer Loaders	Diesel	Average	1.00	4.00	74.0	0.37
Concrete liner	Off-Highway Trucks	Diesel	Average	2.00	4.00	400	0.38
Concrete liner	Forklifts	Diesel	Average	2.00	4.00	100	0.20
Concrete liner	Other Material Handling Equipment	Diesel	Average	2.00	8.00	300	0.40
Concrete liner	Generator Sets	Diesel	Average	2.00	6.00	12.0	0.74

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Mobilization / SWPPP installation	—	—	—	—
Mobilization / SWPPP installation	Worker	20.0	7.70	LDA,LDT1,LDT2
Mobilization / SWPPP installation	Vendor	0.00	4.00	HHDT,MHDT
Mobilization / SWPPP installation	Hauling	4.00	100	HHDT
Mobilization / SWPPP installation	Onsite truck	—	—	HHDT
Borrow area preparations / fence removal	—	—	—	—
Borrow area preparations / fence removal	Worker	20.0	7.70	LDA,LDT1,LDT2
Borrow area preparations / fence removal	Vendor	0.00	4.00	HHDT,MHDT
Borrow area preparations / fence removal	Hauling	0.00	20.0	HHDT
Borrow area preparations / fence removal	Onsite truck	—	—	HHDT
Concrete liner	—	—	—	—

Concrete liner	Worker	60.0	7.70	LDA,LDT1,LDT2
Concrete liner	Vendor	0.00	4.00	HHDT,MHDT
Concrete liner	Hauling	8.00	70.0	HHDT
Concrete liner	Onsite truck	—	—	HHDT
Earthwork (embankment prep)	—	—	—	—
Earthwork (embankment prep)	Worker	30.0	7.70	LDA,LDT1,LDT2
Earthwork (embankment prep)	Vendor	0.00	4.00	HHDT,MHDT
Earthwork (embankment prep)	Hauling	0.00	20.0	HHDT
Earthwork (embankment prep)	Onsite truck	—	—	HHDT
Misc. installations	—	—	—	—
Misc. installations	Worker	10.0	7.70	LDA,LDT1,LDT2
Misc. installations	Vendor	6.00	70.0	HHDT,MHDT
Misc. installations	Hauling	0.00	20.0	HHDT
Misc. installations	Onsite truck	—	—	HHDT
Closeout	—	—	—	—
Closeout	Worker	20.0	7.70	LDA,LDT1,LDT2
Closeout	Vendor	2.00	100	HHDT,MHDT
Closeout	Hauling	0.00	20.0	HHDT
Closeout	Onsite truck	—	—	HHDT
Drainage work	—	—	—	—
Drainage work	Worker	20.0	7.70	LDA,LDT1,LDT2
Drainage work	Vendor	2.00	100	HHDT,MHDT
Drainage work	Hauling	0.00	20.0	HHDT
Drainage work	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Ton of Debris)	Material Exported (Ton of Debris)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Mobilization / SWPPP installation	670	0.00	0.00	0.00	—
Borrow area preparations / fence removal	670	0.00	0.00	0.00	—
Misc. installations	0.00	0.00	0.00	0.00	—
Closeout	0.00	0.00	0.00	0.00	—
Earthwork (embankment prep)	2,880	0.00	0.00	0.00	—
Drainage work	0.00	0.00	0.00	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt

User Defined Linear	0.00	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2027	0.00	204	0.03	< 0.005
2028	0.00	204	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	31.0	annual days of extreme heat
Extreme Precipitation	0.55	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	4	1	1	4
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	71.8
AQ-PM	50.3
AQ-DPM	10.2
Drinking Water	78.4

Lead Risk Housing	69.9
Pesticides	89.6
Toxic Releases	28.0
Traffic	0.70
Effect Indicators	—
CleanUp Sites	53.4
Groundwater	84.7
Haz Waste Facilities/Generators	69.4
Impaired Water Bodies	43.8
Solid Waste	35.7
Sensitive Population	—
Asthma	49.6
Cardio-vascular	71.8
Low Birth Weights	46.3
Socioeconomic Factor Indicators	—
Education	99.3
Housing	32.3
Linguistic	98.7
Poverty	95.1
Unemployment	85.5

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	2.96419864
Employed	8.417810856
Median HI	6.749647119

Education	—
Bachelor's or higher	3.836776594
High school enrollment	20.46708585
Preschool enrollment	19.49185166
Transportation	—
Auto Access	18.65776979
Active commuting	26.34415501
Social	—
2-parent households	19.87681252
Voting	7.083279867
Neighborhood	—
Alcohol availability	64.18580778
Park access	22.57153856
Retail density	2.104452714
Supermarket access	46.72141666
Tree canopy	1.129218529
Housing	—
Homeownership	31.64378288
Housing habitability	38.73989478
Low-inc homeowner severe housing cost burden	16.33517259
Low-inc renter severe housing cost burden	80.44398819
Uncrowded housing	22.82817914
Health Outcomes	—
Insured adults	7.789041447
Arthritis	0.0
Asthma ER Admissions	46.2
High Blood Pressure	0.0
Cancer (excluding skin)	0.0

Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	34.6
Cognitively Disabled	80.8
Physically Disabled	63.7
Heart Attack ER Admissions	11.9
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	62.8
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	12.9
Elderly	75.4
English Speaking	3.3
Foreign-born	84.5
Outdoor Workers	0.3
Climate Change Adaptive Capacity	—
Impervious Surface Cover	88.0

Traffic Density	1.7
Traffic Access	0.0
Other Indices	—
Hardship	95.5
Other Decision Support	—
2016 Voting	32.2

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	83.0
Healthy Places Index Score for Project Location (b)	3.00
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Project specific information for schedule duration and days per phase of construction.
Construction: Off-Road Equipment	Project specific equipment lists and HP from project applicant.

Construction: Dust From Material Movement	Project specific import quantities provided by project applicant.
Construction: Trips and VMT	Trips per phase were provided by the project applicant.
Construction: Paving	No paving done.

APPENDIX B

Biological Resources Technical Report

SAN LUIS CANAL (CALIFORNIA AQUEDUCT POOL 17 AND POOL 18) LINER RAISE PROJECT

Biological Resources Technical Report

Prepared for
California Department of Water Resources
Division of Engineering

October 2025

SAN LUIS CANAL (CALIFORNIA AQUEDUCT POOL 17 AND POOL 18) LINER RAISE PROJECT

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October 2025

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Acronyms and Abbreviations

Acronym	Definition
BRTR	Biological Resources Technical Report
CASP	California Aqueduct Subsidence Program
Cal-IPC	California Invasive Plant Council
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CVP	Central Valley Project
CWHR	California Wildlife Habitat Relationships
DOE	Division of Engineering
DWR	California Department of Water Resources
ESA	Environmental Science Associates
FESA	Federal Endangered Species Act
GPS	Global Positioning System
IPaC	Information for Planning and Consultation
MBTA	Migratory Bird Treaty Act
MP	Milepost
MOU	Memorandum of Understanding
NRCS	Natural Resources Conservation Service
SLC	San Luis Canal
SR	State Route
SWP	State Water Project
USACE	U.S. Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WSDB	Westside Detention Basin
WSE	Water Surface Elevation
WEAP	Worker Environmental Awareness Program

1. Background

The California Department of Water Resources (DWR) South Central Region Office (SCRO) prepared this Biological Resources Technical Report (BRTR) to assess biological resources for the San Luis Field Division (SLFD) California Aqueduct Subsidence Program (CASP) Pool 17 and Pool 18 Liner Raise Project (Project).

CASP has been established to formulate, analyze, evaluate, recommend, and implement actions to address the consequences of subsidence of the California Aqueduct (Aqueduct) in the San Joaquin Valley on the operation and performance of the State Water Project (SWP).

Interim actions or projects have been identified in the SLFD to restore functionality capacity in critical areas to enable DWR to complete water deliveries, thereby increasing operational flexibility and improving safety and reliability. Pools 17 and 18 of the Aqueduct, otherwise known as the San Luis Canal (SLC), were identified as critical.

Subsidence in the SLFD has reduced the lined freeboard, which limits the current operating water surface elevation (WSE) and capacity of the SLC. To maintain capacity as subsidence continues, additional lined freeboard will need to be provided. Freeboard refers to the vertical distance between the design water surface and the top of the concrete canal lining. The amount of freeboard required to fully restore the design capacity will require additional embankment and subsequent liner raise. As an interim solution, select areas of liner in Pools 17 and 18 will be raised by approximately 1 foot and 9 inches for a total length of approximately 8.9 miles on both sides of Pools 17 and 18, to increase the lined freeboard and capacity of the SLC.

2. Environmental Setting

2.1 Project Site

Pools 17 and 18 span from Mile Post (MP) 122.07 to 143.23 of the SLC (**Figure 1**). The centroid of the stretch can be found 11 miles west of the unincorporated community of Five Points in Fresno County. Public Land Survey System is Section 14 of Township 17 South, Range 15 East on the Mount Diablo Principal Meridian, Tres Picos Farms Quad California United States Geologic Survey (USGS) 7.5-minute quadrangle. Liner raises within the Pools are proposed at the following locations (**Table 1, Figure 2**).

Construction will require the use of staging areas and borrow sites for earthen materials. The following locations have been identified for potential use (**Table 2, Figure 3** and **Figure 4**).

Other structures along the SLC that could be affected by the liner raises that would occur as part of the Project. Eleven existing road drains (culverts) that drain storm water that collects between the flood/waste berms and the access road back into the SLC would be rerouted to carry storm water to the opposite side of the berms (away from the SLC). One 36-inch drain inlet pipe would be removed at MP 134.85; this drain is no longer in service, and it would not be replaced.

TABLE 1
LINER RAISE LOCATIONS

Pool	Left Embankment		Right Embankment		Liner Miles
	Upstream MP	Downstream MP	Upstream MP	Downstream MP	
17	128.4	129.0	-	-	0.6
	129.9	130.8	129.9	130.8	1.8
	131.2	132.3	131.2	132.3	2.2
	132.7	132.9	132.7	132.9	0.4
18	133.0	134.3	133.0	135.6	3.9
Total					**8.9**

TABLE 2
STAGING AND BORROW AREA LOCATIONS

Pool	Milepost	Feature
17	127.6 Right	Borrow
	128.5 Right	Staging
	128.6 - 129.6 Left	Borrow
	129.9 - 130.65 Left	Borrow
	130.0 Right	Staging
	130.8 Left	Staging
	130.9 Right	Staging
	131.7 Left	Staging
	131.1 - 131.65 Left	Borrow
	131.75 - 132.2 Left	Borrow
18	132.9 Left	Staging
	133.9 - 134.4 Left	Borrow
	134.9 Right	Staging
	136.05 Left	Borrow

For the purposes of this report, the Project site encompasses the entire project footprint, including the liner raise areas for Pools 17 and 18 and associated areas that could be affected by the liner raises, the staging and borrow areas, and access routes. (**Figures 2 through 4**).

2.2 Physical Conditions

The Project would be located in the western San Joaquin Valley. The average temperature ranges from a high of 77.8° F to a low of 49.5° F. The average annual precipitation is 7.21 inches (National Oceanic and Atmospheric Administration 2024).

The SLC sits on land alternating between three landforms: eroded structural hills, floodplain, and alluvial fan (Natural Resources Conservation Service 2017). Land in the upper watershed is mainly used for livestock grazing. Land use on the alluvial fan and floodplain is dominated by irrigated agriculture.

Surface water is known to interact with the section of the SLC during years of elevated precipitation. The nearby watershed is the Cantua Creek Stream Group located west of the Project site. It originates on the eastern side of the California Coast Range (**Figure 5**). It has a drainage area of 201 square miles. Elevations in this watershed range from 315 feet near the SLC to over 5,100 feet at Santa Rita Peak. The Cantua Creek Stream watershed consists of five major creeks: Arroyo Hondo, Cantua, Salt, Martinez, and Domengine. These creeks drain a portion of the Coast Range and generally flow easterly into the western San Joaquin Valley. Presently, floodwaters from these creeks terminate at four locations, or basins, along an approximate 13-mile stretch of the SLC, with Martinez Creek flowing into Salt Creek approximately 3 miles upstream of the SLC. The large drainage channels can carry significant floodwater and sediment volumes to the basin.

2.3 Land Use

The existing land uses are the operations and maintenance of the SLC, open spaces, and agriculture. The agricultural land use and open spaces extend from the SLC into the surrounding landscapes. Adjacent agricultural land uses are those identified in digitized and verified 2022 crop-type data (Section 4.1.3). The agricultural land uses (e.g., crop types) may vary year-to-year due to normal crop rotations or influenced by changes in market price.

3. Methods

The information provided in this report was obtained from a desktop-level review of biological resources and biological field surveys. Sensitive biological resources including special-status plant and animal species, sensitive natural communities, and aquatic resources that may occur within the Project site were determined, in part, by reviewing natural resource agency databases, relevant literature, and other sources including historic survey data. DWR biologists have conducted countless surveys over the last several decades that contribute to the body of knowledge regarding the protection and distribution of species and habitat presence. A review of this information allowed for initial determinations of sensitive resource distributions and the probability of their occurrence within the Project site.

3.1 Definitions

3.1.1 Special-Status Species

Special-status species are defined as those plants and wildlife that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by federal, state, or local agencies as being under threat from development pressures as well as natural causes. Many of these species receive specific protection that is defined and regulated by the federal Endangered Species Act (FESA) or California Endangered Species Act (CESA).

Other species have been designated as special status on the basis of adopted policies and expertise of state resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and/or special districts to meet local conservation objectives.

Special-status animal species include species that are: (1) listed as threatened or endangered under the CESA or FESA; (2) proposed for federal listing as threatened or endangered; (3) state or federal candidate species; and (4) identified by the California Department of Fish and Wildlife (CDFW) as species of special concern (SSC) or fully protected (FP) species.

Special-status plant species include plants that are: (1) listed as threatened or endangered under the CESA or the FESA; (2) proposed for federal listing as threatened or endangered; (3) state or federal candidate species; (4) designated as rare by the CDFW; and (5) California Rare Plant Rank (CRPR) 1A, 1B, 2A 2B, 3, or 4 species.

- California Rare Plant Rank 1A: Plants presumed extirpated in California and either rare or extinct elsewhere
- California Rare Plant Rank 1B: Plants rare, threatened, or endangered in California and elsewhere
- California Rare Plant Rank 2A: Plants presumed extirpated in California but common elsewhere
- California Rare Plant Rank 2B: Plants rare, threatened, or endangered in California but common elsewhere
- California Rare Plant Rank 3: Plants about which more information is needed, a review list
- California Rare Plant Rank 4: Plants of limited distribution, a watch list

  California Rare Plant Rank Extensions:

  .1 – Seriously threatened in California (greater than 80 percent of occurrences are threatened and/or have a high degree and immediacy of threat).

  .2 – Moderately threatened in California (20 to 80 percent of occurrences are threatened and/or have a moderate degree and immediacy of threat).

“Sensitive” natural communities and habitats are defined by CDFW as those natural communities that have a reduced range and/or are imperiled because of various forms of development and other anthropogenic stressors, including residential and commercial expansion, various forms of agriculture, energy production, mining, etc.

3.1.2 Potential to Occur

The potential for special-status species to occur was assigned to one of four categories, as described below. Special-status species with a potential to occur are evaluated in Section 3.3 of this report.

- High: The species has been recently (since 2015) documented in the vicinity of the Project site, and suitable habitat for the species is present.
- Moderate: The Project site is located within the current range of the species, or there are nearby documented occurrences and suitable habitat for the species is present.
- Low: The Project site is located within the current range of the species, and low-quality habitat is present.
- None: The Project site is located outside of the species current range or suitable habitat to support the species is not present.

3.2 Literature and Database Review

The following information sources were reviewed to identify special-status species and their habitats, sensitive natural communities, aquatic resources, and wildlife movement corridors that may occur within the Project site:

- CDFW California Natural Diversity Database (CNDDB, [2024]), which provides an inventory of the status and locations of rare plants and animals in California. A three-mile search radius was conducted for each site (**Figure 6**).
- California Native Plant Society (CNPS) provides an inventory and ranking of Rare, Threatened, or Endangered vascular plant species of California (CNPS, [2024]). The list serves as the candidate list for listing as threatened and endangered by CDFW. A nine-quadrangle search was conducted for each site (Appendix B).
- United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) Online System (USFWS, [2024a]), which identifies USFWS-managed resources and suggested conservation measures for a defined project; indicates if any listed species, critical habitat, migratory birds, or other protected natural resources may be impacted by the projects; and initiates the regulatory review (Appendix B).
- Environmental Services Association (ESA) *San Luis Canal Embankment and Liner Raise Project Draft Aquatic Resources Delineation Report* (ESA, [2022]) (Appendix C).
- CDFW VegCamp mapping data (VegCamp,[2018]), provides Biogeographic Information and Observation System (BIOS). The mapping layer “Vegetation – Great Valley Ecoregion” [ds2632] was used as a baseline.
- USFWS National Wetlands Inventory online mapping data (USFWS, 2024b) for identification of wetland habitat available for special-tatus species.
- DWR land use mapping data. The review was done by using the verified 2022 DWR Land Use dataset and selecting all fields adjacent to Pools 17 and 18.

- DWR environmental data. DWR has collected environmental data in conjunction with ongoing maintenance projects. Environmental data recorded in the vicinity of the Project site since 2015 is included and analyzed in this technical report. This includes environmental survey data collected as part of ongoing maintenance projects. A summary of the surveys conducted is provided in **Table 3**.

TABLE 3
SURVEYS CONDUCTED NEAR POOLS 17 AND 18 FROM 2015 TO 2024 BY DWR

Pools 17 and 18 Project/Activity	Year(s)	Survey Type
Erosion Repair and Aqueduct Maintenance	2015 - 2024	Biological Resources Assessment
Access Road Maintenance, Mowing and Grading	2015 - 2024	Biological Resources Assessment
Cantua Stream Group Improvements Project	2016	Habitat Assessment
Cantua Stream Group Improvements Project	2016	Protocol Level Burrowing Owl
Cantua Stream Group Improvements Project	2016 - 2017	Burrowing Owl Construction Monitoring
Irrigation Crossing Pipe Inspections and Repair Project	2019	Reconnaissance Den and Burrow Survey
Irrigation Crossing Pipe Inspections and Repair Project	2019	Preconstruction Survey and Monitoring
California Aqueduct Subsidence Program	2020	Vegetation Mapping
California Aqueduct Subsidence Program	2020	Land Use Ground-truthing Surveys
California Aqueduct Subsidence Program	2020	Small Mammal Habitat Survey
California Aqueduct Subsidence Program	2020	Reconnaissance Den and Burrow Survey
CASP Geotechnical Explorations	2021	Preconstruction Surveys and Monitoring
California Aqueduct Subsidence Program	2023 - 2024	Survey Known Sensitive Resources
California Aqueduct Subsidence Program	2024	Western Spadefoot Habitat Assessment

This table does not include discrete maintenance projects in which special-status species observations may have been made but were not detected during a focused survey. However, any species observations collected during these other types of projects not shown in this table have been included in this report.

3.3 Special-Status Species Preliminary Analysis

3.3.1 Special-Status Animal Species

Special-status animal species with a potential to occur within 3 miles of the Project site as reported in USFWS's iPaC and CDFW's CNDDB (**Figure 6**) were analyzed in **Table 4**, which includes listing statuses, brief descriptions of habitat requirements, and a determination of the potential for species to occur within the Project site based on desktop review and general knowledge of the Project site.

Eight special-status wildlife species were determined to have a high potential to occur on the Project site: San Joaquin coachwhip (*Masticophis flagellum ruddocki*), , burrowing owl (*Athene cunicularia*; BUOW), California horned lark (*Eremophila alpestris actia*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus hudsonius*), prairie falcon (*Falco mexicanus*), Swainson's hawk (*Buteo swainsoni*), and white-tailed kite (*Elanus leucurus*).

Four special-status animal species were determined to have a moderate potential to occur on the Project site: short-eared owl (*Asio flammeus*), tricolored blackbird (*Agelaius tricolor*), yellow-headed blackbird (*Xanthocephalus xanthocephalus*), and American badger (*Taxidea taxus*).

Nine special-status animal species were determined to have a low potential to occur on the Project site: San Joaquin kit fox (*Vulpes macrotis mutica*), giant kangaroo rat (*Dipodomys ingens*), Northern California legless lizard (*Aniella pulchra*), California glossy snake (*Arizona elegans occidentalis*), Western pond turtle (*Actinemys marmorata*), golden eagle (*Aquila chrysaetos*), long-billed curlew (*Numenius americanus*), western spadefoot (*Spea hammondii*), and Crotch's bumble bee (*Bombus crotchii*).

All other special-status animal species listed below were determined to have no potential to occur on the Project site due to lack of suitable habitat or other considerations and are not discussed further.

TABLE 4
REVIEW OF REGIONALLY OCCURRING SPECIAL-STATUS ANIMAL SPECIES

Common Name ***Scientific Name***	**Listing Status**	**Habitat Requirements**	**Potential for Occurrence**
AMPHIBIANS			
Mole Salamanders (Ambystomatidae)			
California tiger salamander – central Califonria DPS *Ambystoma californiense*	FT, ST, CDFW WL	Restricted to grasslands and low foothills with pools or ponds that are necessary for breeding.	None. Although marginal upland habitat is present, no breeding habitat is identified within or near the Project. No occurrence has been recorded within the 3-mile search radius of the Project site.
True Frogs (Ranidae)			
California red-legged frog *Rana draytonii*	FT, CDFW SSC	Annual grassland and grassy understory of valley-foothill hardwood habitats in central and northern California. Needs underground refuges and vernal pools or other seasonal water sources.	None. Although marginal habitat is present there are no suitable water sources in the Project site. No occurrence has been recorded within the 3-mile search radius of the Project site.
Spadefoot Toads (Scaphiopodidae)			
Western spadefoot *Spea hammondii*	FPT, CDFW SSC	Mixed woodland, grasslands, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Prefers washes and other sandy areas with patches of brush and rocks. Rain pools or shallow temporary pools, which do not contain bullfrogs, fish, or crayfish are necessary for breeding. Perennial plants are a major food source.	Low. Marginal habitat is present within the Project site. Although temporary stands of water from storms or agriculture runoff are sometimes present. There are recorded occurrences within 3 miles of the Project site in CNDDB. The species was heard near Check 17 in 2024.

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
REPTILES			
Leopard Lizards (Crotaphytidae)			
Blunt-nosed leopard lizard *Gambelia sila*	FE, SE, CDFW FP	Inhabits semiarid grasslands, alkali flats, and washes. Prefers flat areas with open space for running, avoiding densely vegetated areas. Uses mammal dens and burrows for cover and shelter. Will use large shrubs with dense canopy cover for refuge and thermoregulation.	None. Grassland habitat is present within the Project site, however the high density and ruderal nature of the habitat it is not suitable. No occurrence has been recorded within the 3-mile search radius of the Project site.
Legless Lizards (Anniellidae)			
Northern California legless lizard *Aniella pulchra*	CDFW SSC	Found in the San Joaquin Valley in loose sandy soils with moisture. Often found in coastal areas with sandy soils.	Low. Sparse marginal habitat is present within the Project. The species has not been detected during surveys. One recorded occurrence has been documented in CNDDB within 3 miles of the Project site.
Egg-Laying Snakes (Colubridae)			
California glossy snake *Arizona elegans occidentalis*	CDFW SSC	Inhabits arid scrub, rocky washes, grasslands, and chaparral habitats. Appears to prefer microhabitats of open areas with friable soils for burrowing.	Low. Marginal habitat is present within the Project site. No occurrence has been recorded within the 3-mile search radius of the Project site.
San Joaquin coachwhip *Masticophis flagellum ruddocki*	CDFW SSC	Inhabits open, dry, treeless areas with little or no cover, including valley grassland and saltbush scrub. Takes refuge in rodent burrows, under shaded vegetation, and under surface objects.	High. Suitable habitat is present within the Project site. The species has been detected north and south of the Project site during surveys. There are no recorded occurrences within 3 miles of the Project site in CNDDB.
Giant gartersnake *Thamnophis gigas*	FT, ST	Agricultural wetlands such as rice fields and other waterways including irrigation and drainage canals, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands in the Central Valley.	None. Irrigation canals are present within the Project site but do not contain the necessary cover and preferred conditions. No occurrence has been recorded within the 3-mile search radius of the Project site.
Freshwater Turtles (*Emydidae*)			
Western pond turtle *Actinemys marmorata*	FPT, CDFW SSC	Permanent and intermittent waterways. Terrestrial habitat is also important for basking and egg-laying.	Low. Suitable habitat is present within the Project site. No occurrence has been recorded within the 3-mile search radius of the Project site.
BIRDS			
Hawks, Kites, Harriers, & Eagles (Accipitridae)			
Golden eagle *Aquila chrysaetos*	CDFW FP, CDFW WL	Found in a variety of habitats including shrublands, grasslands, farmland, and areas along rivers and streams. Prefer partially or completely open country, especially around mountains, hills, and cliffs.	Low. Only foraging habitat is present in the Project. No occurrence has been recorded within the 3-mile search radius of the Project site.

Common Name ***Scientific Name***	**Listing Status**	**Habitat Requirements**	**Potential for Occurrence**
Swainson's hawk *Buteo swainsoni*	ST	Found in Great Basin grassland, riparian forest, riparian woodland, valley and foothill grassland. Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, alfalfa, or grain fields supporting rodent populations.	High. Foraging, breeding, and nesting habitat are present within the Project site. This species has been observed during past surveys and documented within 3 miles of the Project in CNDDB.
Northern harrier *Circus hudsonius*	CDFW SSC, USFWS BCC	Nests and forages in meadows, marshes, and grasslands.	High. Foraging and breeding habitat are present within the Project site. This species has been observed during past surveys and documented within 3 miles of the Project site in CNDDB.
White-tailed kite *Elanus leucurus*	CDFW FP	Found year-round in coastal and valley lowlands; rarely found away from agricultural areas. Inhabits herbaceous and open stages of most habitats mostly in cismontane California.	High. Suitable habitat is present within the Project. The species has been historically observed foraging in the vicinity of the Project, however, there are no recorded occurrences of nesting within 3 miles of the Project site on CNDDB.
Falcons (Falconidae)			
Prairie falcon Falco mexicanus	CDFW WL	Found in annual grasslands to alpine meadows, but is associated primarily with perennial grasslands, savannahs, rangeland, agricultural fields, and desert scrub areas.	High. Suitable habitat is present within the Project site. Historic detections have been made during surveys, however, there are no recorded occurrences within 3 miles of the Project site on CNDDB.
True Owls (Strigidae)			
Burrowing owl *Athene cunicularia*	SC, USFWS BCC	Found in open grasslands with low vegetation, golf courses, and disturbed and ruderal habitat in urban areas. Usually nests in old burrows of ground squirrels, or other small mammals.	High. Foraging and breeding habitat are present within the Project site. This species has been observed during past surveys and documented in the CNDDB within 3 miles of the Project site.
Short-eared owl *Asio flammeus*	CDFW SSC, USFWS BCC	Found in prairies, grasslands, meadows, and agricultural areas. Prefers large, open areas with low vegetation.	Moderate. Suitable habitat is present within the Project site, but no detections have been made during surveys. One recorded occurrence was documented in CNDDB approximately 3 miles from the northern end of the Project site.
New World Vultures (Cathartidae)			
California condor *Gymnogyps californianus*	FE, SE, CDFW FP	Grassland, chaparral, oak, savannah, and coniferous forests. Large trees or cliff faces are required for nesting.	None. Grassland habitat is the only suitable habitat present and there is no nesting opportunities located in the Project site. No occurrence has been recorded within the 3-mile search radius of the Project site.

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
Shrikes (Laniidae)			
Loggerhead shrike *Lanius ludovicianus*	CDFW SSC	Found in broken woodlands, savannah, pinyon-juniper, Joshua tree, riparian forests, desert oases, scrub, and washes. Prefers open country for hunting, with perches for scanning, and dense shrubs and brush for nesting.	High. Suitable habitat is present within the Project site. Detections have been made during surveys and there are recorded occurrences in CNDDB within 3 miles of the Project site.
Larks (Alaudidae)			
California horned lark *Eremophila alpestris actia*	CDFW WL	Found in prairies and heavily grazed pastures. Prefers bare, dry ground and areas of short, sparse vegetation.	High. Suitable habitat is present within the Project site. This species has been observed north and south of the Project site, but not within; there are recorded occurrences in CNDDB within 3 miles of the Project site.
Blackbirds (Icteridae)			
Tricolored blackbird *Agelaius tricolor*	ST, CDFW SSC, USFWS BCC	Largely endemic to California, most numerous in the Central Valley and nearby vicinity. Typically requires open water, protected nesting substrate, and foraging grounds within vicinity of the nesting colony. Nests in dense thickets of cattails, tules, willow, blackberry, wild rose, and other tall herbs near fresh water. Also nests in agricultural crops (e.g., silage), where colonies are threatened during harvest.	Moderate. Although sparse marginal nesting habitat for the species occurs on site, this species has been observed foraging north of the Project site and recorded observations are documented in CNDDB within 3 miles of the Project site. This species was not observed during focused surveys conducted for the species in 2024. Although this species is unlikely to nest on site, it could be observed foraging in the area on occasion.
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	CDFW SSC	Breeds almost exclusively in marshes with tall emergent vegetation, such as tule or cattail stands, generally in open areas and edges over relatively deep water. During migration and winter, prefers open cultivated lands, fields, and pastures.	Moderate. Suitable nesting habitat is sparse in the Project site. Historic detections have been made during surveys and recorded observations are documented in CNDDB within 3 miles of the Project site. This species is unlikely to nest on site but could forage in the area on occasion.
Sandpipers and Allies (Scolopacidae)			
Long-billed curlew *Numenius americanus*	CDFW WL	Found in lowland areas near agriculture in the interior of California. The Central and Imperial Valleys are important areas for wintering and migrating.	Low. Although suitable habitat is present within the Project site, there are no recent recorded occurrences within 3 miles of the Project site in CNDDB.
MAMMALS			
Squirrels & relatives (Sciuridae)			
San Joaquin antelope squirrel *Ammospermopilus nelsoni*	ST	Found in relatively arid annual grassland and shrubland communities. Prefer areas with a sparse-to-moderate cover of shrubs such as saltbushes.	None. Suitable habitat is not present within the Project. This species has not been detected during surveys. There is one recorded occurrence within 3 miles of the Project site in CNDDB from 1932.

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
Kangaroo rats, Pocket mice, & Kangaroo mice (Heteromyidae)			
Fresno kangaroo rat *Dipodomys nitratoides exilis*	FE, SE	Inhabits arid, alkaline, annual grassland and shrubland associations between 60 and 90 meters above sea level. Uses nearly level terrain with sandy loam soils for excavation of burrows.	None. Suitable habitat is not present within the Project site. No occurrence has been recorded within the 3-mile search radius of the Project site.
Giant kangaroo rat *Dipodomys ingens*	FE, SE	Inhabits fine sandy loam soils supporting sparse annual grass/forb vegetation and marginally found in low-density alkali desert scrub.	Low. Suitable habitat is not present within the Project site. However, the species has recorded occurrences documented 3 miles west of the Project site.
Mice, Rats, & Voles (Muridae)			
Tulare grasshopper mouse *Onychomys torridus*	CDFW SSC	Found in arid shrubland communities in hot, arid grassland and shrubland associations, such as saltbush scrub.	None. Suitable habitat is not present within the Project site. No occurrence has been recorded within the 3-mile search radius of the Project site.
Foxes, Wolves, Coyotes (Canidae)			
San Joaquin kit fox *Vulpes macrotis mutica*	FE, ST	Grassland or grassy open stages with scattered shrubby vegetation; requires loose textured sandy soils for burrowing; requires suitable prey base of small rodents.	Low. Suitable habitat is present within the Project site. Detections have not been made during surveys, but the area has been documented as a corridor for the species in the past. There are no recorded occurrences within 3 miles of the Project site in CNDDB.
Weasels & relatives (Mustelidae)			
American badger *Taxidea taxus*	CDFW SSC	Found in dry, open grasslands, fields, and pastures. Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	Moderate. Suitable habitat is present within the Project. Although this species has been observed north of the Project site and there are recorded occurrences within 3 miles of the Project site in CNDDB, this species was not observed during surveys conducted for the species in 2024.
INSECTS			
Bumble Bees (Bombus)			
Crotch's bumble bee *Bombus crotchii*	SC	Occurs primarily in California. Prefers grassland and scrub area within drier climates. They overwinter in leaf litter and soft soil.	Low. Marginal habitat for foraging may be present, however, succession blooms are not available to sustain nesting. Given the intensive agricultural land and pesticide use in the vicinity, conditions are likely unfavorable for the establishment of bee populations within the project site.
Brush-footed butterflies (Nymphalidae)			
Monarch butterfly *Danaus plexippus*	FC	Live mainly in prairies, meadows, and grasslands. Their life cycle depends on the host plant, milkweed.	None. Although grassland is present in the right-of-way there is limited food availability for the species to survive on. Species' known host plant has not been documented at the Project site.

Common Name *Scientific Name*	Listing Status	Habitat Requirements	Potential for Occurrence
FISH			
Smelts (Nymphalidae)			
Delta smelt *Hypomesus transpacificus*	FT, SE	The upper Sacramento-San Joaquin Delta of California.	None. Suitable habitat is not present within the Project site. No occurrence has been recorded within the 3-mile search radius of the Project site.
BRACHIOPODS			
Fairy Shrimp (Branchinectidae)			
Vernal pool fairy shrimp *Branchinecta lynchi*	FT	Ephemeral freshwater habitats including alkaline pools, clay flats, vernal pools, vernal lakes, vernal swales, and other types of seasonal wetlands.	None. Suitable habitat is not present within the Project site. No occurrence has been recorded within the 3-mile search radius of the Project site.

NOTES: CDFW FP= California Fully Protected; CDFW SSC = California Species of Special Concern; FC = Federal Candidate for Listing; FE = Federally Endangered; FPT = Federally Proposed Threatened; FT = Federally Threatened; SE = Federally Endangered; ST = State Threatened; SC = State Candidate for Listing; USFWS BCC = Birds of Conservation Concern

3.3.2 Special-Status Plant Species

Special-status plant species as reported in USFWS's iPaC, CDFW's CNDDB, and CNPS were analyzed in **Table 5**, which includes listing statuses, brief descriptions of habitat requirements, and a determination of the potential for species to occur within the Project site based on desktop review and general knowledge of the Project site.

Four species have been recorded in the CNDDB or CNPS within 3 miles of the Project site; San Joaquin woollythreads (*Monolopia congdonii*), showy golden madia (*Madia radiata*), forked fiddleneck (*Amsinckia furcate*), and Indian Valley bush-mallow (*Malacothamnus aboriginum*).

All special-status plant species listed below were determined to have low or no potential to occur on the Project site due to lack of suitable habitat or other considerations and are not discussed further.

TABLE 5
REVIEW OF REGIONALLY OCCURRING SPECIAL-STATUS PLANT SPECIES

Common Name *Scientific Name*	Listing Status (Fed/State/ CRPR)	Flowering Period	Habitat Requirements	Potential for Occurrence
Asteraceae (Sunflower Family)				
western lessingia *Benitoa occidentalis*	CRPR 4.3	May-Nov.	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland. Elevation range extends from 450 to 1070 meters above mean sea level (amsl).	None. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2015 more than 15 miles west of the Project.

Common Name *Scientific Name*	Listing Status (Fed/State/ CRPR)	Flowering Period	Habitat Requirements	Potential for Occurrence
Hall's tarplant *Deinandra halliana*	CRPR 1B.2	Apr.-May	Chenopod scrub, cismontane woodland, and valley and foothill grassland. Elevation range extends from 260 to 950 meters above mean sea level (amsl).	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2017 more than 9 miles west of the Project.
pale-yellow layia *Layia heterotricha*	CRPR 1B.1	Mar.-Jun.	Cismontane woodland, coastal scrub, pinyon and juniper woodland, and valley and foothill grassland. Elevation range extends from 300 to 1,705 meters amsl.	Low. Marginal habitat is present in the right of way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1994 more than 8 miles west of the Project.
Munz's tidy-tips *Layia munzii*	CRPR 1B.2	Mar.-Apr.	Chenopod scrub, Valley and foothill grassland (alkaline clay) Elevation range extends from 150 to 700 meters amsl.	Low. Marginal habitat is present in the right of way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1940 more than 6 miles west of the Project.
showy golden madia *Madia radiata*	CRPR 1B.1	Mar.-May	Cismontane woodland and valley and foothill grassland. Elevation range extends from 25 to 1,215 meters amsl.	Low. Marginal habitat is present in the right of way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1935 more than 3 miles west of the Project.
sylvan microseris *Microseris sylvatica*	CRPR 4.2	Mar.-Jun.	Chaparral, Cismontane woodland, Great Basin scrub, Pinyon and juniper woodland, Valley and foothill grassland. Elevation range extends from 45 to 1,500 meters amsl.	Low. Marginal habitat is present within the right of way; however, the only nearby occurrence was last confirmed in the adjacent "Joaquin Rocks' quad in 1996.
San Joaquin woollythreads *Monolopia congdonii*	FE CRPR 1B.2	Feb.-May	Chenopod scrub and valley and foothill grassland (sandy). Elevation range extends from 60 to 800 meters amsl.	Low. Suitable habitat is present in the right of way, however, the species has not been observed within 3 miles of the Project since the 1940's. A revisit in 1988 by CDFW did not observe the species and noted no native habitat remained at the site.
chaparral ragwort *Senecio aphanactis*	CRPR 2B.2	Jan.-Apr. (May)	Chaparral, Cismontane woodland, Coastal scrub. Elevation range extends from 15 to 800 meters amsl.	None. Habitat is not present. The nearest observation occurred in 2023 more than 8 miles west of the Project.
Boraginaceae (Forget-Me-Not Family)				
forked fiddleneck *Amsinckia furcata*	CRPR 4.2	Feb.-May	Cismontane woodland, Valley and foothill grassland. Elevation range extends from 50 to 1,000 meters amsl.	Low. Marginal habitat is present in the right of way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1937 more than 2 miles west of the Project.
Brassicaceae (Cabbage Family)				
Panoche pepper-grass *Lepidium jaredii* ssp. *album*	CRPR 1B.2	Feb.-Jun.	Valley and foothill grassland with clay, steep slopes, and sometimes alkaline soils. Elevation range extends from 185 to 745 meters amsl.	Low. Marginal habitat is present in the right of way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 2023, more than 8 miles west of the Project.

Common Name *Scientific Name*	Listing Status (Fed/State/ CRPR)	Flowering Period	Habitat Requirements	Potential for Occurrence
Chenopodiaceae (Goosefoot Family)				
Lost Hills crownscale *Atriplex coronata* var. *vallicola*	CRPR 1B.2	Apr.-Sep.	Chenopod scrub, valley and foothill grassland, and vernal pools. Elevation range extends from 50 to 635 meters amsl.	Low. Marginal habitat is present within the AOI but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. Nearest observation from 2016 occurred more than 7 miles west of the Project.
crownscale *Atriplex coronata* var. *coronata*	CRPR 4.2	Mar.-Oct.	Chenopod scrub, valley and foothill grassland, and vernal pools. Elevation range extends from 1 to 590 meters amsl.	Low. Marginal habitat is present in the right of way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 2005 more than 9 miles west of the Project.
Lamiaceae (Mint Family)				
San Benito thorn-mint *Acanthomintha obovata ssp. obovata*	CRPR 4.2	Apr.-Jul.	Chaparral, Cismontane woodland, Valley and foothill grassland. Elevation range extends from 395 to 1,500 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2015 more than 15 miles west of the Project.
San Benito monardella *Monardella antonina ssp. benitensis*	CRPR 4.3	Apr.-Sep.	Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland. Elevation range extends from 500 to 1,570 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2004 more than 11 miles west of the Project.
San Joaquin bluecurls *Trichostema ovatum*	CRPR 4.2	Jul.-Oct.	Chenopod scrub, Valley and foothill grassland. Elevation range extends from 65 to 320 meters amsl.	Low. Marginal habitat is present in the right of way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1937 more than 10 miles northeast of the Project.
Liliaceae (Lily Family)				
stinkbells *Fritillaria agrestis*	CRPR 4.2	Mar.-Jun.	Chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland. Elevation range extends from 10 to 1,555 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2015 more than 15 miles west of the Project.
Malvaceae (Mallow Family)				
Indian Valley bush-mallow *Malacothamnus aboriginum*	CRPR 1B.2	Apr.-Oct.	Chaparral and cismontane woodland. Elevation range extends from 150 to 1,700 meters amsl.	None. Suitable habitat does not occur within the Project. The high degree of past and ongoing disturbance further reduces the likelihood for this perennial species to occur. The nearest observation occurred in 1998 more than 3 miles west of the Project.

Common Name *Scientific Name*	Listing Status (Fed/State/ CRPR)	Flowering Period	Habitat Requirements	Potential for Occurrence
Onagraceae (Evening Primrose Family)				
Brewer's clarkia *Clarkia breweri*	CRPR 4.2	Apr.-Jun.	Chaparral, Cismontane woodland, Coastal scrub. Elevation range extends from 215 to 1,115 meters amsl.	None. Suitable habitat does not occur within the Project. The high degree of past and ongoing disturbance further reduces the likelihood for this perennial species to occur. The nearest observation occurred in 2004 more than 11 miles west of the Project.
Papaveraceae (Poppy Family)				
San Benito poppy *Eschscholzia hypecoides*	CRPR 4.3	Mar.-Jun.	Chaparral, Cismontane woodland, Valley and foothill grassland. Elevation range extends from 200 to 1,500 meters amsl.	Low. Marginal habitat is present in the right of way, but the degree of past and ongoing disturbance reduces the likelihood for this species to occur. The nearest observation occurred in 1988 more than 5 miles west of the Project.
Polemoniaceae (Phlox Family)				
few-flowered eriastrum *Eriastrum sparsiflorum*	CRPR 4.3	May-Sep.	Chaparral, Cismontane woodland, Great Basin scrub, Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland. Elevation range extends from 1,075 to 1,710 meters amsl.	None. Suitable habitat does not occur within the Project. The high degree of past and ongoing disturbance further reduces the likelihood for this perennial species to occur. The nearest observation occurred in 2004 more than 11 miles west of the Project.
Panoche navarretia *Navarretia panochensis*	CRPR 1B.3	Apr.-Aug.	Chenopod scrub, Valley and foothill grassland. Elevation range extends from 330 to 860 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2019 more than 10 miles west of the Project.
prostrate vernal pool navarretia *Navarretia prostrata*	CRPR 1B.2	Apr.-Jul.	Coastal scrub, Meadows and seeps, Valley and foothill grassland (alkaline), Vernal pools. Elevation range extends from 3 to 1,210 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2004 more than 12 miles west of the Project.
Polygonaceae (Buckwheat Family)				
cottony buckwheat *Eriogonum gossypinum*	CRPR 4.2	Mar.-Sep.	Chenopod scrub and valley and foothill grassland. Elevation range extends from 100 to 550 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2003 more than 7 miles west of the Project.
protruding buckwheat *Eriogonum nudum var. indictum*	CRPR 4.2	May-Oct.	Chaparral, Chenopod scrub, and cismontane woodland. Elevation range extends from 150 to 1,463 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2020 more than 8 miles west of the Project.
Idria buckwheat *Eriogonum vestitum*	CRPR 4.3	Apr.-Aug.	Valley and foothill grassland. Elevation range extends from 235 to 900 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 1995 more than 10 miles north of the Project.

Common Name *Scientific Name*	Listing Status (Fed/State/ CRPR)	Flowering Period	Habitat Requirements	Potential for Occurrence
Primulaceae (Primerose Family)				
California androsace *Androsace elongata* ssp. *acuta*	CRPR 4.2	Mar.-Jun.	Chaparral, Cismontane woodland, Coastal scrub, Meadows and seeps, Pinyon and juniper woodland, Valley and foothill grassland. Elevation range extends from 150 to 1,305 meters amsl.	Low. Marginal habitat is present in the right of way; however, occurrences of the species are primarily in the coast range. The nearest observation occurred in 2010 more than 7 miles west of the Project.

NOTES: FE = Federally Endangered

CRPR = California Rare Plant Ranking

1B = Plants Rare, Threatened, or Endangered in California and Elsewhere

2B = Plants Rare, Threatened, or Endangered in California and Elsewhere but Are More Common Elsewhere

4B = Watch List: Plants of Limited Distribution

0.1 = Seriously Threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

0.2 = Moderately Threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

0.3 = Not Very Threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

3.3.3 Habitat Connectivity

Wildlife corridors, or habitat corridors, are natural or semi-natural lands (e.g., rural, agricultural, ruderal, barren) that connect populations of wildlife and larger habitat areas across the landscape. While these resources may be utilized strictly for travel purposes, for example, a dry culvert under a roadway or bridge, they can contain natural vegetation and habitats that support foraging, roosting, and breeding activities as well.

Wildlife movement corridors are critical for the long-term health of ecological systems for several reasons. Corridors provide connections that provide wildlife with access to water, food, and cover sources, spatially linking these three resources with wildlife in different areas. In addition, wildlife movement between habitat areas provides for genetic exchange between populations of wildlife in otherwise separated natural areas, thereby improving genetic variability within species which also enhances a species' ability to respond to changing environmental conditions. This is especially critical for small populations subject to loss of variability from genetic drift and effects of inbreeding.

Habitat connectivity in relation to the SLC can be considered in three main aspects—north to south along the SLC, east to west across the SLC, and the open water environment within the SLC.

- **North to South**. The SLC runs generally north to south along California's Central Valley and can be considered a link between habitats dispersed throughout the Central Valley. The north to south connection along both sides of the SLC is open and can provide temporary habitat for traveling wildlife.
- **East to West**. The habitat connectivity from east to west is less open due to the aquatic nature of the SLC. Periodic bridges, overchutes, and utility crossings over the canal provide

terrestrial passage from one side to the other. Structures and crossings may also be used for bird or bat nesting and roosting.

- **Open Water**. Waterfowl and coastal bird species often use the SLC as a resting area during the spring and fall migratory periods. Bats and birds forage for insects over the open water.

3.4 Field Surveys

General evaluations or biological resource surveys were conducted within the vicinity of Pools 17 and 18, including within the SLC, DWR rights-of-way, and adjacent lands. Field surveys were conducted for vegetation, general habitat assessments, land use, and aquatic and biological resources (**Table 3**). Biological resources surveyed consisted of focused and general evaluations for known and potential special-status species presence, including, blunt-nosed leopard lizard (*Gambelia sila*) habitat, western spadefoot, burrowing owl, Swainson's hawk and nesting raptors, tricolored blackbird, swallows (*Hirundinidae*), bats (*Chiroptera*), small mammal habitat, San Joaquin kit fox, canid dens and burrows, and Crotch's bumble bee (*Bombus crotchii*). Although protocol-level surveys were not performed for all special-status species over the entire pools, the extensive number of surveyor hours in the field during targeted or reconnaissance surveys, past and present, increased the potential for sensitive resources to be observed and documented. All relevant survey data compiled from 2015 and onward was used in preparation of this report.

3.4.1 Habitat Surveys

Vegetation and Habitat Mapping

Vegetation and habitat mapping occurred in February 2020 between MP 122.0 and MP 172.5, along the DWR right-of-way from the SLC to the adjacent property boundaries. Surveys consisted of driving all accessible roads within the SLC right-of-way and stopping when necessary to classify vegetation alliances.

Vegetation communities were defined by the dominant species and categorized into vegetation alliances based on the definitions included in *A Manual of California Vegetation* (Manual) (Sawyer et al. 2009). Each stand identified had both compositional and structural integrity as defined in the CDFW-CNPS Protocol for the Combined Vegetation Rapid Assessment and Relevé Field Form (CNPS 2019). The minimum mapping units described in the CDFW-CNPS Protocol of one acre for upland vegetation and 0.5 acres for special stands, including riparian areas and wetlands, were used in the assessments.

Vegetation was also mapped as part of the aquatic resource surveys, as described further in sections below, and the results were added to the vegetation and habitat maps.

General Habitat Assessment

General habitat assessment surveys in the vicinity of Pools 17 and 18 have been conducted annually for maintenance projects such as erosion repairs and vegetation management. Results from surveys conducted from 2015 to 2024 are included in this report. During general habitat assessments, all observations of special-status species and their suitable habitat were

recorded. These surveys included pedestrian, windshield, or a combination thereof using the SLC access roads, toe roads, and publicly accessible roads. Species or species' resources (e.g., habitat and microhabitat) were visually identified using a spotting scope, binoculars, or unaided vision. In areas of potential interest, such as areas with sensitive or native habitat features, pedestrian surveys were conducted to ensure total visual coverage of the area.

Aquatic Resources

In 2021, a desktop review of aerial photographs (1984–2021) was completed. Mapped vegetation types, soil surveys, U.S. Geological Survey 7.5-minute topographic quadrangle maps, and the National Wetlands Inventory were referenced for signatures of hydrophytic vegetation, inundation and/or soil saturation, topographic depressions, or channelization (ESA, 2022).

Aquatic resource delineation and mapping surveys were performed on June 22, 23, and 24 and September 28, 2021, at ephemeral drainages that were identified along Cantua Creek and Salt Creek. The delineation and mapping was completed following the protocols described in the *1987* [U.S. Army] *Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (USACE 2008). Aquatic resources and the associated vegetation types in the vicinity were identified and are described in Section 4.3, below.

3.4.2 Special-Status Species Surveys

Blunt-nosed Leopard Lizard

Blunt-nosed leopard lizard is found in semiarid grasslands, alkali flats, and washes. The species also requires the presence of small mammal burrows for use. The species prefers flat areas with open space for running and thus avoids densely vegetated areas.

A desktop analysis was conducted using past general assessment from 2015 through the current year of areas within the Project site with potentially suitable habitat to conduct protocol level surveys for the species.

Suitable habitat was not identified in the vicinity of the Project site; therefore, protocol surveys were not conducted.

Western Spadefoot

Suitable breeding sites for western spadefoot include turbid ephemeral pools, such as vernal pools, stock ponds, roadside ditches, irrigation ditches, and deep pools within ephemeral creek beds with extended hydroperiod after flows have subsided for the season. Suitable upland habitat can include open grassland habitat and open shrubland with sandy friable soils, with presence of small mammal burrows.

Potential suitable upland and breeding habitats for western spadefoot were identified using aerial imagery and USFWS National Wetlands Inventory. Research conducted by Baumberger et al. (2019), was incorporated for search distances and habitat suitability. Field verifications were then conducted and once suitable habitat presence was confirmed, visual surveys to

determine species presence occurred. The surveys also included verifying the suitability of upland habitat identified by the habitat suitability model. Based on research conducted by Baumberger et al. (2019), the habitat suitability model was developed using a maximum distance of 262 meters from suitable aquatic habitats to upland soil types that spadefoots prefer for aestivation. The survey methodology to determine presence of western spadefoot is described below.

Spadefoot diurnal surveys were conducted beginning of March until mid-July 2024. Surveys were focused on western spadefoot individuals in the egg, larval, and metamorph life stages and occurred at suitable breeding sites within and adjacent to the DWR right-of-way. Surveys involved visually inspecting the pools for any signs of amphibian presence; when present, further inspection was done by dip-netting larval amphibians to identify the species. Dip-netting was done when visual inspection alone wasn't sufficient for adequately surveying the pools. Plastic handled dip-nets with nylon mesh and fine mesh aquarium nets were used to sweep through vegetation and other debris when sampling the pools for spadefoots and other amphibians. The number of sweeps varied per pool based on the size of the pool and whether spadefoot was previously observed at that location.

Pools that were too difficult to dip-net because of muddy conditions or depth were revisited later to check for metamorphs within the adjacent upland. Any metamorph amphibians encountered were hand-captured to identify the species. Shallow ephemeral pools along roads and road shoulders with the presence of spadefoot larvae were revisited to determine if metamorphosis was completed before the breeding pool dried up.

Estimation of the total number and life stages of each species were recorded. Larval and metamorph amphibians were inspected for abnormalities, and representative photographs of each individual were taken. In addition, pools and surrounding upland habitat where spadefoots were observed were photographed. Additional data collected included estimated pool size, depth, and notes on habitat and vegetation in and near the pool.

Swainson's Hawk and Nesting Raptors

The species is observed throughout the Central Valley during the spring and summer. They depend on annual grasslands and agricultural fields for foraging. The species also requires structures or trees for nesting opportunities. Single trees, small stands of trees spread amongst the agricultural fields, structures, and homesteads with shade trees provide nesting habitat for the species.

Swainson's hawk surveys were conducted in 2015 and 2016 along the SLC between MP 128.0 and MP 141.0. Surveys were conducted by windshield and methods were consistent with the *Swainson's Hawk Technical Advisory Committee Recommended Timing and Methodology* (2000). Incidental observations of nests were documented during other site assessments that occurred within the vicinity of Pools 17 and Pool 18; thus, data going back to 2015 is included in this report. In 2021, DWR biologists surveyed occupied or suitable nest trees within the vicinity of Pools 17 and 18 and those within the line of sight from the SLC to determine the potential for nesting raptors.

A desktop analysis using aerial imagery identified areas within the vicinity of the Project site with potentially suitable nesting trees for Swainson's hawk and other nesting raptors. A field-based habitat assessment at these locations verified habitat suitability for Swainson's hawk and other nesting raptors. Surveys occurred in the DWR right-of-way and the immediately adjacent area, depending on access and visual capabilities, with an approximately 0.25 to 0.5-mile buffer around the SLC. Individual observations of Swainson's hawk, nest locations, and active or suitable nesting trees were documented. Surveys were conducted by windshield and methods were consistent with the *Swainson's Hawk Technical Advisory Committee Recommended Timing and Methodology* (2000). Surveys were conducted between February 18, 2021, and August 4, 2021.

Tricolored Blackbird

Tricolored blackbirds typically require open water, protected nesting substrate, and foraging grounds within the vicinity of the nesting colony. This species nests in dense thickets of cattails (*Typha* spp.), tules (*Schoenoplectus* sp.), willow (*Salix* spp.), blackberry (*Rubus* spp.), wild rose (*Rosa* spp.), and other tall herbs near fresh water. They also nest in crops such as grains or silage.

Potential suitable nesting habitat included areas where the above criteria were partially or fully met, and they were identified by analyzing existing baseline data and aerial imagery. Biologists then conducted a field-based habitat assessment at these locations to verify habitat suitability for tricolored blackbird in May 2021. Surveys occurred in the DWR right-of-way and the immediately adjacent area, depending on access and visual capabilities, with an approximately 0.25 to 0.5-mile buffer around the SLC.

During the 2024 field season previously known occurrences within the vicinity of the Project site were revisited to update the status of the observations.

Burrowing Owl

Burrowing owls inhabit open, dry grassland and desert habitats, and in grass, forb, and open shrub stages of pinyon-juniper and ponderosa pine habitats. They usually nests in old burrows of ground squirrel, or other small mammals.

In 2015, a burrowing owl reconnaissance survey was conducted for a flood improvement project. During this reconnaissance survey, all suitable burrowing owl burrow locations between MP 128.0 and MP 141.0 on the right side of the SLC within the right of way were recorded with a global positioning system (GPS) device. In 2016, additional burrowing owl surveys were conducted between the same MPs in accordance with the 2012 *Staff Report on Burrowing Owl Mitigation,* Appendix D*,* breeding season survey protocol (CDFG 2012). The surveys were primarily conducted by windshield in areas where the surrounding area was clearly visible from the vehicle; however, transects were walked where windshield surveys were not adequate to determine the presence of burrowing owls or burrows. Transects were typically spaced 25 to 60 feet apart, depending on topography and vegetation height and density. In 2016 and 2017, additional surveys were conducted between MP 128.0 and 141.0 to monitor known burrowing owl occurrences during embankment raises and other related construction activities.

In 2019, all irrigation crossings with suitable burrowing owl burrow locations between MP 108.0 to 143.0, were recorded and mapped. These surveys followed the same methodology as described above. All suitable burrowing owl burrow locations near various irrigation crossings were recorded and mapped using GPS-enabled devices.

In 2021, burrowing owl surveys were conducted as part of the raptor nesting study within Pools 17 and 18, between February 18, 2021, and August 4, 2021. Surveys were conducted by windshield and methods consistent with CDFW protocol. Species or active burrow sightings were recorded using GPS.

During the 2024 field season previously known occurrences within the vicinity of the Project site were revisited to update the status of the observations.

Bats and Swallows

Bridges and check structures are known to provide usable habitat for bats (Keeley 2020) as well as for swallows (Audubon 2021). All species of swallows receive protection under the federal Migratory Bird Treaty Act (MBTA), which specifically protects active bird nests and their young. Bats use bridges for daytime shelter and night roosts, specifically for migratory stopover sites, hibernation sites, day roosts for nursery and bachelor colonies, and night roosts at different times of the year. Swallows are migratory and use bridges during the spring/summer breeding season.

Visual surveys were conducted for bats and swallows in May 2021 and acoustic surveys were conducted at bridges that could be impacted by the Project during summer and fall that same year (**Table 6**). The structures were visually inspected for secondary signs of use by bats (e.g., guano) and swallows (guano and nest structures).

TABLE 6
BRIDGES CROSSING ALONG POOL 17 AND POOL 18 OF THE SLC THAT COULD BE IMPACTED BY THE PROJECT

Bridges	Milepost	Pool
Highway 33 Bridge/Derrick Avenue	125.31	17
Clarkson Avenue	128.50	17
San Mateo Avenue	130.81	17
Cerini Avenue	132.77	17
Mt. Whitney Avenue	134.90	18
Excelsior Avenue/Parkhurst Avenue	137.06	18
Jeffrey Avenue	139.35	18
Oakland Avenue	141.57	18
Highway 145/Fresno-Coalinga Avenue	143.12	18

To confirm ongoing use and to identify the specific species using the structures these locations were further assessed using targeted survey tools and methods described below.

Bat Surveys

During 2021, two acoustic surveys of each of the bridges identified in Table 6 occurred: once in the summer during the rearing season, and once in the fall during migration. The surveys utilized hand-held acoustic mobile detectors to record and identify use and the species present. The mobile capability of these acoustic detectors allows the microphones to be pointed toward areas of high use (determined by presence of guano deposits, observations of flying bats, or usable habitat features) but still allows for functionally omnidirectional sampling to ensure all airspace is surveyed and low-density species are detected if they are present. All bat detections were independently assessed and verified during post-processing using the Kaleidoscope Pro Classifier software.

During each survey, a total of six survey stations were sampled at each bridge (three on each side). Each survey station was surveyed for 10 minutes using the mobile detectors, which recorded individual flyovers. The use of the survey stations was an adaption of the mobile acoustic transect survey protocol (Loeb et al. 2015).

Data collected included all observed species, as identified by Kaleidoscope Pro Classifier auto identifier (created by Wildlife Acoustics), as well as any observed population and distribution patterns, such as the level of activity, population size estimates, and areas of each bridge that appeared to be preferred, including any flight corridors.

Between April and July 2024, surveys utilized hand-held acoustic mobile detectors and a passive detector to record and identify the species present.

Bridges with previous detections were revisited as well as Check 17 (**Table 7**). The mobile capability of these acoustic detectors allows the microphones to be pointed toward areas of high use (determined by presence of guano deposits, observations of flying bats, or usable habitat features), but still allows for functionally omnidirectional sampling to ensure all airspace is surveyed and low-density species are detected if they are present.

TABLE 7
BRIDGES CROSSING REVISITED OF THE SLC THAT COULD BE IMPACTED BY THE PROJECT

Bridges	Milepost	Pool
Highway 33 Bridge/Derrick Avenue	125.31	17
San Mateo Avenue	130.81	17
Cerini Avenue	132.77	17
Check 17	132.95	18
Excelsior Avenue/Parkhurst Avenue	137.06	18
Jeffrey Avenue	139.35	18
Highway 145/Fresno-Coalinga Avenue	143.12	18

During each bridge survey, a total of six survey stations were sampled at each bridge (three on each side). Each survey station was surveyed for 10 minutes using the mobile detectors, which

recorded individual flyovers. At check 17 a passive recorder was placed in a central location next to Check 17 just after sunset. This omnidirectional microphone provided a larger detection radius and higher sensitivity than that of the handheld microphones (Loeb et al. 2015). These tools and methods have been established as an effective way to target specific features to survey for bat use (Loeb et al. 2015). All bat detections were independently assessed and verified during post-processing using the SonoBat 4.4.5 (Version 4) North America software. The passive detector was left in place for two hours while active detectors were deployed for one hour.

Data collected included all recorded species.

Swallow Surveys

In 2021, Swallow surveys were conducted at each bridge identified in Table 6 during the spring/summer breeding season (extending from April through August), which peaks in June when these birds are in the region and nesting. Surveys were conducted prior to dusk, when foraging and nest site activities were high and identification characteristics were visible. All biologists used quality optics (binoculars and/or spotting scopes) and were familiar with avian field identification and swallow species found in the region.

The initial survey included recording whether species presence or nesting activity was observed at each bridge. Then, two point-count stations were surveyed at each bridge—one on the upstream side and one on the downstream side. The point count stations were positioned approximately 10 meters from the side of each bridge to facilitate full visibility and perspective. The relatively short span of each bridge, along with clear views down their lengths, allowed the sides of each bridge and bridge surroundings to be fully surveyed from the two point-count stations. Each point count lasted a total of 10 minutes, and the data collected included all species observed, as well as any population and distribution patterns noted, such as the level of activity, population size estimate, estimate of number of active nests, and any areas of the bridge that appeared to be preferred. The survey was conducted by two teams of biologists who worked in tandem to survey each bridge from the two-point count stations concurrently.

In 2024, surveys for swallows were not conducted at bridges within the Project site, as they are known habitat for swallows. Therefore, swallows were assumed present on every bridge within the Project site. However, a survey was conducted that specifically examined the Check 17 structure for use by swallows — mainly nesting activity. The survey lasted for 30 minutes, and the data collected included all species observed, such as the level of activity, population size estimate, estimate of number of active nests, and any areas of the structure that appeared to be preferred. The survey was conducted in mid-July (during the spring/summer breeding season) by two biologists who worked in tandem to survey the structure concurrently. All biologists used quality optics (binoculars and/or spotting scopes) and were familiar with avian field identification and swallow species found in the region.

Small Mammal Habitats

Two field surveys were conducted to identify potential suitable habitat for giant kangaroo rat, and other special-status small mammal species with potential to occur within and around the

Project site. The goal was to identify and analyze any site that contained adequate habitat features. Qualifying habitat features included the presence of sandy-loam or friable soils, sparse annual grasses, and desert shrubs such as Atriplex. If a site was identified as potential habitat, an examination for evidence (burrows, scats, tail drags, dust bath, seed caches, haystacks, vertical vents, etc.) of special-status small mammal species would be conducted.

Surveys were conducted on May 19 and June 2, 2021 using vehicle and pedestrian surveys in Pool 17 and Pool 18.

Crotch's Bumble Bee

The habitat assessments followed the Habitat Assessment portion of the 2023 California Department of Fish and Wildlife Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species (survey considerations) (CDFW 2023). The assessments included documenting potential nesting resources, potential overwintering resources, and potential foraging resources. Each blooming plant species was identified, the approximate percent cover of these species was calculated, and the percent of the species that were in bloom was estimated. To calculate the estimated floral cover at each site, an approximate one meter by one meter quadrat was placed randomly within the site at five separate locations. The cover of each flowering species within a quadrat was calculated and averaged among the five quadrats. Shrubs and trees were excluded from quadrats, and instead the percent coverage of these plants were measured using aerial imagery and area calculation tools on ArcGIS Pro.

Because bumble bees are an annual species, only plants that were alive this season had their cover estimated; however, the remains of plants from previous seasons were identified to the finest known level (species or genus) and noted to determine if successional blooms are potentially possible within the site if conditions are favorable. Observed land use activities that may be considered to cause habitat disturbances were documented at each site and in the adjacent lands to each site. Habitat disturbing activities that surveyors looked for included soil disturbances, vegetation removal, chemical application, fire, honey bee (*Apis mellifera*) boxes, and heavy grazing.

Where visible, surveyors took notes of nesting and overwintering features and of flowering plants in the adjacent lands. However, surveyors did not enter these lands to avoid trespassing, so the list of nesting features, overwintering features, and flowering plants is likely incomplete and the percent cover of plants and flowers in the adjacent lands could not be calculated. Habitat disturbing activities in the adjacent lands were also documented using the same criteria for the site assessment.

In sites where there was potentially suitable foraging habitat, foraging bee surveys were performed. A site was considered potentially suitable if the percent cover of flowering resources was at least greater than one percent during the habitat assessment. These surveys were performed following the Foraging Bumble Bee portion of the CDFW survey considerations (CDFW 2023). Each of these surveys were conducted at least one hour after sunrise and at most two hours before sunset, temperatures were between 65 degrees Fahrenheit and 90 degrees Fahrenheit, shadows were visible during surveying periods, sustained wind speeds

were below 8 miles per hour, and surveys were not performed on days with precipitation. Each survey was 60 person-minutes long. All observed pollinating insects were recorded; however, because the purpose of these surveys was to identify potentially occurring bumble bees, these insects were only identified to the finest detail possible through visual observations.

Wildlife Corridor

San Joaquin kit fox have been observed historically along the SLC and adjacent lands. This indicates that the SLC right-of-way may be used as a migratory corridor, for foraging, and possibly for denning.

To assess use by this species, infrared motion-activated wildlife cameras were utilized in combination with scent/track stations in areas with the highest potential for San Joaquin kit fox. Reconyx Hyperfire cameras with 0.2-second trigger speed, up to 90 photos per trigger, and 80mb/s download speed were used. Scent/track stations consisted of one square meter of diatomaceous earth spread on the ground with a scent tablet and paste placed in the center to attract wildlife. DWR biologists placed cameras and scent/track stations near active dens, old dens, fallow agricultural lands, historic CNDDB kit fox records, areas high in small mammal presence (kangaroo rats; *Dipodomys* spp.), and potential movement corridors. Cameras and scent/track stations were deployed for a minimum of 10 days per the *United States Fish and Wildlife San Joaquin Kit Fox Protocol for the Northern Range* (USFWS 1999). Four camera deployments, each consisting of four camera/track stations, were placed to cover the left and right sides of Pools 17 and 18. Cameras were deployed from August 16, 2021, to October 7, 2021, see **Table 8** below for more detail.

TABLE 8
CAMERA DEPLOYMENT LOCATIONS AND DATES

Deployment Date	Location
8/16/2021 – 8/26/2021	141.30 Left
	139.90 Left
	137.64 Left
	132.95 Left
8/30/2021 – 9/09/2021	141.14 Right
	139.84 Right
	137.58 Right
	134.25 Right
9/13/2021 - 9/23/2021	130.34 Left
	126.78 Left
	125.09 Left
	122.28 Left
9/27/2021 - 10/07/2021	129.21 Right
	127.36 Right
	124.74 Right
	123.29 Right

Dens and Burrows

Den and burrow surveys within Pool 17 and Pool 18 were conducted in 2019 and 2020 on both sides of the SLC from MP 122.0 to 143.0. The results from the 2019 and 2020 surveys were then verified during surveys conducted in 2021. Surveys were conducted by windshield and on foot to gain one hundred percent visual coverage. Surveyors drove all accessible roads and scanned for canid dens and medium-sized burrows with typical signs of key hole or elliptical entrances of the target species. In areas where visual coverage could not be obtained by windshield, in areas with thick vegetation or steep inclines, or in areas where no roads were present, surveyors walked transects — generally 30 feet apart. All identified canid dens were mapped using ArcGIS Collector. The condition of the dens and possible species occupying the dens were documented, and photographs were taken. The 2020 and 2021 surveys were conducted from September 22 to 24, 2020; June 2, 2021; and June 14, 2021.

During the 2024 field season previously known occurrences within the vicinity of the Project site were revisited to update the status of the observations.

Special-Status Plants

A desktop analysis was conducted to identify areas in the vicinity of the Project site with potentially suitable habitat for special-status plants that were identified during the literature review. The desktop analysis is described in Section 3.3.2 and **Table 5**.

4. Results: Discussion of Biological Resources

4.1 Habitat Communities and Land Use

4.1.1 Plant Species

Plant diversity along the SLC and adjacent land varies from year-to-year and is dependent on many factors including precipitation, erosion, adjacent land use, and maintenance activities. The following is the list of plants observed along the SLC and adjacent lands since 2015 (**Table 9**).

TABLE 9
PLANTS OBSERVED WITHIN THE PROJECT SITE

Scientific Name	Common Name
Ambrosia psilostachya	ragweed
Amsinckia menziesii	fiddleneck
Arundo donax	Giant reed
Astragalus sp.	astragalus
Atriplex lentiformis	quailbush
Atriplex polycarpa	cattle spinach
Avena barbata	slim oat
Avena fatua	wild oat
Baccharis pilularis	coyote bush
Baccharis salicifolia	Mule fat

Scientific Name	Common Name
Brassica nigra	black mustard
Bromus diandrus	ripgut
Bromus madritensis	Foxtail
Bromus madritensis ssp. rubens	red brome
Centaurea melitensis	tocalote
Centaurea solstitialis	Yellow starthistle
Centromadia sp.	tarweed
Convolvulus arvensis	bindweed
Croton setigerus	doveweed
Datura wrightii	Jimsonweed
Deinandra sp.	tarplant
Erigeron canadensis	Canada horseweed
Erodium cicutarium	red-stemmed filaree
Helianthus sp.	sunflower
Heliotropium curassavicum	Heliotrope
Hordeum murinum	foxtail barley
Lactuca serriola	prickly lettuce
Laennecia coulteri	Coulter's horseweed
Lepidium latifolium	broadleaved pepperweed
Malva neglecta	common mallow
Malva parviflora	cheeseweed
Marrubium vulgare	horehound
Matricaria discoidea	pineapple weed
Melilotus sp.	sweet clover
Parkinsonia sp.	palo verde
Poa annuua	annual bluegrass
Prosopis sp.	mesquite
Rumex crispus	curly dock
Salsola tragus	Russian thistle
Sisymbrium irio	London rocket
Tamarix sp.	saltcedar
Typha sp.	cattails
Urtica sp.	stinging nettle

4.1.2 Vegetation Alliances and Habitat Types

Based on the habitat mapping that was described in Section 3.4.1, the Project site consists of 9 vegetation alliances that were identified using categories and criteria defined in the Manual. From those vegetation alliances, four habitat types can be distinguished using California Wildlife

Habitat Relationships (CWHR) in conjunction with the Manual. Habitat and natural community types present within the Project site include barren, alkali desert scrub, annual grassland, and desert riparian (**Table 10**) (CWHR). A discussion of additional land use types, such as permanent crops, annual crops, and idle lands can be found in Section 4.1.3. Mapped vegetation alliances are depicted in **Figure 7** and **Figure 8**.

TABLE 10
VEGETATION ALLIANCES AND HABITAT TYPES WITHIN THE PROJECT SITE

Vegetation Community/ Land Cover Type (State Rank)	Associated CWHR Habitat Type	Description
fiddleneck- filaree fields (S5)	annual grassland	Characterized by open grasslands composed of annual grasses and forbs. Often occur as an understory to other habitats. Species diversity and structure depends largely on weather patterns and grazing. Great physical differences are characterized between seasons.
wild oats and annual brome grassland (SNA)		
upland mustard and other ruderal forbs*		
sunflower patches*		
quailbush scrub (S4)	alkali desert scrub	Characterized by open stands of very low to moderately high (0.25-2.0 m; 0.8-6.6 ft) grayish, spinescent, leptophyllous to microphyllous subshrubs and shrubs, which are physically uniform, widely spaced, and occur on relatively dry soils.
allscale (Atriplex) scrub (S4)		
mesquite thickets*	desert riparian	Characterized as dense groves of low shrublike trees. These habitats are found adjacent to permanent surface water (e.g., streams, springs) or in naturally subirrigated areas. Usually, an abrupt transition occurs between this and adjacent shorter and more open desert habitats.
tamarisk thickets (SNA)		
bare land	barren	Characterized by the absence of vegetation. Any habitat with <2% total vegetation cover by herbaceous, desert, or nonwildland species and <10% cover by tree or shrub species is defined this way. May consist of sparse growth, rock, gravel, and soil.

Notes:

* Alliances that have sufficient data to propose the vegetation type, but not enough research and regional information to be confident about its status in California's vegetation (California Department of Fish and Wildlife, VegCAMP).

SNA = Semi-natural Alliances - strongly dominated by non-native plants that have become naturalized in the state.

S1 = Critically Imperiled – At very high risk of extirpation due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.

S2 = Imperiled – At high risk of extirpation due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.

S3 = Vulnerable – At moderate risk of extirpation due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

S4 = Apparently Secure – At a fairly low risk of extirpation due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

S5 = Secure – At very low or no risk of extirpation due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.

The three most dominant habitat types are barren, desert riparian, and annual grassland. The barren areas are concentrated on the embankment slopes and the shoulder of the SLC paved roads. Annual grassland can be found along portions of the embankment slopes and SLC road shoulders, adjacent to the barren habitat. The desert riparian habitat type consists of mesquite and salt cedar thickets at the toe of the embankments – between the agricultural land and the SLC embankment within the DWR right of way.

Where desert riparian and alkali desert scrub habitats occur, they are remnants of planting efforts in the late 1960s and early 1970s by the CDFW are present. The parcels were created in an agreement between DWR and CDFW to provide wintering habitat for wildlife (DWR 1974). CDFW managed and monitored the parcels for the agreement term.

Areas with mesquite thickets, such as the planted parcels and narrow strips within the SLC right of way, are a direct result of the planting efforts made by CDFW. The mesquite thickets are a provisional alliance since they are dominated by the Chilean mesquite (*Prosopis chilensis*) and not the honey mesquite (*Prosopis glandulosa*), which is ranked as a sensitive species (NatureServe State Rank S3). Furthermore, the habitat type can only be classified as a sensitive natural community if the mesquite is naturally occurring vegetation. According to the *National Vegetation Classification Standard, Version 2*, natural vegetation is defined as vegetation where ecological processes primarily determine species and site characteristics, and the vegetation is comprised of a largely spontaneously growing set of plant species that are shaped by both site and biotic processes (Küchler 1969, Westhoff and van der Maarel 1973). The mesquite thickets present are not a result of natural, spontaneous processes; they are planted. These mesquite thickets more closely follow the definition of cultural vegetation, defined as vegetation with a distinctive structure, composition, and development determined by regular human activity, and therefore do not meet the criteria of a sensitive natural community (Küchler 1969). The planted areas have not been maintained for many years and both the plantings and native patches have been encroached upon by invasive plants and adjacent landowners.

The provisional alliances documented during vegetation mapping are a mixture of native vegetation and invasive species or relatively small areas where a common native species is dominant. These provisional alliances are not considered sensitive. All native vegetation patches, including the past artificially established parcels, exist as remnant native communities.

The habitat types are geographically fragmented and persistently disturbed. The highly fragmented and disturbed nature of the SLC right of way can be attributed to introduced non-native species, adjacent agricultural land use, routine mowing and spraying along the SLC, and vandalism such as burning, discing, and trash dumping.

4.1.3 Adjacent Land Use

The land use adjacent to the Project site is primarily agricultural production (**Figure 9** and **Figure 10**). Land not in agricultural production is typically occupied with produce processing plants, equipment storage, or homesteads. Both Pools 17 (MP 122.07 to MP 132.94) and 18 (MP 132.95 to MP 143.22) of the SLC are located within the Westlands Water District, which supplies the majority of surface water for agricultural use in their district. A variety of permanent and annual crops are cultivated within the Westlands Water District service area.

The largest acreage of crops within the area are permanent crops such as almonds and pistachios, but many annual crops are produced here as well. Annual crops include alfalfa, grain, tomato, corn, lettuce, leafy greens, melon, squash, cucumber, onion, garlic, and many other fresh produce crops. Acreage between MP 132.95 and MP 143.24 (Pool 18) was largely

observed as idle, which includes lands that have been cropped within the past 3 years or are being prepared for crop production. These idle lands have been used to cultivate annual crops such as lettuce, onion, garlic, tomato, and melon. An agricultural field with annual crops can produce and harvest as many as three crops in one year. Annual crops optimal for each growing season will be planted after the harvest and amendment of the previous crop. This continual working of the land makes it difficult for local wildlife and plants to establish.

4.2 Sensitive Natural Communities

None of the habitat types and associated alliances present meet the criteria for sensitive or rare natural communities. The lack of species diversity and isolation from surrounding agricultural practices are typical obstacles and inhibit habitat ecosystems from flourishing or existing in a natural state.

4.3 Aquatic Resources

Cantua Creek at MP 133.67 and Salt Creek at MP 137.06 were identified. Ephemeral drainages were identified along Cantua Creek and Salt Creek; these ephemeral drainage channels are isolated and are not tributary to jurisdictional waters. The aquatic resources delineation identified approximately 4.16 acres of aquatic resources in the Project site including seasonal wetland and ephemeral drainage, these aquatic resources are described in detail, below. Aquatic habitats in the Project site were classified using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin 1979) ("Cowardin Classification").

Seasonal Wetland

A seasonal wetland has water present for an extended time to promote the growth of hydrophytes and anaerobic soils. However, the wetland is temporary and drains within a season.

Seasonal wetland SW-1 is hydrologically connected to Cantua Creek and totals 0.448 acre in the Project site at MP 133.8 right (**Table 11**, **Figure 11**, and **Figure 12**). Vegetation in the Cantua Creek Project site included Bermuda grass (FACU[1]), California sunflower (*Helianthus californicus*; OBL[2]), Italian rye grass (*Festuca perennis*; FAC[3]), tall flatsedge (*Cyperus eragrostis*; FACW[4]), perennial pepperweed (*Lepidium latifolium*; FAC), sheep sorrel (*Rumex acetosella*; FAC), curly dock (*R. crispus*; FAC), and Baltic rush (*Juncus balticus*; FACW). The wetland contains a rock gabion that serves as a sediment screening device surrounding a concrete drain inlet structure. A small patch of broadleaf cattail (*Typha latifolia*; OBL) and Mexican fan palm (*Washingtonia robusta*; FACW) saplings too small to warrant a separate

1 "FACU" refers to *facultative upland* and is based on the wetland plant indicator status in the Arid West regional list.

2 "OBL" refers to *obligate wetland* and is based on the wetland plant indicator status in the Arid West regional list.

3 "FAC" refers to *facultative* and is based on the wetland plant indicator status in the Arid West regional list.

4 "FACW" refers to *facultative wetland* and is based on the wetland plant indicator status in the Arid West regional list.

wetland type was observed immediately adjacent to the drain inlet structure at the lowest point of seasonal wetland SW-1.

Ephemeral Drainage

An ephemeral drainage has flowing water immediately following precipitation when rainfall or groundwater provides water for channel flow. During dry periods, ephemeral drainages do not exhibit flowing water. In the Project site, ephemeral drainages periodically flow following precipitation during the winter season and are dry during other times of the year.

Four ephemeral drainage segments (ED-1 through ED-4), totaling approximately 3.716 acres, were identified in the Project site along Cantua Creek near MP 133.8 right (**Table 11** and **Figure 11**). In addition, five ephemeral drainage segments (ED5 through ED-9), totaling 0.370 acres, were identified along Salt Creek at MP 136.0 right and MP 137.0 right (**Table 11, Figure 13**, and **Figure 14**). All ephemeral drainages have been realigned to varying degrees within the Project site and convey substantial sediment from upstream reaches. Due to the high degree of historic and ongoing disturbance in much of the surrounding uplands by ongoing agricultural activities, the OHWM is primarily marked by areas of shelving and scour, occasional water staining, a change in the plant community, and/or drift deposits. Very little vegetation is supported in these drainage segments.

TABLE 11
AQUATIC RESOURCES IN THE PROJECT SITE

Aquatic Resource (Map ID)	Rapanos Waters Type	Waters of the U.S. (ac)	Isolated (ac)	Rationale
Seasonal Wetland (SW-1)	Isolated waters	--	0.448	Seasonal wetlands are isolated from any downstream connection to jurisdictional waters.
Waters				
Channels (ED-1 – ED-4) (Cantua Creek)	Isolated waters	--	3.716	Ephemeral drainages are isolated from any downstream connection to jurisdictional waters.
Channels (ED-5 – ED-9) (Salt Creek)	Isolated waters	--	0.370	

The ephemeral drainage channels in the Project site are isolated and not tributary to jurisdictional waters and are therefore not expected to be waters of the U.S. pursuant to the Supreme Court's decision in the consolidated cases of *Rapanos v. United States* and *Carabell v. United States* (referred to hereafter as *Rapanos*).

4.4 Special-Status Animal Species

Preliminary analysis for special-status animal species described in Section 3.3 in combination with surveys conducted from 2015 through 2024 resulted in the following findings (**Figure 15** and **Figure 16**).

Blunt-nosed Leopard Lizard

Suitable habitat was not identified within the Project site and blunt-nosed leopard lizard was not observed during any of the general or focused surveys that occurred between 2015-2024. Therefore, blunt-nosed leopard lizard is not expected to occur within the Project site.

Western Pond Turtle

Marginal habitat for western pond turtle is present within the Project site. Western pond turtles use aquatic habitats primarily for foraging, thermoregulation, and avoidance of predators. They prefer habitats with large areas for cover (logs, algae, vegetation) and basking sites (boulders or other substrates) and have been observed to avoid areas of open water lacking these habitat features (Holland 1994). The SLC does not offer these features as a concrete-lined canal, open with zero coverage, and little to no foraging habitat is available. Marginal habitat may be present in the form of adjacent drainage basins and canals on the adjacent properties. Therefore, western pond turtle was determined to have a low potential to occur within the Project site.

Special Status Reptiles

San Joaquin coachwhip prefers open arid areas such as grassland and scrub habitat. Ancillary observations of the species have been observed along the SLC right of way, however it has not been documented within the Project site. The species habitat is present and therefore has a high potential to occur with the Project site. The California glossy snake has similar habitat preferences of the San Joaquin coachwhip, however the species has not been observed at any time within the Project site. Since habitat is present for the species the likelihood of occurring is low.

The Northern California legless lizard prefers dry sandy washes. This feature is not found with the Project site and the species has not been detected during surveys conduct from 2015-2024, therefore the likelihood of occurrence is low.

Giant garter snakes prefer slow-moving or stagnant waterways and avoid open spaces without cover. The SLC as a concrete-lined canal, open with zero coverage, and has a strong current does not offer suitable habitat to the species. Marginal habitat may be present in the form of adjacent drainage basins and canals on the adjacent properties. However, the species has never been observed in the region or the Project site, therefore it has no potential to occur.

Western Spadefoot

Marginal suitable aquatic habitat and suitable upland habitat is present within and surrounding the Project site. This species has been observed in two areas near but outside of the Project site. Beyond these locations, presence is unlikely, as surveys conducted in 2024 did not detect spadefoot within the Project site. Additionally, spadefoot has not been incidentally recorded along this section of the Aqueduct in any of the past surveys conducted in the region. However, there is no habitat mapped as suitable upland, occupied habitat, suitable breeding, or potential breeding located in any staging areas or borrow areas so the possible risks to western spadefoot are low.

Special Status Amphibians

California tiger salamander and California red-legged frog require pools for breeding similar to the western spadefoot. However, the species require vegetation to attach their eggs to and ponds where western spadefoot are found often lack vegetation. Predation from bullfrogs (*Lithobates catesbeianus*) is also a high concern, bullfrog tadpoles are found all over the Project site when pools and puddles are available. Therefore, the species have no potential occur.

Swainson's Hawk

The Project site provides suitable habitat for Swainson's hawks. In 2021, active nests were observed in a mesquite tree on the right side of the SLC at MP 133.60, and a cottonwood tree at MP 138.40 right. In 2024, an active nest was observed in the same cottonwood tree at MP 138.40 right. Therefore, Swainson's hawk was determined to have a high potential to occur within the Project site.

Tricolored Blackbird

Tricolored blackbirds are known to occur in the vicinity of the Project site. In 2021, tricolored blackbirds were observed at MP 141.90 right in an agricultural canal and a single individual was heard calling in a wheat field at MP 126.70 right. No further observations were made at either of these sites. On April 30 and July 19, 2024, the previously known occurrences were revisited to update the status of the observations. No tricolored blackbirds were observed and suitable nesting habitat remains sparse. Although this species is unlikely to nest on site, it could be observed foraging in the area on occasion.

Therefore, tricolored blackbird was determined to have a low potential to nest and moderate potential to forage within the Project site.

Burrowing Owl

Marginal habitat for the species is present along portions of the embankments bordering the SLC roads of the Project site. Nine active burrows have been recorded in our dataset with typically two active burrows in a given year. However, only one active burrow was observed at MP 134.17 in 2024. Therefore, burrowing owl was determined to have a high potential to occur within the Project site.

Other Special-Status Birds

Northern harrier is commonly observed throughout the area of the Project site. Annual grassland provides nesting and foraging habitat for the species, as well as the adjacent agricultural fields and fallowed lands. However, nesting sites have not been identified due to their inconspicuous placement. Therefore, the species has high potential to occur within the Project site.

White-tailed kite has been historically observed foraging in the vicinity of the Project site and suitable habitat is present. Therefore, this species has high potential to occur within the Project site.

Suitable habitat for short-eared owl is present in the Project site and documented occurrences have been recorded within 3 miles of the Project site. However, no detections have been made during surveys within the Project site. Therefore, this species has moderate potential to occur within the Project site.

Limited suitable nesting habitat for yellow-headed blackbird is present within the Project site. However, historic detections have been made during surveys and recorded observations are documented in CNDDB within 3 miles of the Project site. This species is unlikely to nest on-site but could forage in the area on occasion. Therefore, this species has moderate potential to occur within the Project site.

Other special-status bird species observed in the area include loggerhead shrike, California horned lark, and prairie falcon. Foraging and breeding habitat is available for these species at the Project site. However, nesting availability for the prairie falcon has not been observed. From 2015 to 2024, five loggerhead shrike, one California horned lark, and one prairie falcon were observed at the Project site.

Other Migratory Birds and Raptors

Exposed I-beams on bridges and check structures allow for cavities or ledges for birds to build nests. Cliff swallows (*Petrochelidon pyrrhonota*) are known to nest on the bridges and check structures in the area of the Project site.

Common ravens (*Corvus corax*) often nest on power poles, bridges, and structures in the area of the Project. Larger stick nests were observed on the gate at Check 17. No activity was observed, however, based on the size and material type, it is possible that the nest is associated with common raven.

Approximately 26 active nest sites of migratory birds have been detected over the past five years in the area of the Project site. Most active nests observed at the Project site have been located in available trees along the right-of-way such as eucalyptus and large mesquite stands or power poles.

Bats

A diversity of bat species have been documented in the vicinity of the Project site. However, no visual evidence of roosting was observed such as urine stains or piles of guano. The SLC may also provide a corridor for bats, facilitating movement of various species that roost and/or hibernate in surrounding areas.

Bats recorded during the spring surveys (April- May) in 2024, included Brazilian free-tailed bat (*Tadarida brasiliensis)*, silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus)*; Yuma myotis (*Myotis yumanensis*), litte brown bat (*Myotis lucifugus*), greater bonneted bat (*Eumops perotis*), western red bat (*Lasiurus blossevillii*), pallid bat (*Antrozous pallidus*) California myotis (*Myotis californicus*), and big brown bat (*Eptesicus fuscus*) (**Table 12**).

TABLE 12
DETECTED BAT SPECIES AT THE BRIDGES WITHIN THE AREA OF THE PROJECT SITE

Bridge	TABR	EPFU	LANO	LACI	MYYU	MYLU	EUPE*	LABL*	ANPA*	Myotis Spp
125.31					X					
130.81	X		X	X	X					
132.77	X		X	X		X				X
132.95	X	X		X	X	X	X			
137.06	X		X	X						
139.35								X	X	
143.12										

Notes: TABR= Tadarida brasiliensis; EPFU= Eptesicus fuscus; LANO= Lasionycteris noctivagans; LACI= Lasiurus cinereus; MYYU= Myotis yumanensis; MYLU= Myotis lucifugus; EUPE= Eumops perotis californicus; LABL= Lasiurus blossevillii; ANPA= Antrozous pallidus; *denotes Species of Special Concern

The pallid bat was detected at MP 139.35, along with another species of special concern, the western red bat. A western mastiff was detected at MP 132.95. The pallid bat was only detected on one audio file, the western red bat on two, Given the time of night that these individuals were recorded, approximately two hours past sunset, and the scarcity of detection on any other audio files at this site, it is likely that these individuals were using the SLC for movement.

A *Myotis* species was detected at MP 132.77, but the species could not be confirmed. Although identification could not be determined, the characteristics of the call were not similar to those of any special-status bats.

Therefore, western mastiff bat, pallid bat, and western red bat have moderate potential to occur within the Project site.

Small Mammal Habitat

Suitable habitat for small mammals was not identified in the vicinity of the Project site. Although suitable habitat is not present within the Project site, giant kangaroo rat has CNDDB recorded occurrences documented 3 miles west of the Project site. Therefore, giant kangaroo rat has a low potential to occur within the Project site.

Wildlife Corridor (San Joaquin kit fox and American Badger)

During camera deployments, cameras were placed along the SLC to demonstrate what wildlife prey or predator base of the San Joaquin kit fox may be present or absent. The camera stations in key den and burrow areas did not detect San Joaquin kit fox. The SLC serves as a wildlife corridor for many common species. These species use the corridor for movement (North to

South) and as a home range (breeding, foraging). Examples of species detected during camera studies conducted in 2021 are as follows.

- **Carnivores**. Carnivores detected included coyotes (*Canis latrans*), raccoons (*Procyon lotor*), striped skunk (*Mephitis mephitis*), domestic dogs (*Canis familiaris*), domestic cats (*Felis catus*), and bobcats (*Lynx rufus*). Coyotes are the most recorded carnivores.
- **Small mammals**. Small mammal species detected were California ground squirrels, kangaroo rats (*Dipodomys* spp.), desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), and a mouse (*Cricetidae, Heteromyidae, or Muridae* sp.).
- **Birds**. Bird species detected were northern mockingbird (*Mimus polyglottos*), Eurasian collared dove (*Streptopelia decaocto*), mourning dove (*Zenaida macroura*), and western kingbird (*Tyrannus verticalis*).

No San Joaquin kit fox or evidence was recorded at the camera/ track stations. Therefore, this species is not expected to occur within the Project site

Dens and Burrows

One potentially suitable San Joaquin kit fox den was observed in 2021 at approximately MP 134.50. In 2024, three potentially suitable dens for the species were located on the left side of the SLC at MP 126.82 and MP 136.81. However, the dens did not have the typical characteristics such as a keyhole entrance. No signs of use, such as scat, small mammal remains, or paw prints belonging to the species were observed.

In 2021 or 2024 American badger dens with the typical elliptical shape or claw marks were not observed in the Project site. However, the species has been observed north of the Project site and therefore has a low likelihood of occurring.

Crotch's Bumble Bee

During general habitat assessment in 2024, surveyors noted if there were any ancillary observations of bumble bees. No observations were made. Suitable nesting and foraging habitat is available for the species within the Project site. Therefore, Crotch's bumble bee has a moderate potential to occur foraging within the Project site.

Monarch Butterfly

There are no CNDDB records for the species within 3 miles of the Project site, however, monarch butterfly was present on the USFWS iPaC search result. Although this species was reported in the iPaC, the host plant for the species reproduction cycle was not observed within the Project site. Therefore, this species is not expected to occur within the Project site.

Vernal Pool Fairy Shrimp

There are no CNDDB records for the species within 3 miles of the Project site, however, vernal pool fairy shrimp was present on the USFWS iPaC search result. There are no records or

observations of vernal pools present within the Project site; thus, vernal pool fairy shrimp are not expected to occur within the Project site.

4.5 Special-Status Plant Species

The non-native grassland present in the right of way is ruderal and highly disturbed. The Project site lacks suitable vegetation alliances for special-status species listed in Table 5; therefore, special-status plant species are not expected to occur within the Project site.

5.0 Discussion of Impacts

This section describes the potential impacts to protected biological resources in association with project activities.

5.1 Habitats, Sensitive Natural Communities, and Aquatic Resources

5.1.1 General Habitat

Distribution and health of the vegetation and habitats present will not be impacted. The Project site is exposed to disturbances as discussed in section 4.1.2.

The right of way does serve as a wildlife movement corridor and may be temporarily impacted during construction. The right of way will still be available for travel, but construction activities that generate noise, vibrations, and light may affect species passing through.

5.1.2 Terrestrial Habitats and Agricultural Lands

Implementation of the Project would occur primarily on bare land (disturbed), developed, fiddleneck-filaree fields, and wild oats and annual brome grassland. Staging and borrows sites have been identified in fiddleneck-filaree fields, wild oats and annual brome grasslands, and bare land (disturbed). However, one site does consist of a mesquite thicket and atriplex scrub.

5.1.3 Sensitive Natural Communities

None of the vegetation communities and associated alliances within the Project site meet the criteria for sensitive or rare natural communities.

5.1.4 Aquatic Resources

All aquatic resources identified in section 4.3 are within the Project site but will be avoided, therefore no impacts will occur to aquatic resources.

5.2 Special-Status Animal Species

Burrowing owl, Crotch’s bumble bee, San Joaquin coachwhip, Swainson’s hawk, tricolored blackbird, white-tailed kite, other special-status and migratory birds, and special-status bats have the potential to occur within the Project site.

5.2.1 San Joaquin Coachwhip

One special-status reptile, San Joaquin coachwhip (CDFW species of special concern), has a high potential to occur within the Project site. Although this species has not been documented within the Project site, ancillary observations of this species have been documented along the Aqueduct right-of-way and suitable habitat for this species is present within the Project site.

5.2.2 Burrowing Owl

Habitat for this species is present along portions of the embankments bordering the Aqueduct roads along the Project site, and a total of nine active burrows have been recorded within the Project site, with an average of two active burrows documented in a given year. Only one active burrowing owl burrow was observed at MP 134.17 in 2024. DWR biologists theorize that burrowing owls may use sections of the Aqueduct as overwintering sites and disperse to their breeding sites by spring. Thus, this species has a high potential to occur within the upland annual grassland and disturbed habitats throughout the Project site.

5.2.3 Swainson's Hawk

Active Swainson's hawk nests were observed in 2021 and 2024 during protocol-level surveys conducted in accordance with the Swainson's Hawk Technical Advisory Committee Recommended Timing and Methodology (2000), and the Project site provides suitable habitat for this species to nest and forage. Two active Swainson's hawk nest sites were identified in 2021; a Swainson's hawk nest was located in a mesquite tree on the right side of the Aqueduct at MP 133.60, and an active nest was observed in a cottonwood tree on the right side of the Aqueduct at MP 138.40. The Swainson's hawk nest in the cottonwood tree at MP 138.40 was also confirmed to be active in 2024. Thus, Swainson's hawk nesting is known to occur within 0.25 miles of the Project site and potential impacts to the species may occur.

The annual grassland and scattered trees throughout the Project site provide suitable nesting and foraging habitat for this species.

5.2.4 White-Tailed Kite

While suitable foraging habitat for white-tailed kite is present throughout the Project site, the species has only been historically observed foraging in the vicinity. Given the limited presence of dense-canopied trees and the absence of dense broadleaf deciduous groves typically used for nesting and roosting, nesting by white-tailed kite is not likely to occur within the Project site. White-tailed kite has the potential to occasionally forage within the open annual grassland and agricultural areas throughout the Project site and surrounding areas.

5.2.5 Tricolored Blackbird

Tricolored blackbirds typically nest near open fresh water in dense, tall vegetation like cattails (Typha spp.), tule (Schoenoplectus sp.), willows (Salix spp.), blackberry (Rubus spp.), and wild rose (Rosa spp.); however, they will also use crops like grain or silage for nesting. Potentially suitable nesting habitat, identified through data analysis and field verification in May 2021, was present in areas partially or fully meeting these requirements. In 2021, tricolored blackbirds

were observed on the Project site at MP 141.90 in an agricultural canal and a single calling individual at MP 126.70 right in a wheat field. However, a 2024 survey found no tricolored blackbirds, and only sparse, marginal nesting habitat was observed within the Project site. Consequently, the potential for nesting within the Project site is low, but there is a moderate potential for this species to occasionally forage or occur on-site.

5.2.6 Other Migratory Birds and Raptors

In addition to the special-status bird species discussed previously, the Project site supports a diversity of other migratory birds, including special-status non-listed bird species, protected under the federal Migratory Bird Treaty Act of 1918 and Sections 3503.5, 3505, and 3511 of the California Fish and Game Code. Surveys have identified active nests, primarily in available trees (such as eucalyptus and large mesquite stands) and on power poles along the right-of-way. Commonly observed bird species include common raven, northern mockingbird (*Mimus polyglottos*), mourning dove, western kingbird, and cliff swallow. Special-status non-listed birds with potential to nest on site include California horned lark, loggerhead shrike, northern harrier, and short-eared owl. Nesting migratory birds and raptors have the potential to nest on bridges, structures, power poles, and vegetation (i.e., trees, shrubs, and on the ground) throughout the Project site.

5.2.7 Special-Status Mammals

Three special-status bat species—pallid bat, western mastiff bat, and western red bat—were detected during bat surveys in 2024. However, no visual evidence of roosting was observed such as urine stains or piles of guano. Therefore, these special-status bats are determined to have a moderate potential to occur within the Project site.

5.2.8 Crotch’s Bumble Bee

One special-status invertebrate species, Crotch’s bumble bee, was determined to have a moderate potential to occur within the Project site following the 2024 habitat assessment..

Due to the species’ recent listing, there is not much available data from natural resource agency databases. Staging and borrow sites will be located in potential foraging habitat for the species. Potential construction related impacts may occur as direct mortality from vehicle strikes or if a nest is observed where ground disturbance is planned then destruction and mortality may occur.

5.3 Special-Status Plant Species

No special-status plant species are expected to occur within the Project site; therefore, no potential impacts to special-status plants would occur.

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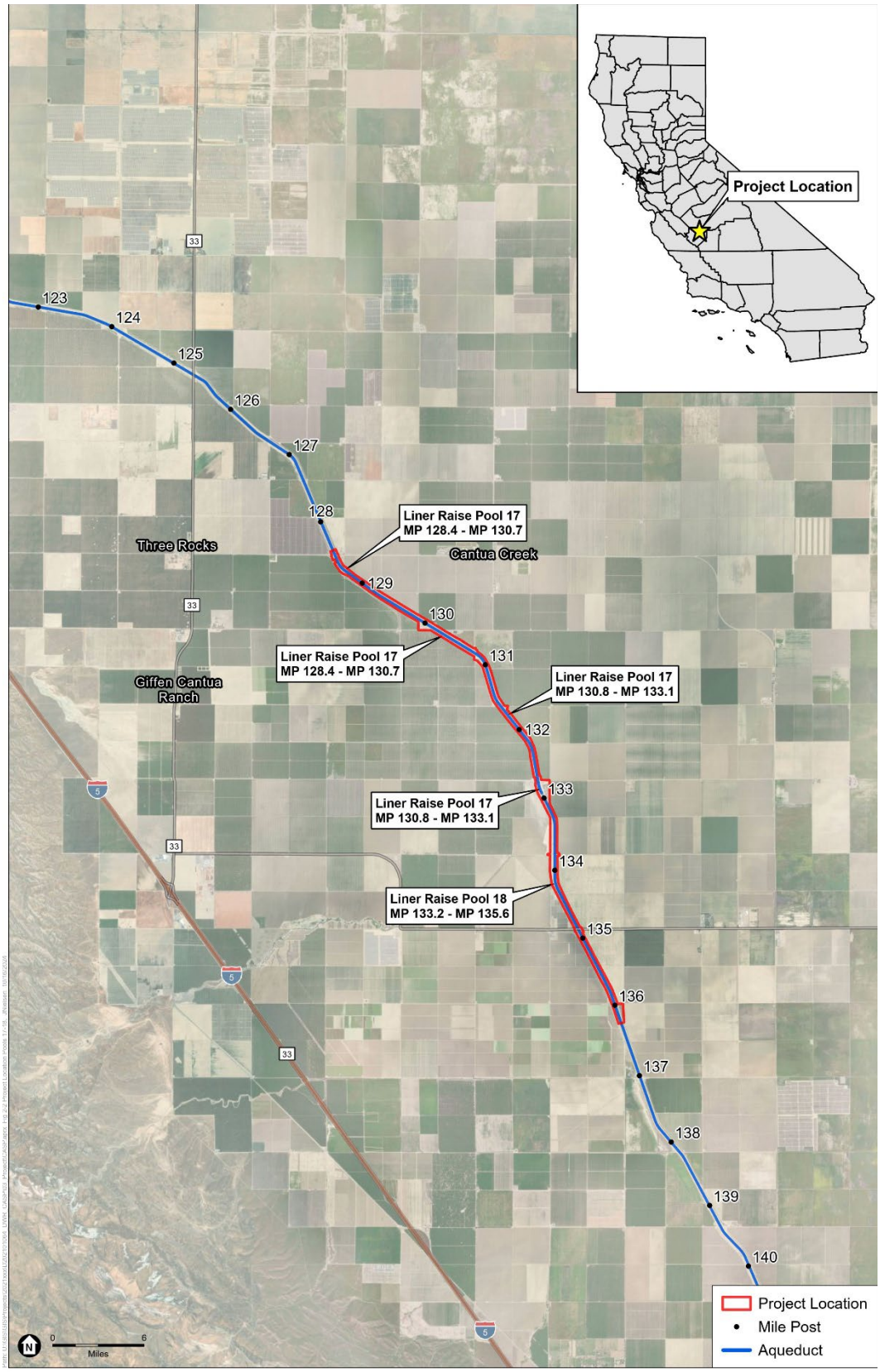
Appendix A
Figures



SOURCE: ESRI; DWR, 2024.

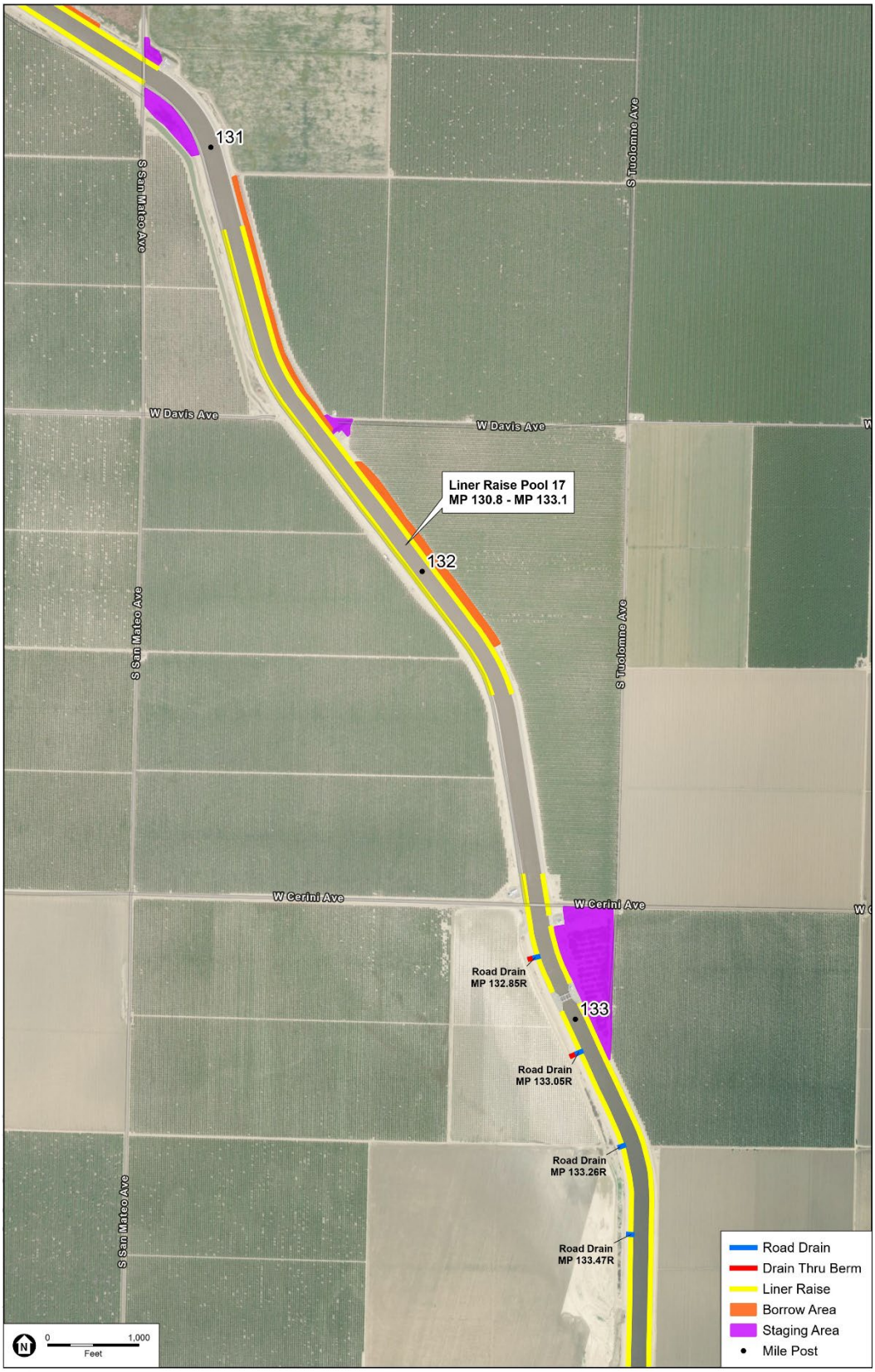
CASP Enviro Support

Figure 1. Pool 17 and Pool 18 Location

SOURCE: ESRI; DWR, 2024

CASP Enviro Support

Figure 2. Pool 17 and Pool 18 Project Site



SOURCE: ESRI; DWR, 2024

CASP Enviro Support

Figure 3. Pool 17 Project Site

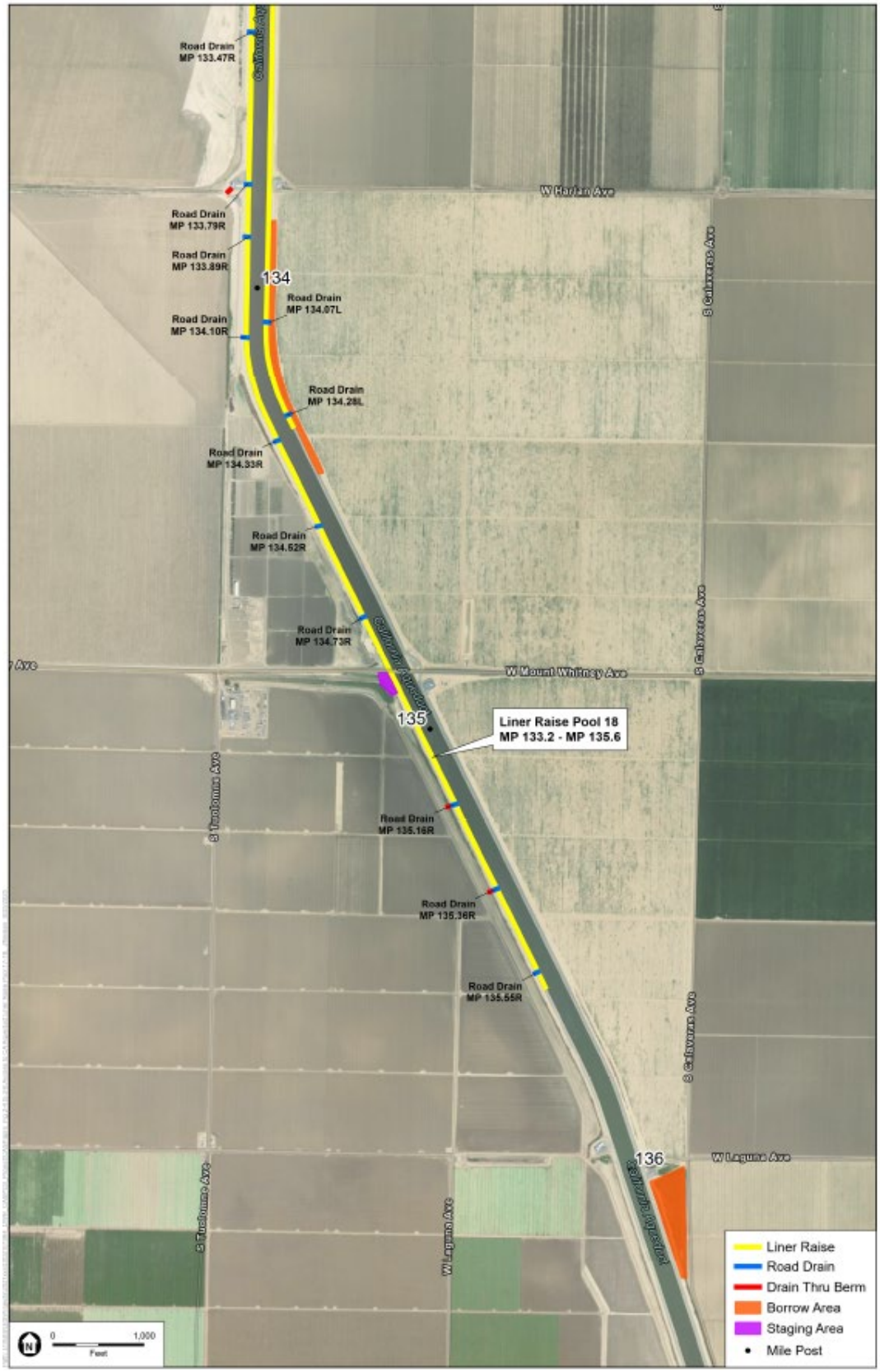


Figure 4. Pool 18 Project Site

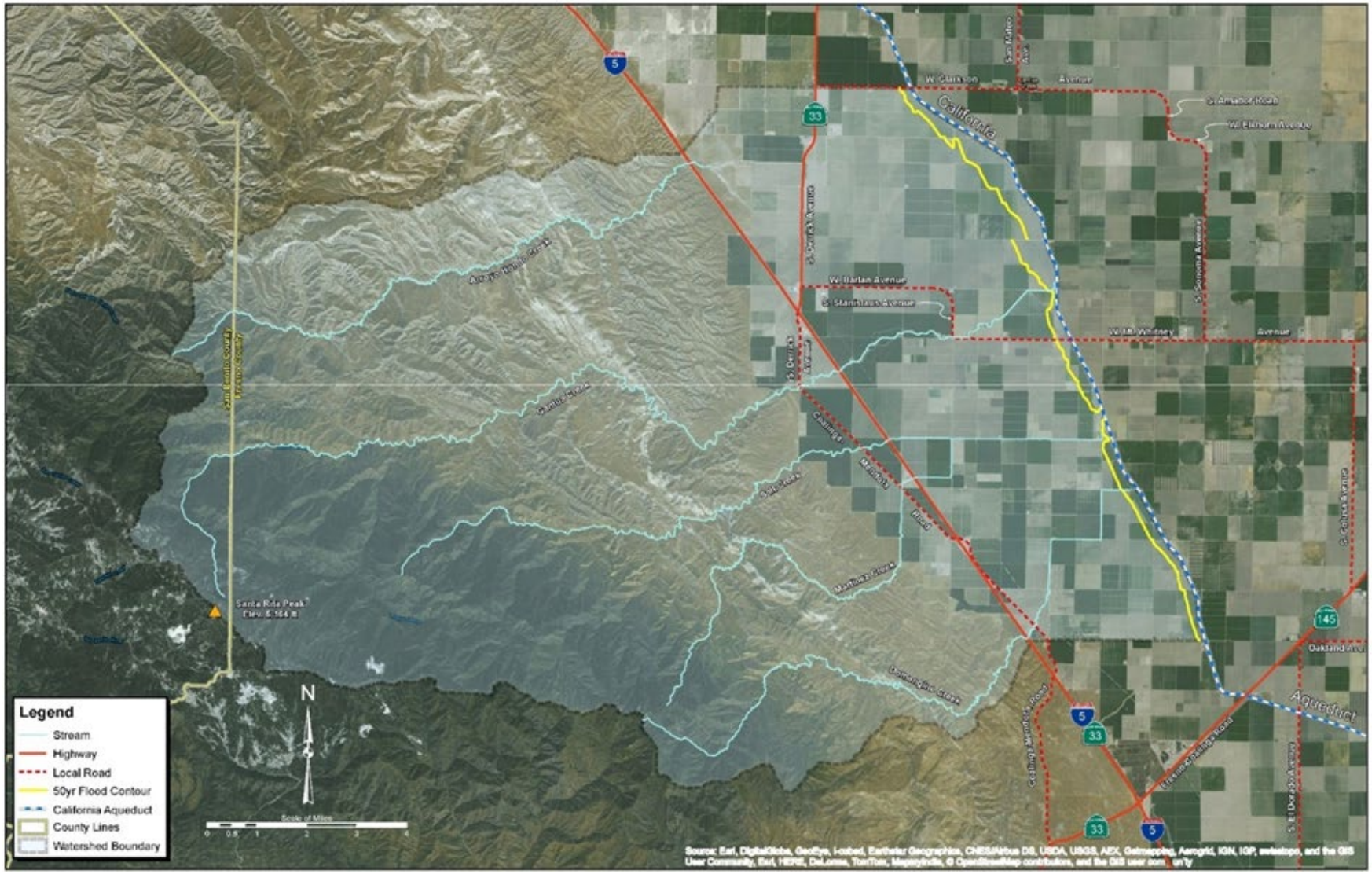


Figure 5. Cantua Creek Stream Group Watershed Located in Pools 17 and 18.

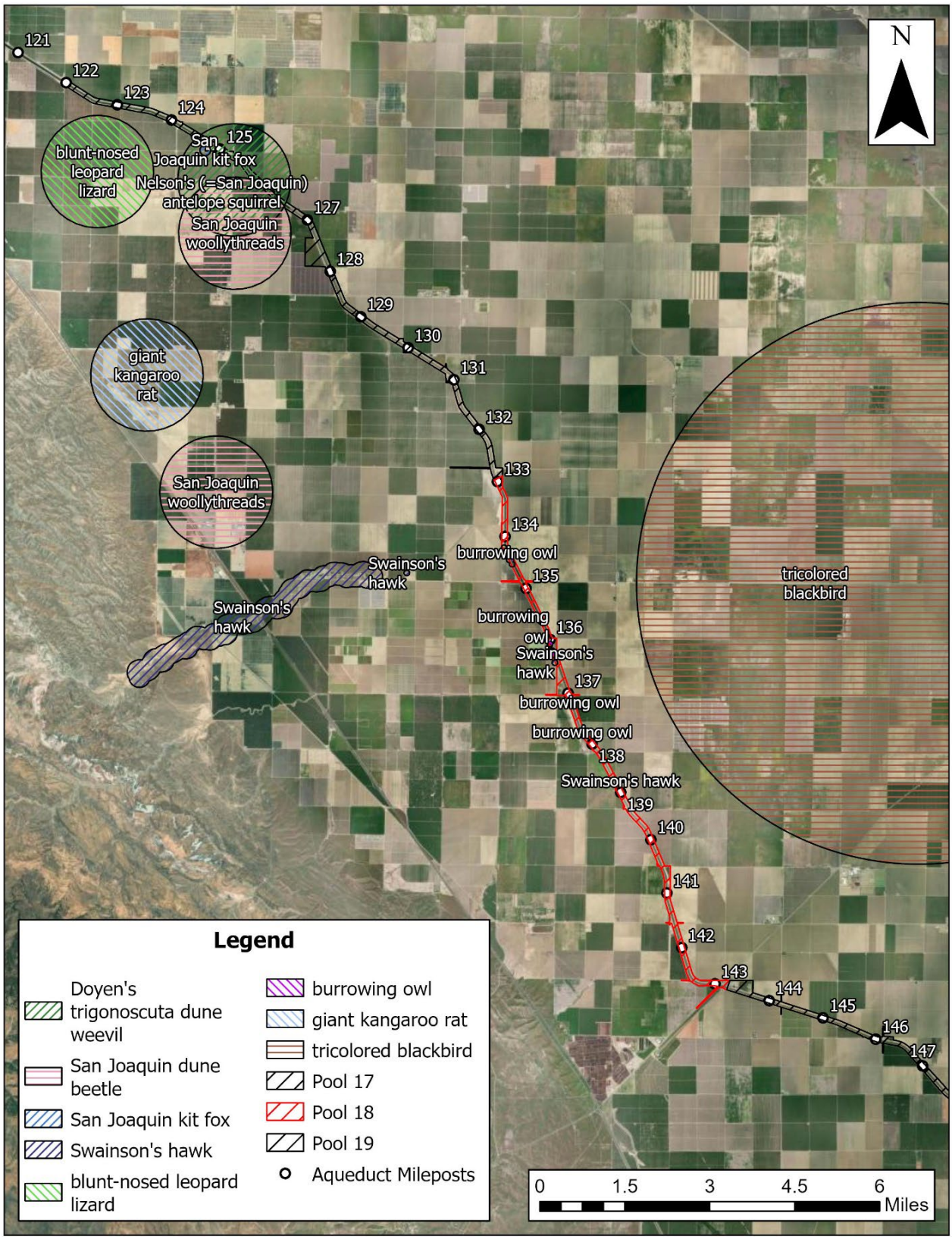


Figure 6. CNDDB Records Within 3 Miles of the Project Site and Observed Species

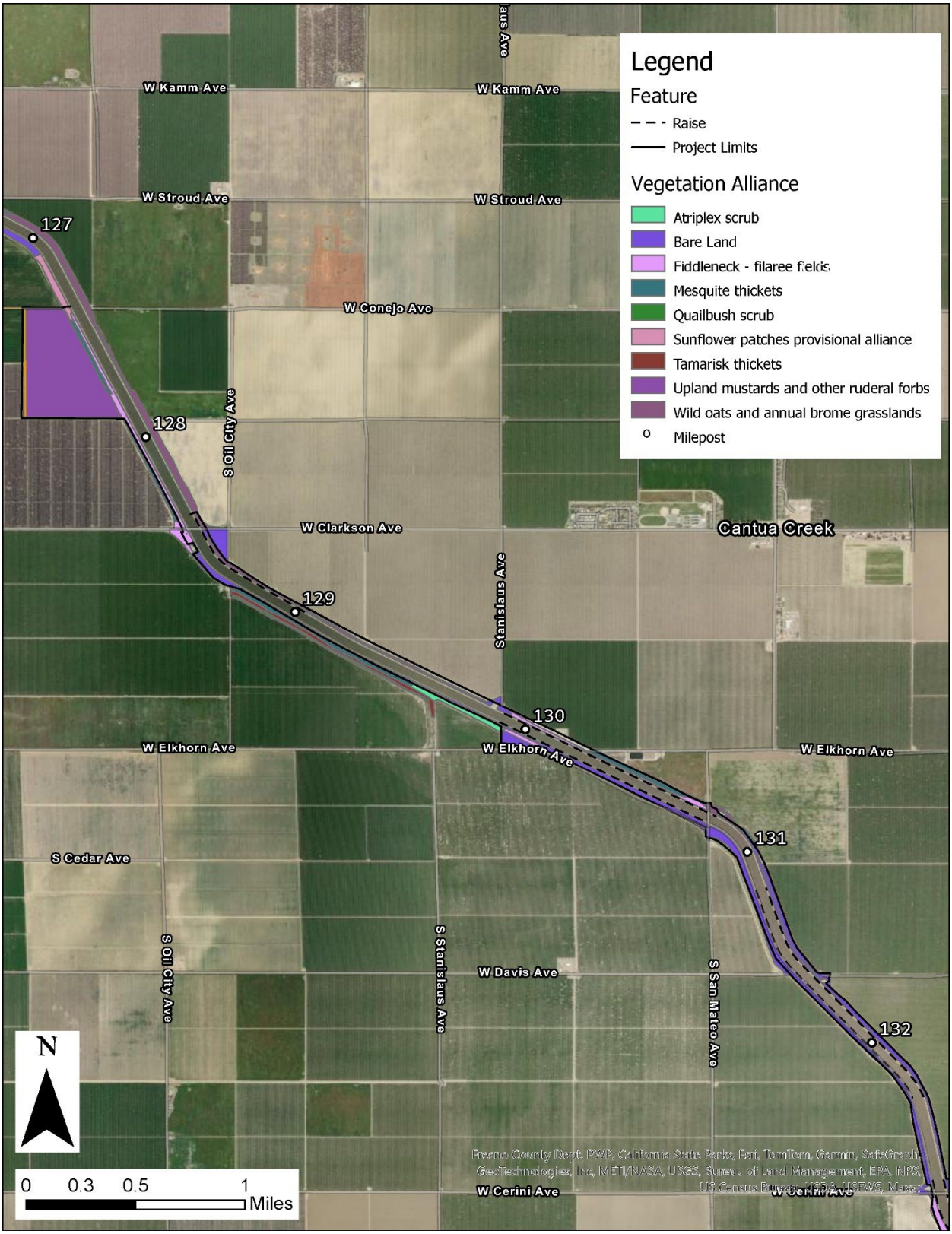


Figure 7. Pool 17 Vegetation Alliance Mapping

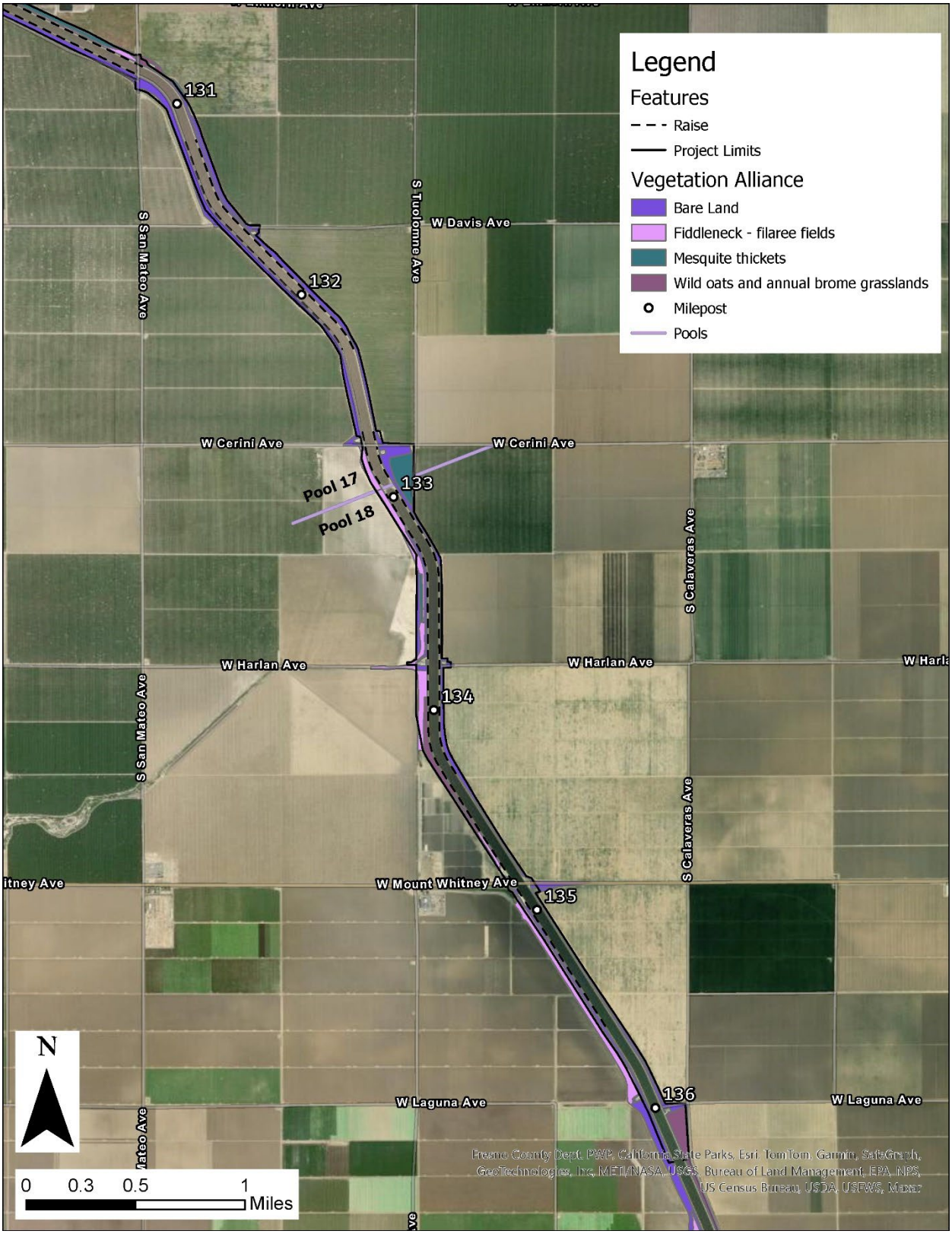


Figure 8. Pool 18 Vegetation Alliance Mapping.

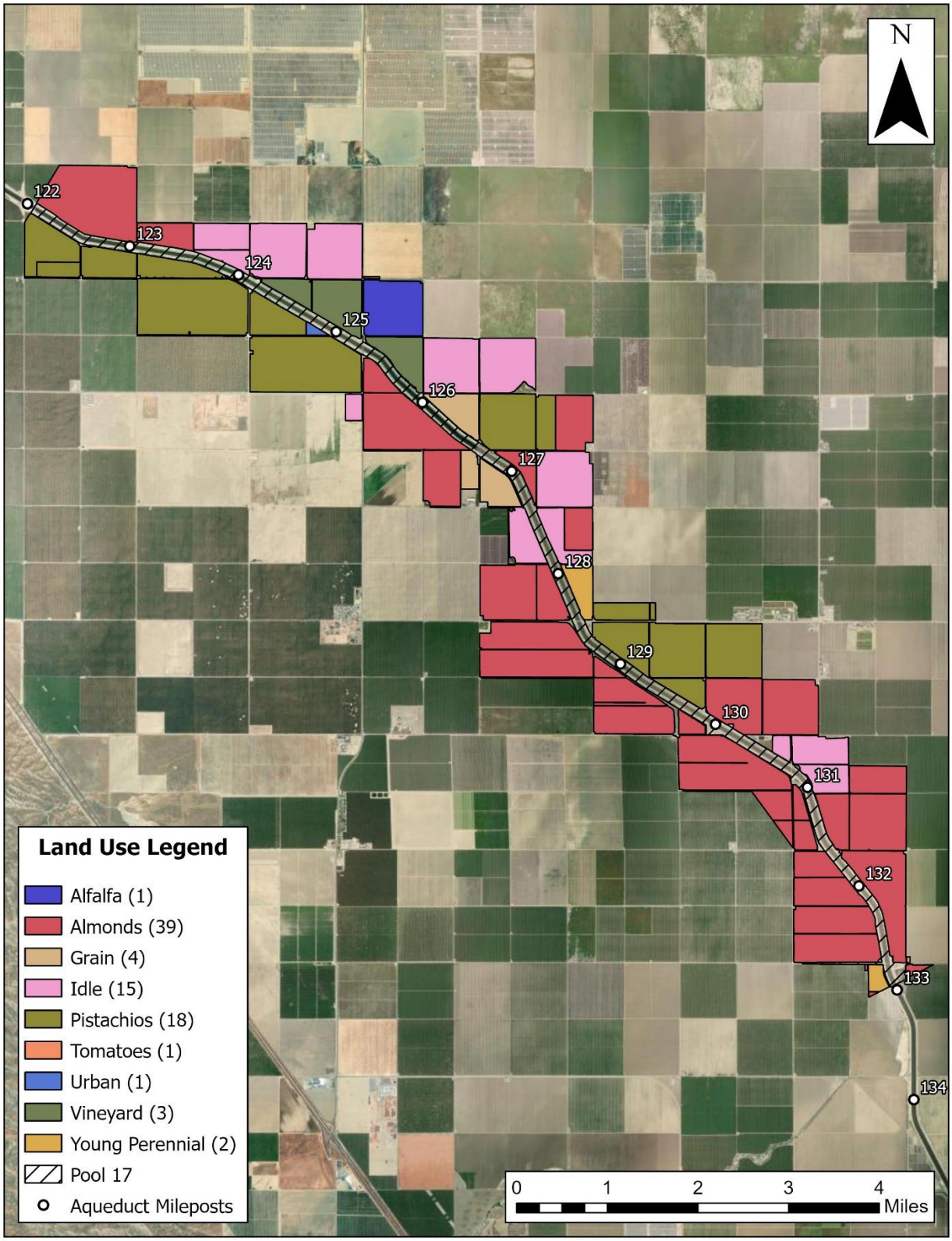


Figure 9. Adjacent Land Use Within Pool 17.

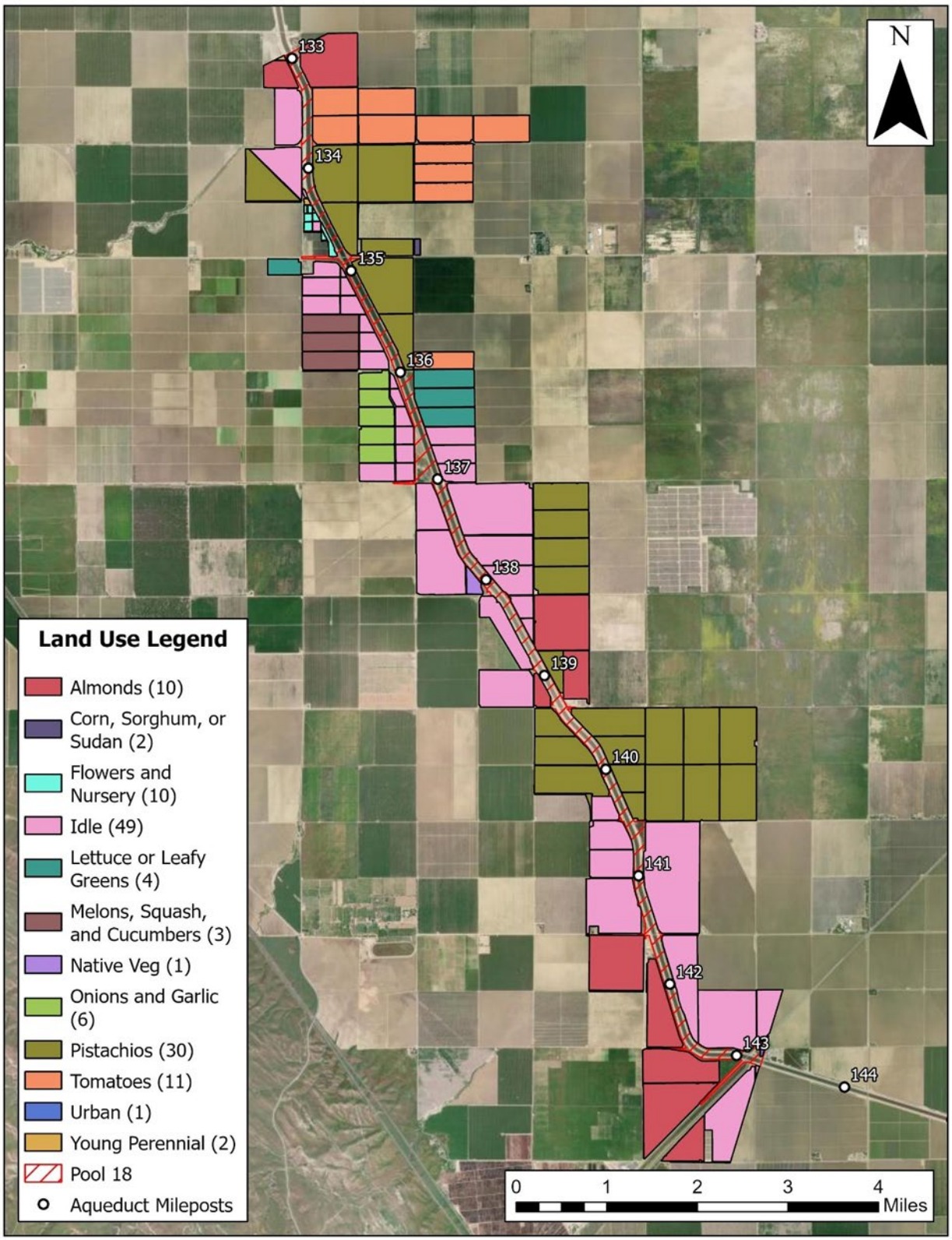


Figure 10. Adjacent Land Use Within Pool 18.

Name	Type	Acres	Sq Ft	Linear Feet
ED-1	Ephemeral Drainage	3.509	152,844	4,185
ED-2	Ephemeral Drainage	0.195	8,510	600
ED-3	Ephemeral Drainage	0.004	157	77
ED-4	Ephemeral Drainage	0.008	344	83
ED-5	Ephemeral Drainage	0.004	162	65
ED-6	Ephemeral Drainage	0.071	3,083	666
ED-7	Ephemeral Drainage	0.062	2,682	329
ED-8	Ephemeral Drainage	0.016	697	347
ED-9	Ephemeral Drainage	0.217	9,463	937
OW-1	Detention Basin	0.641	27,939	
OW-2	Perennial Pond	0.389	16,935	
OW-3	Detention Basin	3.594	156,561	
SW-1	Seasonal Wetland	0.448	19,509	
SW-2	Seasonal Wetland	81.688	3,558,339	
SW-3	Seasonal Wetland under RR Bridge (West)	0.026	1,115	
SW-4	Seasonal Wetland under RR Bridge (East)	0.010	426	
SW-5	Seasonal Wetland	131.082	5,709,948	
SW-6	Seasonal Wetland	14.956	651,479	
SW-7	Seasonal Wetland	152.365	6,637,006	

SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

Cantua Creek Survey Area
Concrete Inlet Structure
Rock Gabion Structure
Seasonal Wetland
Ephemeral Drainage
Ephemeral Drainage Centerline

San Luis Canal Embankment and Liner Raise Project

Figure 4-1
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 12/14/2021

Figure 11. Aquatic Resources Identified Adjacent to Project Site

Name	Type	Acres	Sq Ft	Linear Feet
ED-1	Ephemeral Drainage	3.509	152,844	4,185
ED-2	Ephemeral Drainage	0.195	8,510	600
ED-3	Ephemeral Drainage	0.004	157	77
ED-4	Ephemeral Drainage	0.008	344	83
ED-5	Ephemeral Drainage	0.004	162	65
ED-6	Ephemeral Drainage	0.071	3,083	666
ED-7	Ephemeral Drainage	0.062	2,682	329
ED-8	Ephemeral Drainage	0.016	697	347
ED-9	Ephemeral Drainage	0.217	9,463	937
OW-1	Detention Basin	0.641	27,939	
OW-2	Perennial Pond	0.389	16,935	
OW-3	Detention Basin	3.594	156,561	
SW-1	Seasonal Wetland	0.448	19,509	
SW-2	Seasonal Wetland	81.688	3,558,339	
SW-3	Seasonal Wetland under RR Bridge (West)	0.026	1,115	
SW-4	Seasonal Wetland under RR Bridge (East)	0.010	426	
SW-5	Seasonal Wetland	131.082	5,709,948	
SW-6	Seasonal Wetland	14.956	651,479	
SW-7	Seasonal Wetland	152.365	6,637,006	

SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

Cantua Creek Survey Area
Concrete Inlet Structure
Rock Gabion Structure
Seasonal Wetland
Ephemeral Drainage
Ephemeral Drainage Centerline

San Luis Canal Embankment and Liner Raise Project

Figure 4-2
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 12/14/2021

Figure 12. Aquatic Resources Identified Adjacent to Project Site

Name	Type	Acres	Sq Ft	Linear Feet
ED-1	Ephemeral Drainage	3.509	152,844	4,185
ED-2	Ephemeral Drainage	0.195	8,510	600
ED-3	Ephemeral Drainage	0.004	157	77
ED-4	Ephemeral Drainage	0.008	344	83
ED-5	Ephemeral Drainage	0.004	162	65
ED-6	Ephemeral Drainage	0.071	3,083	666
ED-7	Ephemeral Drainage	0.062	2,682	329
ED-8	Ephemeral Drainage	0.016	697	347
ED-9	Ephemeral Drainage	0.217	9,463	937
OW-1	Detention Basin	0.641	27,939	
OW-2	Perennial Pond	0.389	16,935	
OW-3	Detention Basin	3.594	156,561	
SW-1	Seasonal Wetland	0.448	19,509	
SW-2	Seasonal Wetland	81.688	3,558,339	
SW-3	Seasonal Wetland under RR Bridge (West)	0.026	1,115	
SW-4	Seasonal Wetland under RR Bridge (East)	0.010	426	
SW-5	Seasonal Wetland	131.082	5,709,948	
SW-6	Seasonal Wetland	14.956	651,479	
SW-7	Seasonal Wetland	152.365	6,637,006	

SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

Salt Creek Survey Area
Data Point
Concrete Inlet Structure
Ephemeral Drainage
Ephemeral Drainage Centerline

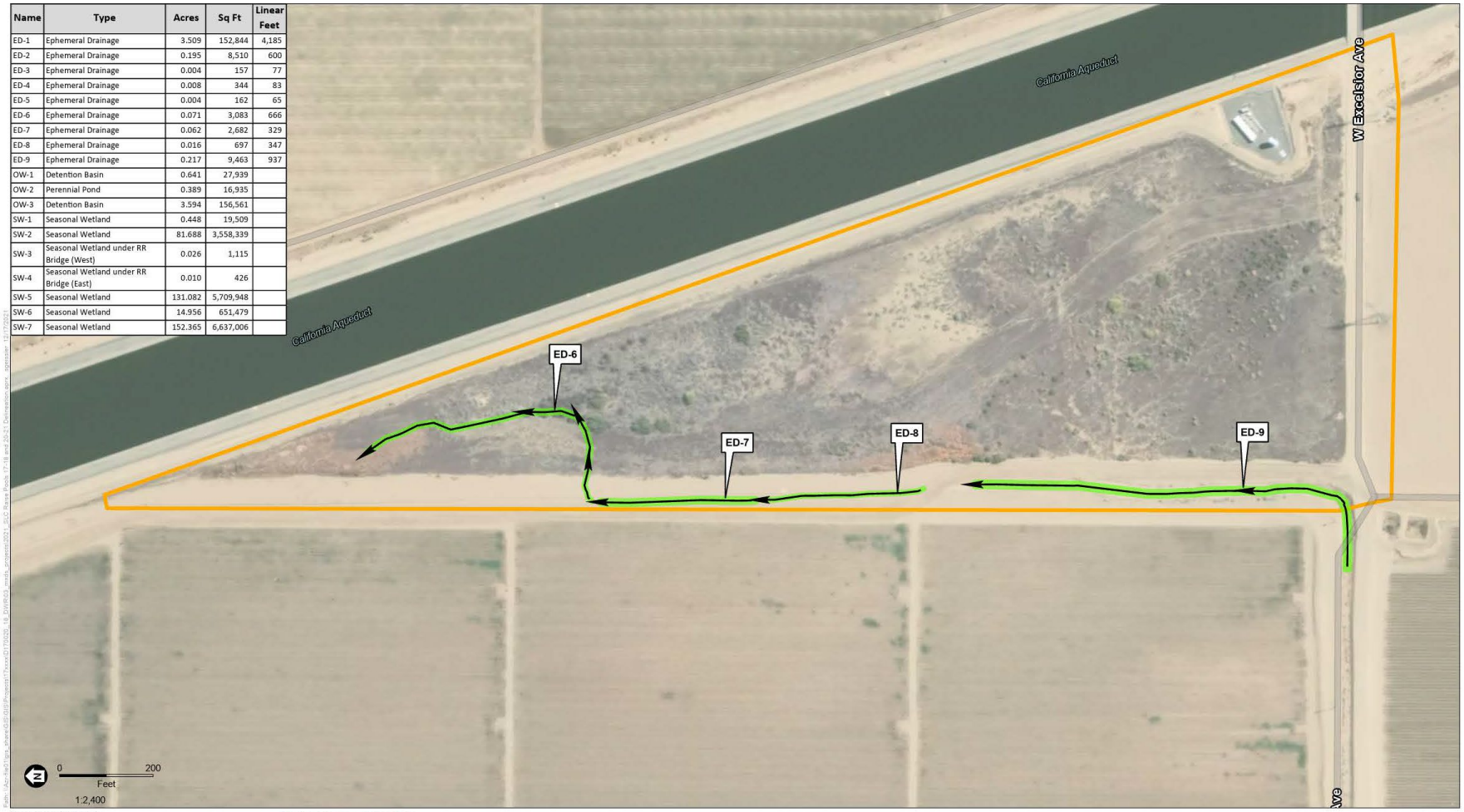
San Luis Canal Embankment and Liner Raise Project

Figure 4-3
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 12/14/2021

Figure 13. Aquatic Resources Identified Adjacent to Project Site

Name	Type	Acres	Sq Ft	Linear Feet
ED-1	Ephemeral Drainage	3.509	152,844	4,185
ED-2	Ephemeral Drainage	0.195	8,510	600
ED-3	Ephemeral Drainage	0.004	157	77
ED-4	Ephemeral Drainage	0.008	344	83
ED-5	Ephemeral Drainage	0.004	162	65
ED-6	Ephemeral Drainage	0.071	3,083	666
ED-7	Ephemeral Drainage	0.062	2,682	329
ED-8	Ephemeral Drainage	0.016	697	347
ED-9	Ephemeral Drainage	0.217	9,463	937
OW-1	Detention Basin	0.641	27,939	
OW-2	Perennial Pond	0.389	16,935	
OW-3	Detention Basin	3.594	156,561	
SW-1	Seasonal Wetland	0.448	19,509	
SW-2	Seasonal Wetland	81.688	3,558,339	
SW-3	Seasonal Wetland under RR Bridge (West)	0.026	1,115	
SW-4	Seasonal Wetland under RR Bridge (East)	0.010	426	
SW-5	Seasonal Wetland	131.082	5,709,948	
SW-6	Seasonal Wetland	14.956	651,479	
SW-7	Seasonal Wetland	152.365	6,637,006	



SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

Salt Creek Survey Area
Ephemeral Drainage Centerline
Ephemeral Drainage

San Luis Canal Embankment and Liner Raise Project

Figure 4-4
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 12/14/2021

Figure 14. Aquatic Resources Identified Downstream Project Site

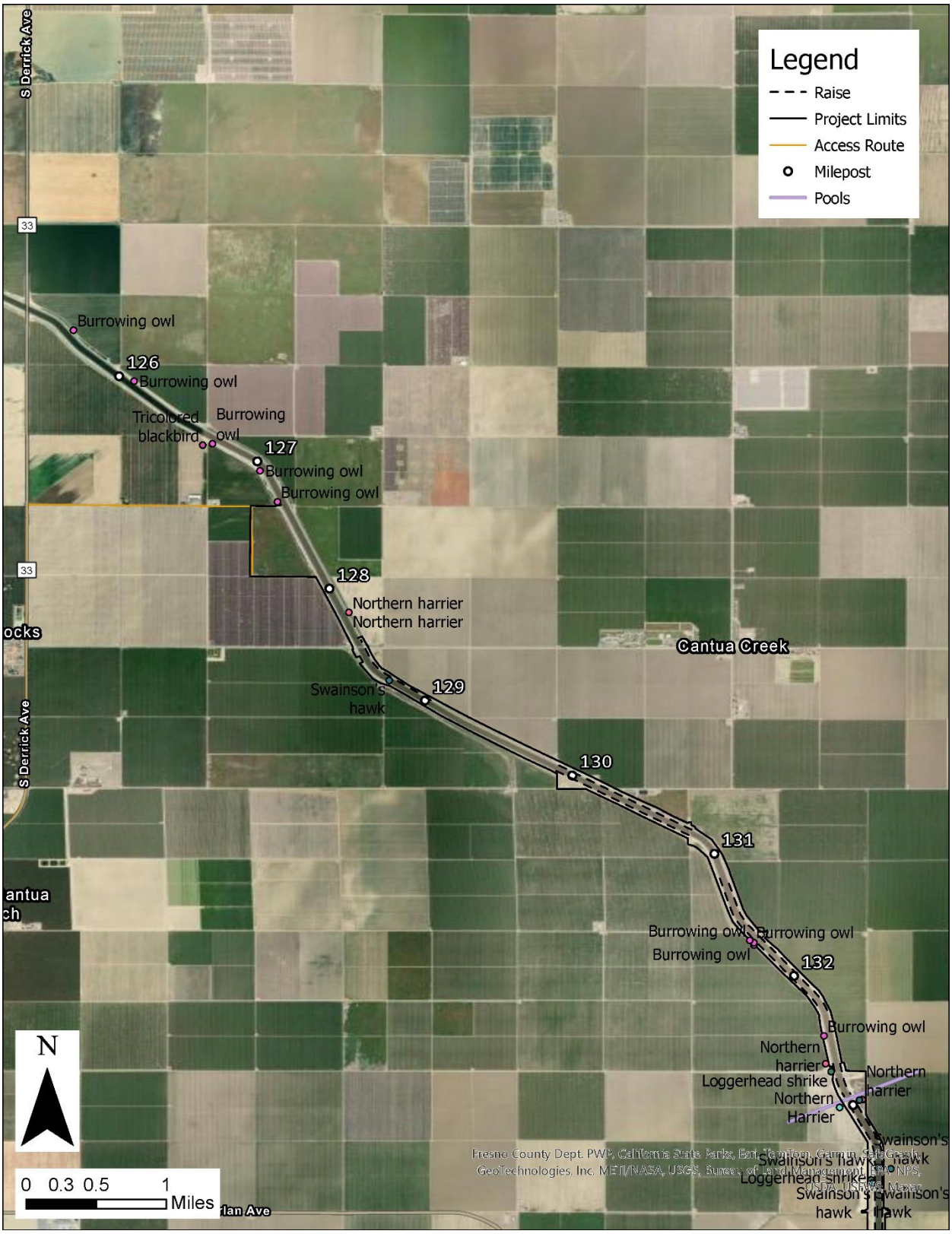


Figure 15. Species Observations Made in Pool 17.

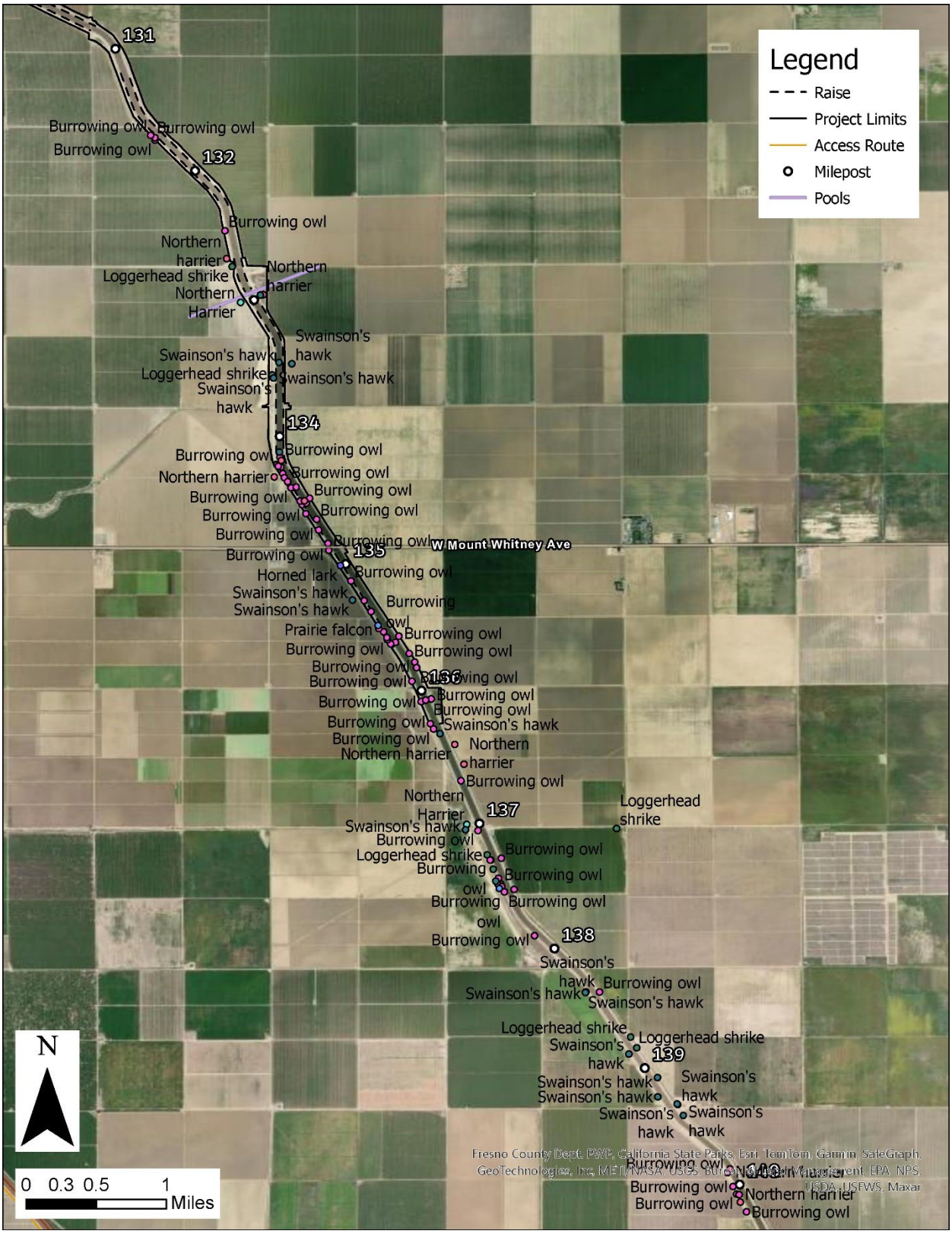


Figure 16. Species Observations Made in Pool 18.

Appendix B
Database Search Results

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

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Location

Fresno County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building

2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

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Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

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2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Fresno Kangaroo Rat Dipodomys nitratoides exilis Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5150	**Endangered**
Giant Kangaroo Rat Dipodomys ingens Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6051	**Endangered**
San Joaquin Kit Fox Vulpes macrotis mutica Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2873	**Endangered**

Birds

NAME	STATUS
California Condor Gymnogyps californianus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8193	**Endangered**

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard Gambelia silus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/625	**Endangered**

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Northwestern Pond Turtle Actinemys marmorata — **Proposed Threatened**
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/1111

Amphibians

NAME	STATUS
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	**Threatened**
Western Spadefoot Spea hammondii Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5425	**Proposed Threatened**

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	**Candidate**

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp Branchinecta lynchi Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/498	**Threatened**

Flowering Plants

NAME	STATUS

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San Joaquin Wooly-threads Monolopia (=Lembertia) congdonii Endangered

Wherever found

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/3746

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

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There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week

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12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

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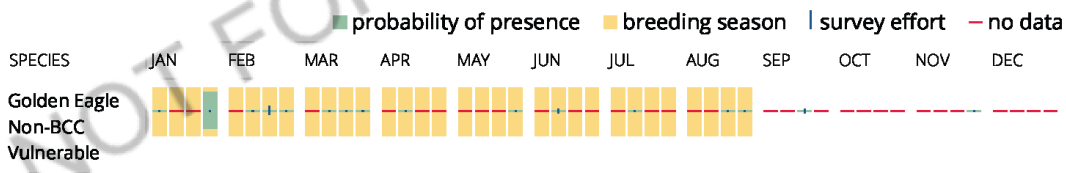

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

NOT FOR CONSULTATION

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

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NAME	BREEDING SEASON
Belding's Savannah Sparrow Passerculus sandwichensis beldingi This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Bullock's Oriole Icterus bullockii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull Larus californicus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
Clark's Grebe Aechmophorus clarkii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Common Yellowthroat Geothlypis trichas sinuosa This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31

Golden Eagle Aquila chrysaetos — **Breeds Jan 1 to Aug 31**

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Spinus lawrencei — **Breeds Mar 20 to Sep 20**

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Northern Harrier Circus hudsonius — **Breeds Apr 1 to Sep 15**

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/8350

Santa Barbara Song Sparrow Melospiza melodia graminea — **Breeds Mar 1 to Sep 5**

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/5513

Tricolored Blackbird Agelaius tricolor — **Breeds Mar 15 to Aug 10**

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Western Grebe aechmophorus occidentalis — **Breeds Jun 1 to Aug 31**

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/6743

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

■ probability of presence ■ breeding season | survey effort – no data

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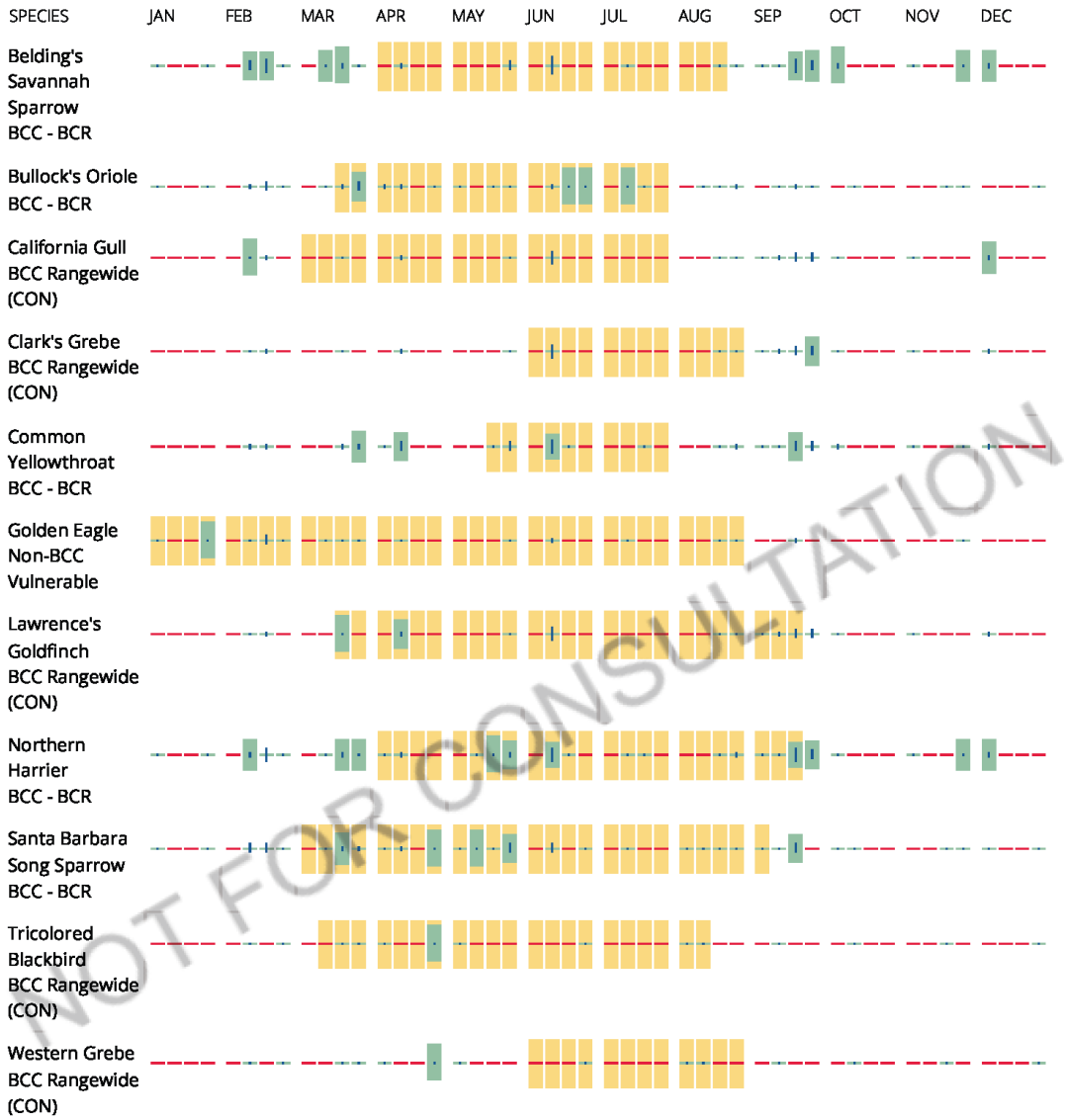

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Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

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Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1Kx
- PEM1C
- PEM1Ch
- PEM1Ax

FRESHWATER POND

- PUBFx

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PUSAx
PUSCx

RIVERINE
R2UBHx
R2UBF
R4SBCx
R5UBF

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

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Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should

seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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Rare Plant Inventory Nine Quad Search

ScientificName	CommonName	Family	Lifeform	CRPR	GRank	SRank	CESA	FESA
Acanthomintha obovata ssp. *obovata*	San Benito thorn-mint	Lamiaceae	annual herb	4.2	G4T3T4	S3S4	None	None
Amsinckia furcata	forked fiddleneck	Boraginaceae	annual herb	4.2	G4	S4	None	None
Androsace elongata ssp. *acuta*	California androsace	Primulaceae	annual herb	4.2	G5?T3T4	S3S4	None	None
Atriplex coronata var. *coronata*	crownscale	Chenopodiaceae	annual herb	4.2	G4T3	S3	None	None
Atriplex coronata var. *vallicola*	Lost Hills crownscale	Chenopodiaceae	annual herb	1B.2	G4T3	S3	None	None
Benitoa occidentalis	western lessingia	Asteraceae	annual herb	4.3	G3G4	S3S4	None	None
Clarkia breweri	Brewer's clarkia	Onagraceae	annual herb	4.2	G4	S4	None	None
Deinandra halliana	Hall's tarplant	Asteraceae	annual herb	1B.1	G3	S3	None	None
Delphinium recurvatum	recurved larkspur	Ranunculaceae	perennial herb	1B.2	G2?	S2	None	None
Eriastrum sparsiflorum	few-flowered eriastrum	Polemoniaceae	annual herb	4.3	G5	S4	None	None
Eriogonum gossypinum	cottony buckwheat	Polygonaceae	annual herb	4.2	G3G4	S3S4	None	None
Eriogonum nudum var. *indictum*	protruding buckwheat	Polygonaceae	perennial herb	4.2	G5T4	S4	None	None
Eriogonum vestitum	Idria buckwheat	Polygonaceae	annual herb	4.3	G3	S3	None	None
Eschscholzia hypecoides	San Benito poppy	Papaveraceae	annual herb	4.3	G4	S4	None	None
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	4.2	G3	S3	None	None
Layia heterotricha	pale-yellow layia	Asteraceae	annual herb	1B.1	G2	S2	None	None
Layia munzii	Munz's tidy-tips	Asteraceae	annual herb	1B.2	G2	S2	None	None
Lepidium jaredii ssp. *album*	Panoche pepper-grass	Brassicaceae	annual herb	1B.2	G2G3T2T3	S2S3	None	None
Madia radiata	showy golden madia	Asteraceae	annual herb	1B.1	G3	S3	None	None
Malacothamnus aboriginum	Indian Valley bushmallow	Malvaceae	perennial deciduous shrub	1B.2	G3	S3	None	None
Microseris sylvatica	sylvan microseris	Asteraceae	perennial herb	4.2	G4	S4	None	None
Monardella antonina ssp. *benitensis*	San Benito monardella	Lamiaceae	perennial rhizomatous herb	4.3	G4T3	S3	None	None
Monolopia congdonii	San Joaquin woollythreads	Asteraceae	annual herb	1B.2	G2	S2	None	FE
Navarretia panochensis	Panoche navarretia	Polemoniaceae	annual herb	1B.3	G3	S3	None	None
Navarretia prostrata	prostrate vernal pool navarretia	Polemoniaceae	annual herb	1B.2	G2	S2	None	None
Senecio aphanactis	chaparral ragwort	Asteraceae	annual herb	2B.2	G3	S2	None	None
Trichostema ovatum	San Joaquin bluecurls	Lamiaceae	annual herb	4.2	G3	S3	None	None

Appendix C
Aquatic Resource Report

SAN LUIS CANAL EMBANKMENT AND LINER RAISE PROJECT

Draft Aquatic Resources Delineation Report

Prepared for
California Department of Water Resources
Division of Engineering
South Central Region Office

April 2022

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Division of Engineering
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April 2022

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Bend	Orlando	San Jose
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Destin	Portland	Seattle
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Los Angeles	San Diego	
Oakland	San Francisco	

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CHAPTER 1
Introduction

This report documents the results and conclusions of an aquatic resources delineation conducted for the California Department of Water Resources' (DWR's) San Luis Canal Embankment and Liner Raise Project (Proposed Project) in June and September 2021. The Proposed Project involves raising the embankment in Pools 17, 18, 20, and 21—a 38-mile segment of the California Aqueduct. The Proposed Project would also involve extending the concrete liner within the canal prism and incorporating structure modifications. Structures that would be modified include turnouts and turn-ins, irrigation and utility crossings, check structures, and bridge crossings. The Proposed Project area consists of a 38-mile segment of the San Luis Canal and adjacent areas that would be subject to effects from implementation of the Proposed Project. This area is referred to as the Area of Interest (AOI).

On behalf of DWR, Environmental Science Associates (ESA) investigated the extent of aquatic resources within the aquatic resources study area, comprising three distinct locations previously identified as potentially supporting aquatic resources within the AOI, that may be subject to regulation under the Clean Water Act (CWA) as well as State regulations, including the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). This report also provides background information necessary to support future permit applications (if any) for the Proposed Project under Sections 404 and 401 of the CWA, the California Water Resources Control Board's Dredge or Fill Procedures, and Section 1600 of California Fish and Game Code (CFGC) administered by California Department of Fish and Wildlife (CDFW).

An aquatic resource delineation involves determining the boundaries between wetlands, waters, and surrounding uplands through the investigation of the three parameters that define a wetland: vegetation, soils, and hydrology, as well as those parameters that define non-wetland waters ("other waters") potentially subject to State and/or federal jurisdiction. The aquatic resources study area was determined via desktop analysis in collaboration with DWR South Central Regional Office biologists familiar with the Proposed Project's AOI. All aquatic resources and their extent and boundaries identified in this report are based on ESA's field observations and regulatory interpretation informed by prior court case decisions.

1.1 Aquatic Resources Study Area

The aquatic resources study area is in Fresno County, California, within the city of Huron and the community of Cantua Creek. The aquatic resources study area falls within the *Tres Picos Farms* and *Huron* California U.S. Geological Survey (USGS) 7.5-minute series quadrangles. The approximate centroid of the Cantua Creek study area is 36.44070278°, -120.30388333°, the Salt

Creek study area is 36.40209167°, -120.28781944°, and the Arroyo Pasajero study area is 36.19611111°, -120.06174167°. The aquatic resources study area is a subset of the AOI where the Cantua Creek and Arroyo Pasajero stream groups, as described under Section 2.3 *Hydrology*, intercept the AOI. The aquatic resources study area is approximately 473.68 acres in size (**Figures 1 and 2**).

1.1.1 Directions to the Survey Areas within the Study Area

The study area comprises three discrete locations within the AOI, which are located along different predominant drainages defining each sub-region. As such, the study area is discussed as the drainage-specific locations.

Directions to the Cantua Creek study area from Sacramento:

- Take Interstate 5 South from Sacramento.
- Take exit 357 to West Kamm Avenue.
- Turn left onto West Kamm Avenue.
- Turn right onto California Highway (CA) 33 South.
- Turn left onto West Clarkson Avenue; the Cantua Creek study area is immediately southwest of the West Clarkson Avenue and San Luis Canal intersection.

Directions to the Salt Creek study area from Sacramento:

- Take Interstate 5 South from Sacramento.
- Take exit 349 to Derrick Avenue.
- Turn left onto CA-33 North/South Derrick Avenue.
- Turn right onto West Harlan Avenue.
- Merge onto South Stanislaus Avenue.
- Continue straight onto West Mt. Whitney Avenue.
- Turn right onto South Tuolumne Avenue.
- Turn left at the first cross street onto West Laguna Avenue; the Salt Creek study area is immediately southeast of the West Laguna Avenue terminus.

Directions to the Arroyo Pasajero study area from Sacramento:

- Take Interstate 5 South from Sacramento.
- Take exit 325 to Jayne Avenue.
- Turn left onto Jayne Avenue.
- Turn right onto West Gale Avenue.
- Turn left onto access road/ramp approximately 1,500 feet west of the West Gale/South Madera Avenue intersection.

- Continue east on the access road/ramp; the Arroyo Pasajero study area is immediately west and northwest of the access gate. (Access to the northern portion of the study area is via the San Luis Canal access road.)

Note: Please contact DWR for access and escort to/from each survey area.

1.2 Contact Information

1.2.1 Applicant

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SOURCE: DWR, 2020; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 1
Regional Location

SOURCE: NHD; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 2
Study Area

ESA

CHAPTER 2
Existing Conditions

The aquatic resources study area is located in the southern San Joaquin Valley, within the San Joaquin sub-region of the Great Central Valley floristic province of California. Historically, this region supported extensive grasslands, marshes, vernal pools, riparian woodlands alkali sink vegetation, and stands of valley oak (*Quercus lobata*). The southern portion of the San Joaquin Valley supports some desert elements (Baldwin et al. 2012), such as hot, dry summers, high sun exposure rates, and drought-tolerant vegetation communities. Agricultural development has resulted in substantial changes to and conversions of these habitats. Currently, regional land uses are mainly agricultural with interspersed rural residential and commercial structures.

The northern portion of the aquatic resources study area is bound to the north by West Clarkson Avenue, to the east by South Sonoma Avenue, to the west by CA-33, and to the south by West Paige Avenue. The southern portion of the aquatic resources study area is bound to the north by CA-198, South Goldenrod Avenue to the east, the city of Huron and South Siskiyou Avenue to the west, and West Gale Avenue to the south. Land uses within and adjacent to the aquatic resources study area are characterized primarily by agricultural production with sparse rural residential and commercial uses.

2.1 Land Cover Types and Vegetation Communities

This section describes the vegetation communities and habitats that occur in the aquatic resources study area. The vegetation community descriptions and terminology used are based on CDFW's *List of California Terrestrial Natural Communities Recognized by The California Natural Diversity Database* (CDFW 2021), and Holland's *Preliminary Description of Terrestrial Natural Communities of California* (Holland 1986). Vegetation communities are assemblages of plant species that occur together in the same area and are defined by species composition (**Appendix A**) and relative abundance.

Land cover types occurring within the aquatic resources study area were observed by ESA biologists Eric Christensen and Megan Minter in 2021 during June and September site reconnaissance surveys and derived from a review of satellite imagery. Land cover types in the aquatic resources study area consist of cropland (including dryland grain crops, irrigated grain crops, irrigated hayfield, and irrigated row and field crops), deciduous orchard, urban (landscaped and developed) land cover, grassland, alkali desert scrub, ruderal habitat, and the aquatic habitats of Cantua, Salt, and Arroyo Pasajero Creeks and constructed basins within the Westside Detention Basin (WSDB).

2.1.1 Aquatic Feature Types and Vegetation Communities

Seasonal Wetland

Seasonal wetland features within the aquatic resources study area were dominated by annual, emergent herbaceous vegetation. Dominant species within these features include tall flatsedge (*Cyperus eragrostis*), Bermuda grass (*Cynodon dactylon*), California sunflower (*Helianthus californicus*), Italian rye grass (*Festuca perennis*), field barley (*Hordeum marinum*), alkali pepperweed (*Lepidium dictyotum*), perennial pepperweed (*L. latifolium*), shinning pepperweed (*L. nitidum*), pennyroyal (*Mentha pulegium*), rabbitsfoot grass (*Polypogon monspeliensis*), cocklebur (*Xanthium strumarium*), sheep sorrel (*Rumex acetosella*), curly dock (*R. crispus*), and common spikeweed (*Centromadia pungens*). Very small patches of broadleaf cattail (*Typha latifolia*), sandbar willow (*Salix exigua*), Fremont cottonwood (*Populus fremontii*) saplings, and Mexican fan palm (*Washingtonia robusta*) saplings that are too small to be considered a separate community type were observed immediately adjacent to and/or within drain inlet structures at the lowest point of certain features (see Photo 1 in **Appendix F**), typically, where flow is impeded and retained. Such control structures include closed gate valves, or gabions structures near inlets. Seasonal wetlands in the aquatic resources study area include the terminus of Cantua Creek and the majority of constructed basins associated within the WSDB.

Valley Foothill Riparian

Valley foothill riparian is a plant community that supports woody vegetation found along rivers, creeks, and streams. This shrub- or tree-dominated community ranges in density from partial (>20 percent) shrub/tree cover to a fully closed canopy of large mature shrubs or trees. Vegetation observed included Fremont cottonwood, Athel tamarisk (*Tamarix aphylla*), smallflower tamarisk (*T. parviflora*), arroyo willow (*S. lasiolepis*), Gooding's willow (*S. gooddingii*), big saltbush (*Atriplex lentiformis*), and silverscale saltbush (*Atriplex argentea*). Understory is predominantly composed of cocklebur, mugwort (*Artemisia douglasiana*), arroyo willow and Fremont cottonwood saplings, California sunflower, and mule fat (*Baccharis salicifolia*). Valley foothill riparian habitat within the aquatic resources study area is formed by vegetation along portions of the constructed basins associated within the WSDB.

Ephemeral Drainage

Ephemeral drainage includes all areas that are largely unvegetated (less than 5 percent vegetation cover) and convey water immediately after precipitation events or other sources of water input (e.g., irrigation runoff) throughout the year. This includes Cantua and Salt Creeks and an unnamed tributary to Salt Creek.

Open Water

Open water includes two detention basins and a perennial pond, all of which are unvegetated (less than 5 percent vegetation cover) and remain inundated for an extended period of time throughout the year. All open water features are located within the WSDB.

2.1.2 Terrestrial Land Cover Types and Vegetation Communities

Non-Native Annual Grassland

California annual grassland consists of sparse to dense coverage of non-native grasses often associated with numerous other annual and perennial herbs. Non-native grassland species generally respond well to moderate disturbance, such as grazing, which may have played a role in their widespread establishment. Annual grasslands provide a nearly continuous ground coverage, and generally have low habitat structure and diversity as a result of historic management and disturbances. Species observed in this community include slender oat (*Avena barbata*), foxtail chess (*Bromus madritensis*), and ripgut brome (*Bromus diandrus*), as well as sporadic broadleaf species such as Russian thistle (*Salsola tragus*), prickly lettuce (*Lactuca serriola*), and cheeseweed mallow (*Malva parviflora*). Non-native annual grassland occurs throughout the aquatic resources study area in uplands along roads and cropland margins, primarily near Salt Creek and Arroyo Pasajero.

Alkali Desert Scrub

Alkali desert scrub habitat within the aquatic resources study area is primarily found in the northern end of the aquatic resources study area, where agriculture and associated runoff are absent. This habitat type is typified by xeric conditions and dominated by small- to moderate-size shrubs. Plants commonly observed growing in this area include cattle saltbush (*Atriplex polycarpa*), big saltbush, California buckwheat (*Eriogonum fasciculatum*), Chilean mesquite (*Prosopis chilensis*), and Coulter's horseweed (*Laennecia coulteri*). Alkali desert scrub primarily occurs in the uplands adjacent to Cantua Creek.

2.1.3 Developed Land Cover Types

Cropland

Cropland includes dryland grain crops, irrigated grain crops, irrigated hayfield, and irrigated row and field crops. Cropland is generally planted on an annual basis and harvested within a single growing season. Similar to orchards, herbaceous field crops consist of a single plant species planted in rows. Herbaceous field crops are often managed over a multi-year process of crop rotation to maintain soil fertility. As a result, plant crop composition can vary from year to year. The most commonly cultivated herbaceous field crop observed within the aquatic resources study area was alfalfa (*Medicago sativa*), with other crops including onions (*Allium cepa*), garlic (*Allium sativum*), and tomatoes (*Solanum lycopersicum*). Cropland occurs at multiple locations adjacent to the aquatic resources study area, mainly near Cantua Creek and Arroyo Pasajero.

Orchard

Orchards occur throughout the area surrounding the aquatic resources study area and represent a dominant land cover type. Each orchard consists of a single plant species planted in rows, most commonly almond (*Prunus dulcis*) and pistachio (*Pistacia vera*). Most orchards have sparse herbaceous vegetation (similar to those found in non-native annual grassland) growing in the

understory, while others are actively maintained as barren. Orchard occurs at multiple locations adjacent to the aquatic resources study area, mainly near Cantua Creek and Salt Creek.

Developed

A small portion of the aquatic resources study area comprises landscaped areas made up of constructed structures (e.g., pump stations, bridges, portions of the San Luis Canal). This land cover type also includes unvegetated areas occupied by buildings, roads, parking lots, paved areas, and other developed facilities, as well as heavily disturbed areas. Developed portions of the aquatic resources study area support little to no vegetative cover, with few native species. Species observed in these habitats include the same as those described under *Ruderal*, below. Developed land cover occurs along roads, unpaved access roads, the San Luis Canal, and paved areas adjacent to the aquatic resources study area.

Ruderal

Ruderal vegetation is composed of plants that are often the first to colonize a disturbed area, and spontaneously arise and spread widely without human intervention. In California, ruderal vegetation is often composed of an assemblage of non-native grasses and forbs. Common species in this habitat type include pigweed amaranth (*Amaranthus albus*), mustard (*Hirschfeldia incana*), Saharan mustard (*Brassica tournefortii*), tocalote (*Centaurea melitensis*), yellow star thistle (*Centaurea solstitialis*), bull thistle (*Cirsium vulgare*), large flowered sand spurry (*Spergularia macrotheca*), mat amaranth (*Amaranthus blitoides*), field bindweed (*Convolvulus arvensis*), perennial pepperweed, prickly Russian thistle, American nightshade (*Solanum americanum*), common sow thistle (*Sonchus oleraceus*), woolly mullein (*Verbascum thapsus*), and non-native grasses such as those described under *Non-Native Annual Grassland*.

Ruderal vegetation was observed along and within previously disturbed areas, along roads and the San Luis Canal, in uplands adjacent to drain inlet and outlet structures, along the peripheries of cropland and deciduous orchards, and interspersed within other vegetative community types. Ruderal vegetation is present adjacent to active agricultural activities and roads, where recent or routine disturbance occurs. This vegetation type occurs along all locations within the aquatic resources study area that abut roads and actively maintained cropland and orchards.

2.2 Soils

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey was consulted to determine the soil units occurring within the aquatic resources study area. The *Custom Soil Resource Report for Santa Clara Area, California, Western Part* (NRCS 2021a; included as **Appendix B**) describes four soil units occurring within the aquatic resources study area. Of those, none contain components listed by the NRCS on the national hydric soils list for Fresno County, California, Western Part (NRCS 2021b). A brief description of each soil unit is provided below. **Figures 3-1** through **3-8** provide a series of soils maps showing the soil units in the aquatic resources study area, and Appendix B provides the source of the following descriptions:

- **Ciervo clay, 0 to 2 percent slopes,** is not listed as hydric. This soil unit occurs in alluvial fan skirts with parent material as alluvium derived from calcareous sedimentary rock. This is a moderately well-drained soil with a high water capacity of 9.8 inches. The map unit composition is 80 percent Ciervo clay and similar soils and 20 percent minor components.
- **Cerini clay loam, 0 to 2 percent slopes,** is not listed as hydric. This soil unit occurs in alluvial fans with parent material as alluvium derived from calcareous sedimentary rock. This is a well-drained soil with a high water capacity of 9.6 inches. The map unit composition is 85 percent Cerini clay loam and similar soils and 15 percent minor components.
- **Excelsior sandy loam, sandy substratum, 0 to 2 percent slopes,** is not listed as hydric. This soil unit occurs in alluvial fans and floodplains with parent material derived from calcareous sedimentary rock. This is a well-drained soil with a moderate water capacity of 6.8 inches. The map unit composition is 85 percent Excelsior, sandy loam, sandy substratum, and similar soils and 15 percent minor components.
- **Westhaven clay loam, 0 to 2 percent slopes,** is not listed as hydric. This soil unit occurs in alluvial fans with parent material as alluvium derived from calcareous sedimentary rock. This is a well-drained soil with a high water capacity of 10.5 inches. The map unit composition is 85 percent Westhaven clay loam and similar soils and 15 percent minor components.

2.3 Hydrology

The aquatic resources study area is located in Fresno County, near the southwestern end of the San Joaquin Valley. The majority of the aquatic resources study area is drained by constructed and natural channels that have been artificially realigned to flow through and around areas of agricultural and other development. Eastward water flow is impeded by the San Luis Canal and agricultural channels. Substantial flow is largely ephemeral to seasonal and is concentrated into channels, ditches, and canals that ultimately parallel the San Luis Canal and flow south toward the former Tulare Lake. These features eventually flow into irrigated agricultural fields in the northern portion of the aquatic resources study area, and into the WSDB in the southern portion of the aquatic resources study area. The hydrology in the aquatic resources study area has been substantially altered by agricultural development since the latter half of the 1800s (San Francisco Call 1898). All of the streams in the aquatic resources study area have been channelized, relocated, or altered in a variety of ways.

The northern portion of the aquatic resources study area (generally near the city of Huron and further north) is located in the Cantua Creek watershed and drains the eastern facing portion of the Coast Range immediately west of the aquatic resources study area. The Cantua Creek watershed includes five major creeks: Arroyo Hondo, Cantua, Salt, Martinez, and Domengine Creeks. Floodwaters from these creeks terminate at four locations, or basins, along a 13-mile stretch of the San Luis Canal, with Martinez Creek converging into Salt Creek roughly 3 miles upstream of the San Luis Canal (California Department of Water Resources 2021).

The southern portion of the aquatic resources study area (generally south of CA-198) is located in the Arroyo Pasajero watershed and also drains the eastern facing portion of the Coast Range west of the aquatic resources study area. The Arroyo Pasajero watershed includes four ephemeral creeks that are tributaries to the Arroyo Pasajero Creek: Zapato Chino, Los Gatos, Warthan, and Jacalitos Creeks. These creeks converge into large drainage channels and convey significant

floodwater and sediment to Arroyo Pasajero Creek and ultimately the WSDB basins. Features such as a dike, gabion weirs, drain inlets, and a rubber dam were built into the WSDB basins and San Luis Canal to control flows, manage sediment, and protect adjacent properties (California Department of Water Resources 2021). Flow from the Arroyo Pasajero watershed terminates in the constructed basins comprising the WSDB.

None of the drainages in the aquatic resources study area ultimately connect to any waters that are tributary to streams considered traditional navigable waters.

2.4 Climate

The overall San Joaquin Valley climate is Mediterranean in nature, which is characterized by warm to hot, dry summers and cool, wet winters, with the bulk of precipitation occurring as rain in the winter months. The climate in the Fresno County area is temperate with mean annual precipitation of 6.95 inches and mean annual temperatures ranging from a high of 77.2 degrees Fahrenheit to a low of 48.3 degrees Fahrenheit (see **Table 2-1** and **Appendix C**) (NOAA 2021). ESA biologists Eric Christensen and Megan Minter conducted the field investigation for this aquatic resources delineation on June 22–24, and September 28, 2021. According to the National Oceanic and Atmospheric Administration (NOAA), no rain had fallen in the aquatic resources study area in the 7 days prior to any of the survey dates. The most recent significant rainfall event in the area prior to the site visit occurred on March 20, 2021, when 0.37 inches of rain fell (NOAA 2021). The annual precipitation total through June 2021 for the western Fresno County area was slightly below average (2016–2020 is 6.15 inches, versus 4.03 inches in 2021) according to the mean precipitation totals for the years 2016–2021 (see Table 2-1).

TABLE 2-1
MONTHLY TOTAL PRECIPITATION FOR FIVE POINTS 5 SSW, CA, IN INCHES

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2016	2.92	0.00	1.11	0.62	M0.55	0.00	0.00	0.00	0.00	0.7	1.00	0.7	7.6
2017	2.64	2.72	0.84	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	6.88
2018	1.21	0.00	2.71	0.00	M0.00	0.00	0.00	0.00	0.00	0.21	1.37	0.95	6.45
2019	1.09	2.16	0.55	0.00	1.56	0.00	0.00	0.00	0.00	M0.00	0.40	2.23	7.99
2020	0.50	0.00	2.25	0.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	3.94
2021	3.23	0.00	0.80	0.00	0.00	0.00							4.03
Mean	**1.93**	**0.81**	**1.38**	**0.32**	**0.35**	**0.00**	**0.00**	**0.00**	**0.00**	**0.18**	**0.61**	**0.84**	**6.15**

NOTE:
1 T = trace amounts of precipitation
2 M = missing and is used when more than 1 day of data is missing for a month

SOURCE: NOAA 2021.

SOURCE: NRCS; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 3-1
Soils Map

ESA

SOURCE: NRCS; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 3-2
Soils Map

ESA

Path: \\Azr-file01\gis_share\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, sgeissler 12/17/2021

SOURCE: NRCS; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 3-3
Soils Map

ESA

SOURCE: NRCS; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 3-4
Soils Map

ESA

SOURCE: NRCS; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 3-5
Soils Map

ESA

Path: \\azr-file01\gis_share\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, sgeissler 12/17/2021

SOURCE: NRCS; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 3-6
Soils Map

ESA

Path: \\Azr-file01\gis_share\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, sgeissler 12/17/2021

SOURCE: NRCS; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 3-7
Soils Map

ESA

Path: \\Azr-file01\gis_share\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, sgeissler 12/17/2021

SOURCE: NRCS; ESA, 2021.

San Luis Canal Embankment and Liner Raise Project

Figure 3-8
Soils Map

ESA

CHAPTER 3
Regulatory Framework

3.1 Clean Water Act – Section 404

The CWA establishes the basic structure for regulating discharges of pollutants into waters of the United States (waters of the U.S.) and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. "Clean Water Act" became the Act's common name with amendments in 1972. The CWA is the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands.

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the U.S. Applicants must obtain a permit from the USACE for discharges of dredged or fill material into waters of the U.S., including wetlands, for non-exempt activities before proceeding. Waters of the U.S. are under the jurisdiction of USACE and U.S. Environmental Protection Agency (EPA).

Compliance with CWA Section 404 requires compliance with other laws and regulations. USACE cannot issue an individual permit or verify the use of a general nationwide permit until the requirements of the federal Endangered Species Act (FESA) and the National Historic Preservation Act (NHPA), among other federal regulations, have been met. In addition, USACE cannot issue or verify any permit until a water quality certification or a waiver of certification has been issued pursuant to CWA Section 401.

3.1.1 Waters of the U.S. – Regulatory Definitions

On August 30, 2021, a U.S. district court issued an order vacating the Navigable Waters Protection Rule (NWPR). The NWPR previously defined waters of the U.S. In light of this order, the USACE has halted implementation of the NWPR and is interpreting waters of the U.S. consistent with the pre-2015 regulations, judicial interpretations, and guidance documents until further notice. The current effective definition of waters of the United States and related terms may be found in the July 1, 2014, annual edition of the Code of Federal Regulations (CFR) at Title 33 Section 328.3, with <u>emphasis added</u>:

(a) The term <u>waters of the United States</u> <u>*means*</u>

1. *All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;*
2. *All interstate waters including interstate wetlands;*

3. *All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:*
    i. *Which are or could be used by interstate or foreign travelers for recreational or other purposes; or*
    ii. *From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or*
    iii. *Which are used or could be used for industrial purpose by industries in interstate commerce;*
4. *All impoundments of waters otherwise defined as waters of the United States under the definition;*
5. *Tributaries of waters identified in paragraphs (a) (1) through (4) of this section;*
6. *The territorial seas;*
7. *Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1) through (6) of this section.*
8. *Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.*
9. *Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.*

(b) *The term* wetlands *means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.*

(c) *The term* adjacent *means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are ''adjacent wetlands.''*

(d) *The term* high tide line *means the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to*

the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

(e) The term ordinary high water mark *means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.*

(f) The term tidal waters *means those waters that rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by hydrologic, wind, or other effects.*

Most perennial and intermittent streams, and their adjacent wetlands, will qualify as waters of the U.S. Ephemeral streams may or may not qualify, depending on whether they exhibit an ordinary high water mark (OHWM) and bed and bank, as well as other factors. An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round and groundwater is not a source of water for the stream. Rather, runoff from rainfall is the primary source of water for stream flow. An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow. A perennial stream has flowing water year-round during a typical year (66 Federal Register 42099).

3.1.2 Waters of the U.S. – Agency Guidance

In January 2001, the U.S. Supreme Court issued a decision in the case of the *Solid Waste Agency of Northern Cook County (SWANCC) v. U.S. Army Corps of Engineers* that altered USACE regulatory authority over wetlands that are isolated from navigable waters. The SWANCC ruling disallows a determination that an aquatic resource is a waters of the U.S. based solely on the use of the aquatic resource by migratory birds.

On December 2, 2008, the EPA and the USACE released revised guidance on the definitions of jurisdictional waters of the U.S. in response to *Rapanos v. United States* and *Carabell v. United States*. According to this guidance, the USACE and the EPA will take jurisdiction over the following waters:

1. Traditional navigable waters, which is defined as all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
2. Wetlands adjacent to traditional navigable waters; including adjacent wetlands that do not have a continuous surface connection to traditional navigable waters.
3. Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months).

4. Wetlands adjacent to non-navigable tributaries as defined above; that have a continuous surface connection to such tributaries (e.g., they are not separated by uplands, a berm, dike, or similar feature).

The EPA and the USACE decide jurisdiction over the following waters, based on a fact-specific analysis to determine if there is a significant nexus, as defined below, to a traditional navigable waters:

1. Non-navigable tributaries that are not relatively permanent.
2. Wetlands adjacent to non-navigable tributaries that are not relatively permanent.
3. Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary.

The EPA and the USACE generally do not assert jurisdiction over the following features:

1. Swales or erosional features (e.g., gullies, small washes characterized by low-volume, infrequent, or short-duration flow).
2. Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

The EPA and the USACE have defined the significant nexus standard as follows:

1. A significant nexus analysis assesses the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters.

2. Significant nexus includes consideration of hydrologic and ecologic factors including:
    a. Volume, duration, and frequency of flow, including consideration of certain physical characteristics of the tributary
    b. Proximity to the traditional navigable water
    c. Size of the watershed
    d. Average annual rainfall
    e. Average annual winter snow pack
    f. Potential of tributaries to carry pollutants and flood waters to traditional navigable waters
    g. Provision of aquatic habitat that supports a traditional navigable water
    h. Potential of wetlands to trap and filter pollutants or store flood waters
    i. Maintenance of water quality in traditional navigable waters

3.2 Clean Water Act – Section 401

Under CWA Section 401, applicants for a federal license or permit to conduct activities which may result in the discharge of a pollutant into waters of the U.S. must obtain certification from the State in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that require a federal license or federal permit, such as a CWA Section 404 permit, must also comply with CWA Section 401.

Section 401 of the CWA gives the State authority to grant, deny, or waive certification of proposed federally licensed or permitted activities resulting in discharge to waters of the U.S. The State Water Resources Control Board (State Water Board) directly regulates multi-regional projects and supports the Section 401 certification and wetlands program statewide. The Regional Water Quality Control Board (RWQCB) regulates activities pursuant to Section 401(a)(1) of the federal CWA, which specifies that certification from the State is required for any applicant requesting a federal license or permit to conduct any activity including but not limited to the construction or operation of facilities that may result in any discharge into navigable waters. The certification shall originate from the State or appropriate interstate water pollution control agency in/where the discharge originates or will originate. Any such discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the CWA.

3.3 Porter-Cologne Water Quality Control Act

The State Water Board and the RWQCBs (together "Boards") are the principal State agencies with primary responsibility for the coordination and control of water quality. In the Porter-Cologne Act, the legislature declared that the "state must be prepared to exercise its full power and jurisdiction to protect the quality of the waters in the State from degradation…" (California Water Code Section 13000).

The Porter-Cologne Act grants the Boards the authority to implement and enforce the water quality laws, regulations, policies, and plans to protect the groundwater and surface waters of the State. Waters of the state require, if impacted, waste discharge permitting and/or a CWA Section 401 certification (in the case of a required USACE permit under Section 404). The enforcement of the state's water quality requirements is not solely the purview of the Boards and their staff. For instance, per CFGC, Section 5650, CDFW has the authority to enforce certain water quality provisions in state law.

Most projects involving water bodies or drainages are regulated by the RWQCB, the principal state agency overseeing water quality of the state at the local/regional levels. The survey area is located within the jurisdiction of the Central Valley RWQCB. Where waters of the State overlap with waters of the U.S., pending verification from the USACE, those waters would be regulated under Section 401 of the CWA, which is described in the Regulatory Framework in Section 3.1.

In the absence of waters of the U.S., waters may be regulated under the Porter-Cologne Act if project activities, discharges, or proposed activities or discharges could affect California's

surface, coastal, or ground waters. The permit submitted by the applicant and issued by RWQCB is either a Water Quality Certification in the presence of waters of the U.S. or a Waste Discharge Requirement in the absence of waters of the U.S.

3.3.1 Waters of the State

"Waters of the State" includes all "waters of the U.S." In 2000, the State Water Board determined that all waters of the U.S. are also waters of the State by regulation, prior to any regulatory or judicial limitations on the federal definition of waters of the U.S. (California Code of Regulations Title 23, Section 3831[w]). This regulation has remained in effect despite subsequent changes to the federal definition. Therefore, waters of the State includes features that have been determined by the EPA or the USACE to be "waters of the U.S." in an approved jurisdictional determination; "waters of the U.S." upon which a USACE permitting decision was based; and features that are consistent with any current or historic final judicial interpretation of "waters of the U.S." or any current or historic federal regulation defining "waters of the U.S." under the CWA.

A new statewide wetland definition and procedures for discharges of dredged and fill material became effective in May 2020. The new state wetland definition is:

> *An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.*

Based on the new statewide wetland definition, the following wetlands are defined as waters of the State:

1. Natural wetlands
2. Wetlands created by modification of a surface water of the State
3. Artificial wetlands that meet any of the following criteria:
    a. Approved by an agency as compensatory mitigation for impacts to other waters of the State, except where the approving agency explicitly identifies the mitigation as being of limited duration
    b. Specifically identified in a water quality control plan as a wetland or other water of the State
    c. Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape
    d. Greater than or equal to 1 acre in size, unless the artificial wetland was constructed, and is currently used and maintained, primarily for one or more of the following purposes (i.e., the following artificial wetlands are not waters of the State unless they also satisfy the criteria set forth in 2, 3a, or 3b):
        i. Industrial or municipal wastewater treatment or disposal

ii. Settling of sediment

iii. Detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial stormwater permitting program

iv. Treatment of surface waters

v. Agricultural crop irrigation or stock watering

vi. Fire suppression

vii. Industrial processing or cooling

viii. Active surface mining—even if the site is managed for interim wetlands functions and values

ix. Log storage

x. Treatment, storage, or distribution of recycled water

xi. Maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits)

xii. Fields flooded for rice growing

All artificial wetlands that are less than an acre in size and do not satisfy the criteria set forth in 2, 3.a, 3.b, or 3.c are not waters of the State. If an aquatic feature meets the wetland definition, the burden is on the applicant to demonstrate that the wetland is not a water of the State.

3.4 California Fish and Game Code Section 1600

Pursuant to Division 2, Chapter 6, Section 1600 et seq. of the CFGC, CDFW regulates "any activity that may substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river lake or stream." A notification of a Lake or Streambed Alteration must be submitted to CDFW for such activities. In addition, CDFW may exert authority under Section 1600 et seq. over areas near lakes and streams, including wetland and riparian habitats. Because CDFW includes under its regulatory authority streamside habitats that may not qualify as wetlands under the CWA definition, CDFW regulatory authority is generally broader than USACE jurisdiction.

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CHAPTER 4
Methodology

4.1 Pre-Field Review

Prior to conducting the field investigation, the following information was reviewed:

- Fresno, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps (historic quadrangles were reviewed as well as the current quadrangle).
- Google Earth aerial photographs of the aquatic resources study area for vegetative, topographic, and hydrographic signatures (Google Earth 2021) (historic aerial photographs from 1984–2020 were reviewed as well as current 2021 aerial photographs).
- *Custom Soil Resource Report for Fresno County, California, Western Part* (NRCS 2021a), for information about soils and geomorphology.
- The National Hydric Soils List for Fresno County, California, Western Part (NRCS 2021b) to determine if any soils mapped within the aquatic resources study area are considered hydric at the level of soil series.
- The National Wetlands Inventory (NWI) (U.S Fish and Wildlife Service [USFWS] 2021).
- Arid West Regional Wetland Plant List (USACE 2020).

Remote Sensing

Prior to field surveys, potential aquatic resources were identified via remote sensing. The desktop analysis relied on the interpretation of aerial photography and other existing data such as the USFWS NWI (USFWS 2021) and EcoAtlas (San Francisco Estuary Institute 2022). During the analysis, information and signatures of aquatic resources were identified on aerial photographs. Information and wetland signatures used during this analysis included:

- NWI – area is mapped as a wetland/water on the USFWS NWI
- EcoAtlas – the California Aquatic Resource Inventory includes USFWS NWI data, National Hydrography Dataset data (US Geological Survey 2021), and maps from regional and local agencies.
- Signatures of hydrophytic vegetation (observed as different color than surrounding vegetation)
- Signatures of inundation and/or soil saturation
- Signatures of topographic depressions or channelization

These potential aquatic resources identified in the desktop analysis were then visited in the field to be investigated further.

4.2 Field Survey Methods

The aquatic resources delineation was conducted by ESA biologists Eric Christensen and Megan Minter on June 22–24 and September 28, 2021. Prior to field surveys, the biologists analyzed aerial photography from normal wet seasons across multiple years to locate potential features using wetland and drainage signatures, as described above under *Remote Sensing*. Areas showing evidence of wetland and/or drainage signatures were investigated within the delineation aquatic resources study area. During the investigation, the biologists surveyed the entire aquatic resources study area, investigating all potential waters of the U.S. and/or waters of the State.

The delineation used the "Routine Determination Method" as described in the *1987 Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), hereafter referred to as the "1987 Manual." The 1987 Manual was used in conjunction with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008a), hereafter referred to as the "Arid West Supplement." For areas where the 1987 Manual and the Arid West Supplement differ, the Arid West Supplement was followed. In addition, the *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008b) was referenced to assist in identifying the OHWM and the lateral limits of the stream channels in the aquatic resources study area.

Three positive parameters must normally be present for an area to be considered a wetland: (1) a dominance of wetland vegetation, (2) presence of hydric soils, and (3) presence of wetland hydrology. Presence or absence of positive indicators for wetland vegetation, soils, and hydrology was assessed per the 1987 Manual and Arid West Supplement. Data were collected at sample points within the aquatic resources study area. In accordance with USACE guidance, sample points were taken at sites representative of the vegetation, hydrology, and physical characteristics across the various wetland types and at adjacent upland areas. Results were extrapolated to nearby wetlands exhibiting similar vegetation and hydrologic conditions. Data points were recorded on Arid West wetland determination and OHWM data forms, which are provided as **Appendix D**.

Determination of Hydrophytic Vegetation

At each data point, a visual assessment of the dominant plant species was made within a 3-foot radius. Dominant species were assessed using the recommended "50/20" rule per the Arid West Supplement. Plants were identified to species using *The Jepson Manual: Vascular Plants of California (Second Edition)* (Baldwin et al. 2012) and/or online botanical resources (Calflora Database [2021] and *Jepson eFlora* [Jepson Flora Project 2021]. The *Regional Wetland Plant List: 2020 Arid West Plant List* (USACE 2020) was used to determine the wetland indicator status of all plants. All species noted within the study plots were recorded on the data sheets.

Determination of Hydric Soils

Soils were characterized at each data point by color, texture, organic matter accumulation, and the presence or absence of hydric soil indicators. Color was described using the *Munsell Soil Color Book* (Munsell Color 2015). Soils were also inspected for redoximorphic features and soil texture to determine whether the soils met the definitions of any of the hydric soil indicators described in the Arid West Supplement and listed on the Arid West data sheets.

Determination of Wetland Hydrology

The presence of wetland hydrology was determined at each data point by the documentation of the presence or absence of primary and/or secondary wetland hydrology indicators, according to the Arid West Supplement.

Determination of Ordinary High Water Mark

For "other waters of the U.S." to be considered jurisdictional, these features must exhibit a defined bed and bank and an OHWM. Drainages with obvious bed and banks and OHWMs were characterized by noting vegetation, geomorphology (e.g., incision), and hydrologic characteristics and by measuring representative channel bank cross-sections to obtain OHWM. Representative channel cross-section OHWM was recorded in the field and used to map streams through geographic information systems (GIS) software along with high-resolution aerial photographs and detailed topographic data. For stream segments that were culverted, the width of the culvert was measured or estimated to determine the OHWM.

4.3 Mapping and Acreage Calculations

All accessible features, including wetland sample points, wetland boundaries, OHWM intervals, and stream channel courses, were recorded using a global positioning system (GPS) with sub-meter accuracy (EOS Arrow 100 GNSS receiver with Esri's ArcGIS Collector application) or hand-recorded on aerial images of the aquatic resources study area. In the office, GPS data were downloaded and aquatic features mapped using GIS software (ArcGIS 10.6.1) on an overlay of both topography and geo-referenced aerial photography. GPS-determined wetland boundaries and data points were visually confirmed. Where access was restricted due to topography, natural barriers, or property boundaries, location information was extrapolated, and aerial imagery and NWI data (listed above) were used to complete feature boundaries. Acreages of aquatic resource polygons and the length of linear features were determined using ArcGIS.

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CHAPTER 5
Results

5.1 Aquatic Resources

The aquatic resources delineation identified approximately 389.284 acres of aquatic resources in the aquatic resources study area. Aquatic habitats in the aquatic resources study area were classified using the *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC 2013) ("Cowardin Classification"). Aquatic resources within the aquatic resources study area are presented in **Table 5-1** and described below. Supporting information, such as plant species observed, a soils report, a rainfall summary, Arid West data sheets the Operations and Maintenance Business Information Link (OMBIL) Regulatory Module (ORM) data sheet, and representative photographs of the delineation aquatic resources study area are provided respectively in Appendices A through F. **Figures 4-1** through **4-8** illustrate the locations and extent of the aquatic resources within the aquatic resources study area.

TABLE 5-1
AQUATIC RESOURCES

Feature Name	Cowardin Classification[1]	Linear feet (ft.)	Area (ac)	Area (sq. ft.)
Wetlands				
seasonal wetland (SW-1)	*Palustrine, Emergent, Persistent, Seasonally Flooded, Diked/Impounded* (PEM1Ch)	--	0.448	19,509
seasonal wetland (SW-2)	PEM1Ch	--	81.688	3,558,339
seasonal wetland (SW-3)	PEM1Ch	--	0.026	1,115
seasonal wetland (SW-4)	PEM1Ch	--	0.010	426
seasonal wetland (SW-5)	PEM1Ch	--	131.082	5,709,948
seasonal wetland (SW-6)	PEM1Ch	--	14.956	651,479
seasonal wetland (SW-7)	PEM1Ch	--	152.365	6,637,006
	Total Wetlands	**--**	***380.574***	***16,577,822***
Other Waters				
ephemeral drainage (ED-1)	*Riverine, Intermittent, Streambed, Seasonally Flooded, Excavated* (R4SBCx)	4,185	3.509	152,844
ephemeral drainage (ED-2)	R4SBCx	600	0.195	8,510
ephemeral drainage (ED-3)	R4SBCx	77	0.004	157
ephemeral drainage (ED-4)	R4SBCx	83	0.008	344
ephemeral drainage (ED-5)	R4SBCx	65	0.004	162
ephemeral drainage (ED-6)	R4SBCx	666	0.071	3,083
ephemeral drainage (ED-7)	R4SBCx	329	0.062	2,682

Feature Name	Cowardin Classification[1]	Linear feet (ft.)	Area (ac)	Area (sq. ft.)
ephemeral drainage (ED-8)	R4SBCx	347	0.016	697
ephemeral drainage (ED-9)	R4SBCx	937	0.217	9,463
other water (OW-1)	*Palustrine, Unconsolidated Bottom, Artificially Flooded, Excavated* (PUBKx)	--	0.641	27,939
other water (OW-2)	*Palustrine, Unconsolidated Bottom, Permanently Flooded* (PUBH)	--	0.389	16,935
other water (OW-3)	PUBKx	--	3.594	156,561
	Total Other Waters of the U.S.	**7,289**	**8.709**	**379,376**
	Total Aquatic Resources	**7,289**	**389.284**	**16,957,198**

[1] The Cowardin classifications included in this table and report are more specific than those included in the Aquatic Resources Table in Appendix E due to form limitations. This additional detail primarily relates to the San Luis Canal embankment impeding water flow and the nature of the seasonal wetlands in constructed basins within the WSDB.

5.1.1 Wetlands

Seasonal Wetland

Seasonal wetland SW-1 is hydrologically connected to Cantua Creek and totals 0.448 acres in the aquatic resources study area (**Appendix F, photo 1**). Vegetation in the Cantua Creek survey area included Bermuda grass (FACU[1]), California sunflower (OBL[2]), Italian rye grass (FAC[3]), tall flatsedge (FACW[4]), perennial pepperweed (FAC), sheep sorel (FAC), curly dock (FAC), and Baltic rush (FACW). The wetland contains a rock gabion that serves as a sediment screening device surrounding a concrete drain inlet structure. A small patch of broadleaf cattail (OBL) and Mexican fan palm (FACW) saplings too small to warrant a separate wetland type was observed immediately adjacent to the drain inlet structure at the lowest point of seasonal wetland SW-1.

Seasonal wetlands SW-2 through SW-7 are hydrologically connected to Arroyo Pasajero and total 380.127 acres in the aquatic resources study area (**Appendix F, photos 2–4**). These wetlands occur within constructed basins that partially comprise the WSDB. Vegetation in the Arroyo Pasajero survey area included those species found in seasonal wetland SW-1 above; in addition, large stands of big saltbush (FAC), Fremont cottonwood (NL[5]), sandbar willow (FACW), and smallflowered tamarisk (FAC) were observed in portions of the seasonal wetlands. Small clusters of broadleaf cattail, Fremont cottonwood saplings, and Mexican fan palm saplings were observed immediately adjacent to a drain inlet structure around a small scour pool in the southwest corner of seasonal wetland SW-5 (near data points 2a and 2b). Elevation tends from northeast to southwest, where the San Luis Canal embankment impedes drainage.

1 "FACU" refers to *facultative upland* and is based on the wetland plant indicator status in the Arid West regional list.

2 "OBL" refers to *obligate wetland* and is based on the wetland plant indicator status in the Arid West regional list.

3 "FAC" refers to *facultative* and is based on the wetland plant indicator status in the Arid West regional list.

4 "FACW" refers to *facultative wetland* and is based on the wetland plant indicator status in the Arid West regional list.

5 "NL" refers to *not listed* in the Arid West regional list.

Surface soil cracks as evidence of routine soil saturation was observed within these features during the field surveys and was the primary indicator of wetland hydrology in these wetlands (Indicator B6 from the Arid West Supplement). Additional primary hydrology indicators noted include inundation visible in aerial imagery (Indicator B7), sediment deposits (Indicator B2), drift deposits (Indicator B3), and water marks (Indicator B1). Hydric soils were indicated in these features by the presence of a depleted matrix (Indicator F3[6] from the Arid West Supplement) and redox depressions (Indicator F8). Sample point 2a reflects the conditions observed in the seasonal wetlands during the field investigation and in the surrounding upland areas represented by sample point 2b (Appendix D). These features within the aquatic resources study area are classified as *Palustrine, Emergent, Persistent, Seasonally Flooded, Diked/Impounded* (FGDC 2013).

Valley Foothill Riparian

There are 7.86 acres of discontinuous riparian habitat patches within the constructed basin of the WSDB in the aquatic resources study area (Appendix F, photos 2–4). Patches of this community are dispersed through portions of the seasonal wetland within the constructed basins. They are dominated by hydrophytic vegetation and exhibit indicators of hydric soil and wetland hydrology. This community occurs in low-elevation areas on the basin floor, typically adjacent to the San Luis Canal embankment, that detain water. Therefore, the areas mapped as riparian in the aquatic resources study area are also considered seasonal wetlands. Due to the location of riparian vegetation in the low elevations on the basin floor, they meet the hydrology indicators A2 (high water table) and A3 (saturation) during the normal wet portion of the growing season and are also expected to support hydric soils.

5.1.2 Waters

Ephemeral Drainage

An ephemeral drainage has flowing water immediately following precipitation, when rainfall or groundwater provides water for channel flow. During dry periods, ephemeral drainages do not exhibit flowing water. In the aquatic resources study area, ephemeral drainages periodically flow following precipitation during the winter season and are dry during other times of the year. Six ephemeral drainage segments, totaling approximately 4.085 acres (7,288.57 linear feet), were identified in the aquatic resources study area along Cantua Creek (**Appendix F, photo 5**) and Salt Creek (**Appendix F, photos 6–7**) (Appendix D). Ephemeral drainage segments ED-1 through ED-4 comprise portions of Cantua Creek, and segments ED-5 through ED-9 comprise portions of Salt Creek. All ephemeral drainages have been realigned to varying degrees within the aquatic resources study area and convey substantial sediment from upstream reaches. Due to the high degree of historic and ongoing disturbance in much of the surrounding uplands by ongoing agricultural activities, the OHWM is primarily marked by areas of shelving and scour, occasional water staining, a change in the plant community, and/or drift deposits (Appendix D). Very little vegetation is supported in these drainage segments, with the exception of segment ED-8. Segment ED-8 mainly supports mule fat and big saltbush. Within the aquatic resources study area, these

[6] Hydric soil indicators are presented in three groups in the Arid West Supplement. Group A: Indicators for All Soils. Group F: Indicators for Loamy and Clayey Soils. Group S: Indicators for Sandy Soils.

features are classified as *Riverine, Intermittent, Streambed, Seasonally Flooded, Excavated* (FGDC 2013).

Other Waters

Two detention basins (OW-1 and OW-3) and one perennial pond (OW-2) were observed within the WSDB. The detention basins were constructed as components of ongoing groundwater recharge operations and are expected to inundate partially from direct precipitation and when water height reaches their respective spillways. Water height within the WSDB is actively managed through the use of a southern control structure (temporary rubber coffer dam atop a permanent concrete dam), which is used at least annually. Each detention basin includes large drain inlets that infrequently (i.e., only during local flood conditions that rarely result in the overtopping of flood control infrastructure) convey water under the San Luis Canal from OW-1 into a large ditch to the east and from OW-3 into the San Luis Canal.

The perennial pond (OW-2) is a topographic low point that is charged by residual groundwater during the summer months when the surrounding seasonal wetlands (SW-2, SW-3, SW-4, and SW-5) are not inundated (**Appendix F, photo 8**). The perennial pond is located below a railroad bridge that is supported by earthen berms beyond the aerial portion. These earthen berms cause water flow to truncate and continue flowing south under the railroad bridge and through the perennial pond. As such, the pond is expected to have emanated as a scour pool during winter months when the WSDB receives and accumulates flow from the Arroyo Pasajero watershed.

Very little vegetation is supported in the detention basins and perennial pond. For these detention basins, the OHWM was mapped as the limits of the artificial banks. Limits of the pond were mapped at the extent of the perennial feature, with the surrounding area beyond being seasonal wetland. Within the aquatic resources study area, the detention basins are classified as *Palustrine, Unconsolidated Bottom, Artificially Flooded, Excavated* and the perennial pond is classified as *Palustrine, Unconsolidated Bottom, Permanently Flooded* (FGDC 2013).

5.2 Analysis of Waters of the U.S.

Table 5-2 below describes the situation and rationale for each aquatic resource as to why it is or is not considered to be a water of the U.S. subject to USACE jurisdiction.

TABLE 5-2
APPLICATION OF THE CLEAN WATER ACT TO AQUATIC RESOURCES

Aquatic Resource (Map ID)	Rapanos Waters Type	Waters of the U.S. (ac)	Isolated (ac)	Rationale
Wetlands				
Seasonal Wetland (SW-1)	Isolated waters	--	0.448	Seasonal wetlands are isolated from any downstream connection to jurisdictional waters.
Seasonal Wetland (SW-2 – SW-7)	Isolated waters	--	380.126	Artificial basins constructed for groundwater recharge and retention; not connected to any downstream jurisdictional waters.

Aquatic Resource (Map ID)	Rapanos Waters Type	Waters of the U.S. (ac)	Isolated (ac)	Rationale
Waters				
Channels (ED-1 – ED-9) (Cantua Creek, Salt Creek)	Isolated waters	--	4.085	Ephemeral drainages are isolated from any downstream connection to jurisdictional waters.
Detention Basins and Pond (OW-1 – OW-3)	Isolated waters	--	4.624	Artificial detention basins and pond constructed for groundwater recharge and retention; not connected to any downstream jurisdictional waters.
	Total:		**389.284**	

All of the ephemeral drainage channels (Cantua Creek and Salt Creek) in the aquatic resources study area are isolated and not tributary to jurisdictional waters, and are therefore not expected to be waters of the U.S. pursuant to the Supreme Court's decision in the consolidated cases of *Rapanos v. United States* and *Carabell v. United States* (referred to hereafter as *Rapanos*).

Seasonal wetland SW-1 in the aquatic resources study area is isolated and not tributary to jurisdictional waters, and are therefore not waters of the U.S. pursuant to *Rapanos*. Seasonal wetlands SW-2 through SW-7 were constructed, are used for groundwater recharge operations, and are not tributary to jurisdictional waters; therefore, these features are not expected to be waters of the U.S.

The detention basins and perennial pond (OW-1 through OW-3) in the aquatic resources study area were constructed, are used for floodwater management and controlled releases, and are not tributary to jurisdictional waters; therefore, these features are not expected to be waters of the U.S.

Based on the information above and the isolation of all features from waters of the U.S, ESA does not expect that any features would be subject to USACE jurisdiction and recommends that DWR determine if an approved jurisdictional determination is necessary for additional regulatory certainty.

5.3 Analysis of Waters of the State

The definition of "Waters of the State" includes all features listed in Table 5-2.

Under the State definition, seasonal wetlands 1–7, ephemeral drainages 1–9, the perennial pond (OW-2), and detention basins (OW-1 and OW-3) meet the definition of wetland because they are artificial wetlands that resulted from historic human activity, are subject to ongoing operation and routine annual maintenance (i.e., non-woody (<4-inch diameter at breast height [4.5 feet above grade] vegetation removal, grading in areas absent of large trees) though it does not interrupt the seasonal hydrologic cycle (e.g., charging, drying), and have become relatively permanent parts of the landscape. Therefore, ESA recommends that DWR determine if a Section 401 CWA Water Quality Certification or Waste Discharge Requirement for the overall Proposed Project is

necessary prior to implementation of Proposed Project activities that would affect waters of the State.

5.4 Analysis of Section 1600 Regulated Areas

The 7.86 acres of valley foothill riparian habitat within the seasonal wetlands (SW-2 through SW-7) within the WSDB is expected to by subject to Section 1600 of CFGC. DWR maintains two streambed alteration agreements (1600-2020-0076-R4 for a portion of the WSDB and 1600-2020-0083-R4 for a portion of the Cantua Creek aquatic resource survey area) with CDFW; therefore, ESA recommends that DWR determine if an additional streambed alteration agreement from CDFW is necessary prior to implementation of Proposed Project activities that would affect regulated riparian habitat.

5.5 Conclusions

A total of 389.284 acres and 7,288.57 linear feet of aquatic resources were mapped in the approximately 473.68-acre aquatic resources study area. None of the aquatic resources meet the criteria for waters of the U.S. because none exhibit a downstream connection with a traditional navigable water. However, a total of **389.284** acres and **7,288.57** linear feet of the aquatic resources are likely to be considered of waters of the State. Additionally, **7.86** acres of riparian habitat are expected to be considered a regulated area per Section 1600 of CFGC. Collectively, these regulated resources include:

- 380.574 acres of wetland
- 8.709 acres (7,288.57 linear feet) of other waters of the State
- 7.86 acres of riparian habitat subject to Section 1600

None of the ephemeral drainages are subject to Section 10 of the Rivers and Harbors Act due to the absence of a connection to a traditional navigable water and lack of tidal influence.

This report documents the aquatic resources boundary delineation and best professional judgment of ESA investigators. All aquatic resources, riparian habitat, and their extent identified in this report are based on ESA's field observations and regulatory interpretation informed by prior court case decisions. ESA does not possess the regulatory authority to issue final conclusions as to the boundaries or extent of waters of the U.S.; waters of the State; or riparian habitat.

Name	Type	Acres	Sq Ft	Linear Feet
ED-1	Ephemeral Drainage	3.509	152,844	4,185
ED-2	Ephemeral Drainage	0.195	8,510	600
ED-3	Ephemeral Drainage	0.004	157	77
ED-4	Ephemeral Drainage	0.008	344	83
ED-5	Ephemeral Drainage	0.004	162	65
ED-6	Ephemeral Drainage	0.071	3,083	666
ED-7	Ephemeral Drainage	0.062	2,682	329
ED-8	Ephemeral Drainage	0.016	697	347
ED-9	Ephemeral Drainage	0.217	9,463	937
OW-1	Detention Basin	0.641	27,939	
OW-2	Perennial Pond	0.389	16,935	
OW-3	Detention Basin	3.594	156,561	
SW-1	Seasonal Wetland	0.448	19,509	
SW-2	Seasonal Wetland	81.688	3,558,339	
SW-3	Seasonal Wetland under RR Bridge (West)	0.026	1,115	
SW-4	Seasonal Wetland under RR Bridge (East)	0.010	426	
SW-5	Seasonal Wetland	131.082	5,709,948	
SW-6	Seasonal Wetland	14.956	651,479	
SW-7	Seasonal Wetland	152.365	6,637,006	

SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

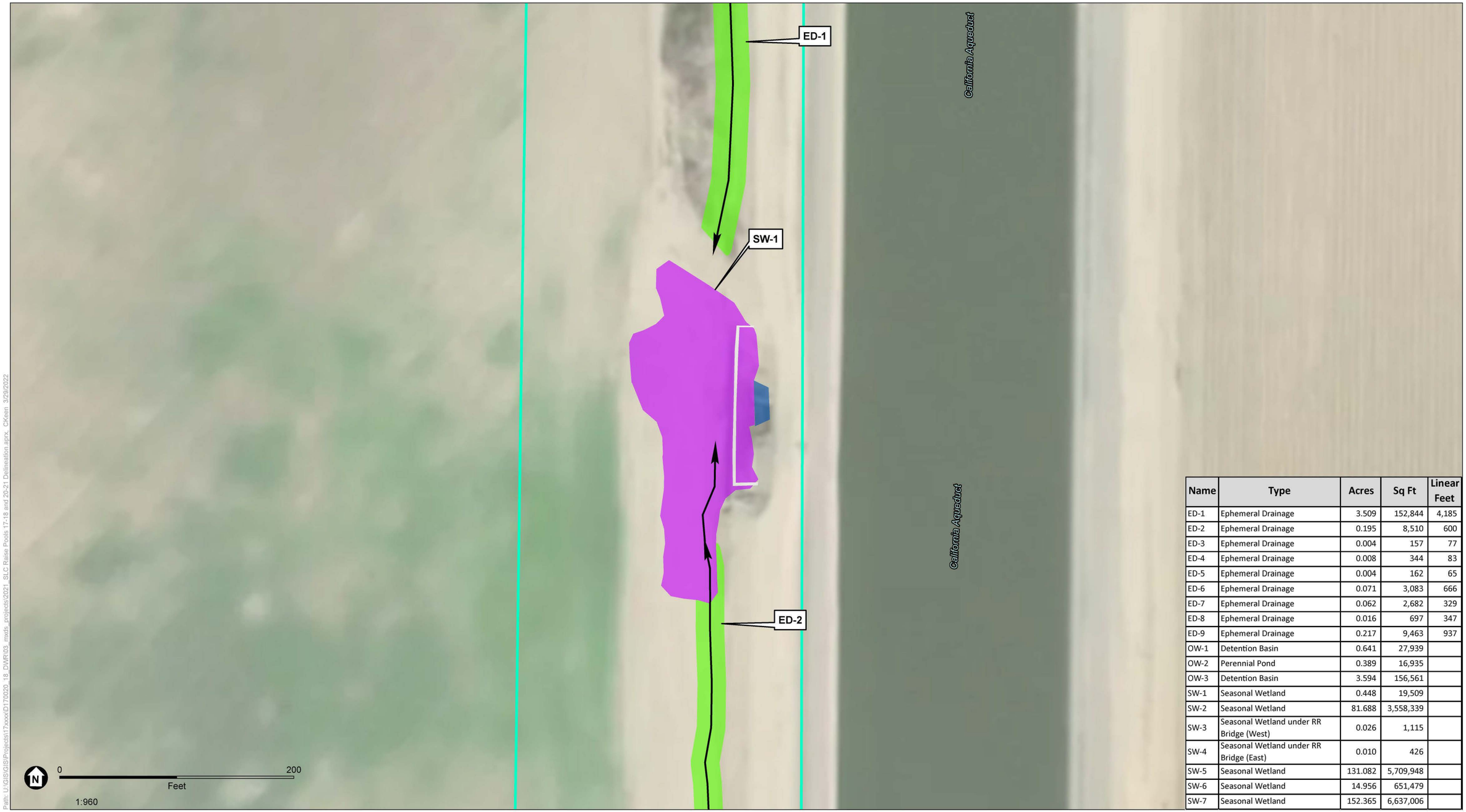
- Cantua Creek Survey Area
- Data Point
- Concrete Inlet Structure
- Rock Gabion Structure
- Seasonal Wetland
- Ephemeral Drainage
- Ephemeral Drainage Centerline

San Luis Canal Embankment and Liner Raise Project

Figure 4-1
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 3/29/2022

Path: U:\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, CKeen, 3/29/2022



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SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

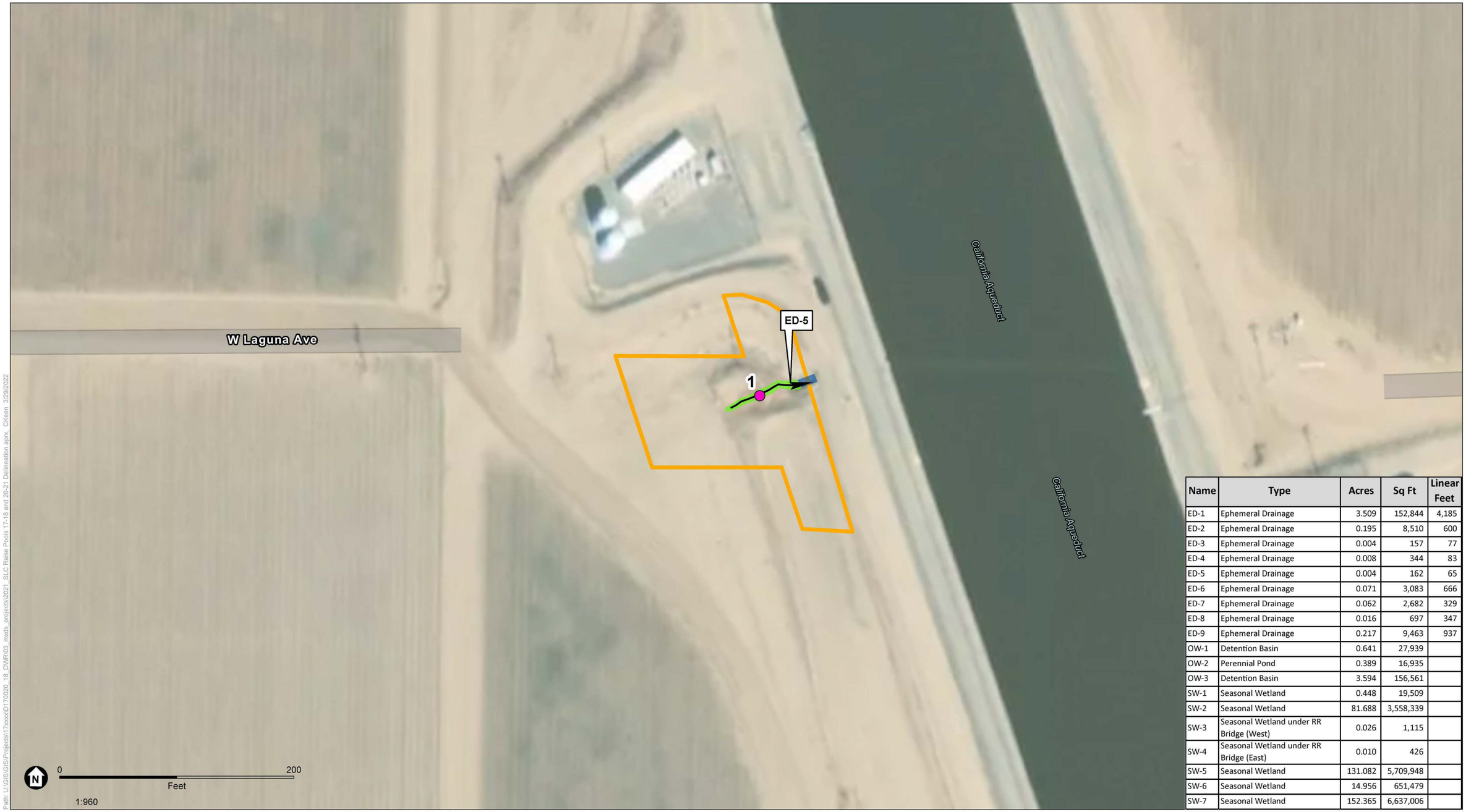
Cantua Creek Survey Area
Concrete Inlet Structure
Rock Gabion Structure
Seasonal Wetland
Ephemeral Drainage
Ephemeral Drainage Centerline

San Luis Canal Embankment and Liner Raise Project

Figure 4-2
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 3/29/2022

Path: U:\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, CKeen, 3/29/2022



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Path: U:\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation aprx, CKeen 3/29/2022

SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

Salt Creek Survey Area
Data Point
Concrete Inlet Structure
Ephemeral Drainage
Ephemeral Drainage Centerline

San Luis Canal Embankment and Liner Raise Project

Figure 4-3
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 3/29/2022

Name	Type	Acres	Sq Ft	Linear Feet
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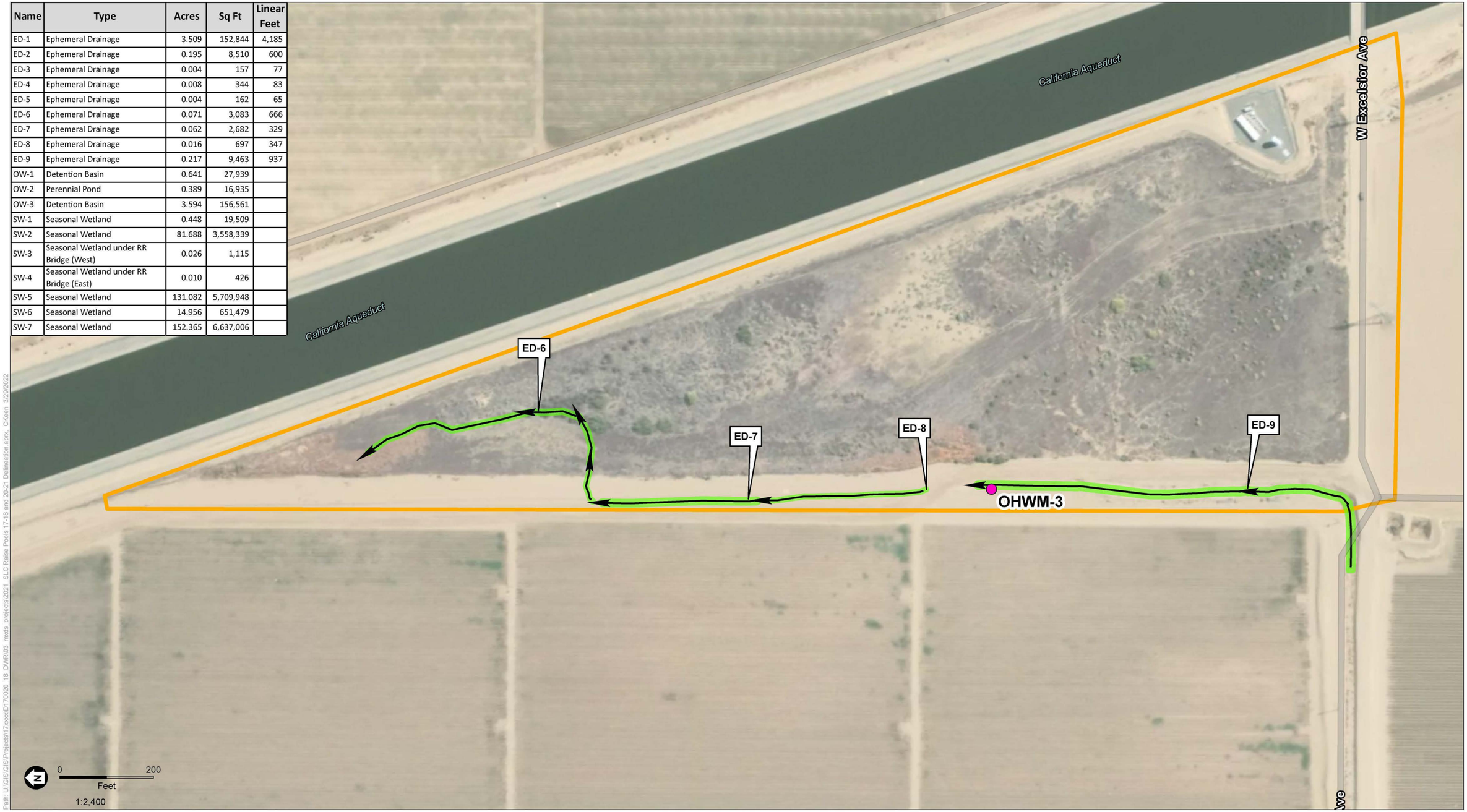
SW-7	Seasonal Wetland	152.365	6,637,006	



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SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

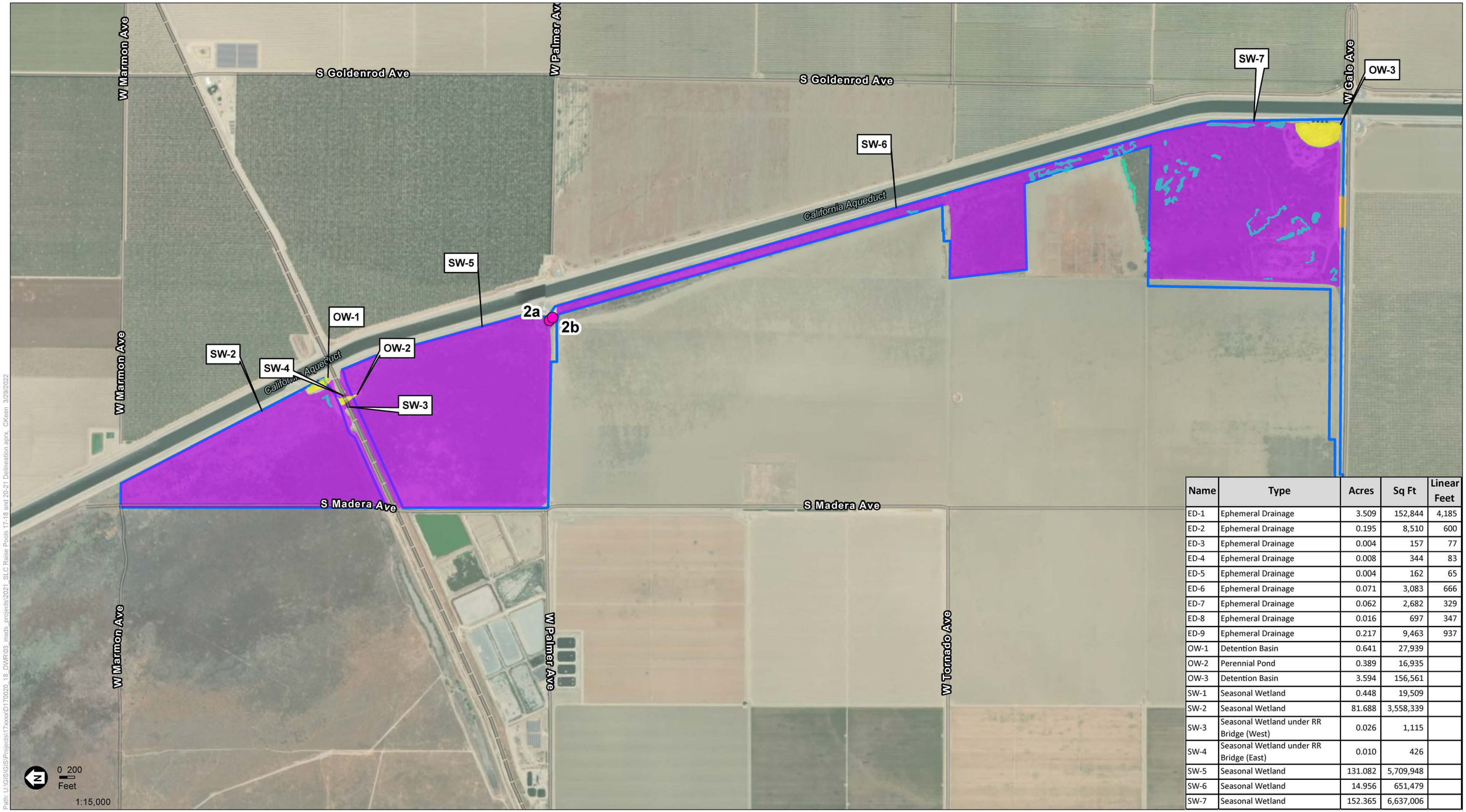
ESA

Salt Creek Survey Area
Ephemeral Drainage
Data Point
Ephemeral Drainage Centerline

San Luis Canal Embankment and Liner Raise Project

Figure 4-4
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 3/29/2022



Name	Type	Acres	Sq Ft	Linear Feet
ED-1	Ephemeral Drainage	3.509	152,844	4,185
ED-2	Ephemeral Drainage	0.195	8,510	600
ED-3	Ephemeral Drainage	0.004	157	77
ED-4	Ephemeral Drainage	0.008	344	83
ED-5	Ephemeral Drainage	0.004	162	65
ED-6	Ephemeral Drainage	0.071	3,083	666
ED-7	Ephemeral Drainage	0.062	2,682	329
ED-8	Ephemeral Drainage	0.016	697	347
ED-9	Ephemeral Drainage	0.217	9,463	937
OW-1	Detention Basin	0.641	27,939	
OW-2	Perennial Pond	0.389	16,935	
OW-3	Detention Basin	3.594	156,561	
SW-1	Seasonal Wetland	0.448	19,509	
SW-2	Seasonal Wetland	81.688	3,558,339	
SW-3	Seasonal Wetland under RR Bridge (West)	0.026	1,115	
SW-4	Seasonal Wetland under RR Bridge (East)	0.010	426	
SW-5	Seasonal Wetland	131.082	5,709,948	
SW-6	Seasonal Wetland	14.956	651,479	
SW-7	Seasonal Wetland	152.365	6,637,006	

SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

- Arroyo Pasajero Survey Area
- Data Point
- Riparian Habitat
- Concrete Inlet Structure
- Concrete Outlet Structure
- Control Structure
- Seasonal Wetland
- Seasonal Wetland under RR Bridge
- Other Waters

San Luis Canal Embankment and Liner Raise Project

Figure 4-5
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 3/29/2022

Path: U:\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx. CKeen 3/29/2022

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ED-3	Ephemeral Drainage	0.004	157	77
ED-4	Ephemeral Drainage	0.008	344	83
ED-5	Ephemeral Drainage	0.004	162	65
ED-6	Ephemeral Drainage	0.071	3,083	666
ED-7	Ephemeral Drainage	0.062	2,682	329
ED-8	Ephemeral Drainage	0.016	697	347
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SW-5	Seasonal Wetland	131.082	5,709,948	
SW-6	Seasonal Wetland	14.956	651,479	
SW-7	Seasonal Wetland	152.365	6,637,006	

SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

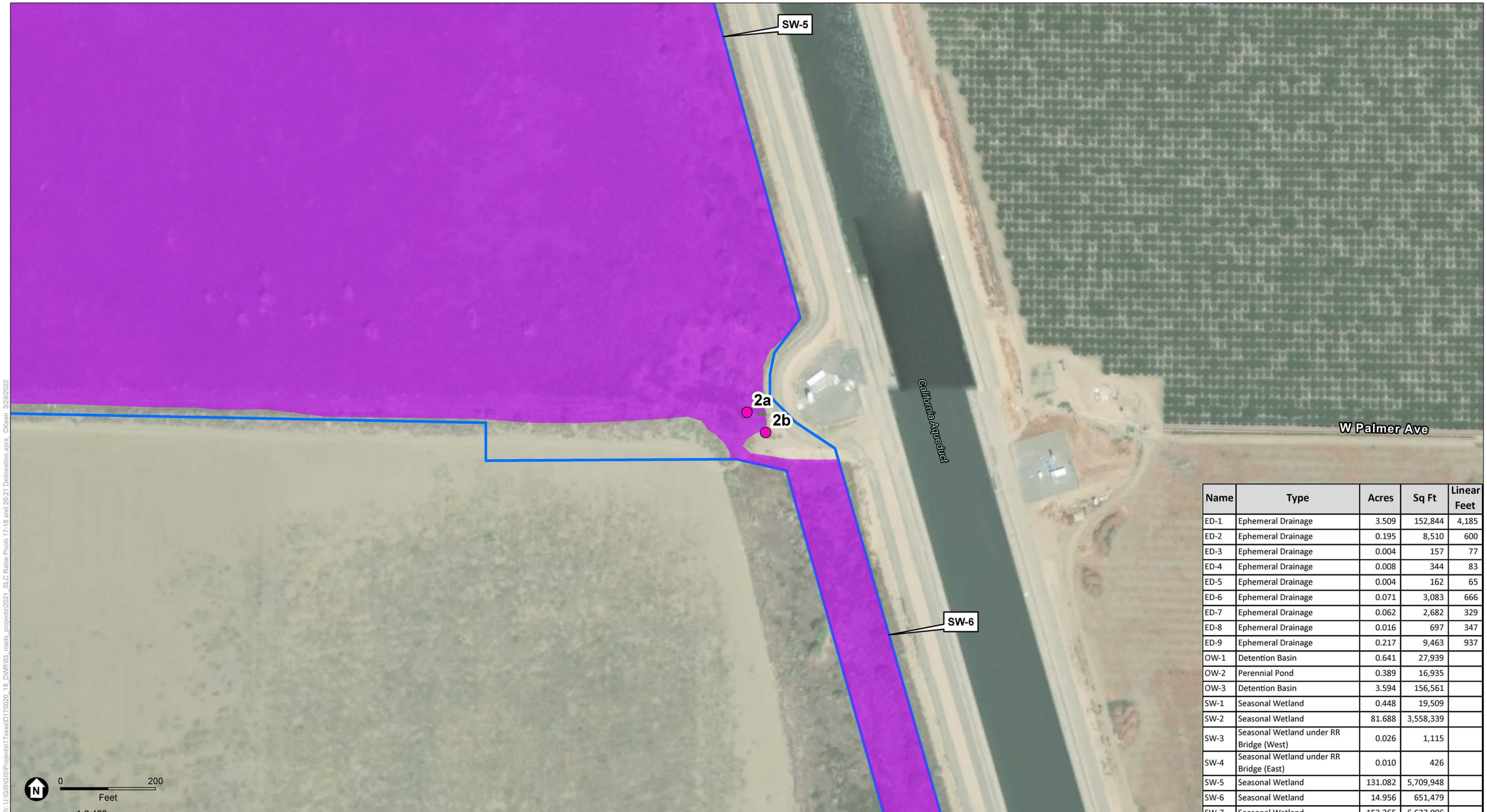
- Arroyo Pasajero Survey Area
- Riparian Habitat
- Concrete Inlet Structure
- Seasonal Wetland
- Seasonal Wetland under RR Bridge
- Other Waters

San Luis Canal Embankment and Liner Raise Project

Figure 4-6
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 3/29/2022

Path: U:\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, CKeen, 3/29/2022



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SW-6	Seasonal Wetland	14.956	651,479	
SW-7	Seasonal Wetland	152.365	6,637,006	

SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

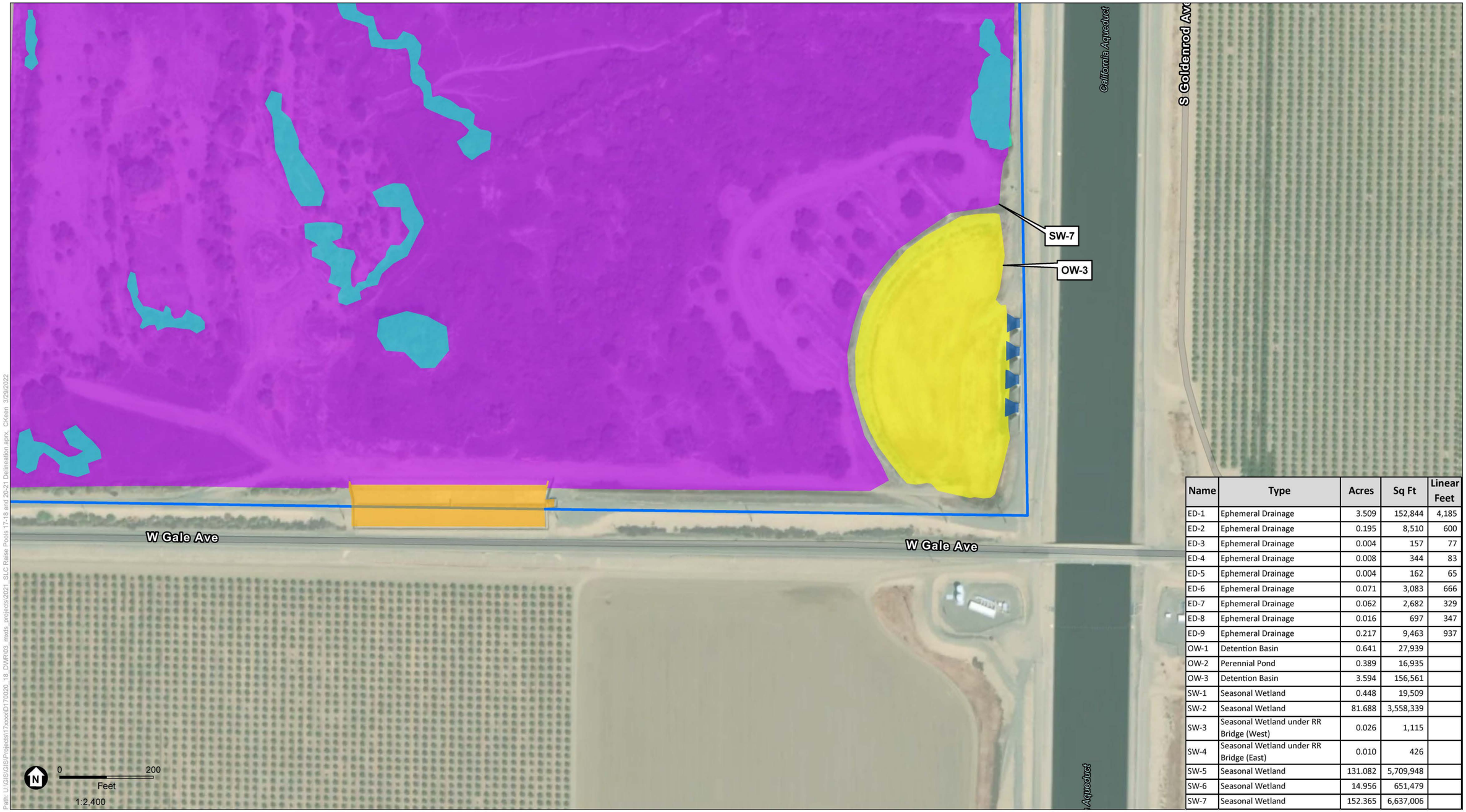
Arroyo Pasajero Survey Area
Data Point
Concrete Outlet Structure
Seasonal Wetland

San Luis Canal Embankment and Liner Raise Project

Figure 4-7
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 3/29/2022

Path: U:\GIS\GIS\Projects\17xxxx\D170020_18_DVR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, CKeen, 3/29/2022



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SOURCE: ESA, 2021

Coordinate System: State Plane California Zone IV (US Feet)
Projection: Lambert Conformal Conic
Datum: NAD 1983 (2011)
Vertical Datum: N/A

ESA

- Arroyo Pasajero Survey Area
- Riparian Habitat
- Concrete Inlet Structure
- Control Structure
- Seasonal Wetland
- Other Waters

San Luis Canal Embankment and Liner Raise Project

Figure 4-8
Aquatic Resources Delineation

Delineated by: Eric Christensen
Mapping by: Stephan Geissler
Created on: 07/20/2021, Revised on: 3/29/2022

Path: U:\GIS\GIS\Projects\17xxxx\D170020_18_DWR\03_mxds_projects\2021_SLC Raise Pools 17-18 and 20-21 Delineation.aprx, CKeen, 3/29/2022

CHAPTER 6
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Appendix A
Plant Species Observed

VASCULAR FLORA RECORDED FROM THE SAN LUIS CANAL EMBANKMENT AND LINER RAISE PROJECT STUDY AREA

Scientific Name	Common Name	Wetland Indicator Status
Amaranthaceae		
Amaranthus albus	Pigweed amaranth	FACU
Amaranthus blitoides	Mat amaranth	FACU
Arecaceae		
Washingtonia robusta	Mexican fan palm	FACW
Asteraceae		
Artemisia douglasiana	Mugwort	FAC
Artemisia dracunculus	Tarragon	FACU
Baccharis salicifolia	Mule fat	FAC
Centaurea melitensis	Tocalote	NL
Centaurea solstitialis	Yellow starthistle	NL
Centromadia pungens	Common spikeweed	FAC
Cirsium vulgare	Bull thistle	FACU
Deinandra kelloggii	Kellogg's tarweed	NL
Erigeron bonariensis	Flax-leaved horseweed	FACU
Erigeron canadensis	Canada horseweed	FACU
Helianthus annuus	Common sunflower	FACU
Helianthus californicus	California sunflower	OBL
Lactuca serriola	Prickly lettuce	FACU
Laennecia coulteri	Coulter's horseweed	FAC
Sonchus oleraceus	Common sow thistle	UPL
Xanthium strumarium	Cocklebur	FAC
Boraginaceae		
Amsinckia intermedia	Common fiddleneck	NL
Amsinckia menziesii	Menzie's fiddleneck	NL
Heliotropium curassavicum	Heliotrope	FACU
Brassicaceae		
Brassica tournefortii	Saharan mustard	NL
Capsella bursa-pastoris	Shepherd's purse	FACU
Hirschfeldia incana	Mustard	NL
Lepidium dictyotum	Alkali pepperweed	FAC
Lepidium latifolium	Perennial pepperweed	FAC
Lepidium nitidum	Shinning pepperweed	FAC
Raphanus sativus	Wild radish	NL
Caryophyllaceae		
Spergularia macrotheca	Large flowered sand spurry	FAC
Chenopodiaceae		
Atriplex argentea	Silverscale saltbush	FAC
Atriplex lentiformis	Big saltbush	FAC
Atriplex polycarpa	Cattle saltbush	FACU
Salsola tragus	Prickly Russian thistle	FACU

VASCULAR FLORA RECORDED FROM THE SAN LUIS CANAL EMBANKMENT AND LINER RAISE PROJECT STUDY AREA

Scientific Name	Common Name	Wetland Indicator Status
Cleomaceae		
Peritoma arborea	Bladderpod	NL
Convolvulaceae		
Convolvulus arvensis	Field bindweed	NL
Cuscuta californica	California dodder	NL
Cyperaceae		
Cyperus eragrostis	Tall flatsedge	FACW
Fabaceae		
Medicago polymorpha	Bur medic	FACU
Medicago sativa	Alfalfa	UPL
Melilotus indicus	Annual yellow sweetclover	FACU
Prosopis chilensis	Chilean mesquite	NL
Geraniaceae		
Erodium botrys	Broad-leaf filaree	FAC
Erodium cicutarium	Redstem filaree	NL
Juglandaceae		
Juglans hindsii	California walnut	FACU
Juglans regia	English walnut	
Juncaceae		
Juncus balticus	Baltic rush	FACW
Lamiaceae		
Marrubium vulgare	White horehound	FACU
Mentha pulegium	Pennyroyal	OBL
Salvia columbariae	Chia sage	NL
Trichostema lanceolatum	Vinegarweed	FACU
Malvaceae		
Malva parviflora	Cheeseweed mallow	NL
Myrsinaceae		
Lysimachia arvensis	Scarlet pimpernel	FAC
Papaveraceae		
Eschscholzia californica	California poppy	NL
Plantaginaceae		
Plantago lanceolata	Ribwort	FAC

VASCULAR FLORA RECORDED FROM THE SAN LUIS CANAL EMBANKMENT AND LINER RAISE PROJECT STUDY AREA

Scientific Name	Common Name	Wetland Indicator Status
Poaceaa		
Arundo donax	Giant reed	FACW
Avena barbata	Slender oat	NL
Avena fatua	Wild oat	NL
Bromus diandrus	Ripgut brome	NL
Bromus hordeaceus	Soft chess	FACU
Bromus madritensis	Foxtail chess	UPL
Cynodon dactylon	Bermuda grass	FACU
Festuca perennis	Italian rye grass	FAC
Hordeum marinum	Field barley	FAC
Phalaris paradoxa	Hood canarygrass	FAC
Poa pratensis	Kentucky blue grass	FAC
Polypogon monspeliensis	Rabbitsfoot grass	FACW
Polygonaceae		
Eriogonum angulosum	Angled stem buckwheat	NL
Rumex acetosella	Sheep sorrel	FAC
Rumex crispus	Curly dock	FAC
Salicaceae		
Populus fremontii	Fremont cottonwood	NL
Salix exigua	Sandbar willow	FACW
Salix gooddingii	Goodding's black willow	FACW
Salix laevigata	Red willow	FACW
Scrophulariaceae		
Verbascum thapsus	Woolly mullein	FACW
Solanaceae		
Datura wrightii	Jimsonweed	UPL
Nicotiana quadrivalvis	Indian tobacco	FACU
Solanum americanum	American nightshade	FACU
Tamaricaceae		
Tamarix aphylla	Athel tamarisk	FAC
Tamarix parviflora	Smallflower tamarisk	FAC
Typhaceae		
Typha latifolia	Broadleaf cattail	OBL

SOURCE: ESA, 2021

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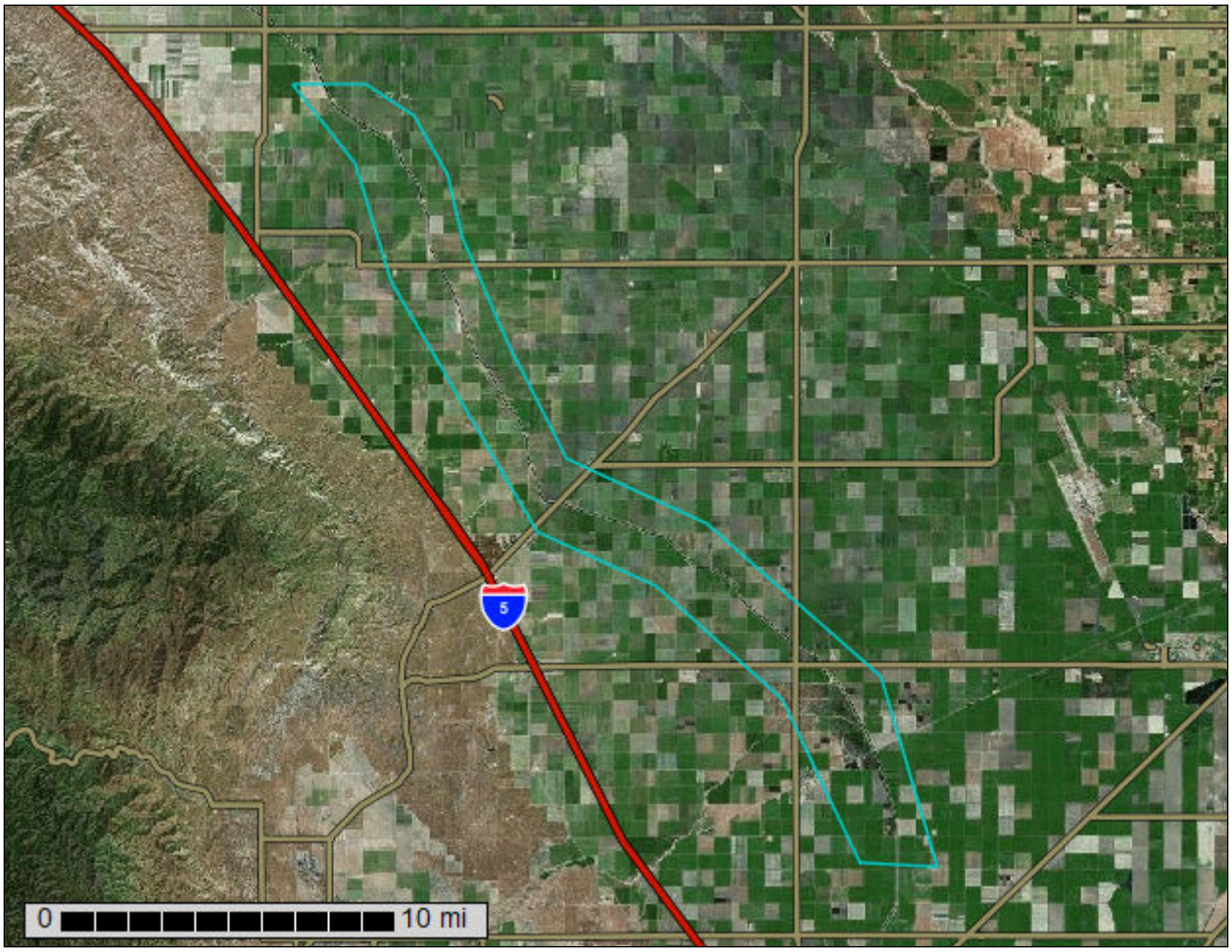
Appendix B
Soils Report

United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Fresno County, California, Western Part



October 26, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

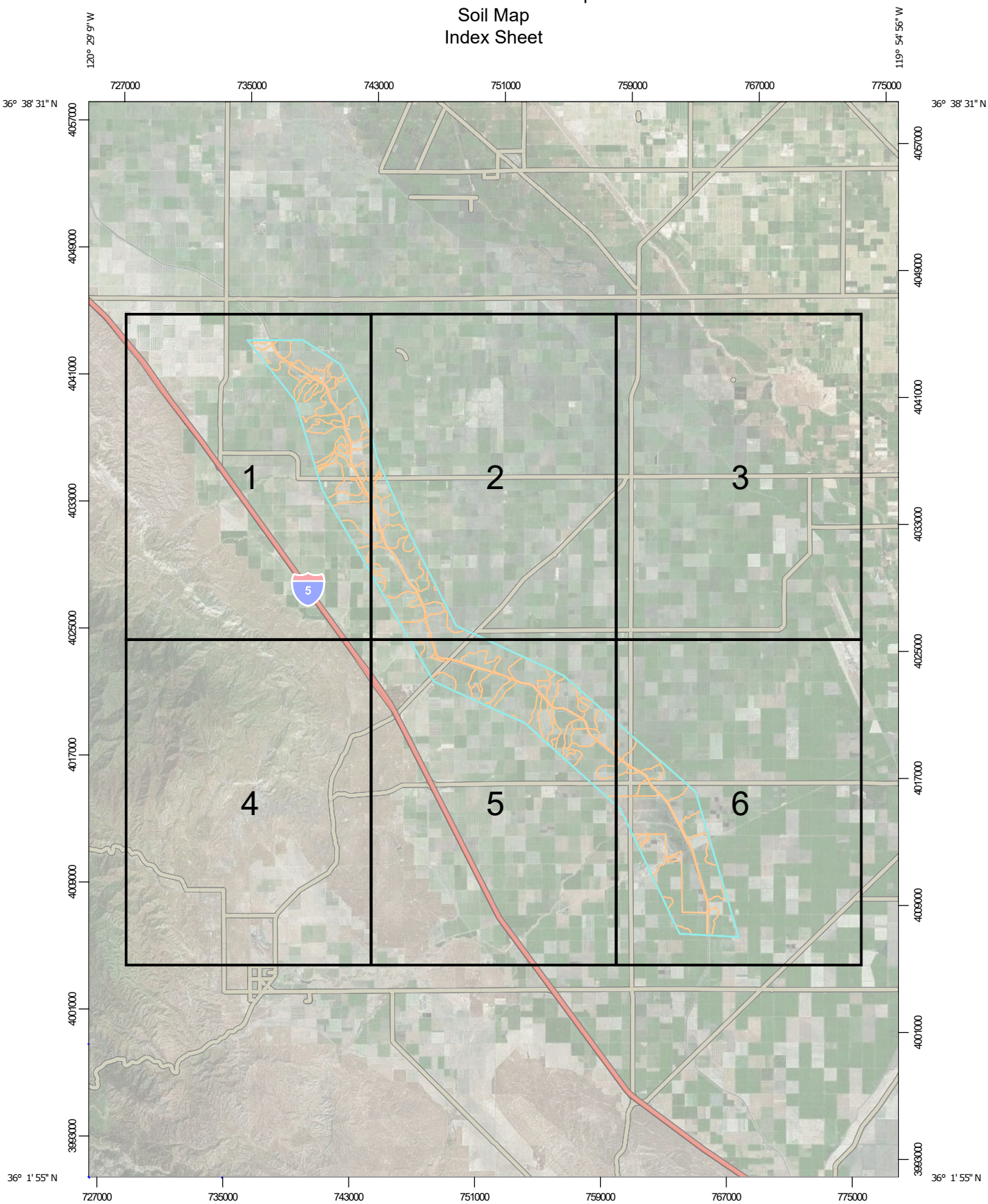
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map
Index Sheet



Map Scale: 1:330,000 if printed on A portrait (8.5" x 11") sheet.

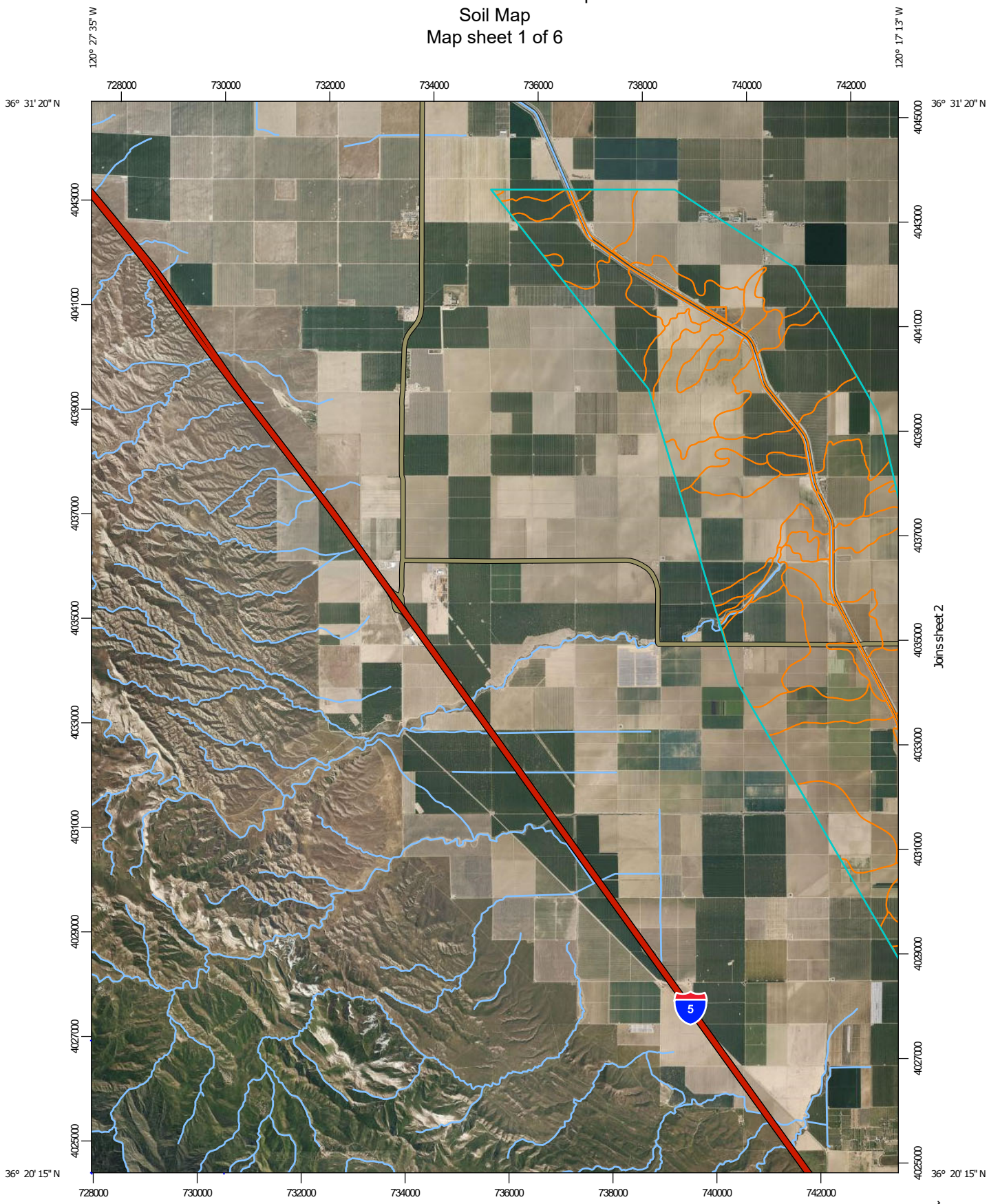
N

Meters: 0 4500 9000 18000 27000

Feet: 0 15000 30000 60000 90000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

Custom Soil Resource Report
Soil Map
Map sheet 1 of 6



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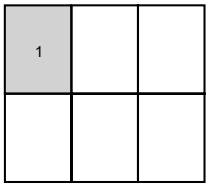
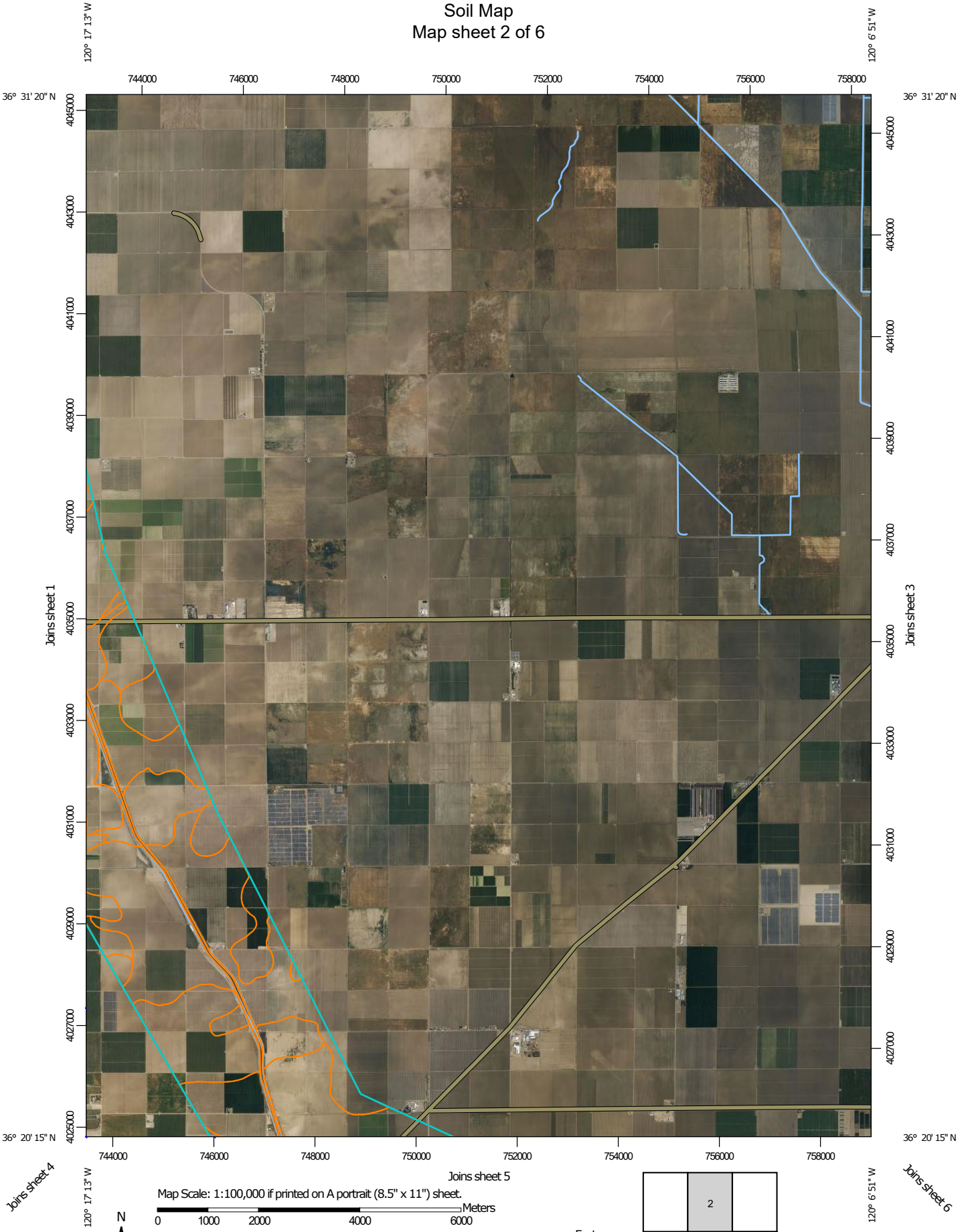
Feet: 0 4500 9000 18000 27000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84



Map Sheet Location

Custom Soil Resource Report
Soil Map
Map sheet 2 of 6



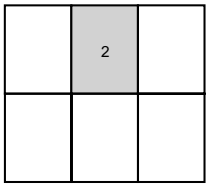
Map Scale: 1:100,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 1000 2000 4000 6000

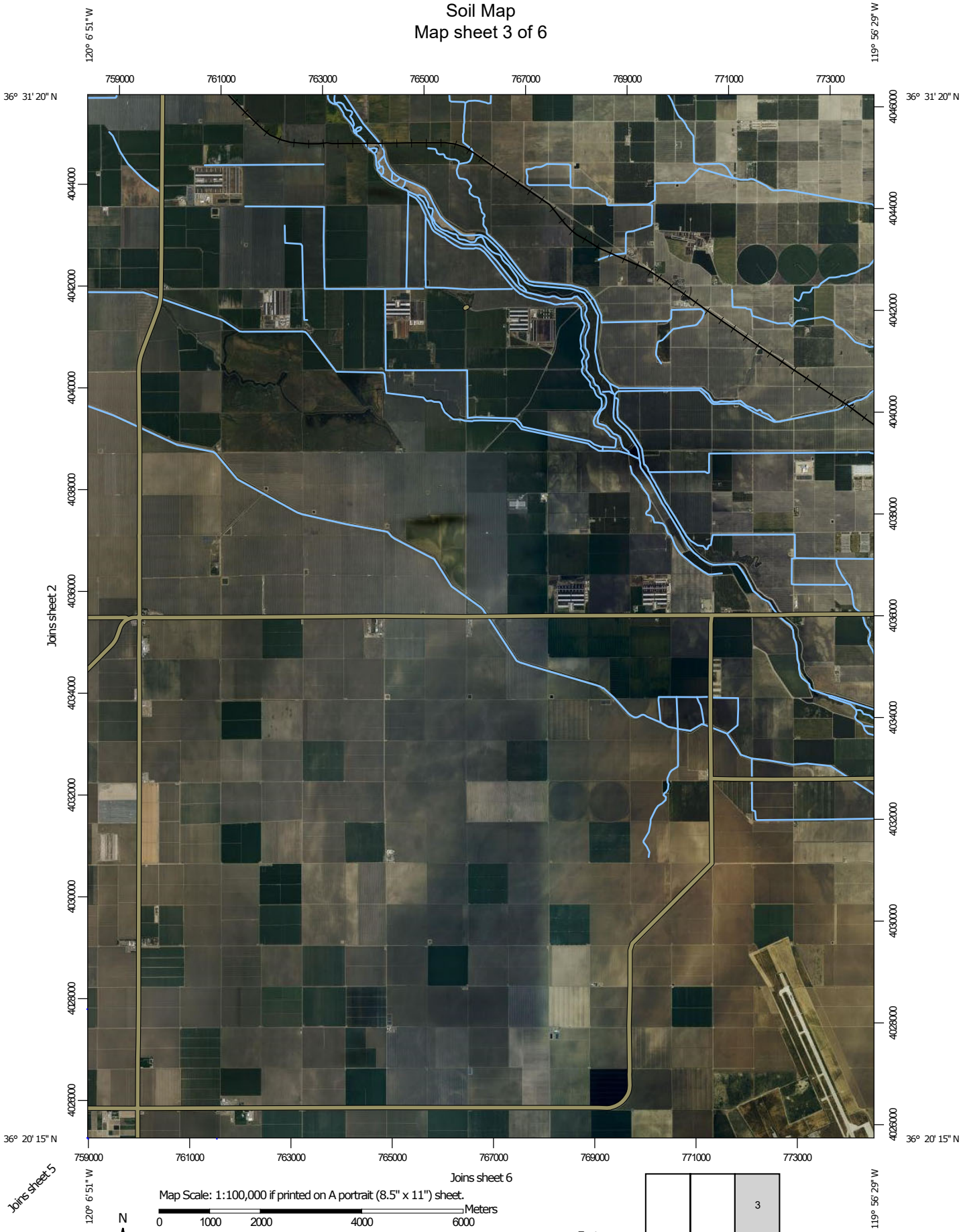
Feet: 0 4500 9000 18000 27000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84



Map Sheet Location

Custom Soil Resource Report
Soil Map
Map sheet 3 of 6



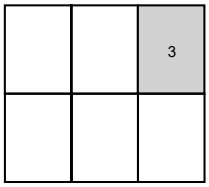
Map Scale: 1:100,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 1000 2000 4000 6000

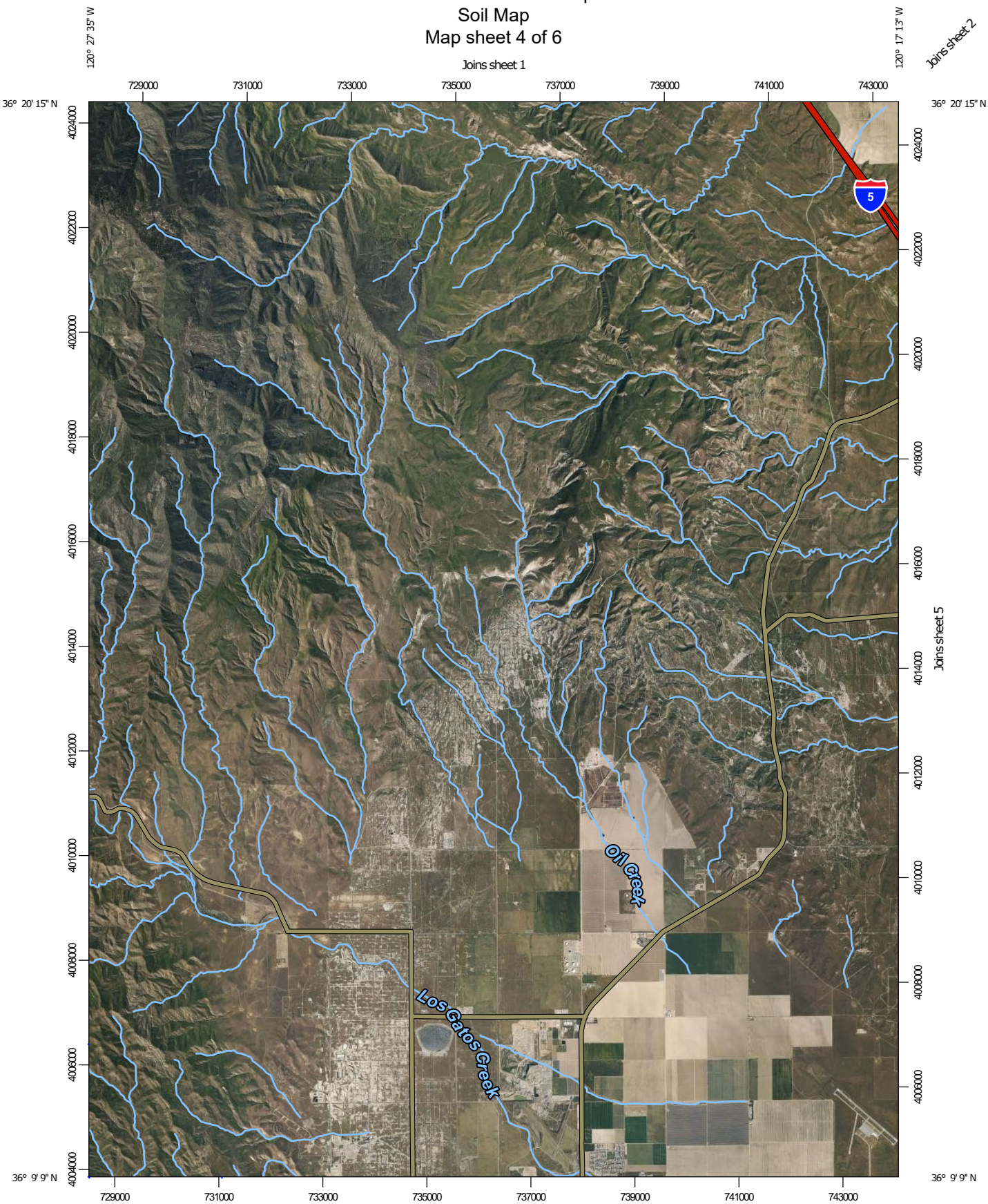
Feet: 0 4500 9000 18000 27000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84



Map Sheet Location

Custom Soil Resource Report
Soil Map
Map sheet 4 of 6



Map Scale: 1:100,000 if printed on A portrait (8.5" x 11") sheet.

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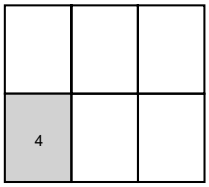
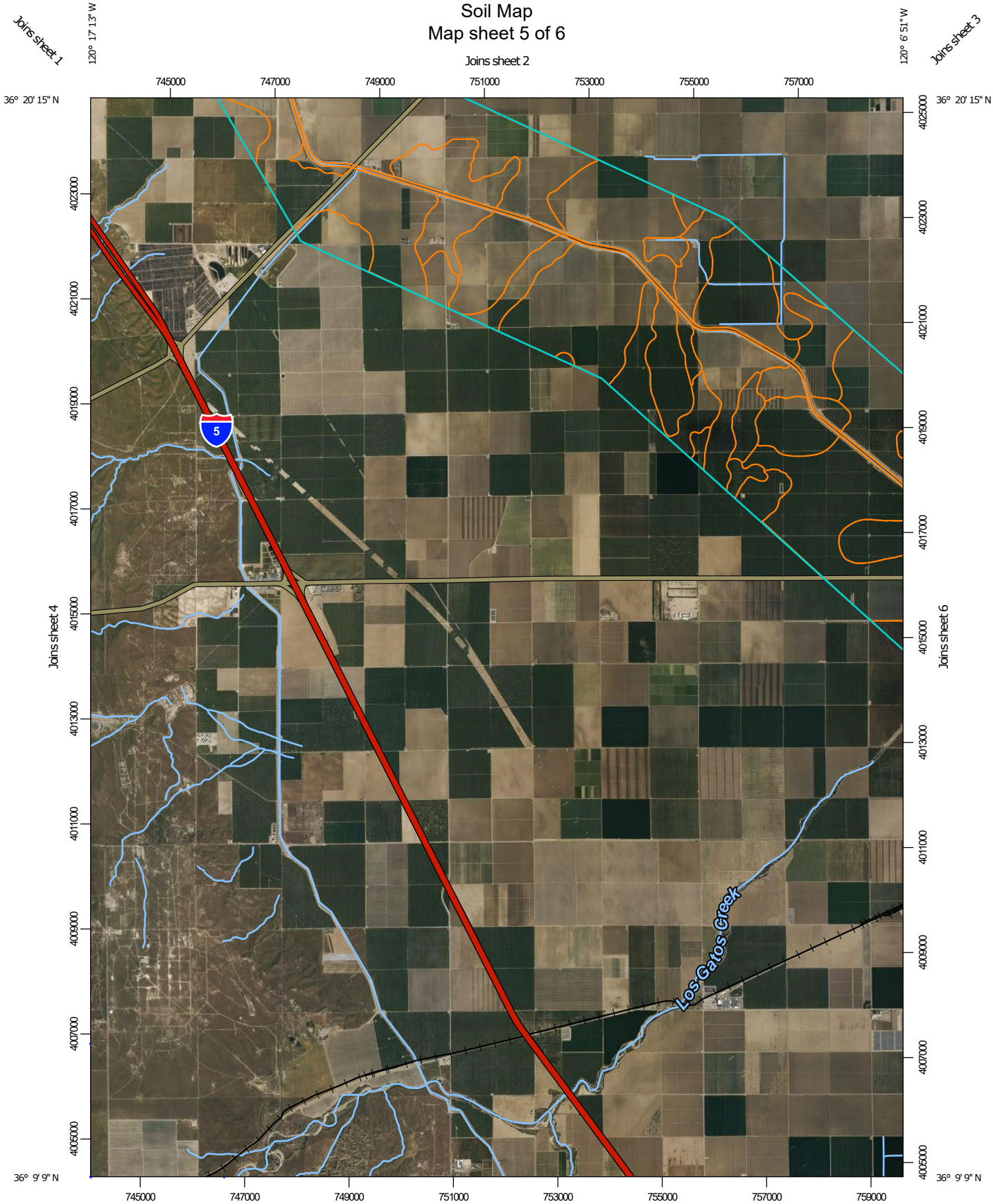
Feet: 0 4500 9000 18000 27000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84



Map Sheet Location

Custom Soil Resource Report
Soil Map
Map sheet 5 of 6



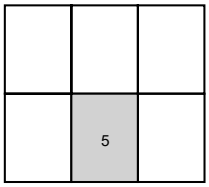
Map Scale: 1:100,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 1000 2000 4000 6000

Feet: 0 4500 9000 18000 27000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84



Map Sheet Location

Custom Soil Resource Report
Soil Map
Map sheet 6 of 6

Map Scale: 1:100,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 1000 2000 4000 6000

Feet: 0 4500 9000 18000 27000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

		6

Map Sheet Location

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Fresno County, California, Western Part
Survey Area Data: Version 16, Sep 3, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 1, 1999—Dec 31, 2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
436	Panoche loam, 0 to 2 percent slopes	1,158.7	2.6%
437	Panoche sandy loam, 0 to 2 percent slopes	275.4	0.6%
442	Panoche clay loam, 0 to 2 percent slopes	2,846.2	6.4%
445	Excelsior sandy loam, 0 to 2 percent slopes, MLRA 17	940.4	2.1%
447	Excelsior sandy loam, sandy substratum, 0 to 2 percent slopes	174.7	0.4%
459	Ciervo clay, 0 to 2 percent slopes	11,186.0	25.1%
461	Ciervo clay, saline-sodic, wet, 0 to 1 percent slopes	373.7	0.8%
462	Ciervo, wet-Ciervo complex, saline-sodic, 0 to 1 percent slopes	2,018.8	4.5%
474	Westhaven loam, 0 to 2 percent slopes	2,429.1	5.4%
477	Westhaven clay loam, 0 to 2 percent slopes	7,934.1	17.8%
478	Cerini sandy loam, 0 to 2 percent slopes, MLRA 17	1,359.6	3.0%
479	Cerini clay loam, 0 to 2 percent slopes	8,612.3	19.3%
490	Cerini sandy loam, subsided, 0 to 5 percent slopes	122.5	0.3%
492	Panoche loam, subsided, 0 to 5 percent slopes	640.7	1.4%
960	Excelsior, sandy substratum-westhaven association, flooded, 0 to 2 percent slopes	3,837.0	8.6%
981	Sewage disposal pond	54.3	0.1%
982	Water	674.6	1.5%
Totals for Area of Interest		**44,644.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps.

The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Fresno County, California, Western Part

436—Panoche loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2ycb2
Elevation: 260 to 850 feet
Mean annual precipitation: 7 to 9 inches
Mean annual air temperature: 63 to 65 degrees F
Frost-free period: 311 to 335 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Panoche and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Panoche

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Typical profile

Ap - 0 to 7 inches: loam
Bw - 7 to 24 inches: loam
Bk - 24 to 60 inches: loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneVery rare
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Kimberlina

Percent of map unit: 5 percent

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Cerini

Percent of map unit: 3 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Calflax

Percent of map unit: 2 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Excelsior

Percent of map unit: 2 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Twisselman

Percent of map unit: 2 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Kettleman

Percent of map unit: 1 percent
Landform: Hills, alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, tread
Down-slope shape: Concave, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

437—Panoche sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hnzp

Elevation: 300 to 850 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 250 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Panoche, sandy loam, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Panoche, Sandy Loam

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 7 inches: sandy loam
Bw - 7 to 16 inches: loam
Bk1 - 16 to 27 inches: loam
Bk2 - 27 to 43 inches: loam
Bk3 - 43 to 57 inches: loam
Bk4 - 57 to 72 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Cerini, clay loam

Percent of map unit: 4 percent
Landform: Alluvial fans

Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Westhaven, loam
Percent of map unit: 4 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Kimberlina, sandy loam
Percent of map unit: 4 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Excelsior, sandy loam
Percent of map unit: 3 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

442—Panoche clay loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 2ycb1
Elevation: 270 to 890 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 62 to 65 degrees F
Frost-free period: 305 to 326 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Panoche, clay loam, and similar soils: 87 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Panoche, Clay Loam

Setting
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile
Ap - 0 to 7 inches: clay loam
Bw - 7 to 16 inches: loam
Bk1 - 16 to 27 inches: loam
Bk2 - 27 to 43 inches: loam
Bk3 - 43 to 57 inches: loam

Bk4 - 57 to 72 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Calflax

Percent of map unit: 4 percent
Landform: Fan skirts
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Cerini

Percent of map unit: 3 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Posochanet

Percent of map unit: 2 percent
Landform: Fan skirts
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ciervo

Percent of map unit: 2 percent
Landform: Fan skirts
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Kimberlina

Percent of map unit: 1 percent
Landform: Alluvial fans
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Wasco

Percent of map unit: 1 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

445—Excelsior sandy loam, 0 to 2 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2ss8v
Elevation: 200 to 1,000 feet
Mean annual precipitation: 5 to 8 inches
Mean annual air temperature: 62 to 65 degrees F
Frost-free period: 240 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Excelsior and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Excelsior

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous coarse-loamy alluvium derived from sedimentary rock

Typical profile

Ap - 0 to 7 inches: sandy loam
A - 7 to 23 inches: sandy loam
C - 23 to 72 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneVery rare
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups
Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Cerini
Percent of map unit: 6 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Excelsior
Percent of map unit: 4 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Kimberlina
Percent of map unit: 3 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Westhaven
Percent of map unit: 1 percent
Landform: Flood plains, alluvial fans
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Bakersfield
Percent of map unit: 1 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear

Hydric soil rating: Yes

447—Excelsior sandy loam, sandy substratum, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hnzw
Elevation: 180 to 900 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Excelsior, sandy loam, sandy substratum, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Excelsior, Sandy Loam, Sandy Substratum

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 7 inches: sandy loam
A - 7 to 23 inches: sandy loam
C1 - 23 to 53 inches: stratified loamy sand to silt loam
C2 - 53 to 72 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): 2s

Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Kimberlina, sandy loam
Percent of map unit: 4 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Excelsior, sandy loam
Percent of map unit: 4 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Excelsior, sandy loam, saline-sodic
Percent of map unit: 2 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Wasco, sandy loam
Percent of map unit: 2 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Polvadero, sandy loam
Percent of map unit: 2 percent
Landform: Fan remnants
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Westhaven, loam
Percent of map unit: 1 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

459—Ciervo clay, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: hp02
Elevation: 210 to 730 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Ciervo, clay, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ciervo, Clay

Setting

Landform: Fan skirts
Landform position (two-dimensional): Footslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 17 inches: clay
Bw - 17 to 27 inches: clay
Bknyz - 27 to 41 inches: silty clay
Bknz - 41 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Ciervo, clay loam

Percent of map unit: 5 percent
Landform: Fan skirts
Hydric soil rating: No

Ciervo, clay, saline-sodic, wet

Percent of map unit: 4 percent
Landform: Fan skirts
Hydric soil rating: No

Ciervo, clay, saline-sodic

Percent of map unit: 4 percent

Landform: Fan skirts
Hydric soil rating: No

Tranquillity, clay, saline-sodic
Percent of map unit: 3 percent
Landform: Fan skirts
Hydric soil rating: No

Cerini, clay loam
Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

Panoche, clay loam
Percent of map unit: 1 percent
Landform: Alluvial fans
Hydric soil rating: No

Westhaven, loam
Percent of map unit: 1 percent
Landform: Alluvial fans
Hydric soil rating: No

461—Ciervo clay, saline-sodic, wet, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: hp03
Elevation: 170 to 330 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 240 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Ciervo, clay, saline-sodic, wet, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ciervo, Clay, Saline-sodic, Wet

Setting
Landform: Fan skirts
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile
Ap - 0 to 17 inches: clay
Bw - 17 to 27 inches: clay
Bknyz - 27 to 41 inches: silty clay

Bknz - 41 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 48 to 60 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 50.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Ciervo, clay, saline-sodic

Percent of map unit: 6 percent
Landform: Fan skirts
Ecological site: R017XY907CA - Aridic Alkali Desert
Hydric soil rating: No

Tranquillity, clay, saline-sodic, wet

Percent of map unit: 5 percent
Landform: Fan skirts
Ecological site: R017XY907CA - Aridic Alkali Desert
Hydric soil rating: No

Ciervo, clay loam, saline-sodic, wet

Percent of map unit: 5 percent
Landform: Fan skirts
Ecological site: R017XY907CA - Aridic Alkali Desert
Hydric soil rating: No

Calflax, clay loam, saline-sodic, wet

Percent of map unit: 4 percent
Landform: Fan skirts
Ecological site: R017XY907CA - Aridic Alkali Desert
Hydric soil rating: No

462—Ciervo, wet-Ciervo complex, saline-sodic, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: hp04
Elevation: 170 to 580 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 240 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ciervo, clay, saline-sodic, wet, and similar soils: 50 percent
Ciervo, clay, saline-sodic, and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ciervo, Clay, Saline-sodic, Wet

Setting

Landform: Fan skirts
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 17 inches: clay
Bw - 17 to 27 inches: clay
Bknyz - 27 to 41 inches: silty clay
Bknz - 41 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 48 to 60 inches
Frequency of flooding: Very rareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 50.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): 3s

Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Ciervo, Clay, Saline-sodic

Setting

Landform: Fan skirts
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 17 inches: clay
Bw - 17 to 27 inches: clay
Bknyz - 27 to 41 inches: silty clay
Bknz - 41 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 40.0
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Ciervo, clay loam, saline-sodic, wet

Percent of map unit: 5 percent
Landform: Fan skirts
Hydric soil rating: No

Cerini, clay loam

Percent of map unit: 3 percent
Landform: Fan skirts
Hydric soil rating: No

Ciervo, clay

Percent of map unit: 3 percent
Landform: Fan skirts
Hydric soil rating: No

Calflax, clay loam, saline-sodic, wet
Percent of map unit: 3 percent
Landform: Fan skirts
Hydric soil rating: No

Panoche, clay loam
Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Tranquillity, clay, saline-sodic
Percent of map unit: 3 percent
Landform: Fan skirts
Hydric soil rating: No

474—Westhaven loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: hp09
Elevation: 270 to 690 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 65 degrees F
Frost-free period: 240 to 290 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Westhaven, loam, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Westhaven, Loam

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile
Ap - 0 to 7 inches: loam
Bw - 7 to 17 inches: loam
Bk1 - 17 to 42 inches: stratified loam to silty clay loam
Bk2 - 42 to 65 inches: stratified loamy sand to silty clay loam
C - 65 to 72 inches: stratified loam to silty clay loam

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Cerini, clay loam

Percent of map unit: 4 percent
Landform: Alluvial fans
Hydric soil rating: No

Wasco, sandy loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Kimberlina, sandy loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Excelsior, sandy loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Panoche, loam

Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

477—Westhaven clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hp0d
Elevation: 250 to 640 feet

Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 65 degrees F
Frost-free period: 240 to 290 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Westhaven, clay loam, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Westhaven, Clay Loam

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 12 inches: clay loam
Bw - 12 to 21 inches: silty clay loam
Bk - 21 to 61 inches: stratified loam to silty clay loam
C - 61 to 72 inches: stratified loamy sand to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Cerini, clay loam

Percent of map unit: 5 percent
Landform: Alluvial fans
Hydric soil rating: No

Ciervo, clay
Percent of map unit: 2 percent
Landform: Fan skirts
Hydric soil rating: No

Calflax, clay loam, saline-sodic
Percent of map unit: 2 percent
Landform: Fan skirts
Hydric soil rating: No

Westhaven, loam
Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

Posochanet, clay loam, saline-sodic
Percent of map unit: 2 percent
Landform: Fan skirts
Hydric soil rating: No

Lethent, clay loam
Percent of map unit: 2 percent
Landform: Fan remnants
Hydric soil rating: No

478—Cerini sandy loam, 0 to 2 percent slopes, MLRA 17

Map Unit Setting
National map unit symbol: 2vnd5
Elevation: 210 to 930 feet
Mean annual precipitation: 6 to 11 inches
Mean annual air temperature: 62 to 66 degrees F
Frost-free period: 240 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Cerini and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cerini

Setting
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile
Ap - 0 to 5 inches: sandy loam
Bw - 5 to 25 inches: clay loam

Bk1 - 25 to 35 inches: stratified sandy loam to clay loam
Bk2 - 35 to 79 inches: stratified sandy loam to clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneVery rare
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Westhaven, loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Excelsior, sandy loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Kimberlina, sandy loam

Percent of map unit: 2 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Granoso

Percent of map unit: 1 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ciervo, clay

Percent of map unit: 1 percent
Landform: Alluvial fans

Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

479—Cerini clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hp0g
Elevation: 160 to 800 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 230 to 290 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Cerini, clay loam, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cerini, Clay Loam

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 5 inches: clay loam
Bw - 5 to 25 inches: clay loam
Bk1 - 25 to 35 inches: stratified sandy loam to clay loam
Bk2 - 35 to 62 inches: stratified sandy loam to clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Very rareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Ciervo, clay

Percent of map unit: 4 percent
Landform: Fan skirts
Hydric soil rating: No

Panoche, clay loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Excelsior, sandy loam

Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

Kimberlina, sandy loam

Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

Cerini, sandy loam

Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

Westhaven, loam

Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

490—Cerini sandy loam, subsided, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: hp0n
Elevation: 330 to 620 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 240 to 290 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Cerini, sandy loam, subsided, and similar soils: 85 percent

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cerini, Sandy Loam, Subsided

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 5 inches: sandy loam
Bw - 5 to 25 inches: clay loam
Bk1 - 25 to 35 inches: stratified sandy loam to clay loam
Bk2 - 35 to 62 inches: stratified sandy loam to clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Excelsior, sandy loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Kimberlina, sandy loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Westhaven, loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Panoche, loam, subsided
Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

Cerini, clay loam, subsided
Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

Cerini, sandy loam
Percent of map unit: 2 percent
Landform: Alluvial fans
Hydric soil rating: No

492—Panoche loam, subsided, 0 to 5 percent slopes

Map Unit Setting
National map unit symbol: hp0q
Elevation: 330 to 590 feet
Mean annual precipitation: 6 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Panoche, loam, subsided, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Panoche, Loam, Subsided

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile
Ap - 0 to 7 inches: loam
Bw - 7 to 16 inches: loam
Bk1 - 16 to 27 inches: loam
Bk2 - 27 to 43 inches: loam
Bk3 - 43 to 57 inches: loam
Bk4 - 57 to 72 inches: sandy loam

Properties and qualities
Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 8.0
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R017XY906CA - Non-Alkali San Joaquin Valley Desert
Hydric soil rating: No

Minor Components

Cerini, clay loam, subsided

Percent of map unit: 5 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Panoche, clay loam, subsided

Percent of map unit: 5 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Excelsior, sandy loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Kimberlina, sandy loam

Percent of map unit: 2 percent
Landform: Alluvial fans
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

960—Excelsior, sandy substratum-westhaven association, flooded, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hp2l

Elevation: 310 to 850 feet
Mean annual precipitation: 7 to 8 inches
Mean annual air temperature: 62 to 64 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Excelsior, sandy loam, sandy substratum, and similar soils: 50 percent
Westhaven, loam, and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Excelsior, Sandy Loam, Sandy Substratum

Setting

Landform: Alluvial fans, flood plains
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Tread
Microfeatures of landform position: Bars and channels
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

A1 - 0 to 7 inches: sandy loam
A2 - 7 to 23 inches: sandy loam
C1 - 23 to 53 inches: stratified loamy sand to silt loam
C2 - 53 to 72 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: Occasional
Calcium carbonate, maximum content: 3 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Description of Westhaven, Loam

Setting

Landform: Alluvial fans, flood plains
Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Tread
Microfeatures of landform position: Bars and channels
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous sedimentary rock

Typical profile

Ap - 0 to 7 inches: loam
Bw - 7 to 17 inches: loam
Bk1 - 17 to 42 inches: stratified loam to silty clay loam
Bk2 - 42 to 65 inches: stratified loamy sand to silty clay loam
C - 65 to 72 inches: stratified loam to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: Occasional
Calcium carbonate, maximum content: 4 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Minor Components

Ciervo, clay

Percent of map unit: 10 percent
Landform: Fan skirts
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Excelsior, sandy loam

Percent of map unit: 5 percent
Landform: Alluvial fans, flood plains
Microfeatures of landform position: Bars and channels
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Cerini, clay loam

Percent of map unit: 3 percent
Landform: Alluvial fans
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Anela, very gravelly sandy loam
Percent of map unit: 2 percent
Landform: Flood plains
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

981—Sewage disposal pond

Map Unit Setting
National map unit symbol: hp2n
Elevation: 140 to 650 feet
Farmland classification: Not prime farmland

Map Unit Composition
Sewage disposal pond: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

982—Water

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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Appendix C
WETS Table

WETS Table

WETS Station: FIVE POINTS 5 SSW, CA								
Requested years: 1942 - 2000								
Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	54.9	36.0	45.5	1.40	0.64	1.70	4	0.1
Feb	62.5	39.5	51.0	1.31	0.53	1.50	3	0.0
Mar	68.0	41.6	54.8	1.08	0.41	1.25	3	0.0
Apr	75.8	45.4	60.6	0.52	0.17	0.53	1	0.0
May	84.3	51.0	67.7	0.29	0.00	0.25	1	0.0
Jun	91.8	57.3	74.5	0.10	0.00	0.00	0	0.0
Jul	97.8	62.4	80.1	0.01	0.00	0.00	0	0.0
Aug	95.5	61.0	78.3	0.02	0.00	0.00	0	0.0
Sep	90.6	57.6	74.1	0.19	0.00	0.11	0	0.0
Oct	80.2	49.6	64.9	0.34	0.00	0.33	1	0.0
Nov	66.3	41.2	53.7	0.75	0.38	0.85	2	0.0
Dec	55.7	36.7	46.2	0.95	0.47	1.13	2	0.0
Annual:					5.14	7.93		
Average	77.0	48.3	62.6	-	-	-	-	-
Total	-	-	-	6.95			18	0.1

GROWING SEASON DATES			
Years with missing data:	24 deg = 43	28 deg = 36	32 deg = 32
Years with no occurrence:	24 deg = 7	28 deg = 2	32 deg = 0
Data years used:	24 deg = 16	28 deg = 23	32 deg = 27
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	Insufficient data	2/8 to 12/3: 298 days	3/20 to 11/19: 244 days
70 percent *	Insufficient data	1/28 to 12/15: 321 days	3/10 to 11/30: 265 days
* Percent chance of the growing season occurring between the Beginning and Ending dates.			

STATS TABLE - total precipitation (inches)													
Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1942												0.83	0.83
1943	1.50	0.64	2.81	0.49									5.44
1944			0.16	0.59	0.86	T	0.00	0.00	0.00	0.53	M0.81	0.66	3.61
1945	0.44	2.75	0.90	0.11	1.11	0.09	0.00	T	T	0.64	0.39	1.07	7.50
1946	0.29	0.81	0.98	0.02	0.13	0.00	T	0.00	0.00	0.25	0.96	1.77	5.21
1947	0.29	0.72	0.78	0.18	0.25	0.00	0.00	0.00					2.22
1948				1.47	0.06	MT						1.06	2.59
1949	0.48	0.57	2.29	0.09	0.68	T	0.01	T	0.00	T	0.31	0.95	5.38
1950	0.68	0.61	0.89	0.46	0.00	0.00	0.00	0.00	0.39	0.46	0.34	0.61	4.44
1951	1.25	0.25	0.07	0.60	0.00	0.00	0.00	0.00	0.00	0.11	0.75	1.94	4.97

1952	2.02	0.25	1.66	1.50	0.00	0.00	0.00	0.00	0.00	0.36	0.88	1.93	8.60
1953	0.41	T	0.20	1.06	0.26	T	0.00	0.00	0.00	0.02	1.33	0.12	3.40
1954	1.70	0.47	1.18	0.32	0.28	0.02	0.00	0.00	0.00	0.00		M1.13	5.10
1955	2.63	1.50	0.00	0.97	1.11	0.00	0.00	0.00	0.00	0.00	0.35	3.51	10.07
1956					1.10	0.00	0.00	0.00	T	0.74	0.00	0.11	1.95
1957	1.98	0.63	T	1.08	0.30						M0.00	1.06	5.05
1958	1.53	2.48	3.27	1.39	0.49	0.00	0.00	0.00	0.64	0.00	0.05	0.28	10.13
1959	1.33		0.04	0.03	0.01	0.00	0.00	0.00	0.06	0.00	0.00	0.18	1.65
1960	0.97	1.24	0.34	0.63	0.00	0.00	0.00	0.00	0.00	0.00	2.04	0.26	5.48
1961	1.36	0.51	0.17	0.30	0.32	0.00	0.04	0.00	0.00	0.00	1.06	1.42	5.18
1962	1.05	3.45	0.57	T	0.07	0.00	0.00	0.00	0.00	0.17	0.00	1.20	6.51
1963	0.81	1.64	0.50	1.16	0.33	0.00	0.00	0.00	0.07		1.64	0.09	6.24
1964	0.84			MT	0.03	T		M0.15	0.00	0.91		0.76	2.69
1965	0.33	0.32	0.59	1.29	0.00		0.04				3.09	1.26	6.92
1966	0.46		0.01	0.00	0.19	0.04	0.28	0.00	0.05	0.00	0.29	1.86	3.18
1967	1.49	0.10	1.04	1.43	0.12	0.03	0.00	0.00	0.23	0.00	1.66		6.10
1968	0.53	0.69	1.09	0.43	0.00	0.00	0.00	0.00	0.00	1.08	1.11	0.94	5.87
1969	4.91	4.50	0.84	0.73	0.00	0.99	0.02	0.00	0.00	0.04	0.37	0.23	12.63
1970	1.71	M0.84	M0.45	0.04	0.00	0.02	0.00	0.00	0.00	0.00	1.07	1.81	5.94
1971	0.18	0.11	0.09	0.60	0.80	0.00	0.00	0.00	0.00	0.03	0.44	1.39	3.64
1972	0.11	T	0.00	0.01	0.05	0.00	0.02	0.00	0.20	0.46	2.34	0.61	3.80
1973	2.01	3.12	1.14	0.03	0.00	0.00	0.00	0.00	0.00	0.63	0.39	0.50	7.82
1974	3.06	0.04	1.24	0.11	0.00	0.00	0.11	0.00	0.00	0.67	0.26	1.11	6.60
1975	0.22	0.66	1.21	0.22	0.00	0.00	0.00	0.22	0.08	0.68	0.06	0.12	3.47
1976	0.00	2.16	0.45	1.39	0.00	0.03	T	0.25	2.64	0.16	0.75	0.58	8.41
1977	0.52	0.07	0.32	0.01	0.93	0.17	0.00	0.00	0.00	T	0.25	2.38	4.65
1978	2.38	3.89		1.56	0.00	0.00	0.00	0.00	1.48	0.00	1.15	0.55	11.01
1979	2.31	1.66	0.99	0.00	0.00	0.00	0.13	0.00	0.05	0.10	0.52	0.32	6.08
1980	3.31	2.85	1.28	0.20	0.26	0.00	0.01	0.00	0.00	0.00	0.10	0.13	8.14
1981	M1.18	M0.47	2.61	1.39	0.18	0.00	0.00	0.00	0.00	0.37	1.04	0.34	7.58
1982	M0.53	0.42	M2.53	1.58	0.00	2.50	M0.00	M0.00	0.91	0.71	M2.22	0.84	12.24
1983	2.84	2.08	3.47	0.59	0.18	0.00	0.00	0.36	1.24	T	M0.45	M1.46	12.67
1984	0.11	0.39	M0.10	0.10	0.00	0.05	0.00	M0.00	0.00	0.47	1.02	1.76	4.00
1985	M0.48	0.00	0.95	0.00	0.00	0.05		0.00	0.00	0.50	1.89	0.65	4.52
1986	1.06	2.22	2.15	0.63	0.00	0.00	0.00	M0.00	0.	M0.	0.00	M0.	6.33

									00	00		27	
1987	1.39	0.59	2.20	M0.00		0.00	0.00	M0.00	M0.00	M0.27	0.46	1.05	5.96
1988	M1.34	0.00	0.11		0.00	0.22	0.00	0.00	0.00	0.00	0.74	M1.81	4.22
1989	0.23	1.01	0.26	0.00	0.07	0.00	0.00	0.00	0.89	0.05	0.44	0.00	2.95
1990	2.38	0.86	0.28	0.27	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.16	4.63
1991	0.32	1.60	3.49	M0.00	M0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.98	6.62
1992		3.20	M1.19	0.00	0.00	0.00	0.00	0.00	0.00	2.06	0.00	M1.32	7.77
1993	4.38	2.65	4.08	0.00			0.00	0.00	0.00	M1.30	M0.43	M0.78	13.62
1994	1.51	1.59	M0.31	0.36	2.13	0.00	0.00	M0.00	M0.35	0.35	M0.45	0.34	7.39
1995	6.11	M1.17	M5.59	0.49	0.60	0.09	0.00	0.00	0.00	0.00	0.00	0.75	14.80
1996	M1.50	M1.71	0.93	0.33	M0.13	M0.16	0.00	0.00	0.00	1.75	0.56	3.45	10.52
1997	M1.93	0.44	1.01	T	T	0.00	T	0.00	M0.08	0.10	1.85	0.79	6.20
1998	M1.09	4.86	1.45	1.29	1.77	0.45	0.00	0.00	0.53	0.36	1.08	0.00	12.88
1999	M0.42	M0.24	M0.83	0.41			0.00	0.00					1.90
2000	M1.60	M2.31	M1.15	0.94	0.00	M0.22	0.00			1.53	0.00	0.00	7.75
2001	M2.39	M1.73	M2.38	0.77	0.00	0.00	T	0.00	0.00	M0.05		M0.57	7.89
2002		M0.18	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	M0.75	M2.27	4.03
2003	M0.35	1.45	0.81	0.51	0.78	0.00	0.00	0.06	0.00	0.04	0.12	1.59	5.71
2004	0.83	2.54	M0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.09	0.30	3.70	9.46
2005	1.39	1.91	1.00		0.60	0.00		0.00	0.16			0.39	5.45
2006	3.27		M1.08	0.36	1.10	0.00	M0.00	0.00	0.00	0.32	0.08	0.14	6.35
2007	0.38	0.65	0.24	0.61	0.00	0.00	0.00	M0.00	0.68	0.35	0.03	0.87	3.81
2008	3.88	0.32	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.22	0.34	M0.80	5.88
2009	0.40	M1.71	0.01	0.00	0.03	0.52	0.00	0.00	0.00	0.54	0.08	1.31	4.60
2010	2.11	2.32	0.23	1.38		0.00	0.00	0.00	0.00	0.00	0.95	3.19	10.18
2011	1.88	0.99	M1.52	M0.43	0.04	0.42	0.00	0.00	M0.00	0.42	0.72	0.00	6.42
2012	0.37	0.41	1.44	1.02	0.00	0.00	M0.00	M0.00	0.00	0.00	0.42	0.90	4.56
2013	0.47	0.36	0.84	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.27	0.07	2.08
2014	0.10	M1.42	0.67	0.30	0.00	0.00	0.00	0.00	0.00	0.00	1.00	2.47	5.96
2015	0.10	0.28	0.00	0.56	0.47	0.00	0.00	M0.00	0.00	0.39	0.76	1.01	3.57
2016	2.92	0.00	1.11	0.62	M0.55	0.00	0.00	0.00	0.00	0.70	1.00	0.70	7.60
2017	2.64	2.72	0.84	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	6.88
2018	1.21	0.00	2.71	0.00	M0.00	0.00	0.00	0.00	0.00	0.21	1.37	0.95	6.45
2019	1.09	2.16	0.55	0.00	1.56	0.00	0.00	0.00	0.00	M0.00	0.40	2.23	7.99
2020	0.50	0.00	2.25	0.86	0.00	0.00	0.00	0.00	0.00	0.00	M0.00	0.33	3.94

2021	3.23	0.00	0.80	0.00	0.00	M0.00	4.03
Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.							
Data missing for all days in a month or year is blank.							
Creation date: 2016-07-22							

Appendix D
Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: San Luis Canal Embankment and Liner Raise Proj City/County: Fresno County Sampling Date: 6/23/21

Applicant/Owner: California Department of Water Resources State: CA Sampling Point: DP-1

Investigator(s): Eric Christensen, Megan Minter Section, Township, Range: S36, T17S, R15E

Landform (hillslope, terrace, etc.): alluvial fan Local relief (concave, convex, none): concave Slope (%): 0-2

Subregion (LRR): C - Mediterranean California Lat: 36.41408889 Long: -120.28734167 Datum: WGS84

Soil Map Unit Name: Excelsior, sandy substratum-westhaven association, flooded, 0 to 2 pen NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Climatic/hydrologic conditions were dry in 2020 and more typical in 2021. The PDSI for the study area was categorized as "near normal". Feature is an ephemeral drainage downhill from an actively disced agricultural row crop field. Hydrology of the region has been historically altered by agricultural development.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: ____)			
1. Brassica tournefortii	40	Yes	NL
2. Bromus madritensis	30	Yes	UPL
3. Amsinckia intermedia	20	Yes	NL
4.			
5.			
6.			
7.			
8.			
	90	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	30	x 5 =	150
Column Totals:	30 (A)		150 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** ✓

Remarks:

SOIL

Sampling Point: DP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	2.5Y3/4	100					silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Agricultural discing/culivation 50 feet upslope. Soil not consolidated and fine sediment routinely washes in to feature.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✓ Surface Soil Cracks (B6)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

Gate valve and concrete drain inlet structure downstream of data point. Drain conveys flow under San Luis Canal.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: San Luis Canal Embankment and Liner Raise Proj City/County: Fresno County Sampling Date: 6/23/21

Applicant/Owner: California Department of Water Resources State: CA Sampling Point: DP-2a

Investigator(s): Eric Christensen, Megan Minter Section, Township, Range: S6, T20S, R18E

Landform (hillslope, terrace, etc.): alluvial fan Local relief (concave, convex, none): concave Slope (%): 0-2

Subregion (LRR): C - Mediterranean California Lat: 36.21075278 Long: -120.05921944 Datum: WGS84

Soil Map Unit Name: Excelsior, sandy substratum-westhaven association, flooded, 0 to 2 pen NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** **Yes ✓ No ____**
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Climatic/hydrologic conditions were dry in 2020 and more typical in 2021. The PDSI for the study area was categorized as "near normal". Feature is a seasonal wetland below a drain inlet pipe within a constructed basin in the Arroyo Pasajero Recharge System. Hydrology of the region has been historically altered by agricultural development and locally for groundwater replenishment and flood control activities.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus fremontii	5	Yes	NL
2.			
3.			
4.			
	5 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. Baccharis salicifolia	15	Yes	FAC
2. Helianthus californicus	20	Yes	OBL
3. Salix exigua	5	Yes	FACW
4.			
5.			
	40 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Heliotropium curassavicum	20	Yes	FACU
2. Lepidium latifolium	20	Yes	FAC
3. Datura wrightii	2	No	UPL
4. Helianthus californicus	3	No	UPL
5. Typha latifolia	3	No	OBL
6.			
7.			
8.			
	48 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 52 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	5	x 2 =	10
FAC species	40	x 3 =	120
FACU species	20	x 4 =	80
UPL species		x 5 =	0
Column Totals:	85 (A)		230 (B)

Prevalence Index = B/A = 2.7058823529

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ✓ No ____**

Remarks:

SOIL

Sampling Point: DP-2a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	2.5Y3/2	90	7.5YR5/8	10	C	PL	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Data point within constructed groundwater recharge basin below drain inlet.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ✓ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 14

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

Drain outlet pipe 5 feet uphill of data point.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: San Luis Canal Embankment and Liner Raise Proj City/County: Fresno County Sampling Date: 6/23/21

Applicant/Owner: California Department of Water Resources State: CA Sampling Point: DP-2b

Investigator(s): Eric Christensen, Megan Minter Section, Township, Range: S6, T20S, R18E

Landform (hillslope, terrace, etc.): alluvial fan Local relief (concave, convex, none): concave Slope (%): 0-2

Subregion (LRR): C - Mediterranean California Lat: 36.21063611 Long: -120.05908611 Datum: WGS84

Soil Map Unit Name: Excelsior, sandy substratum-westhaven association, flooded, 0 to 2 pen NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

Climatic/hydrologic conditions were dry in 2020 and more typical in 2021. The PDSI for the study area was categorized as "near normal" in 2021. Feature is an upland adjacent to a constructed basin in the Arroyo Pasajero Recharge System. Hydrology of the region has been historically altered by agricultural development and locally for groundwater replenishment and flood control activities.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. Atriplex lentiformis	3	No	FAC
2.			
3.			
4.			
5.			
	3 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Lepidium latifolium	20	Yes	FAC
2. Amsinckia intermedia	3	No	NL
3. Bromus madritensis	2	No	UPL
4.			
5.			
6.			
7.			
8.			
	25 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 75 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	1	x 3 =	3
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	1 (A)		3 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ____

Remarks:

Marginal hydrophytic vegetation present due to dominance of one invasive facultative species.

SOIL

Sampling Point: DP-2b

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	2.5Y3/2						silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR C**)
___ 1 cm Muck (A9) (**LRR D**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (**LRR C**)
___ 2 cm Muck (A10) (**LRR B**)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Data point within access road/ramp adjacent to constructed groundwater recharge basin.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1) (**Nonriverine**)
___ Sediment Deposits (B2) (**Nonriverine**)
___ Drift Deposits (B3) (**Nonriverine**)
___ Surface Soil Cracks (B6)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Salt Crust (B11)
___ Biotic Crust (B12)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (**Riverine**)
___ Sediment Deposits (B2) (**Riverine**)
___ Drift Deposits (B3) (**Riverine**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photos

Remarks:

No evidence of wetland hydrology

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: SAN LUIS CANAL EMBANKMENT AND LINER RAISE PROJECT	**Date:** June 22, 2021	**Time:** 12:15 p.m.
Project Number:	**Town:**	**State:** CA
Stream: Cantua Creek	**Photo begin file#:** 3011	**Photo end file#:** 3522
Investigator(s): Eric Christensen, Megan Minter		

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details: Cantua Creek (OHWM-1)

Projection: WGS84 **Datum:** WGS84

Coordinates: 36.456012, -120.305631

Potential anthropogenic influences on the channel system:

San Luis Canal impedes eastward flow and rock gabion around culvert inlet controls, truncates, and receives episodic stream flow. Adjacent row crop tilling and management activities. Routine sediment management within stream portions to maintain capacity and prevent flooding. Extensive agricultural development upstream.

Brief site description:

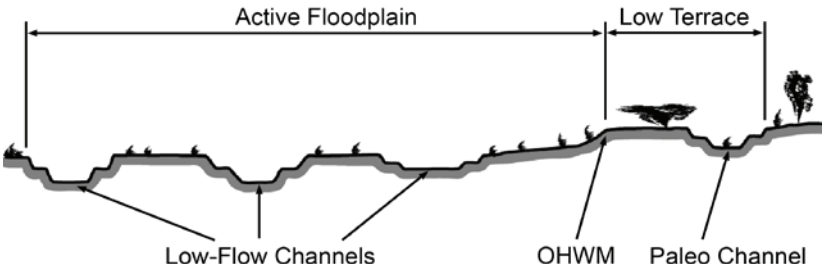
Episodic stream bounded on east by San Luis Canal and on west by active row crop fields.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates: 1984-2021
- ☑ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☑ GPS
   - ☑ Digitized on computer
   - ☐ Other:

Project ID: **Cross section ID:** **Date:** **Time:**

Cross section drawing:

West East

OHWM

GPS point: 36.45598611, -120.30565833

Indicators:

- ☐ Change in average sediment texture
- ☑ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:
OHWM is clearly defined by abrupt change in slope where bank falls into the channel. Soil cracks and debris evident along channel.

Floodplain unit: ☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: 36.45598333, -120.30565000

Characteristics of the floodplain unit:

Average sediment texture: fine silt

Total veg cover: 40 % Tree: 0 % Shrub: 20 % Herb: 20 %

Community successional stage:

- ☐ NA
- ☑ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☑ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☑ Surface relief
- ☑ Other: Scour line
- ☑ Other: Vegetation absent from channel center
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: SAN LUIS CANAL EMBANKMENT AND LINER RAISE PROJECT	**Date:** June 22, 2021	**Time:** 12:45 p.m.
Project Number:	**Town:**	**State:** CA
Stream: Cantua Creek	**Photo begin file#:** 3011	**Photo end file#:** 3522
Investigator(s): Eric Christensen, Megan Minter		

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details: Cantua Creek (OHWM-2)

Projection: WGS84 **Datum:** WGS84

Coordinates: 36.44378056, -120.30215278

Potential anthropogenic influences on the channel system:

San Luis Canal impedes eastward flow and rock gabion around culvert inlet controls, truncates, and receives episodic stream flow. Adjacent row crop tilling and management activities. Routine sediment management within stream portions to maintain capacity and prevent flooding. Extensive agricultural development upstream.

Brief site description:

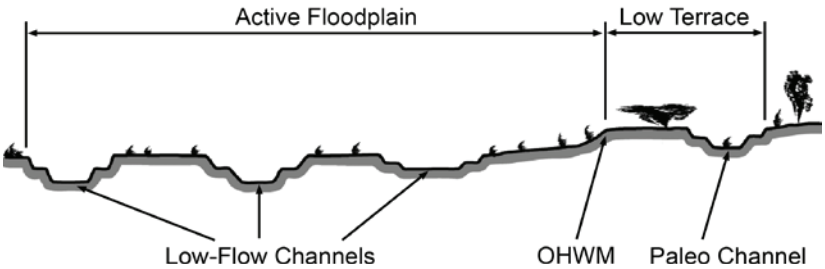
Episodic stream bounded on east by San Luis Canal and on west by active row crop fields.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates: 1984-2021
- ☑ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

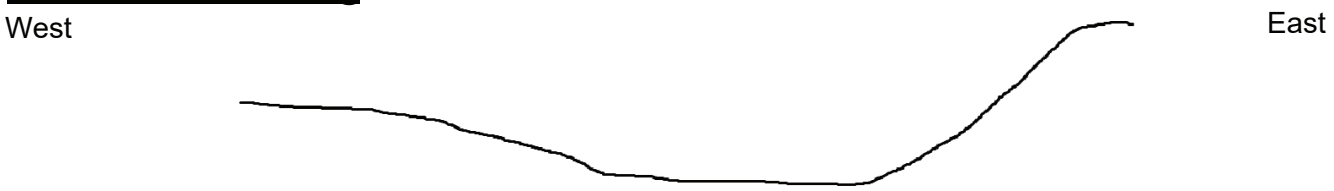


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☑ GPS
   - ☑ Digitized on computer
   - ☐ Other:

Project ID: **Cross section ID:** **Date:** **Time:**

Cross section drawing:



OHWM

GPS point: 36.44378056, -120.30215278

Indicators:

- ☐ Change in average sediment texture
- ☑ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:
OHWM is clearly defined by abrupt change in slope where bank falls into the channel. Soil cracks and debris evident along channel.

Floodplain unit: ☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: 36.44376111, -120.30212222

Characteristics of the floodplain unit:

Average sediment texture: fine silt

Total veg cover: 20 % Tree: 0 % Shrub: 10 % Herb: 10 %

Community successional stage:

- ☐ NA
- ☑ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☑ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☑ Surface relief
- ☑ Other: Scour line
- ☑ Other: Vegetation absent from channel center
- ☐ Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: SAN LUIS CANAL EMBANKMENT AND LINER RAISE PROJECT	**Date:** September 28, 2021	**Time:** 9:40 a.m.
Project Number:	**Town:**	**State:** CA
Stream: Salt Creek	**Photo begin file#:**	**Photo end file#:**
Investigator(s): Eric Christensen, Megan Minter	1952	5351

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details: Salt Creek (OHWM-3)

Projection: WGS84 **Datum:** WGS84

Coordinates: 36.40186667, -120.28400556

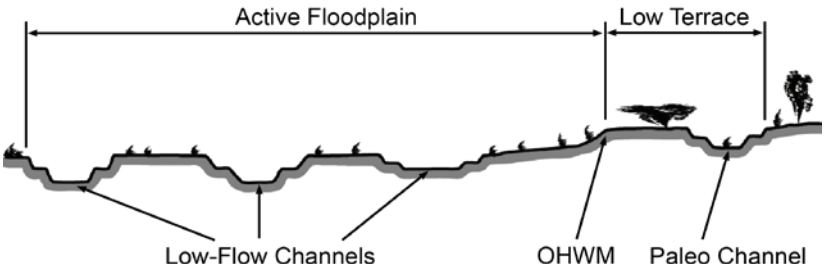
Potential anthropogenic influences on the channel system:
Stream is routed south and east of row crop agricultural field. Water pipeline and access road traverse segments of stream channel. San Luis Canal impedes eastward flow and directs stream north. Adjacent row crop tilling and management activities. Routine sediment management within upstream portions to maintain capacity and prevent flooding. Extensive agricultural development upstream.

Brief site description:
Episodic stream bounded on west by agricultural field and east by San Luis Canal.

Checklist of resources (if available):

- ☑ Aerial photography
  Dates: 1984-2021
- ☑ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☑ GPS
   - ☑ Digitized on computer
   - ☐ Other:

Project ID: **Cross section ID:** **Date:** **Time:**

Cross section drawing:

West East

OHWM

GPS point: 36.40186667, -120.28400556

Indicators:

- ☑ Change in average sediment texture
- ☐ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:
OHWM is clearly defined by abrupt change in slope where bank falls into the channel. Soil cracks and debris evident along channel.

Floodplain unit: ☑ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: 36.40185833, -120.28397222

Characteristics of the floodplain unit:

Average sediment texture: fine sand

Total veg cover: 10 % Tree: 0 % Shrub: 0 % Herb: 10 %

Community successional stage:

- ☐ NA
- ☑ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☑ Mudcracks
- ☐ Ripples
- ☑ Drift and/or debris
- ☑ Presence of bed and bank
- ☑ Benches
- ☑ Soil development
- ☑ Surface relief
- ☑ Other: Scour line
- ☑ Other: Vegetation absent from channel center
- ☐ Other: _____

Comments:

Appendix E

Aquatic Resources Table

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
ED-1	CALIFORNIA	R4SB	RIVERINE	Area	3.509	ACRE	B1WETNONADJ	36.45132097	-120.30319791	Cantua Creek
ED-2	CALIFORNIA	R4SB	RIVERINE	Area	0.195	ACRE	B1WETNONADJ	36.44429067	-120.30188920	Cantua Creek
ED-3	CALIFORNIA	R4SB	RIVERINE	Area	0.004	ACRE	B1WETNONADJ	36.44349964	-120.30222362	Cantua Creek
ED-4	CALIFORNIA	R4SB	RIVERINE	Area	0.008	ACRE	B1WETNONADJ	36.44326870	-120.30244732	Cantua Creek
ED-5	CALIFORNIA	R4SB	RIVERINE	Area	0.004	ACRE	B1WETNONADJ	36.41409342	-120.28730555	Unnamed tributary to Salt Creek
ED-6	CALIFORNIA	R4SB	RIVERINE	Area	0.071	ACRE	B1WETNONADJ	36.40475685	-120.28361671	Salt Creek
ED-7	CALIFORNIA	R4SB	RIVERINE	Area	0.062	ACRE	B1WETNONADJ	36.40368726	-120.28411595	Salt Creek
ED-8	CALIFORNIA	R4SB	RIVERINE	Area	0.016	ACRE	B1WETNONADJ	36.40271631	-120.28405513	Salt Creek
ED-9	CALIFORNIA	R4SB	RIVERINE	Area	0.217	ACRE	B1WETNONADJ	36.40068347	-120.28403268	Salt Creek
OW-1	CALIFORNIA	PUB	ORGSOILFLT	Area	0.641	ACRE	B2GRNDWATER	36.21917993	-120.06223761	Arroyo Pasajero
OW-2	CALIFORNIA	PUB	LACUSTRINF	Area	0.389	ACRE	B2GRNDWATER	36.21817551	-120.06288743	Arroyo Pasajero
OW-3	CALIFORNIA	PUB	ORGSOILFLT	Area	3.594	ACRE	B2GRNDWATER	36.18261132	-120.05036687	Arroyo Pasajero
SW-1	CALIFORNIA	PEM	DEPRESS	Area	0.448	ACRE	B1WETNONADJ	36.44527771	-120.30191816	Cantua Creek
SW-2	CALIFORNIA	PEM	DEPRESS	Area	81.688	ACRE	B2GRNDWATER	36.22097839	-120.06581638	Arroyo Pasajero
SW-3	CALIFORNIA	PEM	DEPRESS	Area	0.026	ACRE	B2GRNDWATER	36.21809267	-120.06313381	Arroyo Pasajero
SW-4	CALIFORNIA	PEM	DEPRESS	Area	0.01	ACRE	B2GRNDWATER	36.21824549	-120.06272409	Arroyo Pasajero
SW-5	CALIFORNIA	PEM	DEPRESS	Area	131.082	ACRE	B2GRNDWATER	36.21393598	-120.06355737	Arroyo Pasajero
SW-6	CALIFORNIA	PEM	DEPRESS	Area	14.956	ACRE	B2GRNDWATER	36.20270256	-120.05588193	Arroyo Pasajero
SW-7	CALIFORNIA	PEM	DEPRESS	Area	152.365	ACRE	B2GRNDWATER	36.18730847	-120.05378318	Arroyo Pasajero

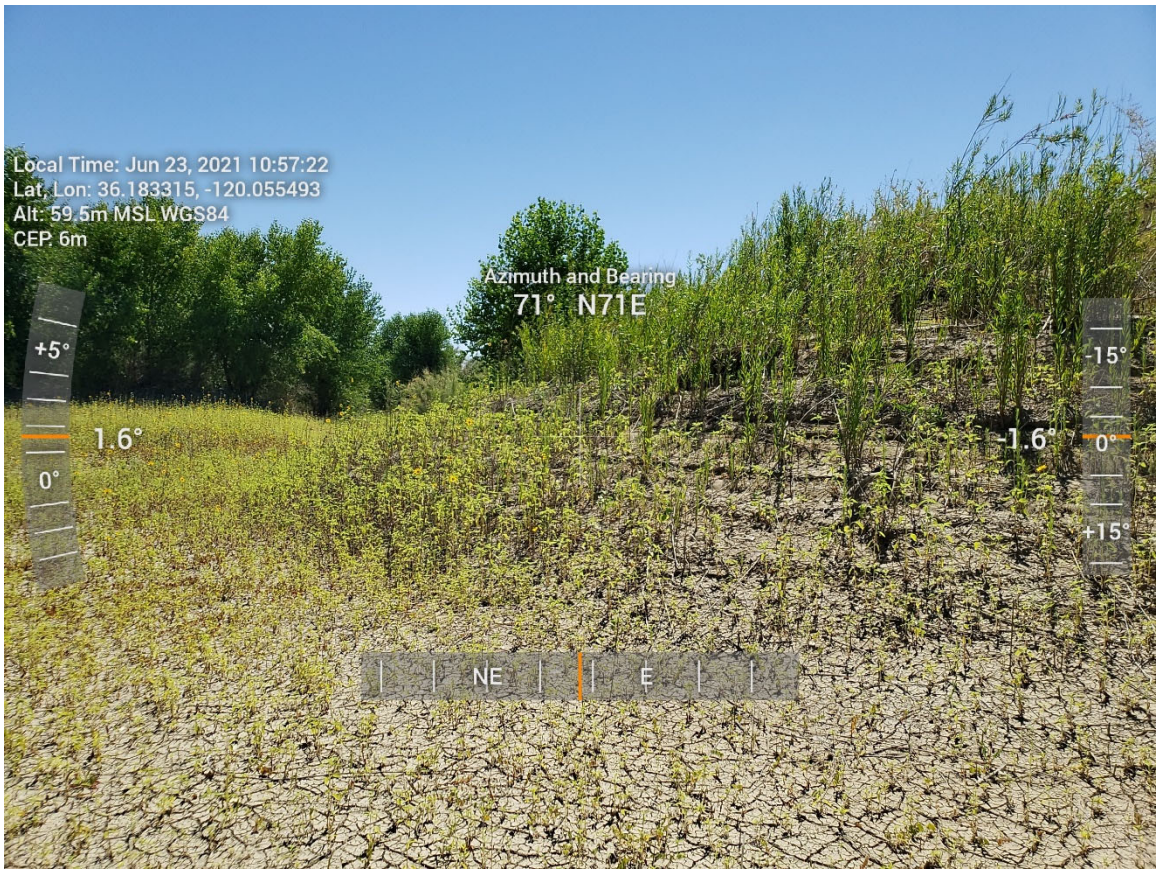
Appendix F

Aquatic Resources Study Area Photographs

San Luis Canal Embankment and Liner Raise Project

Photo 1

SW-1 is in the center with the rock gabion structure and concrete drain inlet to the right.
June 22, 2021



San Luis Canal Embankment and Liner Raise Project

Photo 2
View from SW-7 water marks on the mound to the right and cracked soil evident throughout.
June 23, 2021

San Luis Canal Embankment and Liner Raise Project

Photo 3

Data point 2a is in the center foreground and view is within SW-5 in the Arroyo Pasajero Recharge System.

June 22, 2021

San Luis Canal Embankment and Liner Raise Project

Photo 4
View of SW-7 with predominance of perennial pepperweed and other facultative plant species evident.
June 23, 2021

San Luis Canal Embankment and Liner Raise Project

Photo 5
ED-1 is shown in the center (cracked soil and drift lines evident) with the San Luis Canal Embankment on the left.
June 22, 2021

San Luis Canal Embankment and Liner Raise Project

Photo 6

ED-5 is in the center with data point 1 located at the center point. Concrete drain inlet receives flow when ephemeral drainage conveys water.
June 23, 2021

San Luis Canal Embankment and Liner Raise Project

Photo 7
View of ED-8 looking upstream with soil stratification and embedded shells/debris evident.
September 28, 2021

San Luis Canal Embankment and Liner Raise Project

Photo 8
OW-2 is shown in the center background under and behind a railroad bridge.
June 23, 2021

APPENDIX C

Cultural Resources Inventory Report (Confidential)

APPENDIX D

Tribal Cultural Consultation

Tribal Consultation Log
CASP SLFD Pools 17 and 18 Liner Raise Project

Date	Tribe	AB52?	From	From Agency	To	To Agency	Type	Subject
7/19/24	n/a	n/a	Melissa Grijalva-Foreman	DWR	NAHC	NAHC	email with attachments	SLF and Tribal contact list request.
7/19/24	n/a	n/a	NAHC	NAHC	Melissa Grijalva-Foreman (ESA)	DWR	email with attachments	SLF and Tribal contact list request receipt confirmation.
7/23/24	n/a	n/a	Cameron Vela (NAHC)	NAHC	Robin Hoffman (ESA)	DWR	email with attachments	SLF negative results and Tribal contact list.
10/10/24	Amah Mutsun Tribal Band	No	Jesse Dillon	DWR	Valentin Lopez, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Big Sandy Rancheria of Western Mono Indians	No	Jesse Dillon	DWR	Elizabeth Kipp, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Cold Springs Rancheria of Mono Indians	No	Jesse Dillon	DWR	Carol Bill, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Dumna Wo-Wah Tribal Government	No	Jesse Dillon	DWR	Robert Ledger, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Dunlap Band of Mono Indians	No	Jesse Dillon	DWR	Benjamin Charley, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Kitanemuk & Yowlumne Tejon Indians	No	Jesse Dillon	DWR	Delia Dominguez, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Northern Valley Yokut / Ohlone Tribe	No	Jesse Dillon	DWR	Timothy Perez, Tribal Compliance	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Salinan Tribe of Monterey, San Luis Obispo Counties	No	Jesse Dillon	DWR	Patti Dunton, Tribal Administrator	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Santa Rosa Rancheria Tachi Yokut Tribe	Yes	Jesse Dillon	DWR	Leo Sisco, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Sierra Foothill Wuksachi Yokuts Tribe	No	Jesse Dillon	DWR	Marie Dominguez, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Table Mountain Rancheria	No	Jesse Dillon	DWR	Michelle Heredia-Cordova,	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Traditional Choinumni Tribe	No	Jesse Dillon	DWR	David Alvarez, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Tule River Indian Tribe	No	Jesse Dillon	DWR	Neil Peyron, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Wuksachi Indian Tribe/Eshom Valley Band	No	Jesse Dillon	DWR	Kenneth Woodrow, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/10/24	Xolon-Salinan Tribe	No	Jesse Dillon	DWR	Karen White, Chairperson	Tribe	certified mail	Notification and invitation to consult.
10/11/24	Amah Mutsun Tribal Band	No	Jesse Dillon	DWR	Valentin Lopez, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Big Sandy Rancheria of Western Mono Indians	No	Jesse Dillon	DWR	Elizabeth Kipp, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Cold Springs Rancheria of Mono Indians	No	Jesse Dillon	DWR	Carol Bill, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Dumna Wo-Wah Tribal Government	No	Jesse Dillon	DWR	Robert Ledger, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Dunlap Band of Mono Indians	No	Jesse Dillon	DWR	Benjamin Charley, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Kitanemuk & Yowlumne Tejon Indians	No	Jesse Dillon	DWR	Delia Dominguez, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Northern Valley Yokut / Ohlone Tribe	No	Jesse Dillon	DWR	Timothy Perez, Tribal Compliance	Tribe	email with formal request	Notification and invitation to consult.
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10/11/24	Santa Rosa Rancheria Tachi Yokut Tribe	Yes	Jesse Dillon	DWR	Leo Sisco, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Table Mountain Rancheria	No	Jesse Dillon	DWR	Michelle Heredia-Cordova,	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Traditional Choinumni Tribe	No	Jesse Dillon	DWR	David Alvarez, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Tule River Indian Tribe	No	Jesse Dillon	DWR	Neil Peyron, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Wuksachi Indian Tribe/Eshom Valley Band	No	Jesse Dillon	DWR	Kenneth Woodrow, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/11/24	Xolon-Salinan Tribe	No	Jesse Dillon	DWR	Karen White, Chairperson	Tribe	email with formal request	Notification and invitation to consult.
10/16/24	Traditional Choinumni Tribe	No	David Alvarez, Chair	Tribe	Marea Bell	DWR	phone call	Response to consultation request and informed DWR that the
11/06/24	Tule River Indian Tribe	No	Jesse Dillon	DWR	Charmaine McDarment, Chairperson	Tribe	certified mail	Notification and invitation to consult.
11/13/24	Santa Rosa Rancheria Tachi Yokut Tribe	Yes	Jesse Dillon	DWR	Leo Sisco, Chairperson	Tribe	email	Notification and invitation to consult; reply on top of email from
11/13/24	Amah Mutsun Tribal Band	No	Jesse Dillon	DWR	Valentin Lopez, Chairperson	Tribe	email	Notification and invitation to consult; reply on top of email from
11/15/24	Amah Mutsun Tribal Band	No	[General]	Tribe	Jesse Dillon	DWR	email	Response to consultation request and informed DWR that the

Robin Hoffman

From: NAHC@NAHC <NAHC@nahc.ca.gov>
Sent: Friday, July 19, 2024 4:23 PM
To: Melissa Grijalva-Foreman
Cc: Robin Hoffman; Vela, Cameron@NAHC
Subject: RE: SLF Search and Native American Contacts: D202101064.03 CASP SJFD Pools 17 and 18 Liner Raise Project
Attachments: D202101064.03_CASP_Pool_17_18_NAHC_Request_20240719.pdf; Fig 2 Project Location (Pool 17 18) Tribal.pdf; Fig 1 Project Vicinity (Pools 17 18) Tribal.pdf

Hello,

Thank you for your message. We're in receipt of your project. Our turn-around time is approximately 4 weeks, and we don't anticipate responding sooner than that timeframe. Our response will be delivered by email. Please let us know if you have any questions.

Kind Regards,

Native American Heritage Commission
1550 Harbor Blvd Suite 100
West Sacramento, CA 95691
Phone: 916-373-3710

From: Melissa Grijalva-Foreman <MGrijalva-Foreman@esassoc.com>
Sent: Friday, July 19, 2024 4:02 PM
To: NAHC@NAHC <NAHC@nahc.ca.gov>
Cc: Robin Hoffman <rhoffman@esassoc.com>
Subject: SLF Search and Native American Contacts: D202101064.03 CASP SJFD Pools 17 and 18 Liner Raise Project

Good afternoon,

I would like to request a Sacred Lands File search and list of Native American contacts for the *D202101064.03 CASP SJFD Pools 17 and 18 Liner Raise Project* in *Fresno County*. The formal request form, project location, and vicinity maps are attached. Please let me know if you have any questions.

Thank you,

Melissa Grijalva-Foreman, MA
Cultural Resource Specialist

ESA | Environmental Science Associates
Oakland, CA

1-925-408-6032 **cell**
1-510-463-6766 **direct**
MGrijalva-Foreman@esassoc.com | **esassoc.com**

ESA partners with clients and communities to drive sustainable, resilient, and equitable solutions that shape a better world. Let's stay in touch: **Sign up for our newsletter.**

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: D202101064.03 - CASP SLFD Pools 17 & 18 Liner Raise Project

County: Fresno County

USGS Quadrangle Name: Cantua Creek and Tres Picos Farms

Township: 16s **Range: 15E** **Section(s): 29, 32, 33**
Township: 17S **Range: 15E** **Section (s): 2, 3, 11, 13, 14, 24, 25**

Company/Firm/Agency: Environmental Science Associates

Street Address: 775 Baywood Dr Suite 100

City: Petaluma **Zip:** 94954-6531

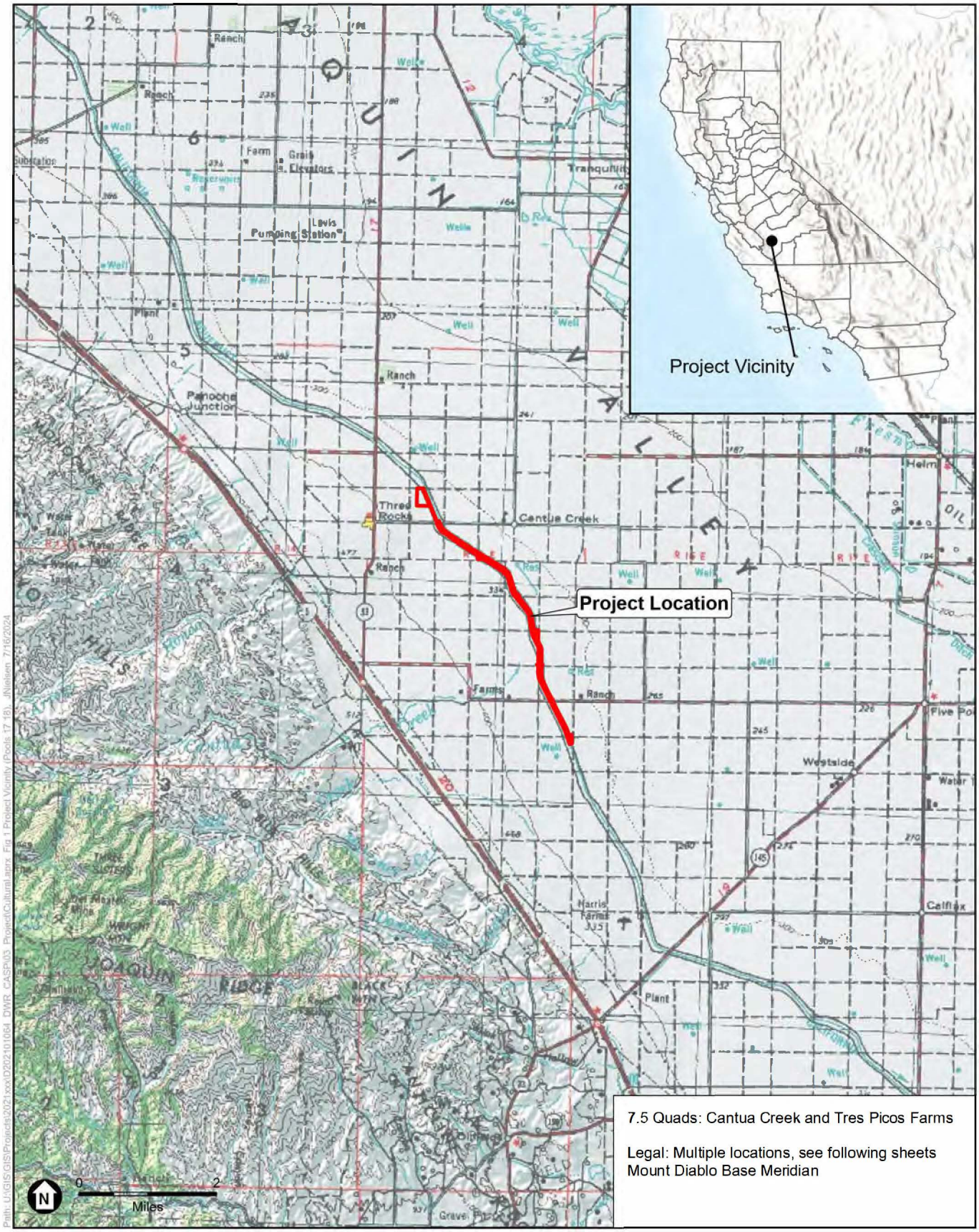
Phone: 707-494-3349

Fax:

Email: rhoffman@esassoc.com

Project Description:

Per the CASP Executive Charter, to address subsidence along the California Aqueduct corrective actions are needed. While long-term corrective planning is underway, near-term "interim actions" are needed to continue existing operations through the San Luis Field Division. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

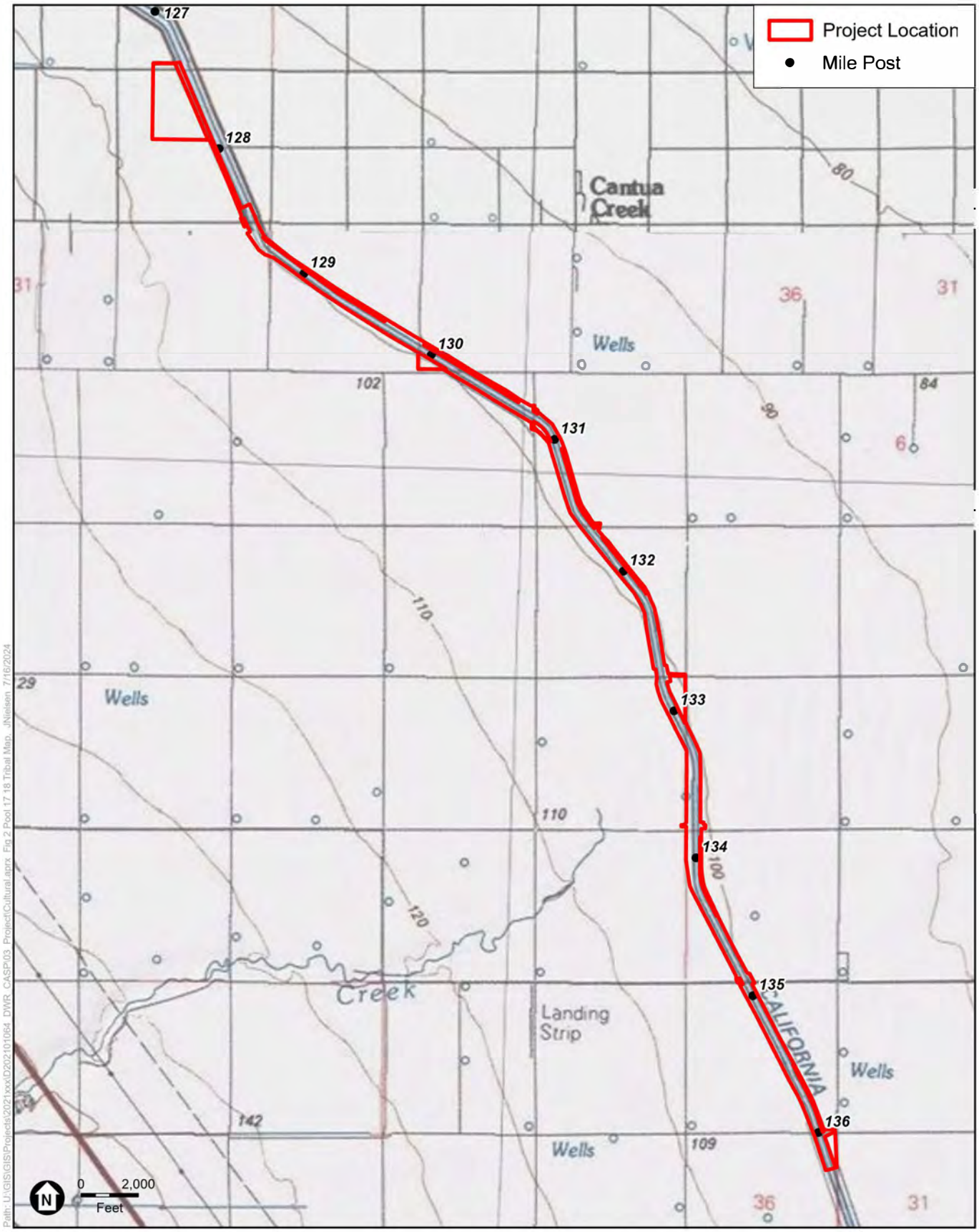


SOURCE: ESRI; DWR, 2024.

CASP SLFD Pools 17 and 18 Liner Raise Project

Figure 1
Project Vicinity

ESA



SOURCE: USGS; DWR, 2024.

CASP SLFD Pools 17 and 18 Liner Raise Project

Figure 2
Project Location

ESA

Robin Hoffman

From: Vela, Cameron@NAHC <Cameron.Vela@nahc.ca.gov>
Sent: Tuesday, July 23, 2024 1:24 PM
To: Robin Hoffman
Subject: D202101064.03 CASP SLFD Pools 17 & 18 Liner Raise Project
Attachments: SLF No D202101064.03 CASP SLFD Pools 17 & 18 Liner Raise Project 7.23.2024.pdf; D202101064.03 CASP SLFD Pools 17 & 18 Liner Raise Project List 7.23.2024.xlsx

Good Afternoon,

Attached is the response to the project referenced above. If you have any additional questions, please feel free to contact our office email at nahc@nahc.ca.gov.

Thank You,

Cameron Vela
Native American Heritage Commission
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Cameron.vela@nahc.ca.gov
Direct Line: (916) 573-0168
Office: (916) 373-3710

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1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710

July 22, 2024

Robin Hoffman
ESA

Via Email to: rhoffman@esassoc.com

Re: D202101064.03 CASP SLFD Pools 17 & 18 Liner Raise Project, Fresno County

Dear Mr. Hoffman:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Cameron.vela@nahc.ca.gov.

Sincerely,

Cameron Vela

Cameron Vela
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Fresno County
7/23/2024

County	Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
Fresno	Amah Mutsun Tribal Band	N	Valentin Lopez, Chairperson	P.O. Box 5272 Galt, CA, 95632	(916) 743-5833		vjltestingcenter@aol.com	Costanoan Northern Valley Yokut	Alameda,Calaveras,Contra Costa,Fresno,Madera,Mariposa,Merced,Monterey,San Benito,San Francisco,San	7/20/2023
	Amah Mutsun Tribal Band	N	Ed Ketchum, Vice-Chairperson		(530) 578-3864		aerieways@aol.com	Costanoan Northern Valley Yokut	Alameda,Calaveras,Contra Costa,Fresno,Madera,Mariposa,Merced,Monte	7/20/2023
	Kitanemuk & Yowlumne Tejon Indians	N	Delia Dominguez, Chairperson	115 Radio Street Bakersfield, CA, 93305	(626) 339-6785		2deedominguez@gmail.com	Kitanemuk Southern Valley Yokut	Fresno,Kern,Kings,Los Angeles,Madera,Monterey,San Benito,San Luis Obispo,Tulare	
	Northern Valley Yokut / Ohlone Tribe	N	Katherine Perez, Chairperson	P.O. Box 717 Linden, CA, 95236	(209) 649-8972		canutes@verizon.net	Costanoan Northern Valley Yokut	Alameda,Calaveras,Contra Costa,Fresno,Madera,Mariposa,Merced,Sacramento,San Benito,San Joaquin,Santa	4/30/2024
	Northern Valley Yokut / Ohlone Tribe	N	Timothy Perez, Tribal Compliance Officer	P.O. Box 717 Linden, CA, 95236	(209) 662-2788		huskanam@gmail.com	Costanoan Northern Valley Yokut	Alameda,Calaveras,Contra Costa,Fresno,Madera,Mariposa,Merced,Sacramento,San Benito,San Joaquin,Santa	11/21/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Shana Powers, THPO	P.O. Box 8 Lemoore, CA, 93245	(559) 423-3900		spowers@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Nichole Escalon, Cultural Specialist I	P.O. Box 8 Lemoore, CA, 93245	(559) 924-1278		nescalone@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Samantha McCarty, Cultural Specialist II	P.O. Box 8 Lemoore, CA, 93245	(559) 633-3440		smccarty@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Table Mountain Rancheria	F	Michelle Heredia-Cordova, Chairperson	P.O. Box 410 Friant, CA, 93626	(559) 822-2587	(559) 822-2693	mhcordova@tmr.org	Yokut	Fresno,Kern,Kings,Madera,Monterey,San Benito,San Luis Obispo,Tulare	12/21/2023
	Table Mountain Rancheria	F	Bob Pennell, Cultural Resource Director	P.O. Box 410 Friant, CA, 93626	(559) 325-0351	(559) 325-0394	rpennell@tmr.org	Yokut	Fresno,Kern,Kings,Madera,Monterey,San Benito,San Luis Obispo,Tulare	
	Tule River Indian Tribe	F	Neil Peyron, Chairperson	P.O. Box 589 Porterville, CA, 93258	(559) 781-4271	(559) 781-4610	neil.peyron@tulerivertribe-nsn.gov	Yokut	Alameda,Amador,Calaveras,Contra Costa,Fresno,Inyo,Kern,Kings,Madera,Mariposa,Merced,Monterey,Sacramento,San	
	Tule River Indian Tribe	F	Kerri Vera, Environmental Department	P. O. Box 589 Porterville, CA, 93258	(559) 783-8892	(559) 783-8932	kerri.vera@tulerivertribe-nsn.gov	Yokut	Alameda,Amador,Calaveras,Contra Costa,Fresno,Inyo,Kern,Kings,Madera,Mariposa,Merced,Monterey,Sacramento,San	7/22/2016
	Tule River Indian Tribe	F	Joey Garfield, Tribal Archaeologist	P. O. Box 589 Porterville, CA, 93258	(559) 783-8892	(559) 783-8932	joey.garfield@tulerivertribe-nsn.gov	Yokut	Alameda,Amador,Calaveras,Contra Costa,Fresno,Inyo,Kern,Kings,Madera,Mariposa,Merced,Monterey,Sacramento,San	7/22/2016
	Wuksachi Indian Tribe/Eshom Valley Band	N	Kenneth Woodrow, Chairperson	1179 Rock Haven Ct. Salinas, CA, 93906	(831) 443-9702		kwood8934@aol.com	Foothill Yokut Mono	Alameda,Calaveras,Contra Costa,Fresno,Inyo,Kings,Madera,Marin,Mariposa,Merced,Mono,Monterey,San Benito,San	6/19/2023

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed D202101064.03 CASP SLFD Pools 17 & 18 Liner Raise Project, Fresno County.

Record: PROJ-2024-003730
Report Type: List of Tribes
Counties: Fresno
NAHC Group: All

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Valentin Lopez
Chairperson
Amah Mutsun Tribal Band
P.O. Box 5272
Galt, CA, 95632
vjltestingcenter@aol.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Lopez,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

The Environmental Coordination Section (ECS) in DOE supports various aspects of environmental compliance of our division's work, including compliance with AB 52, and the DWR *Tribal Engagement Policy*. Currently, DOE's environmental team is supporting multiple projects of which the Amah Mutsun Tribal Band (Tribe) has been identified as possible partner, consulting Tribe, or otherwise interested. For ease of review, and in furtherance of DWR goals of collaboration and transparency, we have consolidated consultation letters different projects into one envelope. My intention is to acknowledge the multiple consultation letters and provide consolidated communication where possible.

The consultation letters enclosed are related to the following projects.

- The Pools 17 and 18 Liner Raise Project is located approximately 12 miles west of Helm, California, within Fresno County, on the San Luis Canal. DWR and Reclamation are proposing to jointly implement this project.

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Marea Bell	*Main Point of Contact* Enviro. Planning Lead: • Pools 17&18 • Pools 20&21	Marea.Bell@water.ca.gov (916) 882-2945
Sarah Cannon	ECS Manager	Sarah.Cannon@water.ca.gov (916) 882-2829
Jesse Dillon	CASP Program Manager	Jesse.Dillon@water.ca.gov (916) 699-8403
Anecita Augustinez	DWR Office of Tribal Affairs	Anecita.Augustinez@water.ca.gov (916) 216-8637

Should you have any questions, comments, or concerns at any point, please do not hesitate to contact me directly, reach out to the designated project contact(s), or contact the DWR Tribal Office. We remain committed to partnering with you in a clear and cooperative manner, to properly account for and manage resources important to the Tribe, consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

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DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail and email

The Honorable Valentin Lopez
Chairperson
Amah Mutsun Tribal Band
P.O. Box 5272
Galt, CA, 95632
vjltestingcenter@aol.com

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Lopez,

This letter serves as a formal invitation to the Amah Mutsun Tribal Band (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

If the Tribe would like to consult under Assembly Bill (AB) 52, this is also notice DWR has not received an AB 52 request for notification from the Tribe and is an opportunity to ensure current and future engagement to consult under AB 52.

Brief Overview of Project Description
The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment of the San Luis Canal located in portions of Pools 17 and 18 (see Attachments 1 and 2), which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing the capacity and operational flexibility that has become limited due to subsidence while improving safety and reliability.

Brief Program Background
The concrete-lined San Luis Canal was constructed as a series of interconnected pools that are operated in coordination to convey water, primarily by gravity, from one pool to the next through check structures and pumping plants. The San Luis Canal traverses portions of the Central Valley that have experienced subsidence, which is defined as a local or regional drop in ground surface elevation. This subsidence has reduced the San

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Luis Canal's delivery capability and reliability, as well as increased maintenance, repair, and energy costs.

This project is part of a larger CASP program, comprised of short-term (interim) actions and long-term corrective actions aimed to repair the San Luis Canal and the California Aqueduct. Additional information about the program and projects can be found here: https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence

Cultural Resources Investigations To-Date

Cultural resources investigations completed to date for the Project include the activities listed below. An *Archaeological and Architectural Resources Inventory Report* is currently being prepared for the project.

- California Native American Heritage Commission Sacred Lands File search request (no sacred sites identified)
- Records searches of the California Historical Resources Information System for the Project Area and vicinity (six previously recorded cultural resources in the Project Area, all of which are historic-era built environmental resources)
- Intensive-level pedestrian survey of the Project Area (no archaeological resources identified)

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DWR is the lead agency under the CEQA and is proposing to prepare an Initial Study/Mitigated Negative Declaration for the Project. As part of the cultural resources review of the Project under CEQA, we are writing to provide the Tribe an opportunity to submit any information the Tribe is willing to share about cultural resources or Tribal cultural resources as defined in California Public Resources Code (PRC) §21074, that may be near the proposed Project Area shown in Attachments 1 and 2. We understand that the locations of these resources are sensitive and resource locations will not be disclosed in public documents and will be kept confidential as provided for under California Government Code §6254.10.

Because the Project is being jointly proposed by DWR and Reclamation, it is subject to federal environmental regulations, including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966 (NHPA). Reclamation is the lead federal agency for NEPA/NHPA purposes.

Conclusion

DWR is committed to working collaboratively with the Tribe to properly account for and manage resources important to the Tribe consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*. We welcome any recommendations regarding the appropriate management or treatment of resources, including Tribal cultural resources, that occur within or near the Project Area. This notification does not limit the Tribe's ability to submit information regarding the identification or significance of Tribal cultural resources, the significance of the Project's potential impact on tribal cultural resources, or any appropriate mitigation measures (PRC §21080.3.2(c)(1)).

If the Tribe has any questions or needs additional information, please contact DWR Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR

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Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Ed Ketchum, Vice-Chairperson, Amah Mutsun Tribal Band
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

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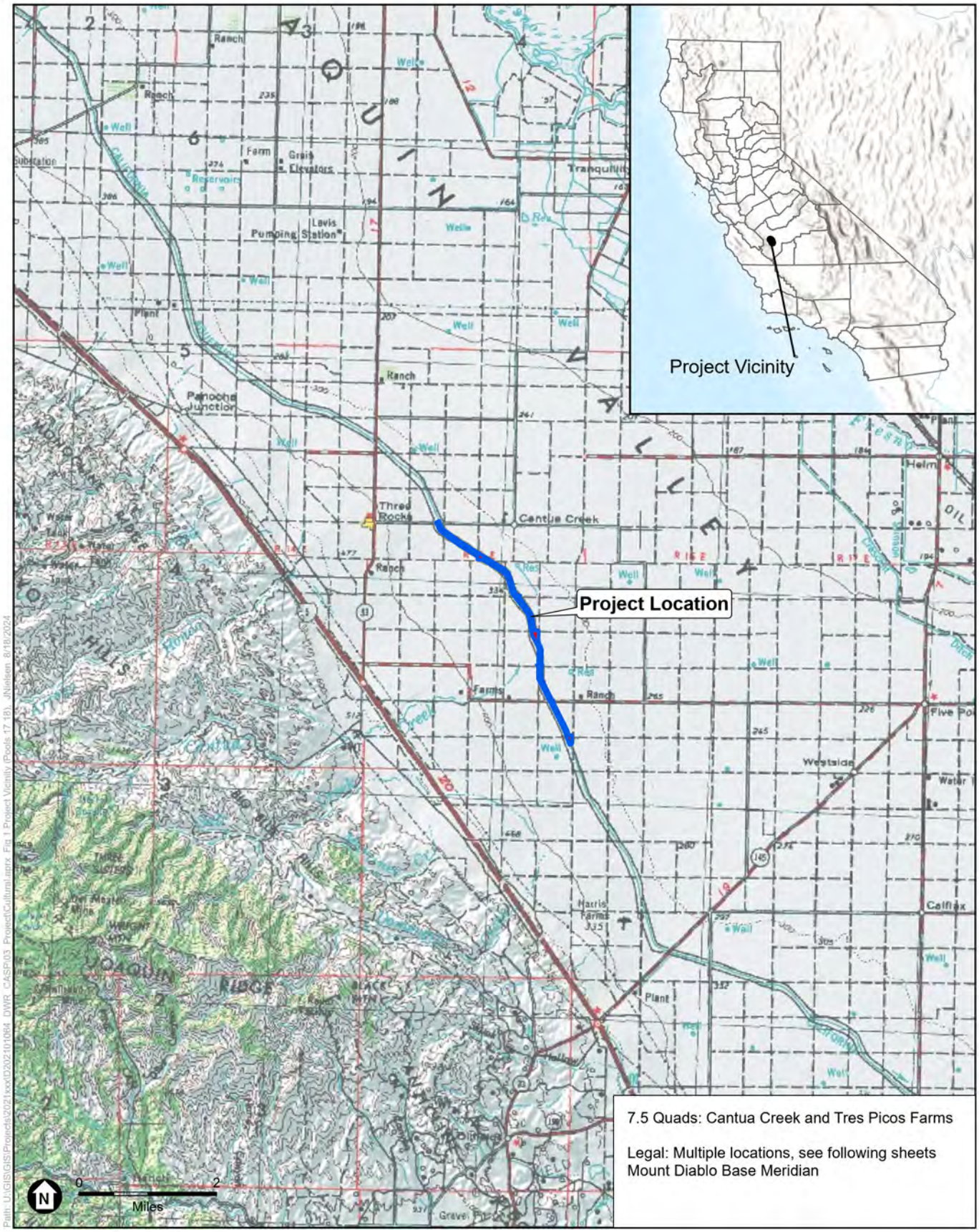

SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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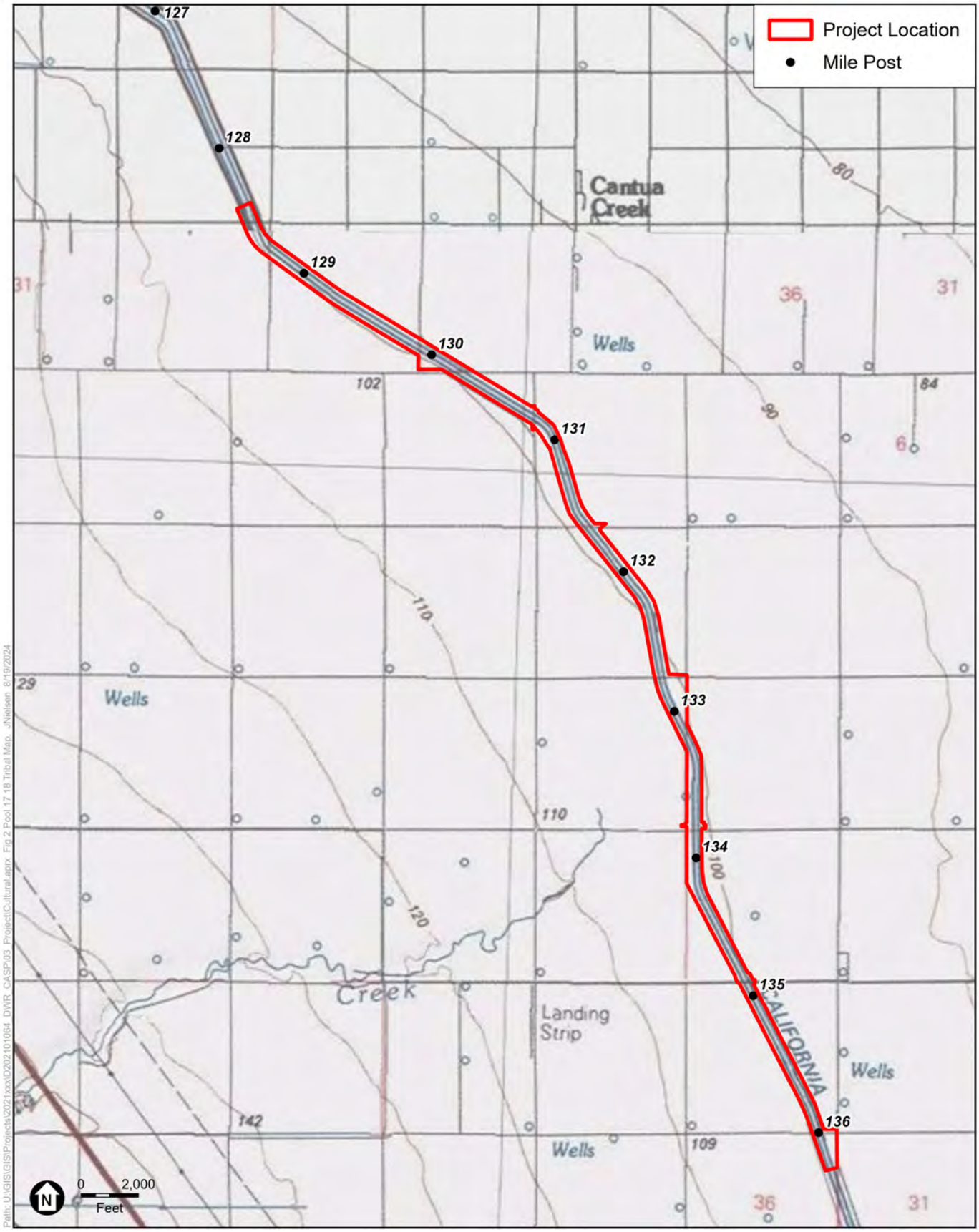

SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

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DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Elizabeth Kipp
Chairperson
Big Sandy Rancheria of Western Mono Indians
P.O. Box 337
Auberry, CA 93602
lkipp@bsrnation.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

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Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

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SACRAMENTO, CA 95814

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CASP Program Manager, DWR Division of Engineering

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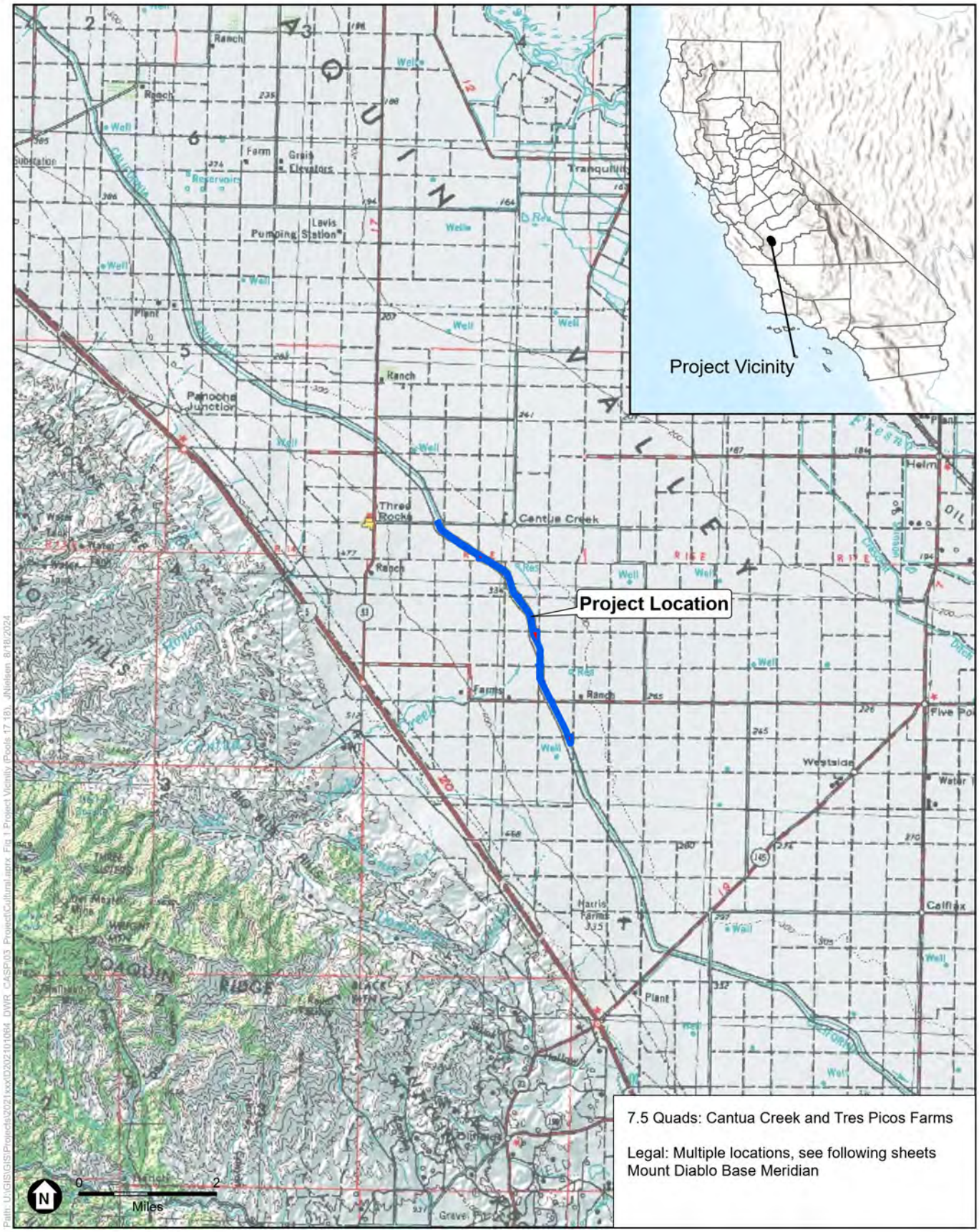

SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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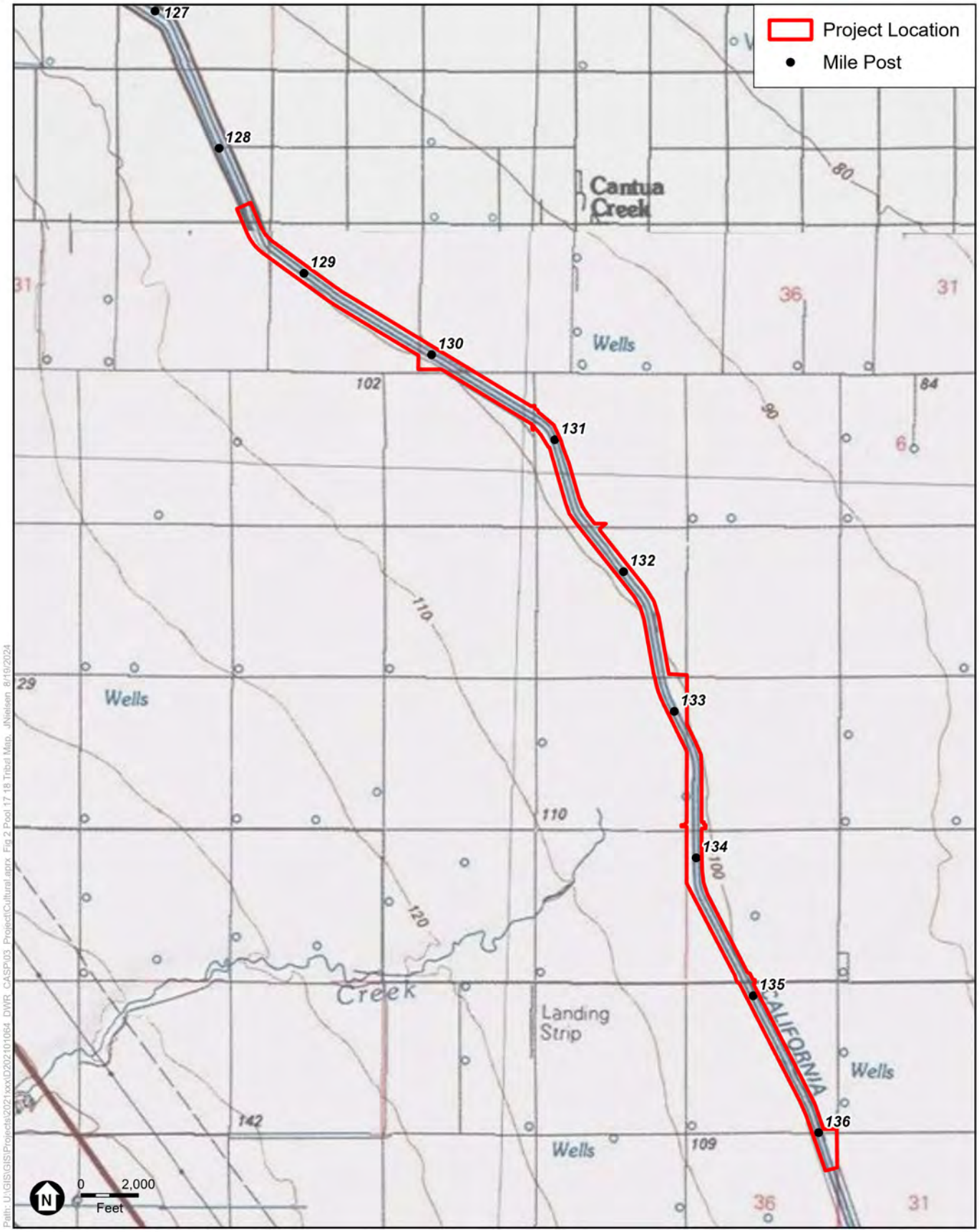

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CASP

Figure 2
Project Location

ESA

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DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Carol Bill
Chairperson
Cold Springs Rancheria of Mono Indians
P.O. Box 209, Tollhouse, CA 93667
csrchair@netptc.net;
coldsprgstribe@netptc.net

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

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Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

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P.O. Box 209, Tollhouse, CA 93667
csrchair@netptc.net;
coldsprgstribe@netptc.net

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Bill,

This letter serves as a formal invitation to the Cold Springs Rancheria of Mono Indians (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

If the Tribe would like to consult under Assembly Bill (AB) 52, this is also notice DWR has not received an AB 52 request for notification from the Tribe and is an opportunity to ensure current and future engagement to consult under AB 52.

Brief Overview of Project Description
The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment of the San Luis Canal located in portions of Pools 17 and 18 (see Attachments 1 and 2), which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing the capacity and operational flexibility that has become limited due to subsidence while improving safety and reliability.

Brief Program Background
The concrete-lined San Luis Canal was constructed as a series of interconnected pools that are operated in coordination to convey water, primarily by gravity, from one pool to the next through check structures and pumping plants. The San Luis Canal traverses portions of the Central Valley that have experienced subsidence, which is defined as a local or regional drop in ground surface elevation. This subsidence has reduced the San

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

Luis Canal's delivery capability and reliability, as well as increased maintenance, repair, and energy costs.

This project is part of a larger CASP program, comprised of short-term (interim) actions and long-term corrective actions aimed to repair the San Luis Canal and the California Aqueduct. Additional information about the program and projects can be found here: https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence

Cultural Resources Investigations To-Date

Cultural resources investigations completed to date for the Project include the activities listed below. An *Archaeological and Architectural Resources Inventory Report* is currently being prepared for the project.

- California Native American Heritage Commission Sacred Lands File search request (no sacred sites identified)
- Records searches of the California Historical Resources Information System for the Project Area and vicinity (six previously recorded cultural resources in the Project Area, all of which are historic-era built environmental resources)
- Intensive-level pedestrian survey of the Project Area (no archaeological resources identified)

CEQA Implementation

DWR is the lead agency under the CEQA and is proposing to prepare an Initial Study/Mitigated Negative Declaration for the Project. As part of the cultural resources review of the Project under CEQA, we are writing to provide the Tribe an opportunity to submit any information the Tribe is willing to share about cultural resources or Tribal cultural resources as defined in California Public Resources Code (PRC) §21074, that may be near the proposed Project Area shown in Attachments 1 and 2. We understand that the locations of these resources are sensitive and resource locations will not be disclosed in public documents and will be kept confidential as provided for under California Government Code §6254.10.

Because the Project is being jointly proposed by DWR and Reclamation, it is subject to federal environmental regulations, including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966 (NHPA). Reclamation is the lead federal agency for NEPA/NHPA purposes.

Conclusion

DWR is committed to working collaboratively with the Tribe to properly account for and manage resources important to the Tribe consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*. We welcome any recommendations regarding the appropriate management or treatment of resources, including Tribal cultural resources, that occur within or near the Project Area. This notification does not limit the Tribe's ability to submit information regarding the identification or significance of Tribal cultural resources, the significance of the Project's potential impact on tribal cultural resources, or any appropriate mitigation measures (PRC §21080.3.2(c)(1)).

If the Tribe has any questions or needs additional information, please contact DWR Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR

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Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

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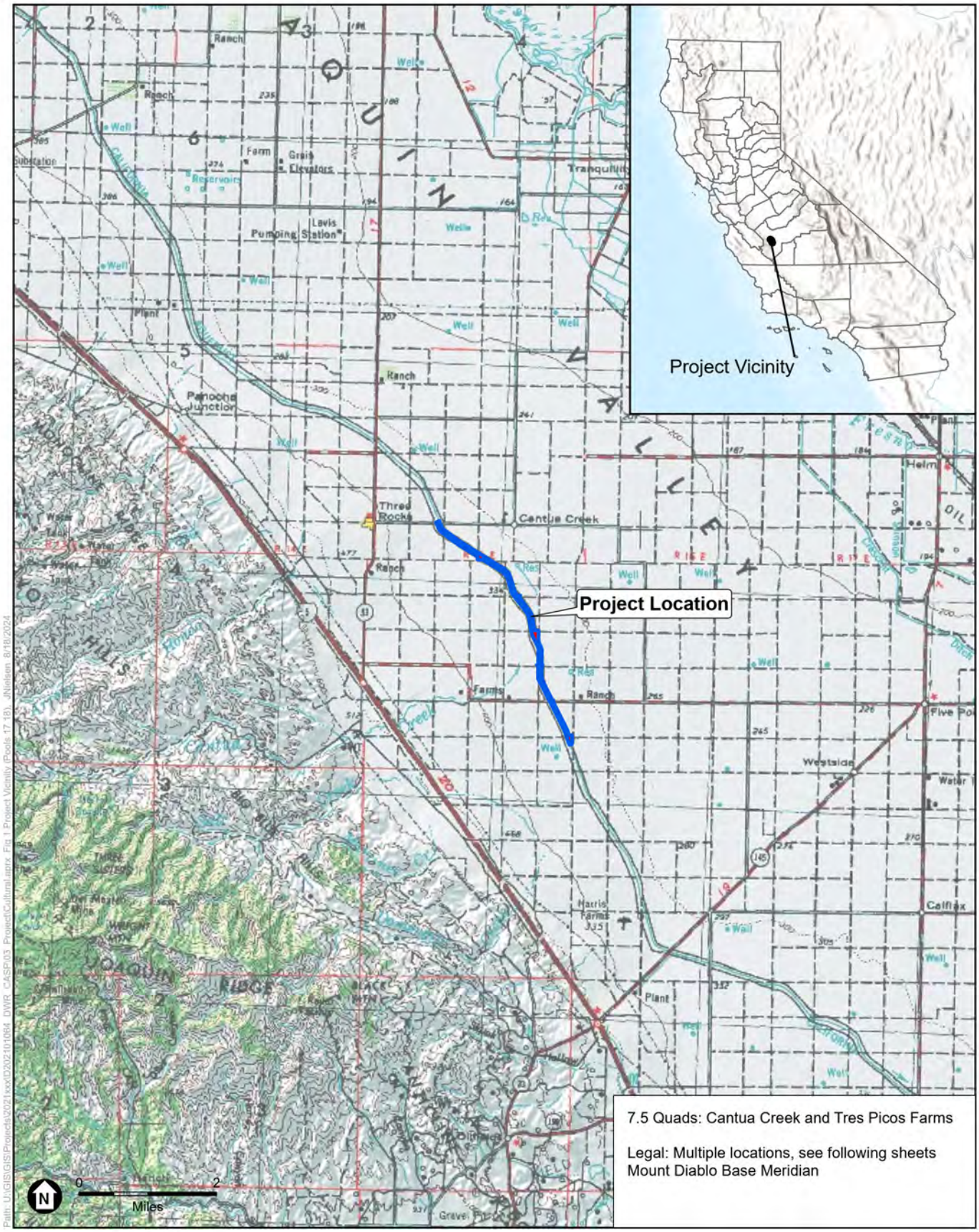

SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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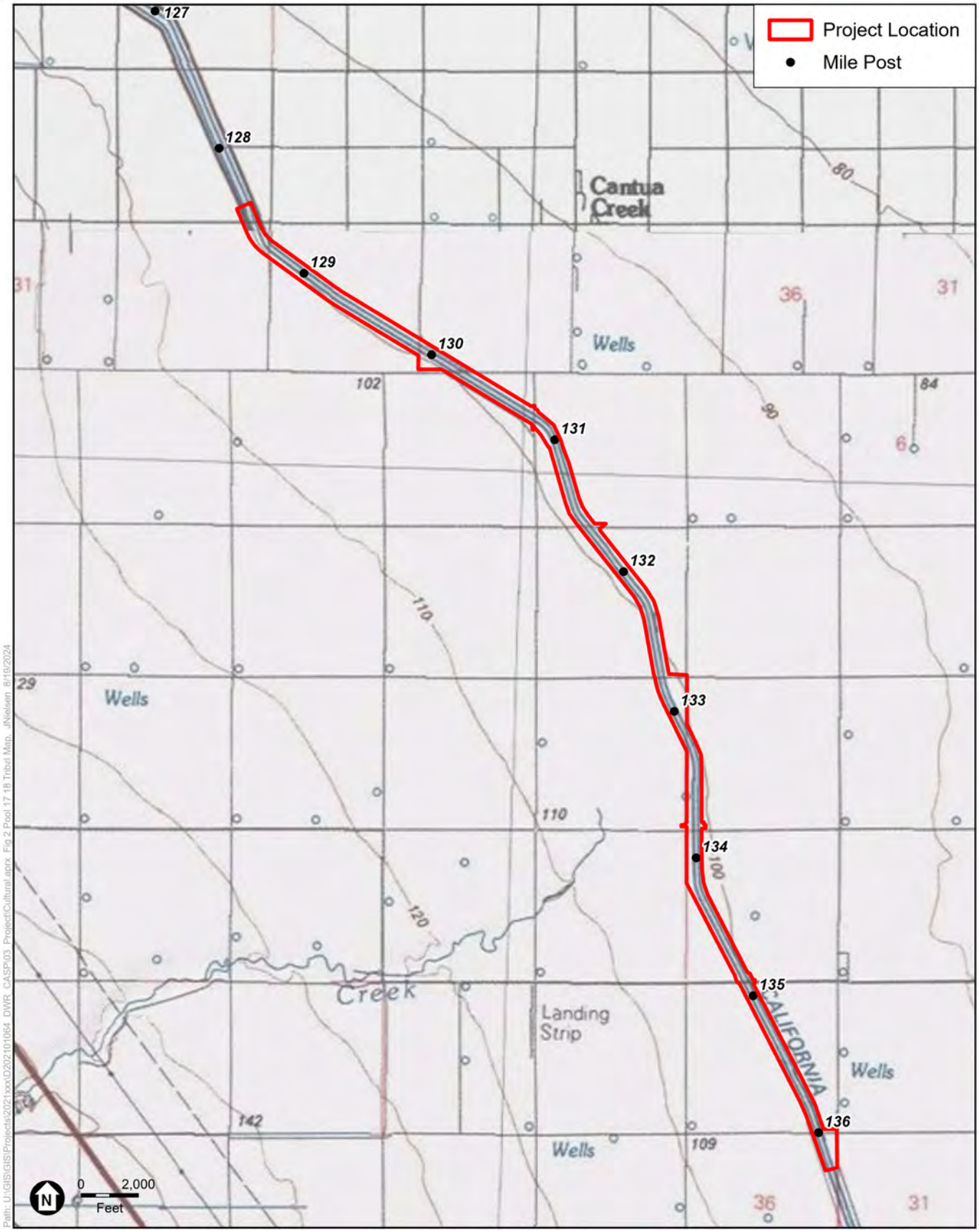

SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Robert Ledger
Chairperson
Dumna Wo-Wah Tribal Government
2191 West Pico Ave.
Fresno, CA 93705
ledgerrobert@ymail.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Ledger,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

The Environmental Coordination Section (ECS) in DOE supports various aspects of environmental compliance of our division's work, including compliance with AB 52, and the DWR *Tribal Engagement Policy*. Currently, DOE's environmental team is supporting multiple projects of which the Dumna Wo-Wah Tribal Government (Tribe) has been identified as possible partner, consulting Tribe, or otherwise interested. For ease of review, and in furtherance of DWR goals of collaboration and transparency, we have consolidated consultation letters different projects into one envelope. My intention is to acknowledge the multiple consultation letters and provide consolidated communication where possible.

The consultation letters enclosed are related to the following projects.

- The Pools 17 and 18 Liner Raise Project is located approximately 12 miles west of Helm, California, within Fresno County, on the San Luis Canal. DWR and Reclamation are proposing to jointly implement this project.

- The Pools 20 and 21 Liner Raise Project is located approximately 3 miles north of Kettleman City, California, within Fresno and Kings Counties, on the San Luis Canal. DWR and Reclamation are proposing to jointly implement this project.

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For ease of reference, helpful contacts are in the list below.

Marea Bell	*Main Point of Contact* Enviro. Planning Lead: • Pools 17&18 • Pools 20&21	Marea.Bell@water.ca.gov (916) 882-2945
Sarah Cannon	ECS Manager	Sarah.Cannon@water.ca.gov (916) 882-2829
Jesse Dillon	CASP Program Manager	Jesse.Dillon@water.ca.gov (916) 699-8403
Anecita Augustinez	DWR Office of Tribal Affairs	Anecita.Augustinez@water.ca.gov (916) 216-8637

Should you have any questions, comments, or concerns at any point, please do not hesitate to contact me directly, reach out to the designated project contact(s), or contact the DWR Tribal Office. We remain committed to partnering with you in a clear and cooperative manner, to properly account for and manage resources important to the Tribe, consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail and email

The Honorable Robert Ledger
Chairperson
Dumna Wo-Wah Tribal Government
2191 West Pico Ave.
Fresno, CA 93705
ledgerrobert@ymail.com

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Ledger,

This letter serves as a formal invitation to the Dumna Wo-Wah Tribal Government (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

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Brief Overview of Project Description
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Conclusion
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If the Tribe has any questions or needs additional information, please contact DWR

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Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
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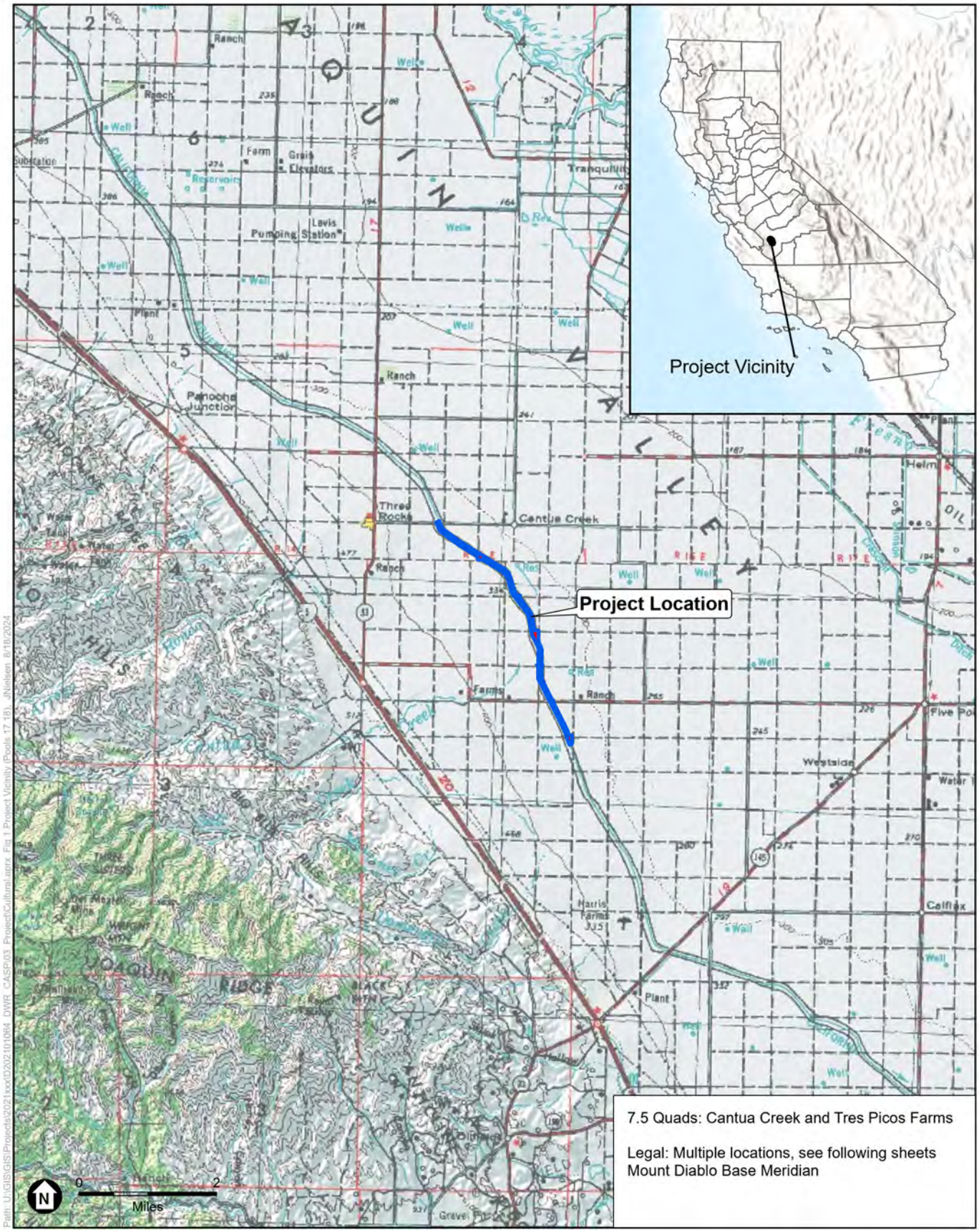

SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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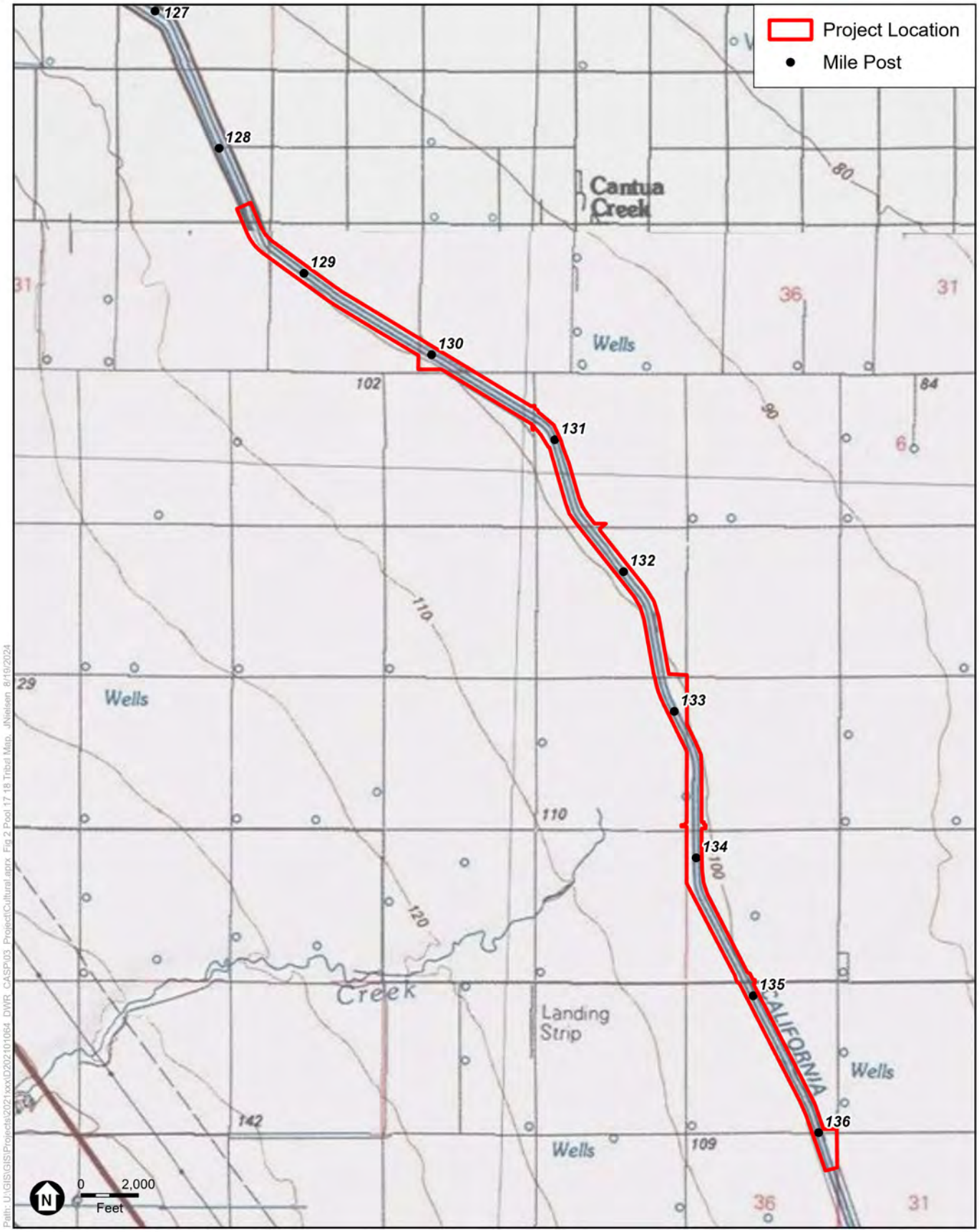

SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

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DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

Honorable Benjamin Charley
Chairperson
Dunlap Band of Mono Indians
P.O. Box 14
Dunlap, CA 93621
ben.charley@yahoo.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Charley,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

The Environmental Coordination Section (ECS) in DOE supports various aspects of environmental compliance of our division's work, including compliance with AB 52, and the DWR *Tribal Engagement Policy*. Currently, DOE's environmental team is supporting multiple projects of which the Dunlap Band of Mono Indians (Tribe) has been identified as possible partner, consulting Tribe, or otherwise interested. For ease of review, and in furtherance of DWR goals of collaboration and transparency, we have consolidated consultation letters different projects into one envelope. My intention is to acknowledge the multiple consultation letters and provide consolidated communication where possible.

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Anecita Augustinez	DWR Office of Tribal Affairs	Anecita.Augustinez@water.ca.gov (916) 216-8637

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Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

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DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail and email

Honorable Benjamin Charley
Chairperson
Dunlap Band of Mono Indians
P.O. Box 14
Dunlap, CA 93621
ben.charley@yahoo.com

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

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Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Dirk Charley, Tribal Secretary, Dunlap Band of Mono Indians
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
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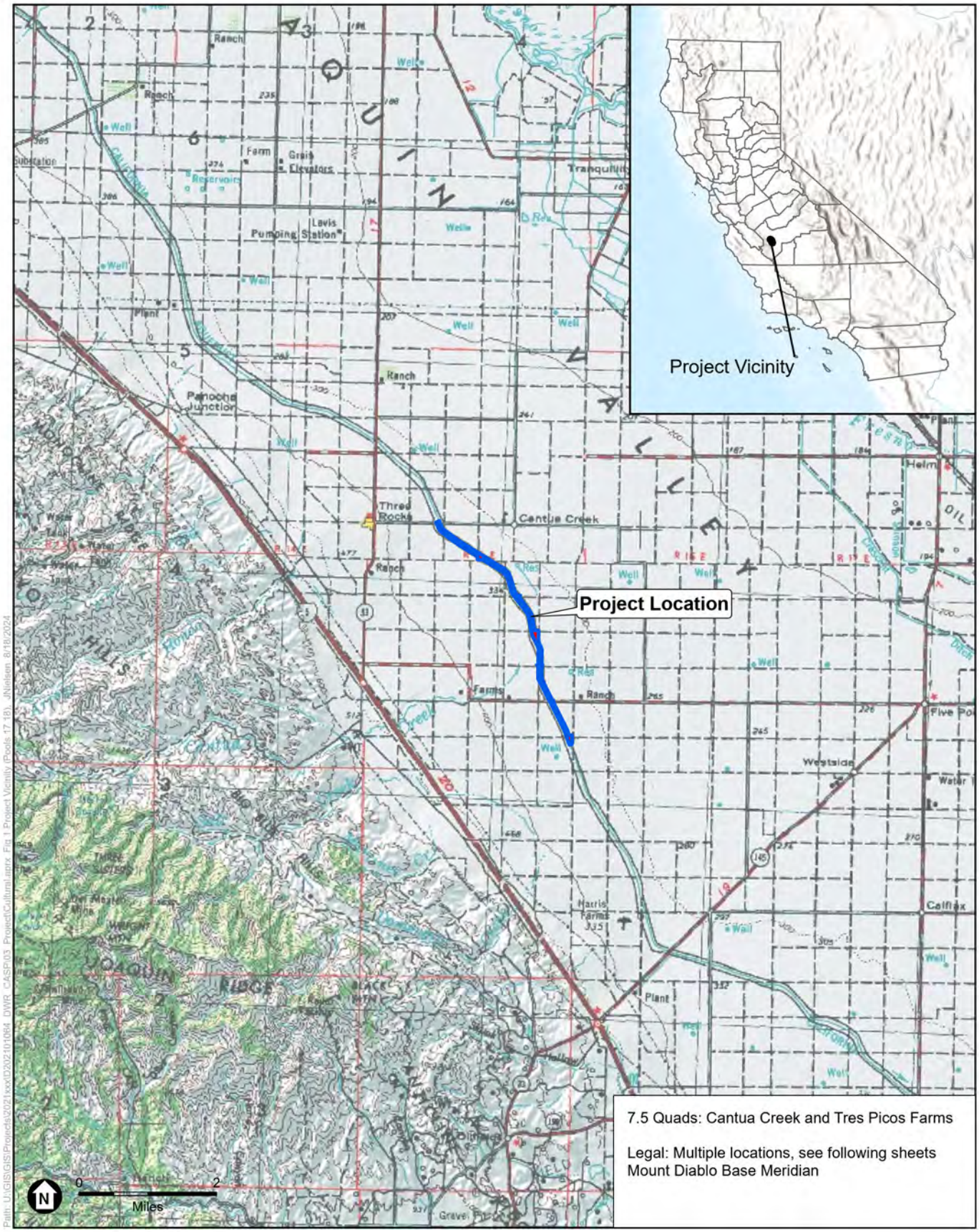

SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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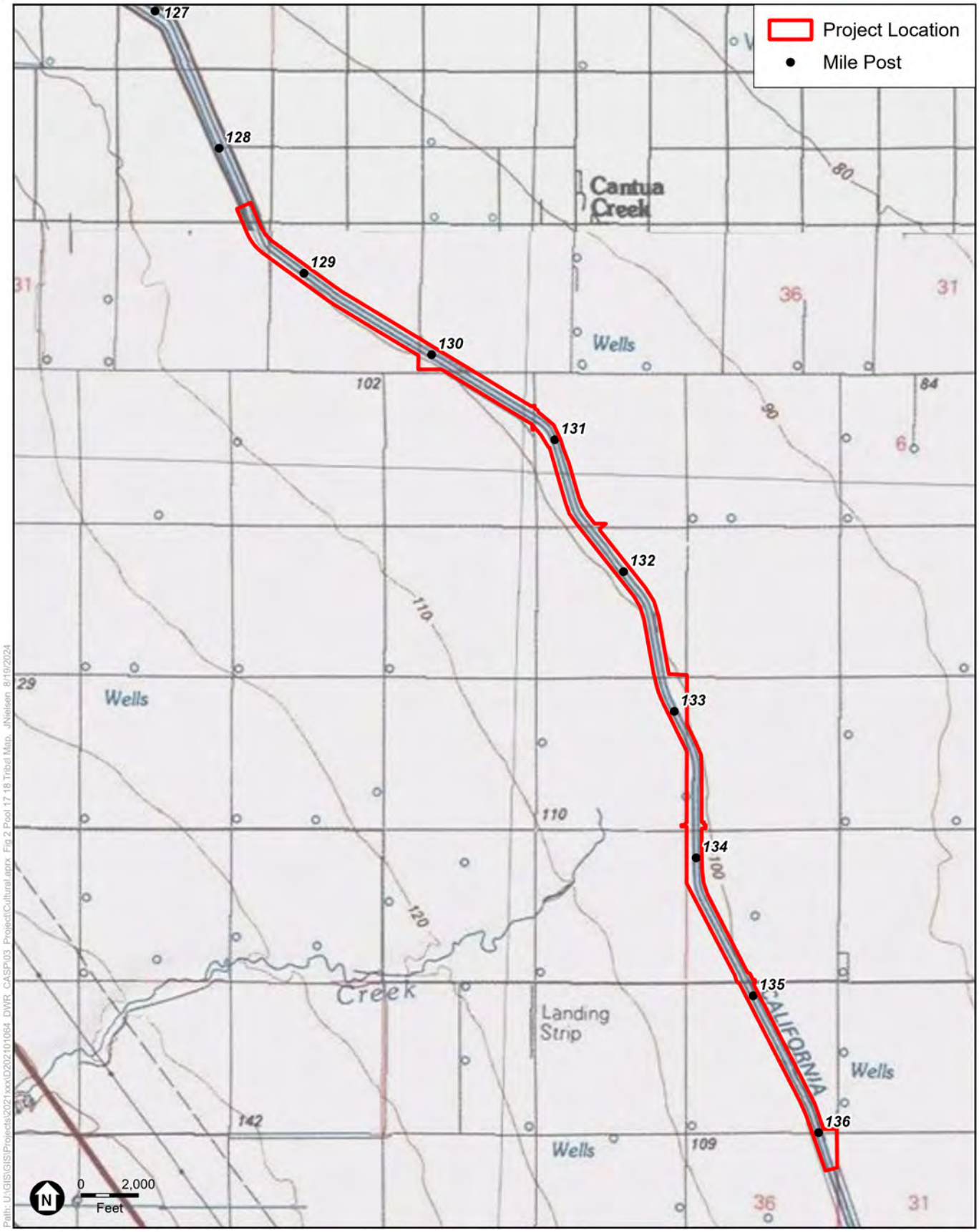

SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Delia Dominguez,
Chairperson
Kitanemuk & Yowlumne Tejon Indians
115 Radio Street
Bakersfield, CA, 93305
2deedominguez@gmail.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Dominguez,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

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Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail and email

The Honorable Delia Dominguez
Chairperson
Kitanemuk & Yowlumne Tejon Indians
115 Radio Street
Bakersfield, CA, 93305
2deedominguez@gmail.com

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Dominguez,

This letter serves as a formal invitation to the Kitanemuk & Yowlumne Tejon Indians (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

If the Tribe would like to consult under Assembly Bill (AB) 52, this is also notice DWR has not received an AB 52 request for notification from the Tribe and is an opportunity to ensure current and future engagement to consult under AB 52.

Brief Overview of Project Description
The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment of the San Luis Canal located in portions of Pools 17 and 18 (see Attachments 1 and 2), which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing the capacity and operational flexibility that has become limited due to subsidence while improving safety and reliability.

Brief Program Background
The concrete-lined San Luis Canal was constructed as a series of interconnected pools that are operated in coordination to convey water, primarily by gravity, from one pool to the next through check structures and pumping plants. The San Luis Canal traverses portions of the Central Valley that have experienced subsidence, which is defined as a

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local or regional drop in ground surface elevation. This subsidence has reduced the San Luis Canal's delivery capability and reliability, as well as increased maintenance, repair, and energy costs.

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Because the Project is being jointly proposed by DWR and Reclamation, it is subject to federal environmental regulations, including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966 (NHPA). Reclamation is the lead federal agency for NEPA/NHPA purposes.

Conclusion
DWR is committed to working collaboratively with the Tribe to properly account for and manage resources important to the Tribe consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*. We welcome any recommendations regarding the appropriate management or treatment of resources, including Tribal cultural resources, that occur within or near the Project Area. This notification does not limit the Tribe's ability to submit information regarding the identification or significance of Tribal cultural resources, the significance of the Project's potential impact on tribal cultural resources, or any appropriate mitigation measures (PRC §21080.3.2(c)(1)).

If the Tribe has any questions or needs additional information, please contact DWR

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Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

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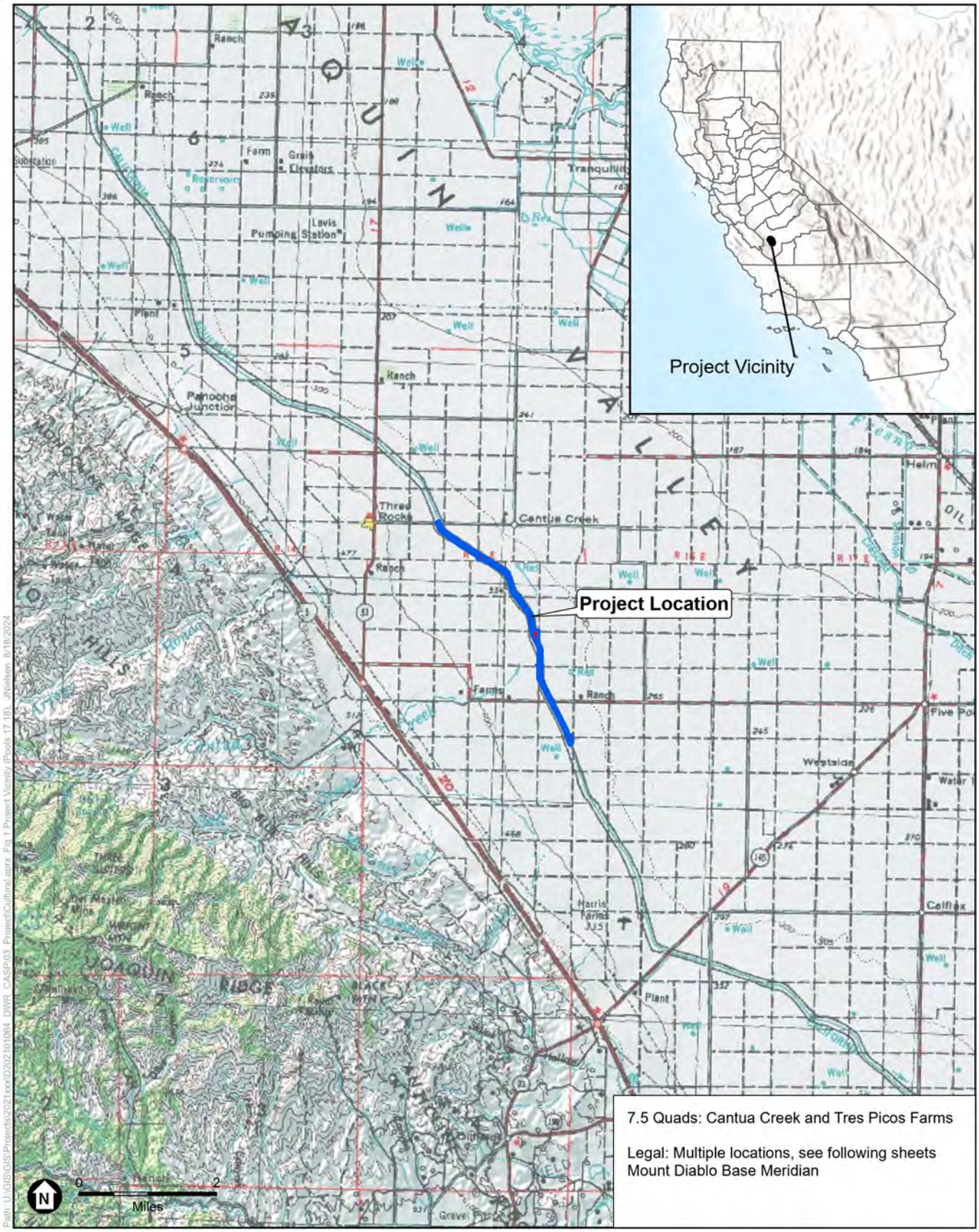

SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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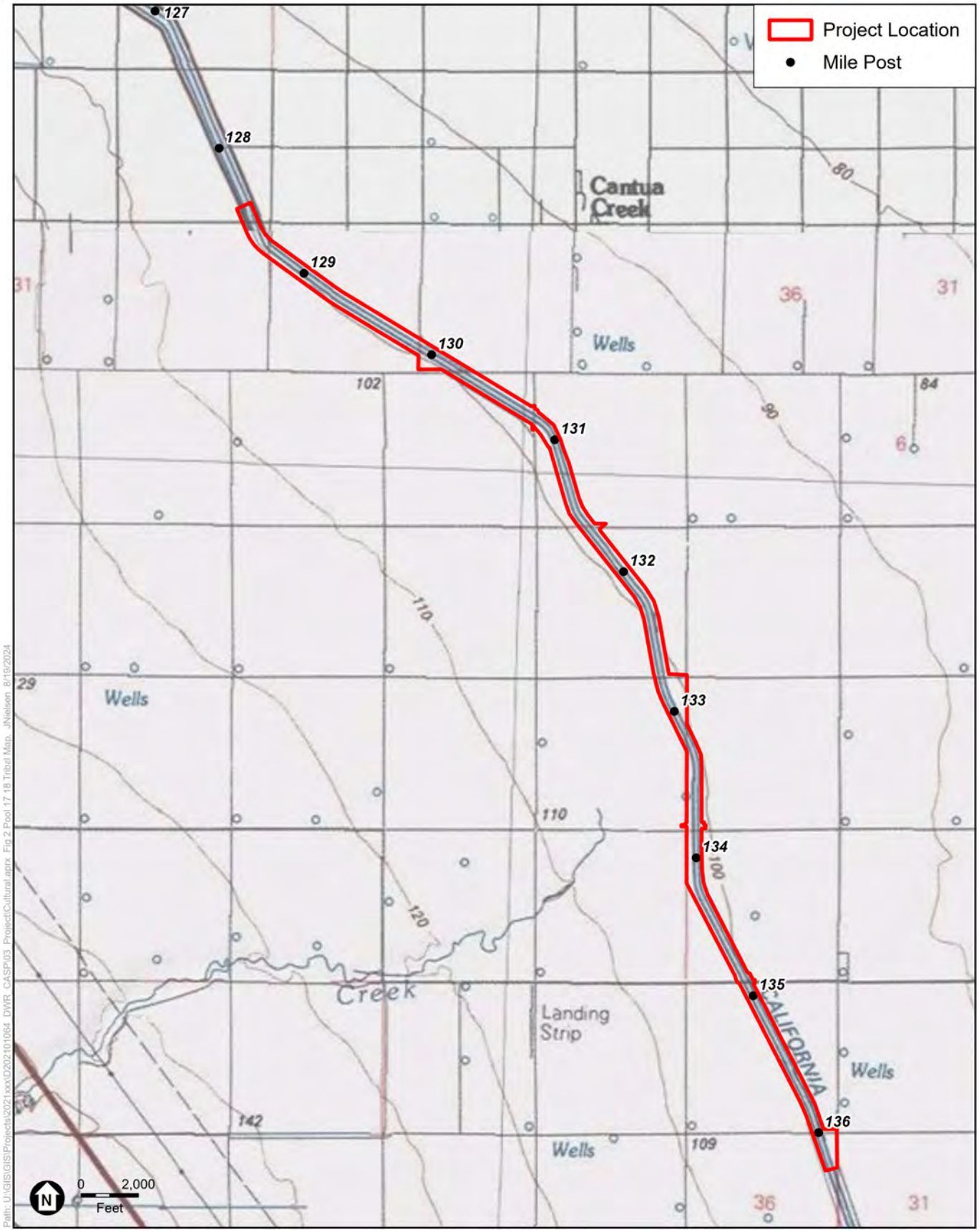

SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

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DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

Mr. Timothy Perez
Tribal Compliance Officer
Northern Valley Yokut / Ohlone Tribe
P.O. Box 717
Linden, CA, 95236
huskanam@gmail.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Mr. Perez,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

The Environmental Coordination Section (ECS) in DOE supports various aspects of environmental compliance of our division's work, including compliance with AB 52, and the DWR *Tribal Engagement Policy*. Currently, DOE's environmental team is supporting multiple projects of which the Northern Valley Yokut / Ohlone Tribe (Tribe) has been identified as possible partner, consulting Tribe, or otherwise interested. For ease of review, and in furtherance of DWR goals of collaboration and transparency, we have consolidated consultation letters different projects into one envelope. My intention is to acknowledge the multiple consultation letters and provide consolidated communication where possible.

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Sarah Cannon	ECS Manager	Sarah.Cannon@water.ca.gov (916) 882-2829
Jesse Dillon	CASP Program Manager	Jesse.Dillon@water.ca.gov (916) 699-8403
Anecita Augustinez	DWR Office of Tribal Affairs	Anecita.Augustinez@water.ca.gov (916) 216-8637

Should you have any questions, comments, or concerns at any point, please do not hesitate to contact me directly, reach out to the designated project contact(s), or contact the DWR Tribal Office. We remain committed to partnering with you in a clear and cooperative manner, to properly account for and manage resources important to the Tribe, consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

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Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Katherine Perez, Chairperson, Northern Valley Yokut / Ohlone Tribe
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
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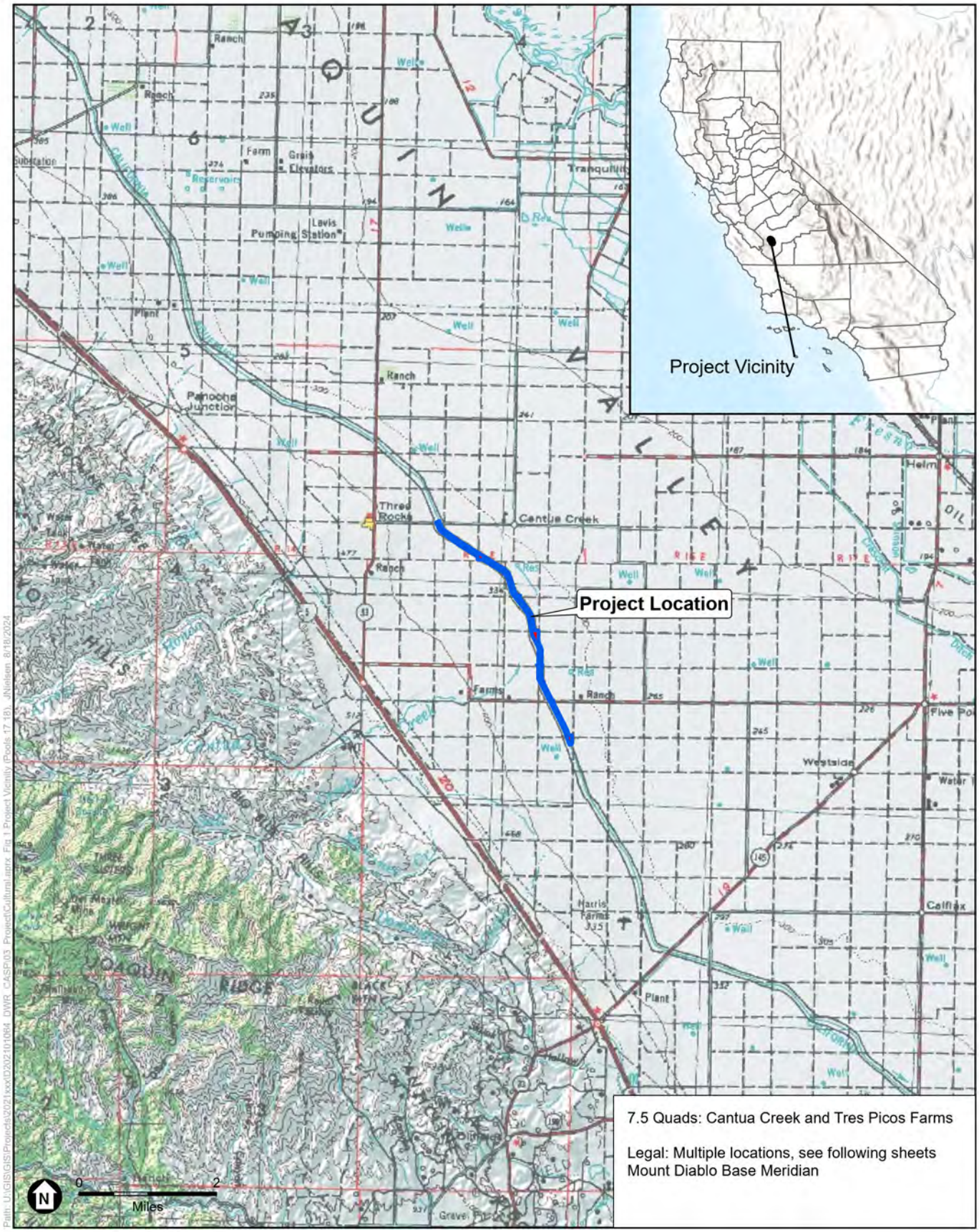

SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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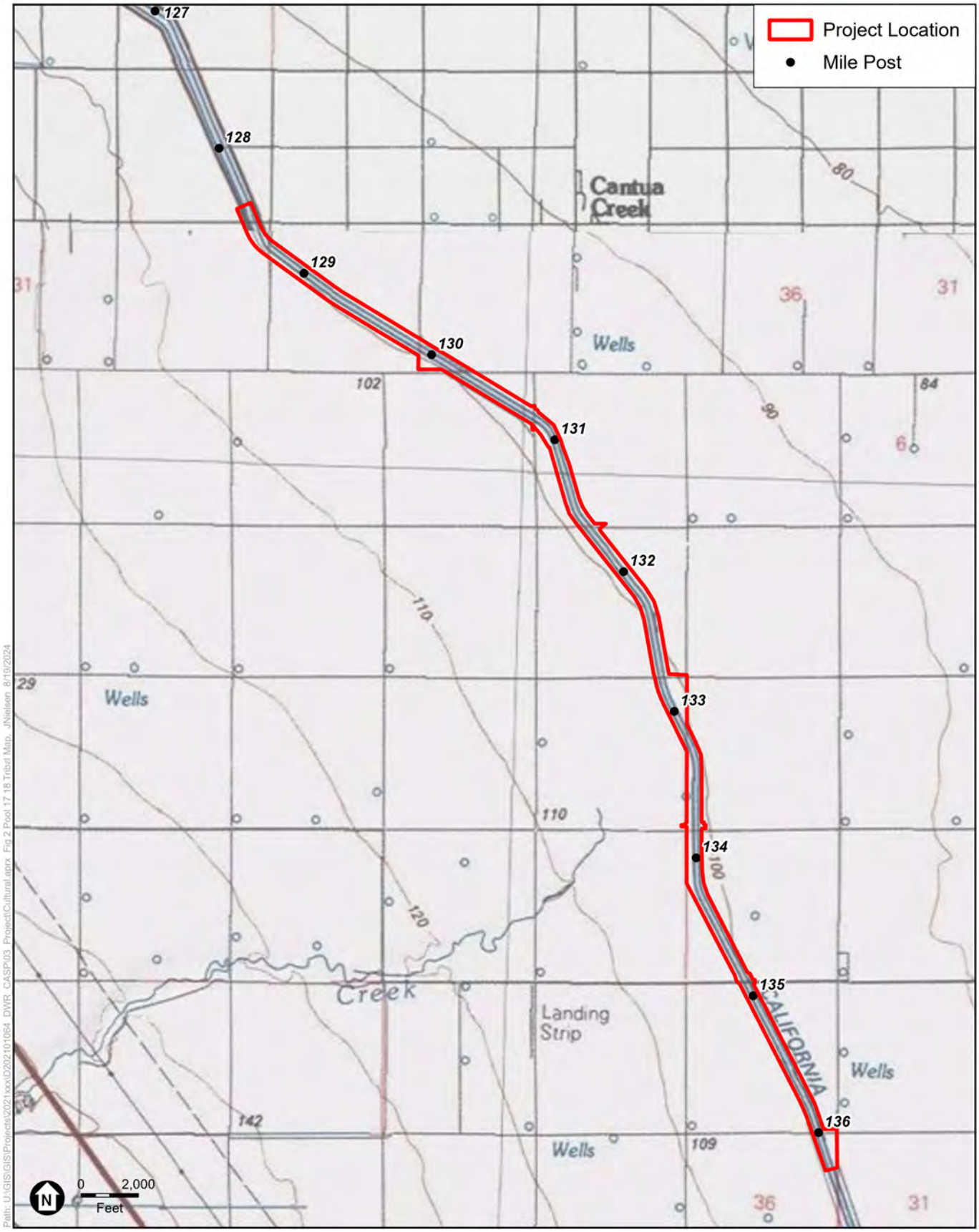

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CASP

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Project Location

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DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

Ms. Patti Dunton
Tribal Administrator
Salinan Tribe of Monterey and San Luis Obispo Counties
8270 Morro Rd.
Atascadero, CA, 93422
info@salinantribe.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Ms. Dunton,

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Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Robert Piatti, Cultural Protection Lead, Salina Tribe of Monterey and San Luis Obispo Counties
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
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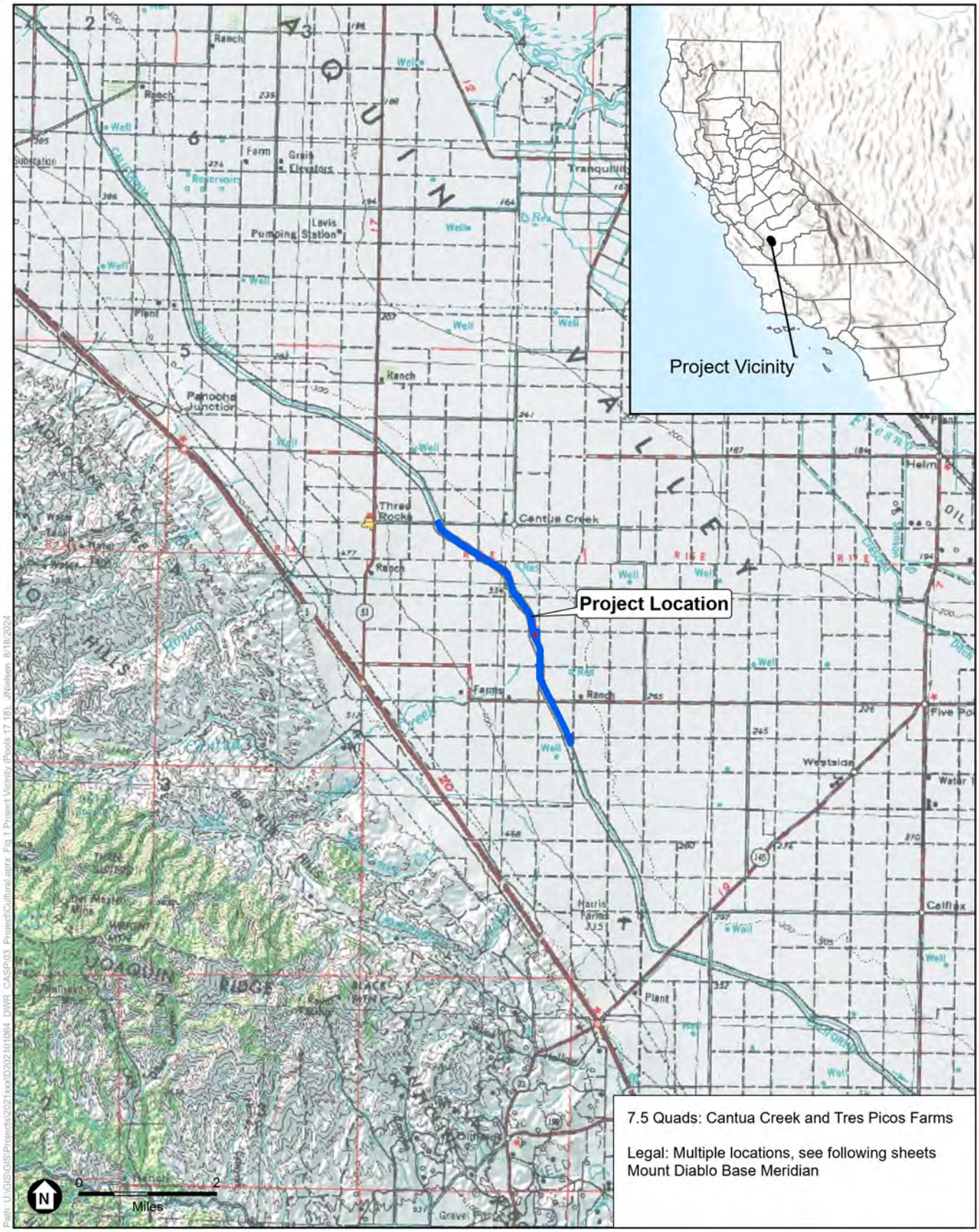

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ESA

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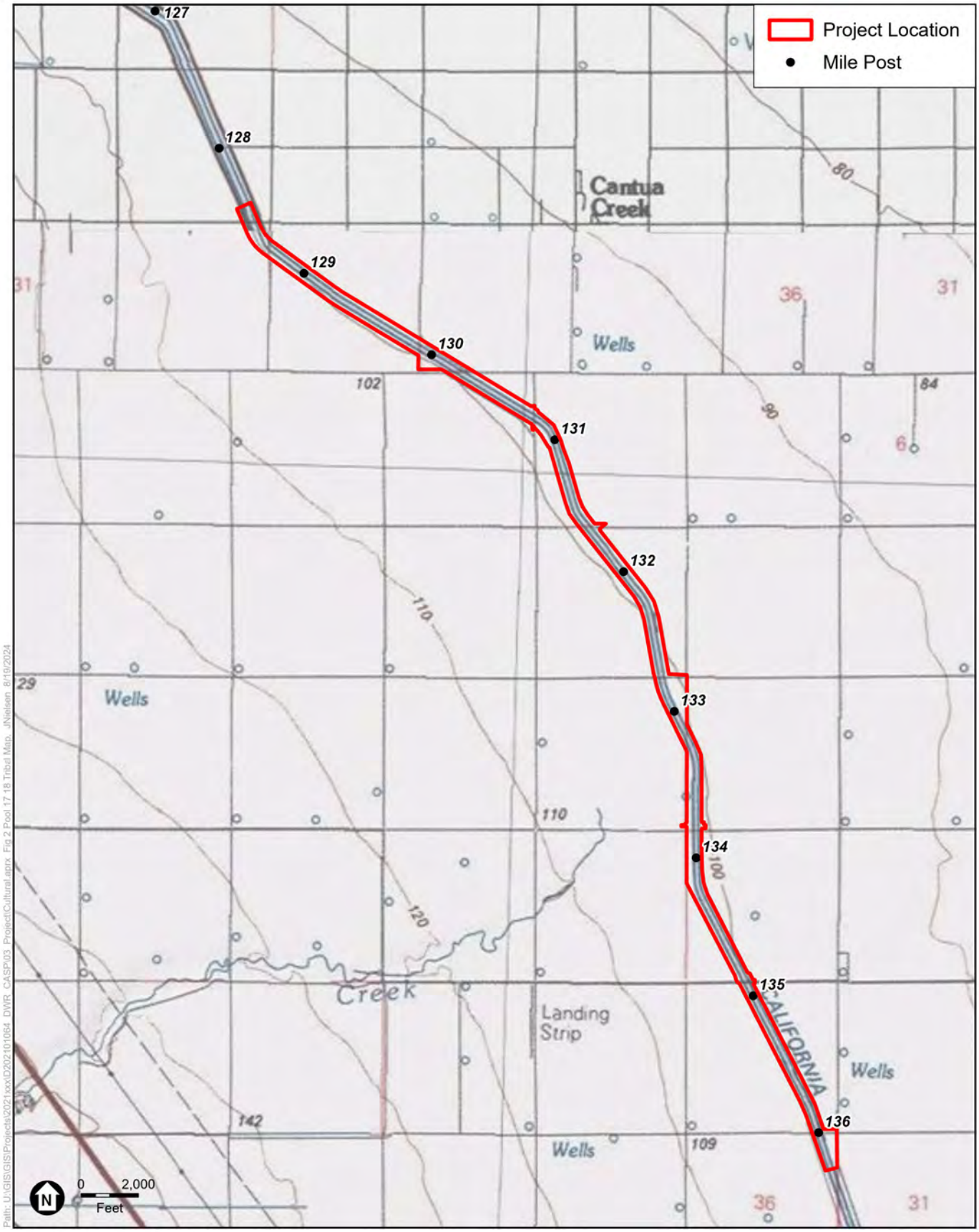

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Figure 2
Project Location

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P.O. BOX 942836
SACRAMENTO, CA 94236-0001
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Date: 10/10/2024 Sent via certified mail

The Honorable Leo Sisco
Chairperson
Santa Rosa Rancheria Tachi Yokut Tribe
P.O. Box 8
Lemoore, CA, 93245

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Todd Wong	*Main Point of Contact* Enviro. Planning Lead: • Pool 24	Todd.Wong@water.ca.gov (916) 694-7811
Sarah Cannon	ECS Manager	Sarah.Cannon@water.ca.gov (916) 882-2829
Jesse Dillon	CASP Program Manager	Jesse.Dillon@water.ca.gov (916) 699-8403
Anecita Augustinez	DWR Office of Tribal Affairs	Anecita.Augustinez@water.ca.gov (916) 216-8637

Should you have any questions, comments, or concerns at any point, please do not hesitate to contact me directly, reach out to the designated project contact(s), or contact the DWR Tribal Office. We remain committed to partnering with you in a clear and cooperative manner, to properly account for and manage resources important to the Tribe, consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail and email

The Honorable Leo Sisco
Chairperson
Santa Rosa Rancheria Tachi Yokut Tribe
P.O. Box 8
Lemoore, CA, 93245

Subject: AB 52 Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Sisco,

This letter serves as a formal invitation to the Santa Rosa Rancheria Tachi Yokut Tribe (Tribe) to begin government-to-government consultation with the Department of Water Resources (DWR) under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) §21080.3.1, on the proposed San Luis Canal Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working collaboratively with the Tribe to properly account for resources important to the Tribe.

Brief Overview of Project Description
The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment of the San Luis Canal located in portions of Pools 17 and 18 (see Attachments 1 and 2), which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing the capacity and operational flexibility that has become limited due to subsidence while improving safety and reliability.

Brief Program Background
The concrete-lined San Luis Canal was constructed as a series of interconnected pools that are operated in coordination to convey water, primarily by gravity, from one pool to the next through check structures and pumping plants. The San Luis Canal traverses portions of the Central Valley that have experienced subsidence, which is defined as a local or regional drop in ground surface elevation. This subsidence has reduced the San Luis Canal's delivery capability and reliability, as well as increased maintenance, repair, and energy costs.

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This project is part of a larger CASP program, comprised of short-term (interim) actions and long-term corrective actions aimed to repair the San Luis Canal and the California Aqueduct. Additional information about the program and projects can be found here: https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence

Cultural Resources Investigations To-Date

Cultural resources investigations completed to date for the Project include the activities listed below. An *Archaeological and Architectural Resources Inventory Report* is currently being prepared for the project.

- California Native American Heritage Commission Sacred Lands File search request (no sacred sites identified)
- Records searches of the California Historical Resources Information System for the Project Area and vicinity (six previously recorded cultural resources in the Project Area, all of which are historic-era built environmental resources)
- Intensive-level pedestrian survey of the Project Area (no archaeological resources identified)

CEQA Implementation

DWR is the lead agency under the CEQA and is proposing to prepare an Initial Study/Mitigated Negative Declaration for the Project. As part of the cultural resources review of the Project under CEQA, we are writing to provide the Tribe an opportunity to submit any information the Tribe is willing to share about cultural resources or Tribal cultural resources as defined in California Public Resources Code (PRC) §21074, that may be near the proposed Project Area shown in Attachments 1 and 2. We understand that the locations of these resources are sensitive and resource locations will not be disclosed in public documents and will be kept confidential as provided for under California Government Code §6254.10.

Because the Project is being jointly proposed by DWR and Reclamation, it is subject to federal environmental regulations, including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966 (NHPA). Reclamation is the lead federal agency for NEPA/NHPA purposes.

Conclusion

DWR is committed to working collaboratively with the Tribe to properly account for and manage resources important to the Tribe. If the Tribe wishes to engage in formal government-to-government consultation with DWR for the proposed Project under AB 52 and PRC §21080.3.1, please respond within 30 calendar days of this notice in writing with the Tribe's designated Point of Contact(s) for consultation to DWR Office of Tribal Affairs Executive Manager Anecita Agustinez at tribalpolicyadvisor@water.ca.gov and DWR Environmental Planning Lead Marea Bell at marea.bell@water.ca.gov.

If a written request for consultation under AB 52 (PRC §21080.3.1) is not received by DWR within 30 calendar days, DWR will proceed with consultation under its *Tribal Engagement Policy* and the California Natural Resources Agency *Tribal Consultation Policy* to work collaboratively with the Tribe. This notification does not limit the ability of the Tribe to submit information to DWR. (PRC §21080.3.2.)

If the Tribe has any questions or needs additional information, please contact DWR

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Environmental Planning Lead Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov, or DWR Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

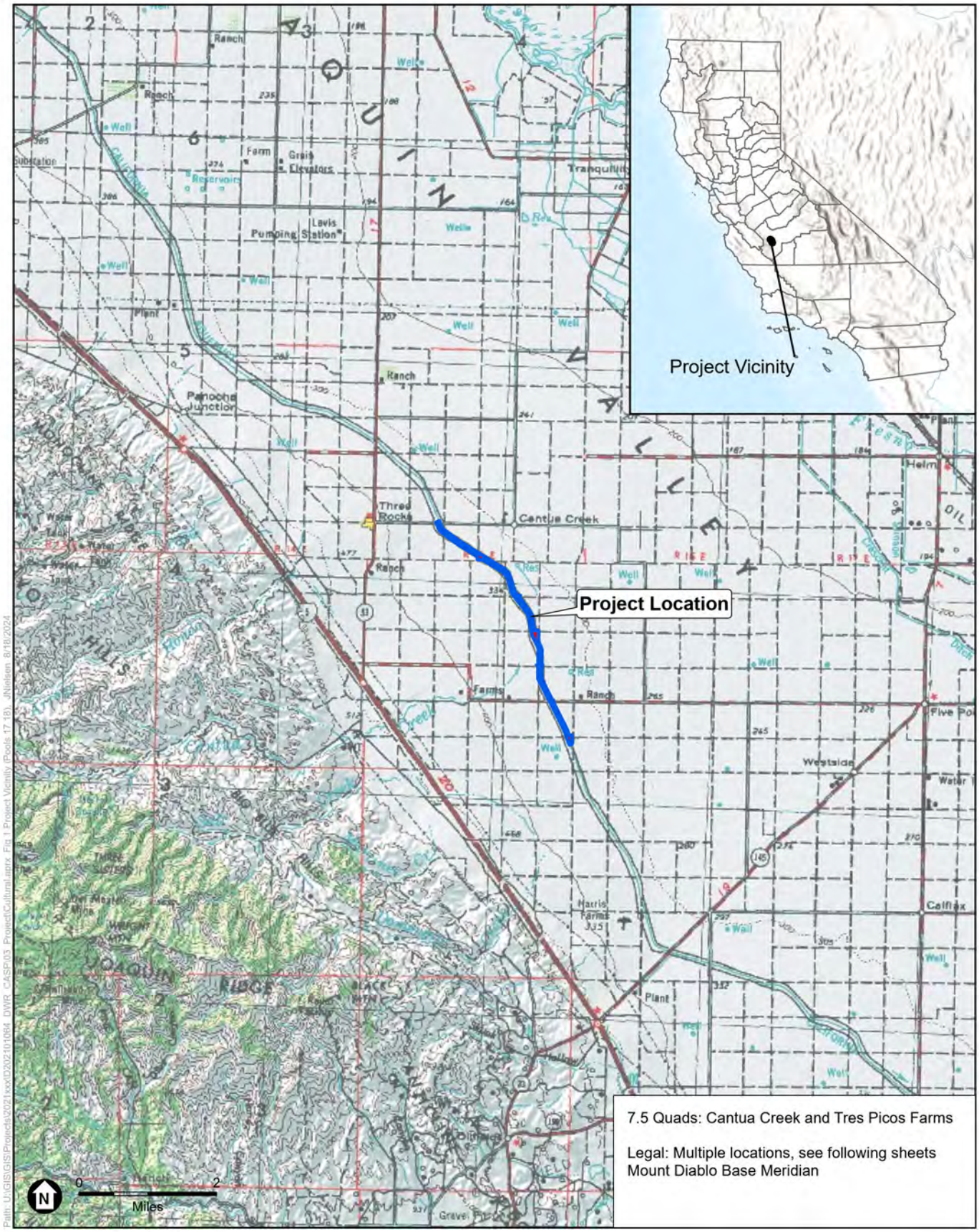
Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR State Water Project: Division of Engineering

cc.
Samantha McCarty, Cultural Specialist II, Santa Rosa Rancheria Tachi Yokut Tribe
Nichole Escalon, Cultural Specialist I, Santa Rosa Rancheria Tachi Yokut Tribe
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC



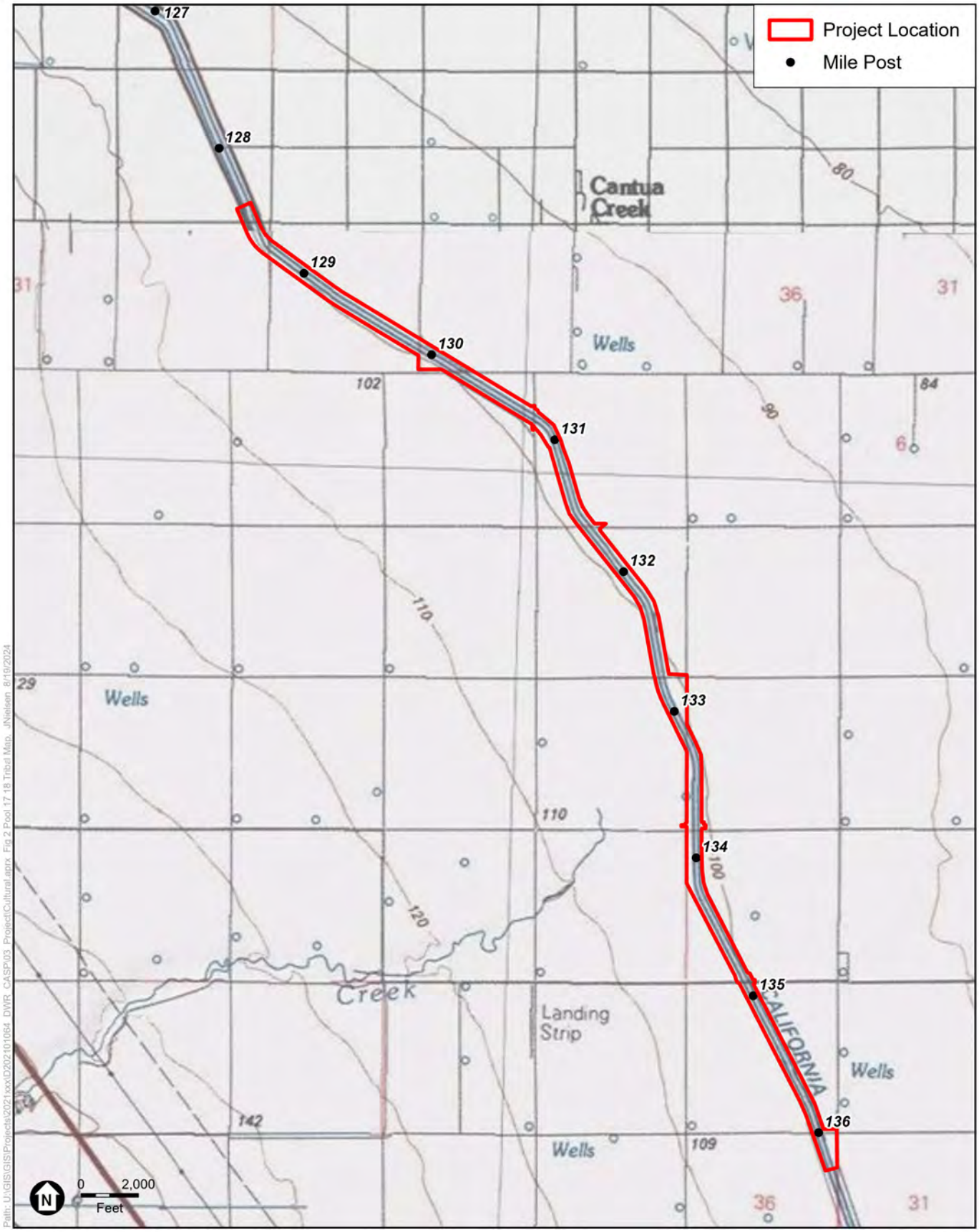
SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC



SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Marie Dominguez
Chairperson
Sierra Foothill Wuksachi Yokuts Tribe
35845 Maxon Road #108
Sanger, CA 93657

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Dominguez,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

The Environmental Coordination Section (ECS) in DOE supports various aspects of environmental compliance of our division's work, including compliance with AB 52, and the DWR *Tribal Engagement Policy*. Currently, DOE's environmental team is supporting multiple projects of which the Sierra Foothill Wuksachi Yokuts Tribe (Tribe) has been identified as possible partner, consulting Tribe, or otherwise interested. For ease of review, and in furtherance of DWR goals of collaboration and transparency, we have consolidated consultation letters different projects into one envelope. My intention is to acknowledge the multiple consultation letters and provide consolidated communication where possible.

The consultation letters enclosed are related to the following projects.

- The Pools 17 and 18 Liner Raise Project is located approximately 12 miles west of Helm, California, within Fresno County, on the San Luis Canal. DWR and Reclamation are proposing to jointly implement this project.

- The Pools 20 and 21 Liner Raise Project is located approximately 3 miles north of Kettleman City, California, within Fresno and Kings Counties, on the San Luis Canal. DWR and Reclamation are proposing to jointly implement this project.

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

For ease of reference, helpful contacts are in the list below.

Marea Bell	*Main Point of Contact* Enviro. Planning Lead: • Pools 17&18 • Pools 20&21	Marea.Bell@water.ca.gov (916) 882-2945
Sarah Cannon	ECS Manager	Sarah.Cannon@water.ca.gov (916) 882-2829
Jesse Dillon	CASP Program Manager	Jesse.Dillon@water.ca.gov (916) 699-8403
Anecita Augustinez	DWR Office of Tribal Affairs	Anecita.Augustinez@water.ca.gov (916) 216-8637

Should you have any questions, comments, or concerns at any point, please do not hesitate to contact me directly, reach out to the designated project contact(s), or contact the DWR Tribal Office. We remain committed to partnering with you in a clear and cooperative manner, to properly account for and manage resources important to the Tribe, consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail

The Honorable Marie Dominguez
Chairperson
Sierra Foothill Wuksachi Yokuts Tribe
35845 Maxon Road #108
Sanger, CA 93657

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Dominguez,

This letter serves as a formal invitation to the Sierra Foothill Wuksachi Yokuts Tribe (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

If the Tribe would like to consult under Assembly Bill (AB) 52, this is also notice DWR has not received an AB 52 request for notification from the Tribe and is an opportunity to ensure current and future engagement to consult under AB 52.

Brief Overview of Project Description
The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment of the San Luis Canal located in portions of Pools 17 and 18 (see Attachments 1 and 2), which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing the capacity and operational flexibility that has become limited due to subsidence while improving safety and reliability.

Brief Program Background
The concrete-lined San Luis Canal was constructed as a series of interconnected pools that are operated in coordination to convey water, primarily by gravity, from one pool to the next through check structures and pumping plants. The San Luis Canal traverses portions of the Central Valley that have experienced subsidence, which is defined as a local or regional drop in ground surface elevation. This subsidence has reduced the San

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

Luis Canal's delivery capability and reliability, as well as increased maintenance, repair, and energy costs.

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Cultural Resources Investigations To-Date

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- California Native American Heritage Commission Sacred Lands File search request (no sacred sites identified)
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CEQA Implementation

DWR is the lead agency under the CEQA and is proposing to prepare an Initial Study/Mitigated Negative Declaration for the Project. As part of the cultural resources review of the Project under CEQA, we are writing to provide the Tribe an opportunity to submit any information the Tribe is willing to share about cultural resources or Tribal cultural resources as defined in California Public Resources Code (PRC) §21074, that may be near the proposed Project Area shown in Attachments 1 and 2. We understand that the locations of these resources are sensitive and resource locations will not be disclosed in public documents and will be kept confidential as provided for under California Government Code §6254.10.

Because the Project is being jointly proposed by DWR and Reclamation, it is subject to federal environmental regulations, including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966 (NHPA). Reclamation is the lead federal agency for NEPA/NHPA purposes.

Conclusion

DWR is committed to working collaboratively with the Tribe to properly account for and manage resources important to the Tribe consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*. We welcome any recommendations regarding the appropriate management or treatment of resources, including Tribal cultural resources, that occur within or near the Project Area. This notification does not limit the Tribe's ability to submit information regarding the identification or significance of Tribal cultural resources, the significance of the Project's potential impact on tribal cultural resources, or any appropriate mitigation measures (PRC §21080.3.2(c)(1)).

If the Tribe has any questions or needs additional information, please contact DWR Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

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Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

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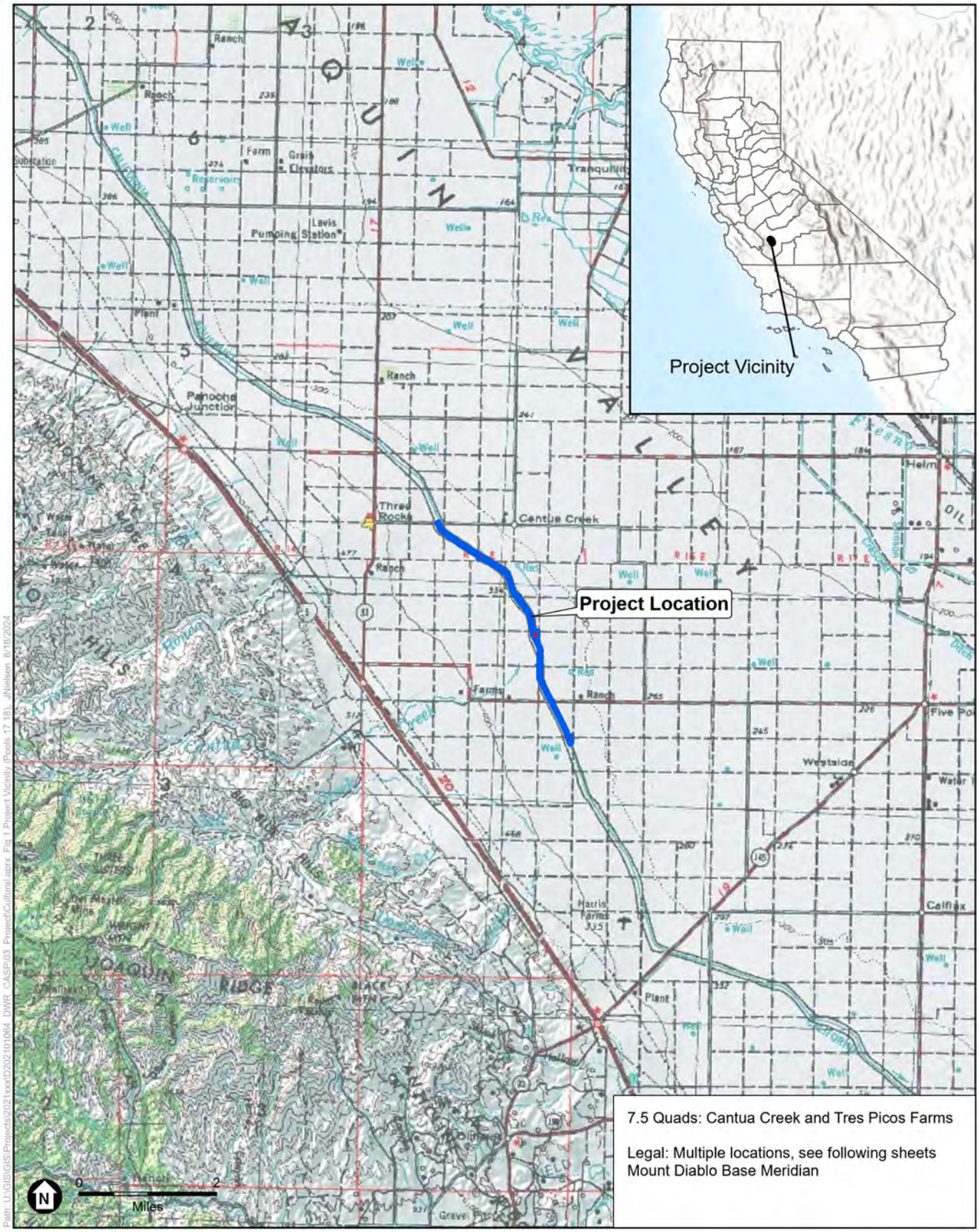

SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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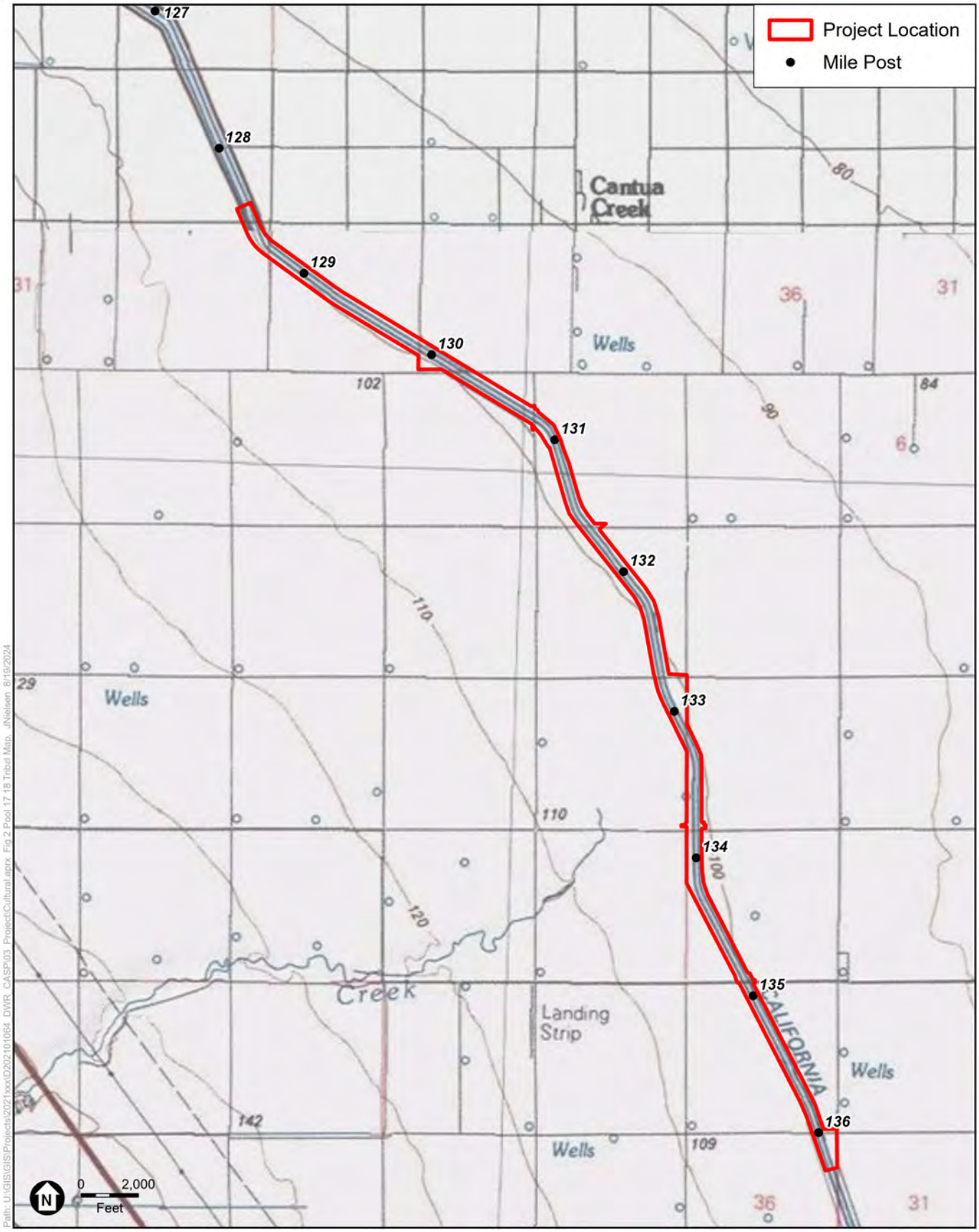

SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Michelle Heredia-Cordova
Chairperson
Table Mountain Rancheria
P.O. Box 410
Friant, CA, 93626
mhcordova@tmr.org

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Heredia-Cordova,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

The Environmental Coordination Section (ECS) in DOE supports various aspects of environmental compliance of our division's work, including compliance with AB 52, and the DWR *Tribal Engagement Policy*. Currently, DOE's environmental team is supporting multiple projects of which the Table Mountain Rancheria (Tribe) has been identified as possible partner, consulting Tribe, or otherwise interested. For ease of review, and in furtherance of DWR goals of collaboration and transparency, we have consolidated consultation letters different projects into one envelope. My intention is to acknowledge the multiple consultation letters and provide consolidated communication where possible.

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- The Pools 20 and 21 Liner Raise Project is located approximately 3 miles north of Kettleman City, California, within Fresno and Kings Counties, on the San Luis Canal. DWR and Reclamation are proposing to jointly implement this project.

- The Pool 24 Liner Raise Project is located adjacent to and to the north of Lost Hills, California, within Kern County, on the California Aqueduct.

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

For ease of reference, helpful contacts are in the list below.

Marea Bell	*Main Point of Contact* Enviro. Planning Lead: • Pools 17&18 • Pools 20&21	Marea.Bell@water.ca.gov (916) 882-2945
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Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

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DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail and email

The Honorable Michelle Heredia-Cordova
Chairperson
Table Mountain Rancheria
P.O. Box 410
Friant, CA, 93626
mhcordova@tmr.org

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Heredia-Cordova,

This letter serves as a formal invitation to the Table Mountain Rancheria (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

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If the Tribe has any questions or needs additional information, please contact DWR

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Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Bob Pennell, Cultural Resource Director, Table Mountain Rancheria
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

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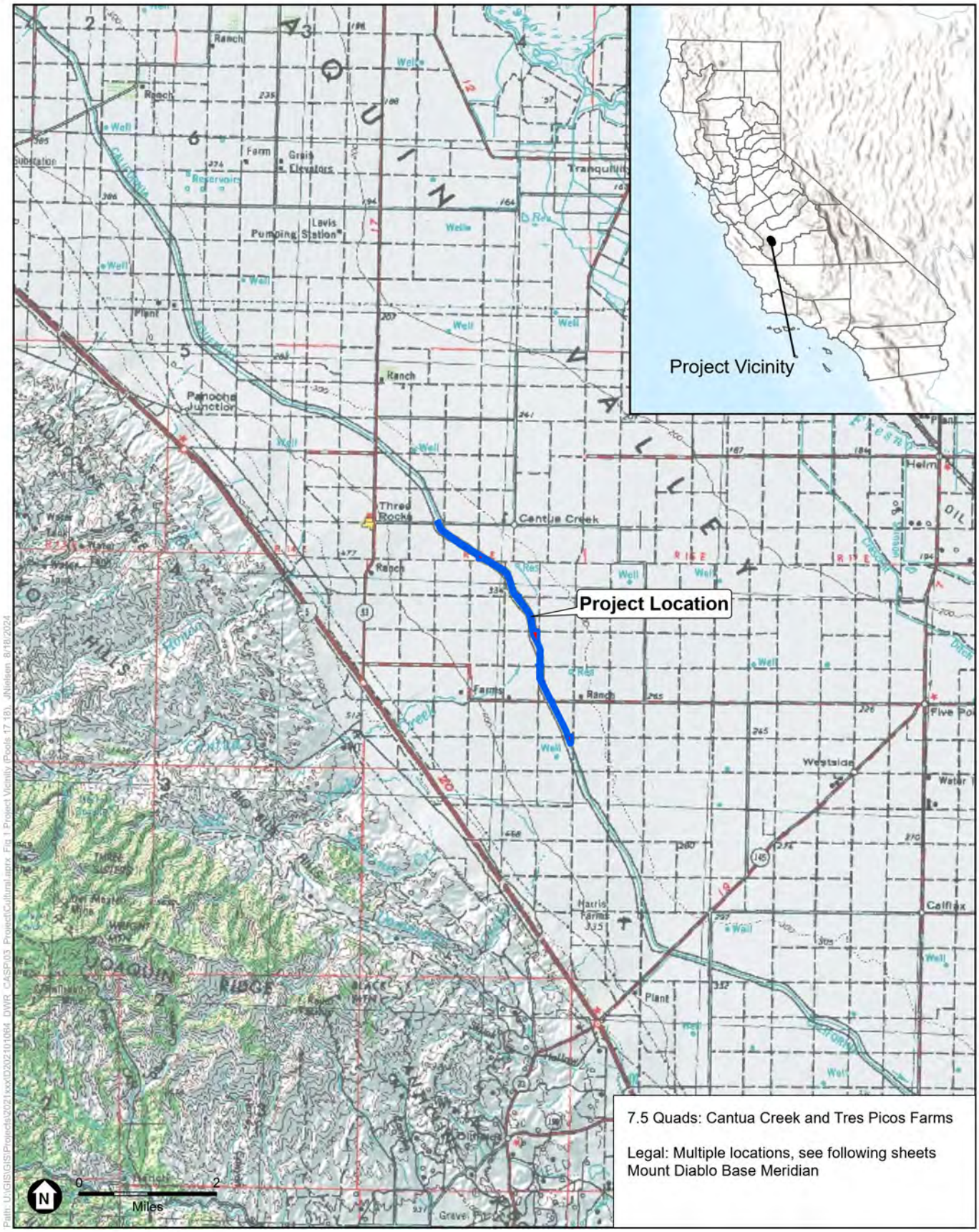


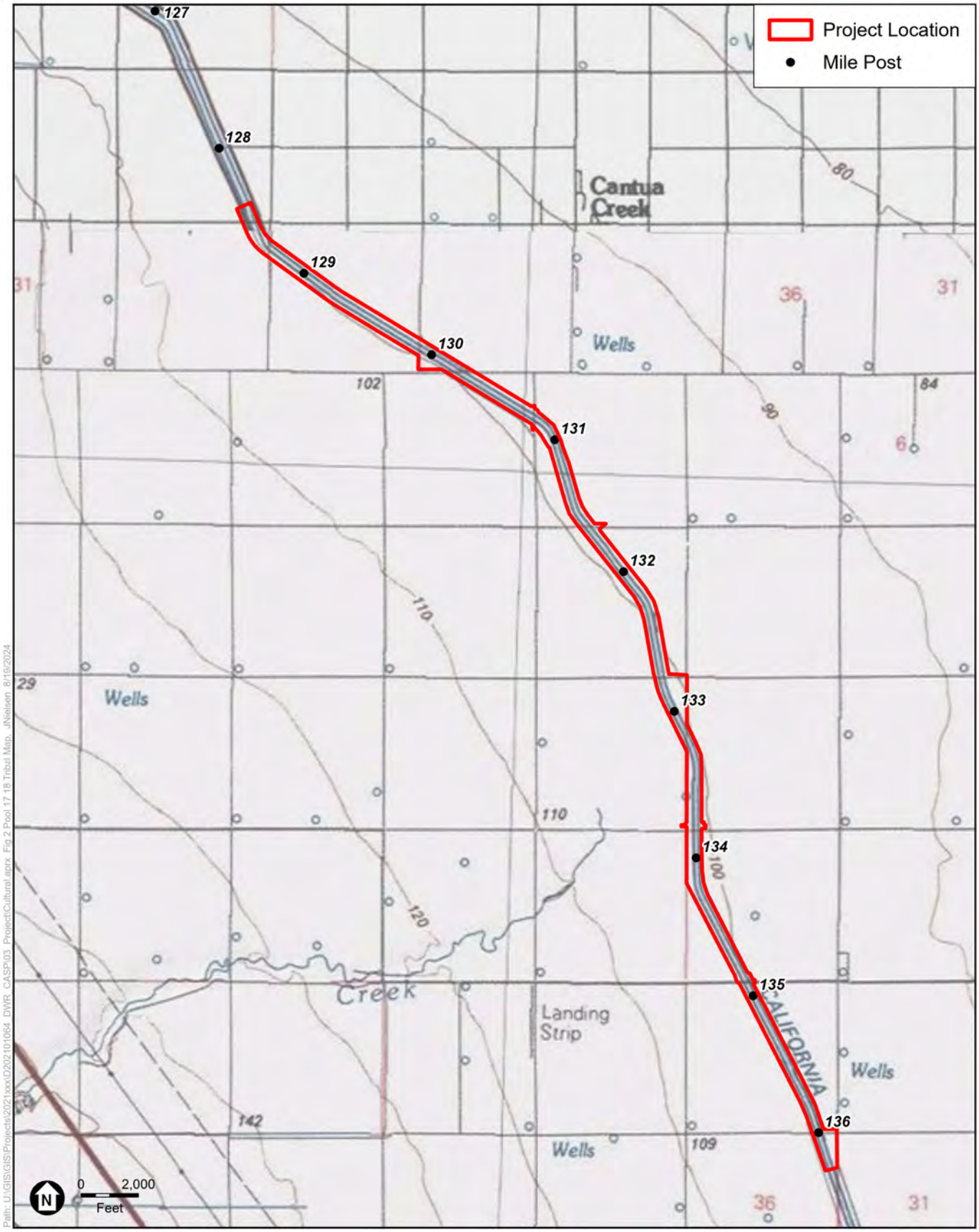
SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC



SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

Honorable David Alvarez
Chairperson
Traditional Choinuymni Tribe
2415 E. Houston Ave.
Fresno, CA 93720
davealvarez@sbcglobal.net

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Alvarez,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

The Environmental Coordination Section (ECS) in DOE supports various aspects of environmental compliance of our division's work, including compliance with AB 52, and the DWR *Tribal Engagement Policy*. Currently, DOE's environmental team is supporting multiple projects of which the Traditional Choinuymni Tribe (Tribe) has been identified as possible partner, consulting Tribe, or otherwise interested. For ease of review, and in furtherance of DWR goals of collaboration and transparency, we have consolidated consultation letters different projects into one envelope. My intention is to acknowledge the multiple consultation letters and provide consolidated communication where possible.

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Marea Bell	*Main Point of Contact* Enviro. Planning Lead: • Pools 17&18 • Pools 20&21	Marea.Bell@water.ca.gov (916) 882-2945
Sarah Cannon	ECS Manager	Sarah.Cannon@water.ca.gov (916) 882-2829
Jesse Dillon	CASP Program Manager	Jesse.Dillon@water.ca.gov (916) 699-8403
Anecita Augustinez	DWR Office of Tribal Affairs	Anecita.Augustinez@water.ca.gov (916) 216-8637

Should you have any questions, comments, or concerns at any point, please do not hesitate to contact me directly, reach out to the designated project contact(s), or contact the DWR Tribal Office. We remain committed to partnering with you in a clear and cooperative manner, to properly account for and manage resources important to the Tribe, consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

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DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail and email

Honorable David Alvarez
Chairperson
Traditional Choinuymni Tribe
2415 E. Houston Ave.
Fresno, CA 93720
davealvarez@sbcglobal.net

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Alvarez,

This letter serves as a formal invitation to the Traditional Choinuymni Tribe (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

If the Tribe would like to consult under Assembly Bill (AB) 52, this is also notice DWR has not received an AB 52 request for notification from the Tribe and is an opportunity to ensure current and future engagement to consult under AB 52.

Brief Overview of Project Description
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Brief Program Background
The concrete-lined San Luis Canal was constructed as a series of interconnected pools that are operated in coordination to convey water, primarily by gravity, from one pool to the next through check structures and pumping plants. The San Luis Canal traverses portions of the Central Valley that have experienced subsidence, which is defined as a

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Because the Project is being jointly proposed by DWR and Reclamation, it is subject to federal environmental regulations, including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966 (NHPA). Reclamation is the lead federal agency for NEPA/NHPA purposes.

Conclusion
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If the Tribe has any questions or needs additional information, please contact DWR

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Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

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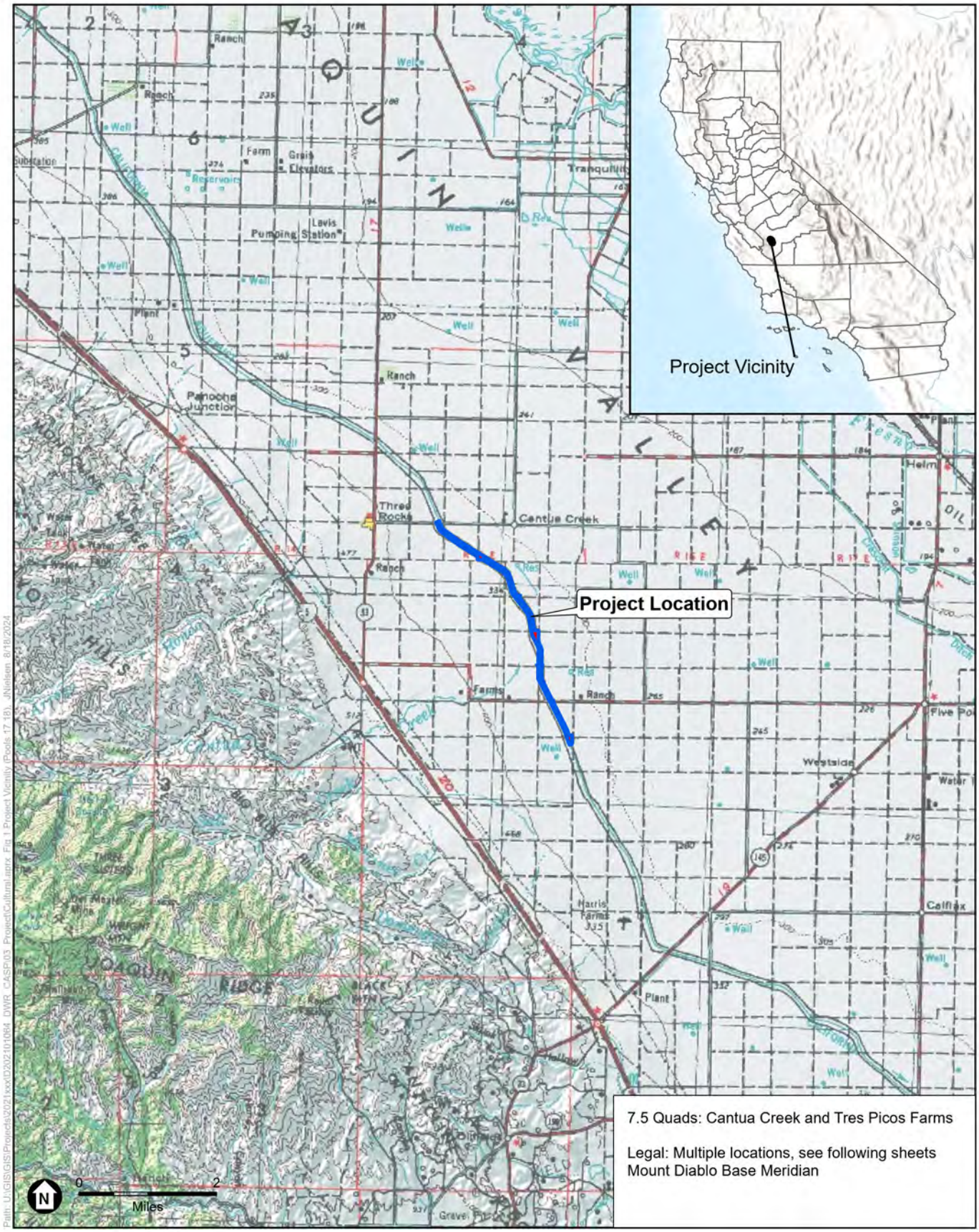

SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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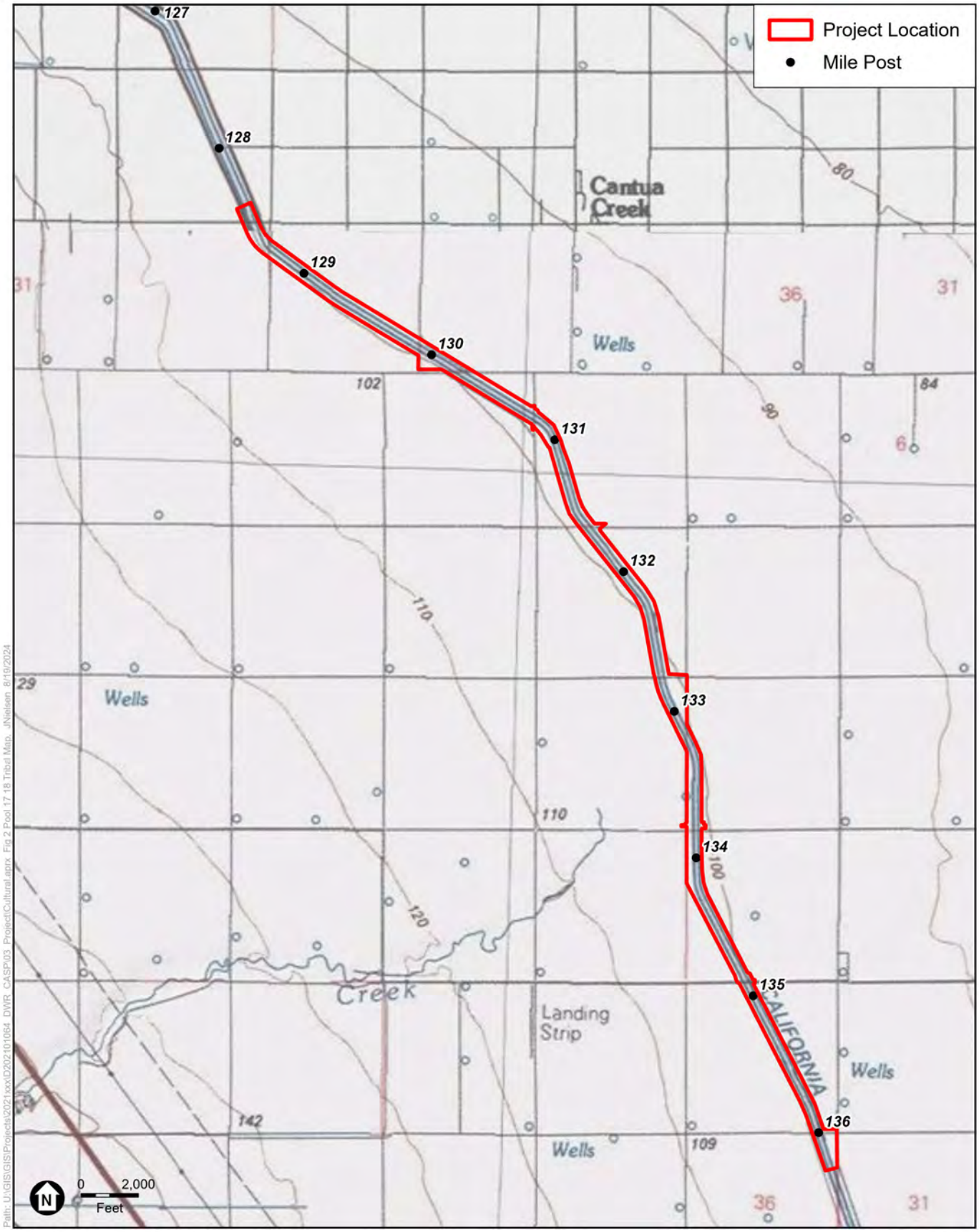

SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

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DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Neil Peyron
Chairperson
Tule River Indian Tribe
P.O. Box 589
Porterville, CA, 93258
neil.peyron@tulerivertribe-nsn.gov

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Peyron,

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Sarah Cannon
DWR – State Water Project: Division of Engineering
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Chairperson
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neil.peyron@tulerivertribe-nsn.gov

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Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Kerri Vera, Environmental Department, Tule River Indian Tribe
Joey Garfield, Tribal Archaeologist, Tule River Indian Tribe
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
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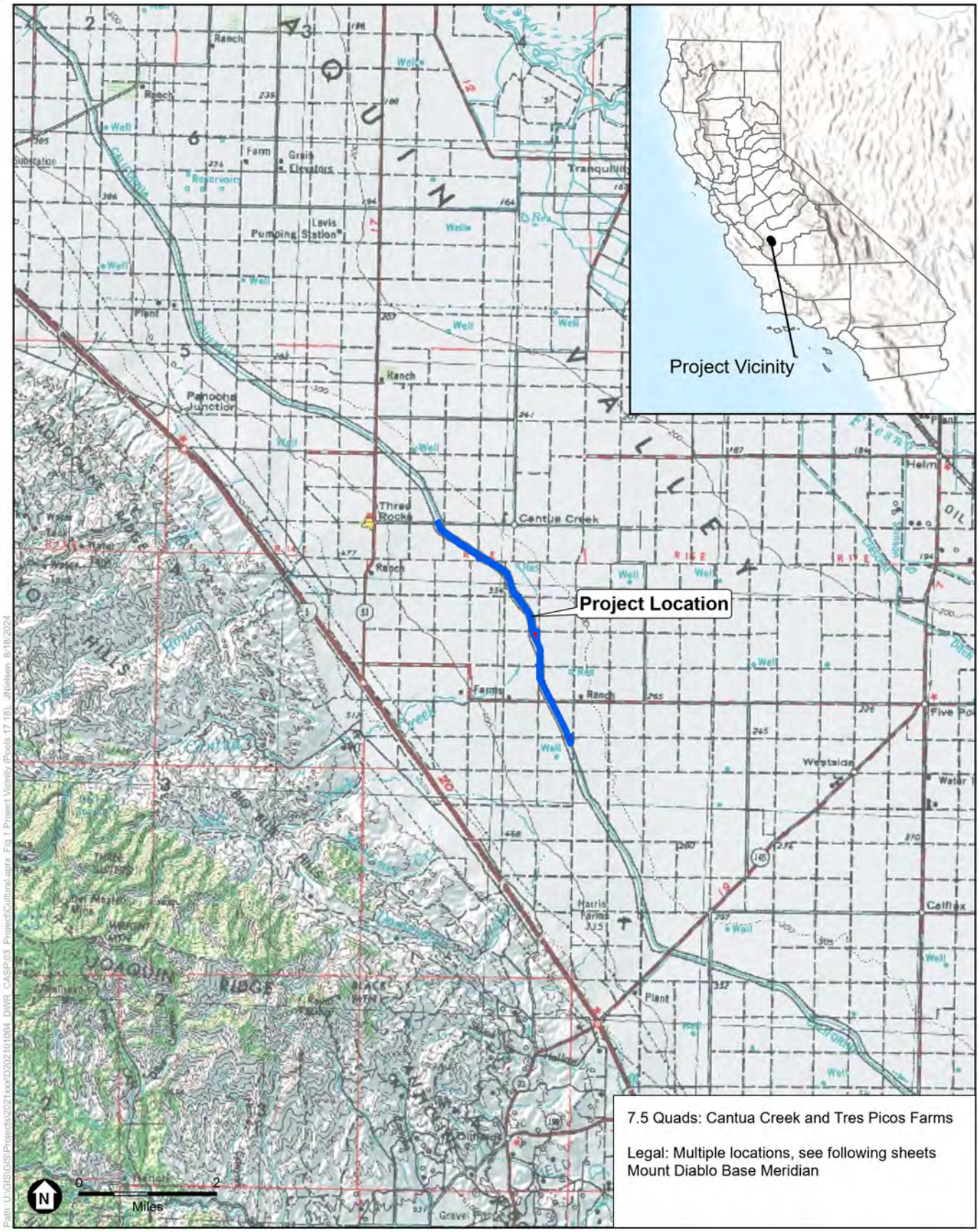

SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

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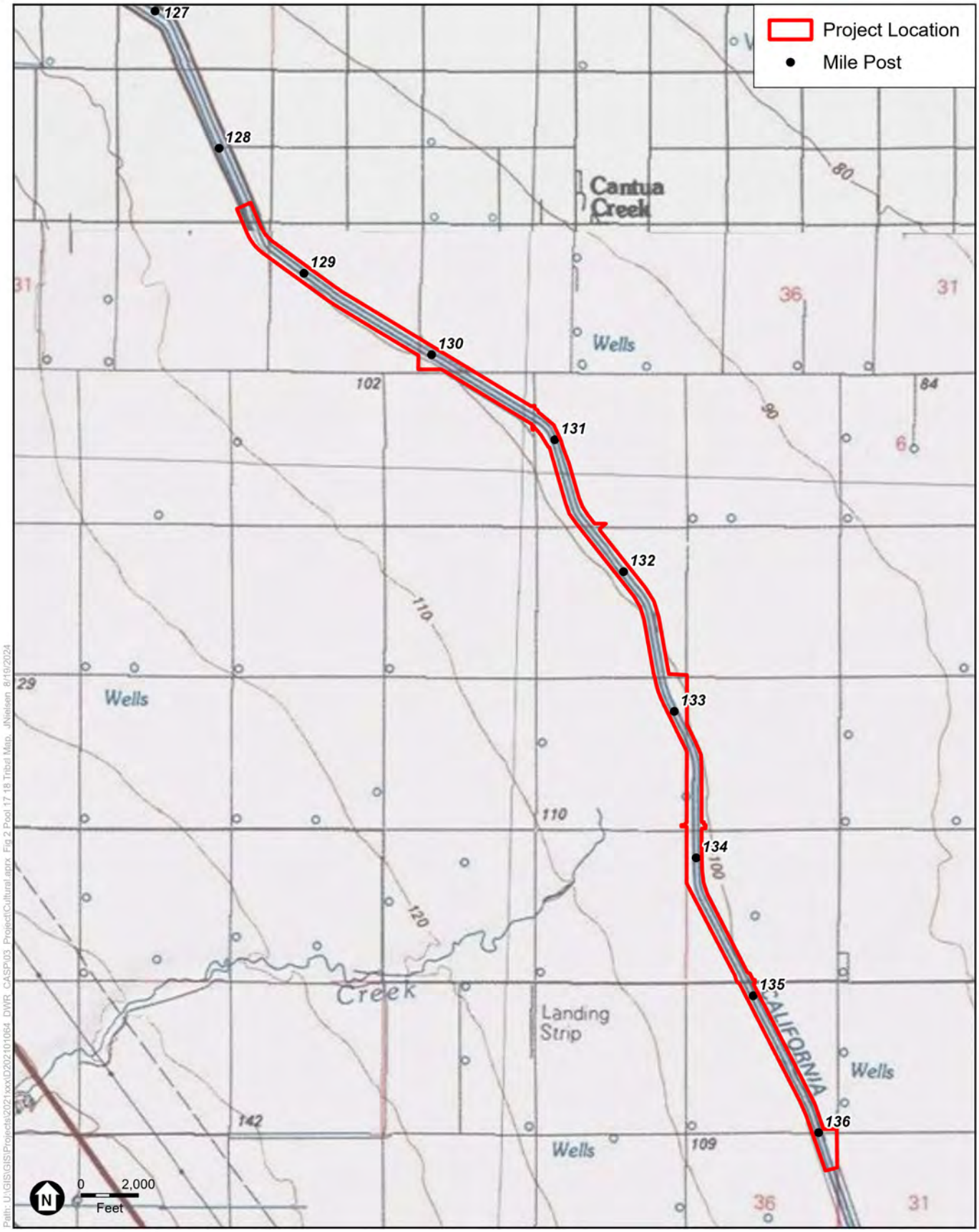

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CASP

Figure 2
Project Location

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DEPARTMENT OF WATER RESOURCES
P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Karen White
Chairperson
Xolon-Salinan Tribe
P.O. Box 7045
Spreckels, CA, 93962
xolon.salinan.heritage@gmail.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson White,

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DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

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Chairperson
Xolon-Salinan Tribe
P.O. Box 7045
Spreckels, CA, 93962
xolon.salinan.heritage@gmail.com

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CASP Program Manager, DWR Division of Engineering

cc.
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Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
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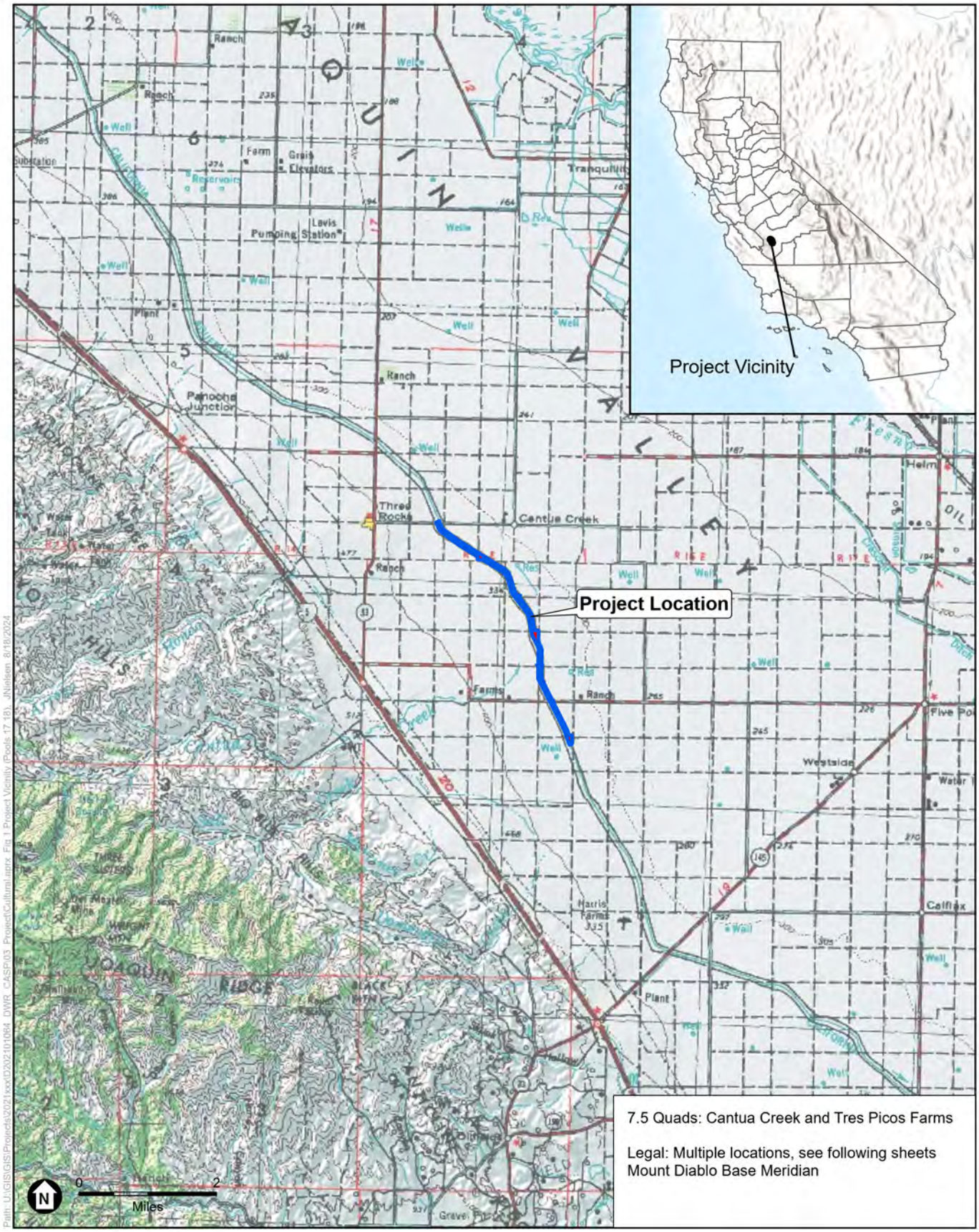

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CASP

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Project Vicinity

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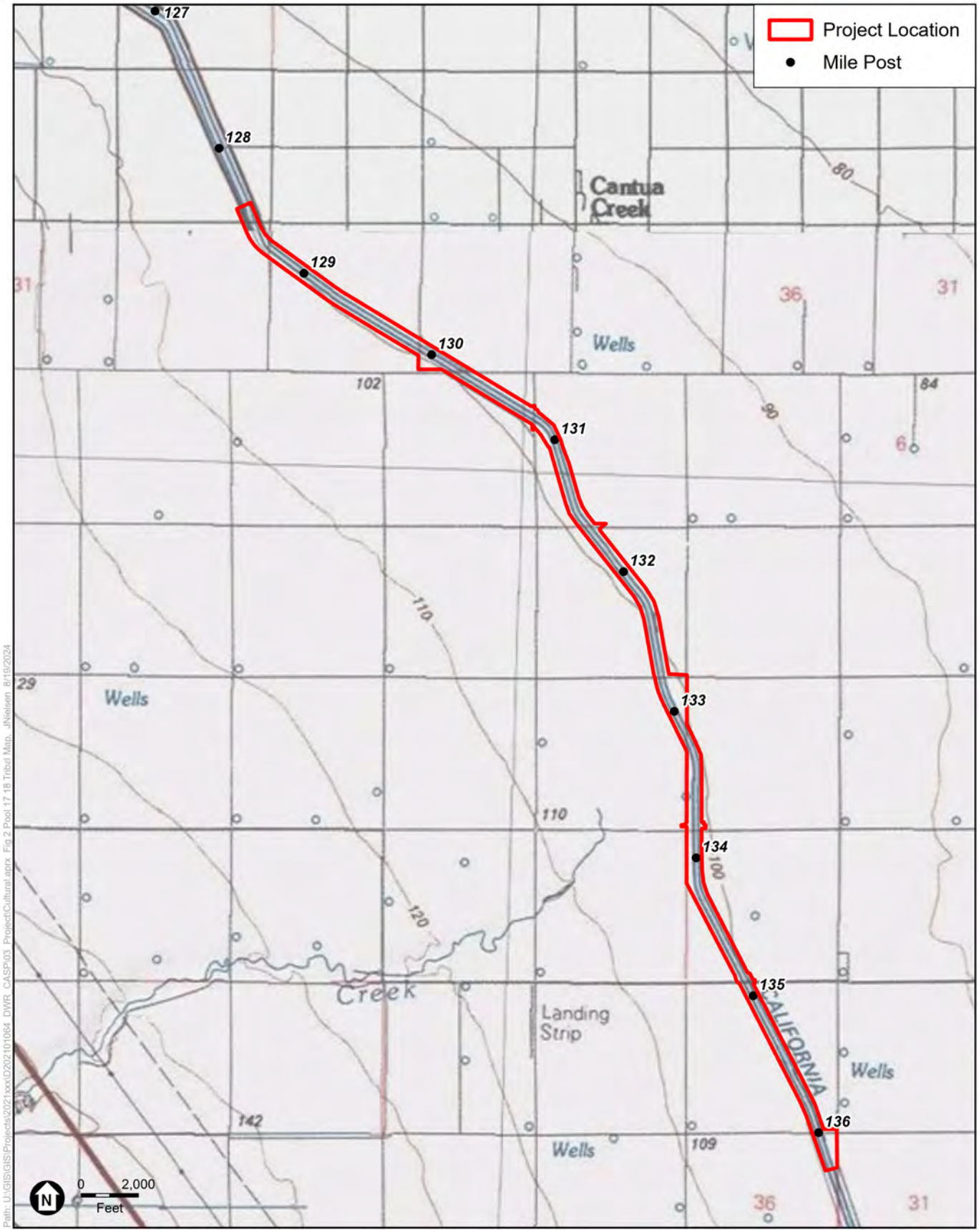

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CASP

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Project Location

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P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

Date: 10/10/2024 Sent via certified mail

The Honorable Kenneth Woodrow
Chairperson
Wuksachi Indian Tribe/Eshom Valley Band
1179 Rock Haven Ct.
Salinas, CA, 93906
kwood8934@aol.com

Subject: DWR Tribal Consultation Letters Enclosed

- **Pools 17 and 18 Liner Raise Project**
- **Pools 20 and 21 Liner Raise Project**
- **Pool 24 Liner Raise Project**

Dear Chairperson Woodrow,

I hope this letter finds you well. I am writing on behalf of the Department of Water Resources (DWR), Division of Engineering (DOE). DOE works on design and construction projects through the State to maintain various elements of the State Water Project.

The Environmental Coordination Section (ECS) in DOE supports various aspects of environmental compliance of our division's work, including compliance with AB 52, and the DWR *Tribal Engagement Policy*. Currently, DOE's environmental team is supporting multiple projects of which the Wuksachi Indian Tribe/Eshom Valley Band (Tribe) has been identified as possible partner, consulting Tribe, or otherwise interested. For ease of review, and in furtherance of DWR goals of collaboration and transparency, we have consolidated consultation letters different projects into one envelope. My intention is to acknowledge the multiple consultation letters and provide consolidated communication where possible.

The consultation letters enclosed are related to the following projects.

- The Pools 17 and 18 Liner Raise Project is located approximately 12 miles west of Helm, California, within Fresno County, on the San Luis Canal. DWR and Reclamation are proposing to jointly implement this project.

- The Pools 20 and 21 Liner Raise Project is located approximately 3 miles north of Kettleman City, California, within Fresno and Kings Counties, on the San Luis Canal. DWR and Reclamation are proposing to jointly implement this project.

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

For ease of reference, helpful contacts are in the list below.

Marea Bell	*Main Point of Contact* Enviro. Planning Lead: • Pools 17&18 • Pools 20&21	Marea.Bell@water.ca.gov (916) 882-2945
Sarah Cannon	ECS Manager	Sarah.Cannon@water.ca.gov (916) 882-2829
Jesse Dillon	CASP Program Manager	Jesse.Dillon@water.ca.gov (916) 699-8403
Anecita Augustinez	DWR Office of Tribal Affairs	Anecita.Augustinez@water.ca.gov (916) 216-8637

Should you have any questions, comments, or concerns at any point, please do not hesitate to contact me directly, reach out to the designated project contact(s), or contact the DWR Tribal Office. We remain committed to partnering with you in a clear and cooperative manner, to properly account for and manage resources important to the Tribe, consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

Respectfully,

Sarah Cannon

Sarah Cannon
DWR – State Water Project: Division of Engineering
Environmental Coordination Section Manager

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

Date: 10/10/2024 Sent via certified mail and email

The Honorable Kenneth Woodrow
Chairperson
Wuksachi Indian Tribe/Eshom Valley Band
1179 Rock Haven Ct.
Salinas, CA, 93906
kwood8934@aol.com

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson Woodrow,

This letter serves as a formal invitation to the Wuksachi Indian Tribe/Eshom Valley Band (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

If the Tribe would like to consult under Assembly Bill (AB) 52, this is also notice DWR has not received an AB 52 request for notification from the Tribe and is an opportunity to ensure current and future engagement to consult under AB 52.

Brief Overview of Project Description
The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment of the San Luis Canal located in portions of Pools 17 and 18 (see Attachments 1 and 2), which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing the capacity and operational flexibility that has become limited due to subsidence while improving safety and reliability.

Brief Program Background
The concrete-lined San Luis Canal was constructed as a series of interconnected pools that are operated in coordination to convey water, primarily by gravity, from one pool to the next through check structures and pumping plants. The San Luis Canal traverses portions of the Central Valley that have experienced subsidence, which is defined as a

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local or regional drop in ground surface elevation. This subsidence has reduced the San Luis Canal's delivery capability and reliability, as well as increased maintenance, repair, and energy costs.

This project is part of a larger CASP program, comprised of short-term (interim) actions and long-term corrective actions aimed to repair the San Luis Canal and the California Aqueduct. Additional information about the program and projects can be found here: https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence

Cultural Resources Investigations To-Date
Cultural resources investigations completed to date for the Project include the activities listed below. An *Archaeological and Architectural Resources Inventory Report* is currently being prepared for the project.

- California Native American Heritage Commission Sacred Lands File search request (no sacred sites identified)
- Records searches of the California Historical Resources Information System for the Project Area and vicinity (six previously recorded cultural resources in the Project Area, all of which are historic-era built environmental resources)
- Intensive-level pedestrian survey of the Project Area (no archaeological resources identified)

CEQA Implementation
DWR is the lead agency under the CEQA and is proposing to prepare an Initial Study/Mitigated Negative Declaration for the Project. As part of the cultural resources review of the Project under CEQA, we are writing to provide the Tribe an opportunity to submit any information the Tribe is willing to share about cultural resources or Tribal cultural resources as defined in California Public Resources Code (PRC) §21074, that may be near the proposed Project Area shown in Attachments 1 and 2. We understand that the locations of these resources are sensitive and resource locations will not be disclosed in public documents and will be kept confidential as provided for under California Government Code §6254.10.

Because the Project is being jointly proposed by DWR and Reclamation, it is subject to federal environmental regulations, including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966 (NHPA). Reclamation is the lead federal agency for NEPA/NHPA purposes.

Conclusion
DWR is committed to working collaboratively with the Tribe to properly account for and manage resources important to the Tribe consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*. We welcome any recommendations regarding the appropriate management or treatment of resources, including Tribal cultural resources, that occur within or near the Project Area. This notification does not limit the Tribe's ability to submit information regarding the identification or significance of Tribal cultural resources, the significance of the Project's potential impact on tribal cultural resources, or any appropriate mitigation measures (PRC §21080.3.2(c)(1)).

If the Tribe has any questions or needs additional information, please contact DWR

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC

Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

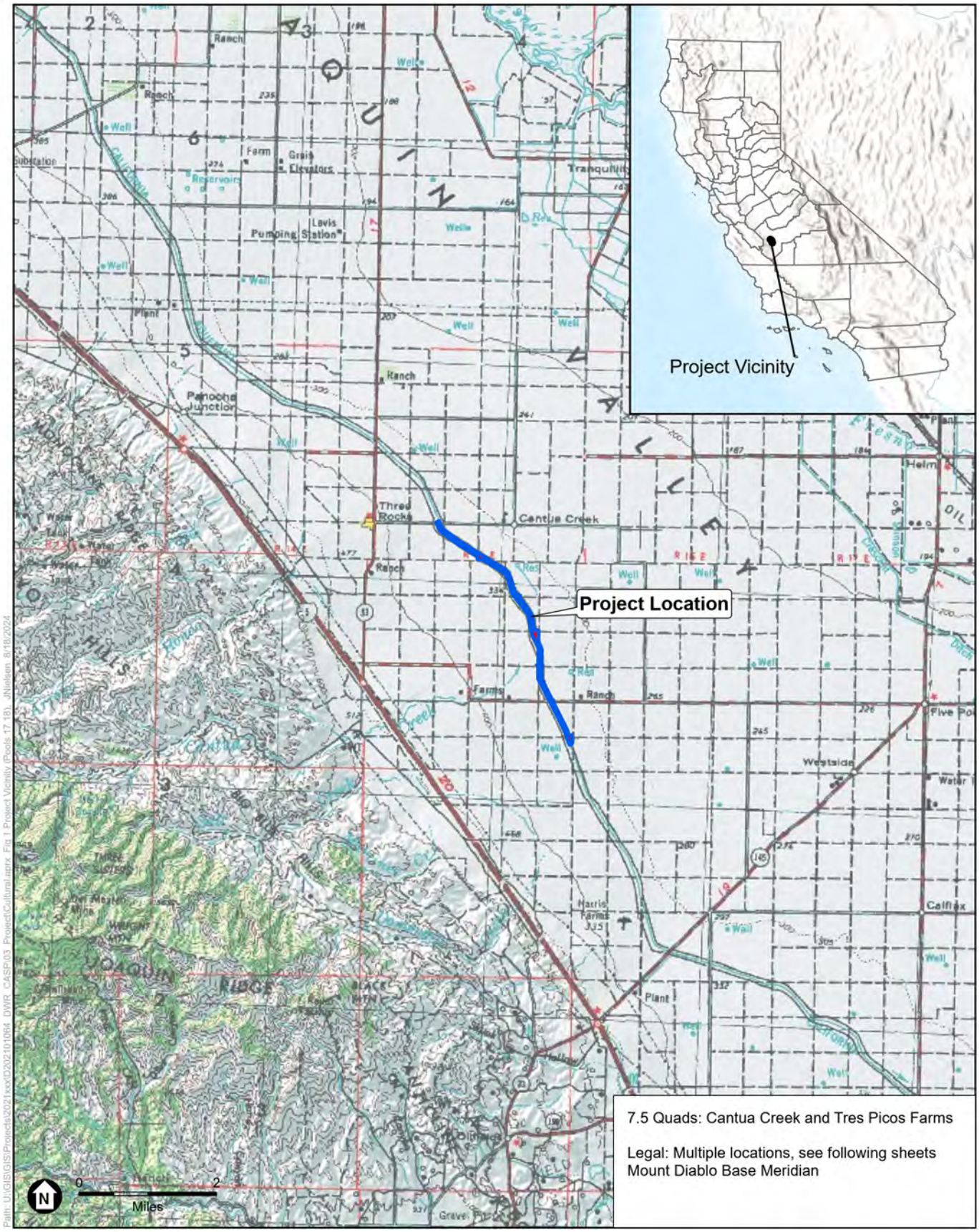
Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC



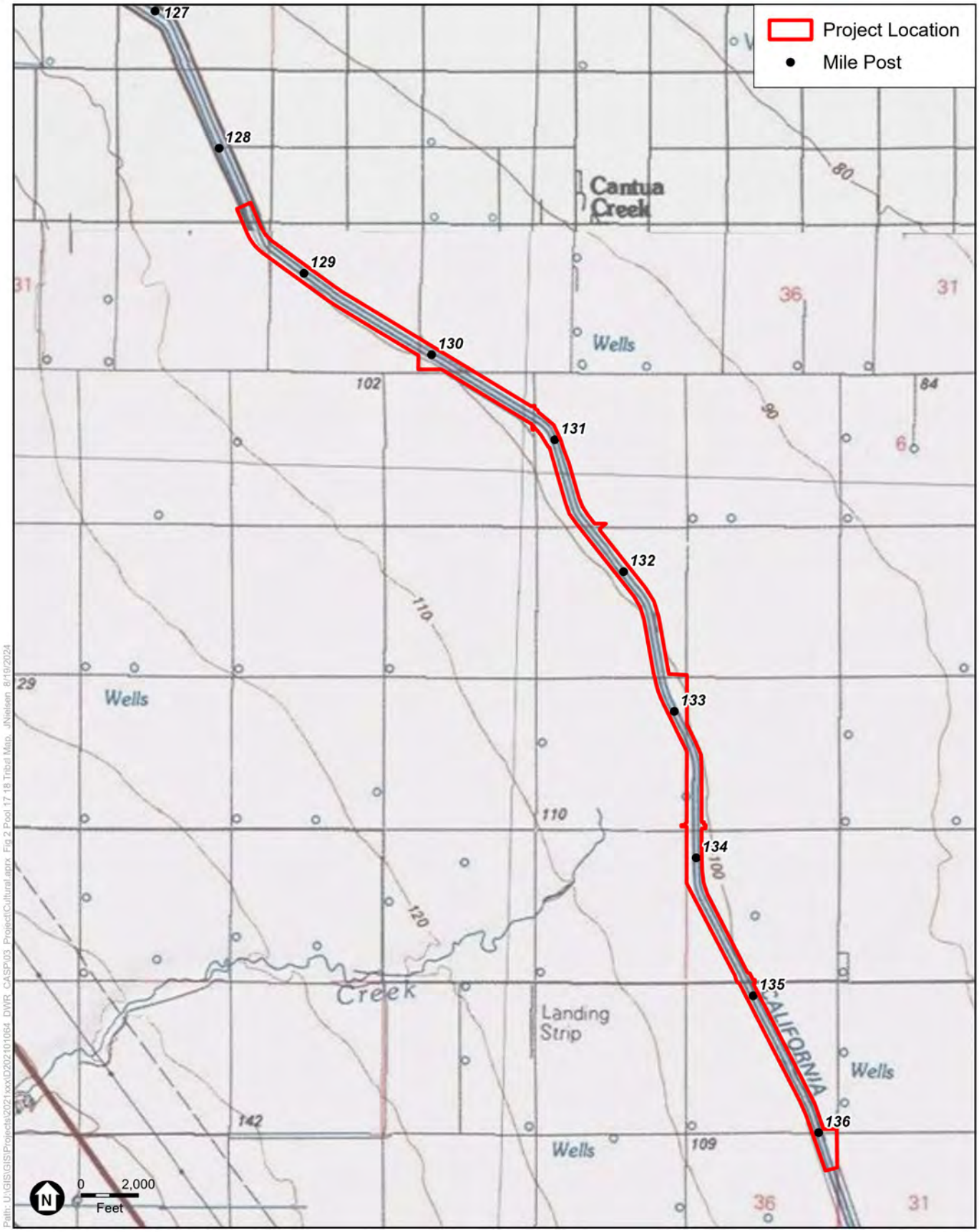
SOURCE: ESRI; DWR, 2024.

CASP

Figure 1
Project Vicinity

ESA

Docusign Envelope ID: 18AD45D2-1433-4203-84AA-1570EF44F2FC



SOURCE: USGS; DWR, 2024.

CASP

Figure 2
Project Location

ESA

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: vjltestingcenter@aol.com
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR; aerieways@aol.com
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: AmahMutsun_CASP-Pools17-18_Letter.pdf

Dear Chairperson Lopez,

This letter serves as a formal invitation to the Amah Mutsun Tribal Band (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: lkipp@bsrnation.com
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: BigSandyRancheria_CASP-Pools17-18_Letter.pdf

Dear Chairperson Kipp,

This letter serves as a formal invitation to the Big Sandy Rancheria of Western Mono Indians (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: csrchair@netptc.net; coldsprgstribe@netptc.net
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: ColdSpringsRancheria_CASP-Pools17-18_Letter.pdf

Dear Chairperson Bill,

This letter serves as a formal invitation to the Cold Springs Rancheria of Mono Indians (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: ledgerrobert@ymail.com
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: DumnaWoWah_CASP-Pools17-18_Letter.pdf

Dear Chairperson Ledger,

This letter serves as a formal invitation to the Dumna Wo-Wah Tribal Government (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: ben.charley@yahoo.com
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR; dcharley2016@gmail.com
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: DunlapBand_CASP-Pools17-18_Letter.pdf

Dear Chairperson Charley,

This letter serves as a formal invitation to the Dunlap Band of Mono Indians (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: 2deedominguez@gmail.com
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: KitanemukYowlumne_CASP-Pools17-18_Letter.pdf

Dear Chairperson Dominguez,

This letter serves as a formal invitation to the Kitanemuk & Yowlumne Tejon Indians (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: huskanam@gmail.com
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: NVYOT_CASP-Pools17-18_Letter.pdf

Dear Mr. Perez,

This letter serves as a formal invitation to the Northern Valley Yokut / Ohlone Tribe (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: info@salinantribe.com
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR; quiggyllynn@gmail.com
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: SalinanTribe_CASP-Pools17-18_Letter.pdf

Dear Ms. Dunton,

This letter serves as a formal invitation to the Salinan Tribe of Monterey, San Luis Obispo Counties (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: smccarty@tachi-yokut-nsn.gov
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR
Subject: AB 52 Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: SR-Rancheria_CASP-Pools17-18_Letter.pdf

Dear Chairperson Sisco,

This letter serves as a formal invitation to the Santa Rosa Rancheria Tachi Yokut Tribe (Tribe) to begin government-to-government consultation with the Department of Water Resources (DWR) under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) §21080.3.1, on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, October 11, 2024 12:07 PM
To: mhcordova@tmr.org
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR; rpennell@tmr.org
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: TableMtRancheria_CASP-Pools17-18_Letter.pdf

Dear Chairperson Heredia-Cordova,

This letter serves as a formal invitation to the Table Mountain Rancheria (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Wednesday, November 13, 2024 12:21 PM
To: vlopez@amahmutsun.org
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR; aerieways@aol.com; vjltestingcenter@aol.com
Subject: RE: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: AmahMutsun_CASP-Pools17-18_Letter.pdf

Dear Chairperson Lopez,

The California Aqueduct Subsidence Program (CASP) distributed a formal invitation to the Amah Mutsun Tribal Band (Tribe) via email to consult on the Pools 17 and 18 Liner Raise Project on October 10, 2024.

Since that invitation (included below and attached for your reference) we became aware of new contact information for the Tribe and wanted to resend the invitation to the correct contact.
If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

-----Original Message-----
From: Dillon, Jesse@DWR <Jesse.Dillon@water.ca.gov>
Sent: Friday, October 11, 2024 12:07 PM
To: vjltestingcenter@aol.com
Cc: Agustinez, Anecita S.@DWR <Anecita.Agustinez@water.ca.gov>; Cannon, Sarah@DWR <Sarah.Cannon@water.ca.gov>; Bell, Marea@DWR <Marea.Bell@water.ca.gov>; Falke, Mariko@DWR <Mariko.Falke@water.ca.gov>; aerieways@aol.com
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project

Dear Chairperson Lopez,

This letter serves as a formal invitation to the Amah Mutsun Tribal Band (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,

Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

DEPARTMENT OF WATER RESOURCES
715 P STREET
SACRAMENTO, CA 95814

November 06, 2024 Sent via certified mail and email

The Honorable Charmaine McDarment
Chairperson
Tule River Indian Tribe
340 N. Reservation Road
Porterville, CA, 93258
Charmaine.McDarment@tulerivertribe-nsn.gov

Subject: Notification for the California Aqueduct Subsidence Program - San Luis Field Division: Pools 17 and 18 Liner Raise Project

Dear Chairperson McDarment,

This letter serves as a formal invitation to the Tule River Indian Tribe (Tribe) to begin consultation with the Department of Water Resources (DWR) on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County, as depicted in the *Cantua Creek*, *California* and *Tres Picos Farms*, *California* U.S. Geological Survey 7.5-minute topographic maps (see Attachments 1 and 2). DWR and the U.S. Bureau of Reclamation (Reclamation) are proposing to implement the Project jointly. DWR is the lead agency under the California Environmental Quality Act (CEQA) and is committed to working with the Tribe under DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*.

If the Tribe would like to consult under Assembly Bill (AB) 52, this is also notice DWR has not received an AB 52 request for notification from the Tribe and is an opportunity to ensure current and future engagement to consult under AB 52.

Brief Overview of Project Description
The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment of the San Luis Canal located in portions of Pools 17 and 18 (see Attachments 1 and 2), which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the Public Water Agencies, thereby increasing the capacity and operational flexibility that has become limited due to subsidence while improving safety and reliability.

Brief Program Background
The concrete-lined San Luis Canal was constructed as a series of interconnected pools that are operated in coordination to convey water, primarily by gravity, from one pool to the next through check structures and pumping plants. The San Luis Canal traverses portions of the Central Valley that have experienced subsidence, which is defined as a

local or regional drop in ground surface elevation. This subsidence has reduced the San Luis Canal's delivery capability and reliability, as well as increased maintenance, repair, and energy costs.

This project is part of a larger CASP program, comprised of short-term (interim) actions and long-term corrective actions aimed to repair the San Luis Canal and the California Aqueduct. Additional information about the program and projects can be found here: https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence

Cultural Resources Investigations To-Date
Cultural resources investigations completed to date for the Project include the activities listed below. An *Archaeological and Architectural Resources Inventory Report* is currently being prepared for the project.

- California Native American Heritage Commission Sacred Lands File search request (no sacred sites identified)
- Records searches of the California Historical Resources Information System for the Project Area and vicinity (six previously recorded cultural resources in the Project Area, all of which are historic-era built environmental resources)
- Intensive-level pedestrian survey of the Project Area (no archaeological resources identified)

CEQA Implementation
DWR is the lead agency under the CEQA and is proposing to prepare an Initial Study/Mitigated Negative Declaration for the Project. As part of the cultural resources review of the Project under CEQA, we are writing to provide the Tribe an opportunity to submit any information the Tribe is willing to share about cultural resources or Tribal cultural resources as defined in California Public Resources Code (PRC) §21074, that may be near the proposed Project Area shown in Attachments 1 and 2. We understand that the locations of these resources are sensitive and resource locations will not be disclosed in public documents and will be kept confidential as provided for under California Government Code §6254.10.

Because the Project is being jointly proposed by DWR and Reclamation, it is subject to federal environmental regulations, including the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966 (NHPA). Reclamation is the lead federal agency for NEPA/NHPA purposes.

Conclusion
DWR is committed to working collaboratively with the Tribe to properly account for and manage resources important to the Tribe consistent with DWR's *Tribal Engagement Policy* and the California Natural Resources Agency's *Tribal Consultation Policy*. We welcome any recommendations regarding the appropriate management or treatment of resources, including Tribal cultural resources, that occur within or near the Project Area. This notification does not limit the Tribe's ability to submit information regarding the identification or significance of Tribal cultural resources, the significance of the Project's potential impact on tribal cultural resources, or any appropriate mitigation measures (PRC §21080.3.2(c)(1)).

If the Tribe has any questions or needs additional information, please contact DWR

Project Manager Marea Bell at (916) 882-2945 or marea.bell@water.ca.gov or DWR Office of Tribal Affairs Executive Manager Anecita Agustinez at (916) 216-8637 or tribalpolicyadvisor@water.ca.gov.

Information on the CASP Tribal Engagement activities can also be found here https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence/TribalEngagement.

Respectfully,

Jesse Dillon, P.E.
CASP Program Manager, DWR Division of Engineering

cc.
Kerri Vera, Environmental Department, Tule River Indian Tribe
Joey Garfield, Tribal Archaeologist, Tule River Indian Tribe
Anecita Augustinez, DWR Office of Tribal Affairs Executive Tribal Policy Advisor
Mariko Falke, DWR Office of Tribal Affairs Executive Tribal Liaison
Sarah Cannon, DWR Environmental Coordination Section Manager
Marea Bell, DWR Environmental Planning Lead

Attachment 1. Project Vicinity Map
Attachment 2. Project Location Map

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Wednesday, November 13, 2024 12:17 PM
To: lsisco@tachi-yokut-nsn.gov
Cc: Agustinez, Anecita S.@DWR; Cannon, Sarah@DWR; Bell, Marea@DWR; Falke, Mariko@DWR; smccarty@tachi-yokut-nsn.gov; nescalon@tachi-yokut-nsn.gov
Subject: RE: AB 52 Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project
Attachments: SR-Ranch_CASP-Pools17-18_Letter.pdf

Dear Chairperson Sisco,

The California Aqueduct Subsidence Program (CASP) distributed a formal invitation to the Santa Rosa Rancheria Tachi Yokut Tribe (Tribe) to begin government-to-government consultation with the Department of Water Resources (DWR) under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) §21080.3.1, on the proposed Pools 17 and 18 Liner Raise Project on October 10, 2024.

Since that invitation (included below and attached for your reference) we became aware of new contact information for the Tribe and wanted to resend the invitation to the correct contact.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

-----Original Message-----
From: Dillon, Jesse@DWR <Jesse.Dillon@water.ca.gov>
Sent: Friday, October 11, 2024 12:07 PM
To: smccarty@tachi-yokut-nsn.gov
Cc: Agustinez, Anecita S.@DWR <Anecita.Agustinez@water.ca.gov>; Cannon, Sarah@DWR <Sarah.Cannon@water.ca.gov>; Bell, Marea@DWR <Marea.Bell@water.ca.gov>; Falke, Mariko@DWR <Mariko.Falke@water.ca.gov>
Subject: Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project

Dear Chairperson Sisco,

This letter serves as a formal invitation to the Santa Rosa Rancheria Tachi Yokut Tribe (Tribe) to begin government-to-government consultation with the Department of Water Resources (DWR) under Assembly Bill 52 (AB 52), pursuant to Public Resources Code (PRC) §21080.3.1, on the proposed California Aqueduct Subsidence Program (CASP) San Luis Field Division (SLFD) Pools 17 and 18 Liner Raise Project (Project). The Project is located approximately 12 miles west of Helm, California, within Fresno County. The Project is an interim action and consists of raising the concrete liner to the top of the unlined embankment located in portions of Pools 17 and 18, which would allow the water surface elevation under existing standard operating limitations to be raised. This Project would enable DWR to complete water deliveries to the

Public Water Agencies, thereby increasing operational flexibility that has become limited due to subsidence and improving safety and reliability.

Attached is the formal notification of the Project sent by DWR on October 10. 2024.

If the Tribe has any questions or needs additional information, please contact the California Aqueduct Subsidence Program at casp@water.ca.gov.

Respectfully,
Jesse J. Dillon, P.E.
Program Manager – California Aqueduct Subsidence Program
California Department of Water Resources, State Water Project, Division of Engineering
715 P Street, 4th Floor, Sacramento, CA 95814

Robin Hoffman

From: Dillon, Jesse@DWR
Sent: Friday, November 15, 2024 2:55 PM
To: Bell, Marea@DWR; Wong, Todd@DWR
Subject: FW: Re:Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project

Please log the following response.
Thank you,

Jesse J. Dillon, P.E.

Program Manager – California Aqueduct Subsidence Program
Ca. Dept. of Water Resources, State Water Project, Div. of Engineering
715 P Street, 4th Floor, Sacramento 95814
Cell Phone: (916) 699-8403

jesse.dillon@water.ca.gov

From: Amah Mutsun Tribal Band <culturalresources_amtb@amahmutsun.org>
Sent: Friday, November 15, 2024 11:42 AM
To: Dillon, Jesse@DWR <Jesse.Dillon@water.ca.gov>
Subject: Re:Notification for the California Aqueduct Subsidence Program San Luis Field Division Pools 17 and 18 Liner Raise Project

> You don't often get email from culturalresources_amtb@amahmutsun.org. Learn why this is important

Dear Jesse Dillon,

Thank you for this notice regarding the San Luis Field Division Pools.

Since this project is outside the territory of Amah Mutsun, they will decline to participate in this consultation.

Thank you,