City of Banning

Community Development Department

NOTICE OF PUBLIC HEARING AND NOTICE OF INTENT (NOI) TO ADOPT A MITIGATED NEGATIVE DECLARATION (MND)(EA 24-0051) FOR CONSIDERATION OF THE CONSTRUCTION AND OPERATION OF A NEW NON-POTABLE WATER STORAGE RESERVOIR THAT IS 24-FEET IN DIAMETER AND 21-FEET TALL WITH A CAPACITY OF APPROXIMATELY 61,000 GALLONS, ASSOCIATED APPURTENANCES, ON-SITE ACCESS ROAD, AND THE CONSTRUCTION AND OPERATION OF A NEW BOOSTER PUMP STATION DESIGNED FOR THE FUTURE ULTIMATE FLOW OF 2,500 GALLONS PER MINUTE (GPM). THE PROPOSED RESERVOIR AND BOOSTER STATION WILL BE LOCATED ON A PORTION OF ASSESSOR'S PARCEL NUMBER (APN) 538-280-001 THAT IS APPROXIMATELY 7.51 ACRES. THE PROJECT SITE IS LOCATED ON A CITY-OWNED PROPERTY WITHIN THE OPEN SPACE-PARKS (OS-P) ZONING DISTRICT AND IS GENERALLY LOCATED ON THE SOUTH SIDE OF WEST LINCOLN STREET AND EAST OF 22ND STREET, WITHIN THE CITY OF BANNING, CALIFORNIA.

NOTICE IS HEREBY GIVEN of a public hearing before a Special Meeting of the City of Banning Planning Commission, to be held on Wednesday, May 29, 2024, at 5:30 p.m. in the Council Chambers, City Hall, 99 East Ramsey Street, Banning, California, to consider an Initial Study/Mitigated Negative Declaration for the proposed construction and operation of a new non-potable water storage reservoir that is 24-feet in diameter and 21-feet tall with a capacity of approximately 61,000 gallons, associated appurtenances, on-site access road, and the construction and operation of a new booster pump station designed for the future ultimate flow of 2,500 gallons per minute (gpm). The proposed reservoir and booster station will be located on a portion of assessor's Parcel Number (APN) 538-280-001 that is approximately 7.51 acres. The project site is located on a City-owned property within the Open Space-Parks (OS-P) zoning district and is generally located on the south side of West Lincoln Street and east of 22nd Street, within the City of Banning, California.

An Initial Study/Mitigated Negative Declaration (IS/MND) prepared for the project is available for public review and comment for a 30-day public review and comment period prior to the public hearing beginning FRIDAY, APRIL 26, 2024, and concluding MONDAY, MAY 27, 2024.

Information regarding the Initial Study/Mitigated Negative Declaration can be obtained by contacting the City's Community Development Department at (951) 922-3125, or by visiting the following link: https://banningca.gov/Archive.aspx?AMID=60&Type=&ADID=

To observe the live meeting through your personal computer, but not participate with video or oral comments, you may use your computer or smart phone to enter the following or click on the link: https://banninglive.viebit.com or on the Banning Government Channel on Cable Television.

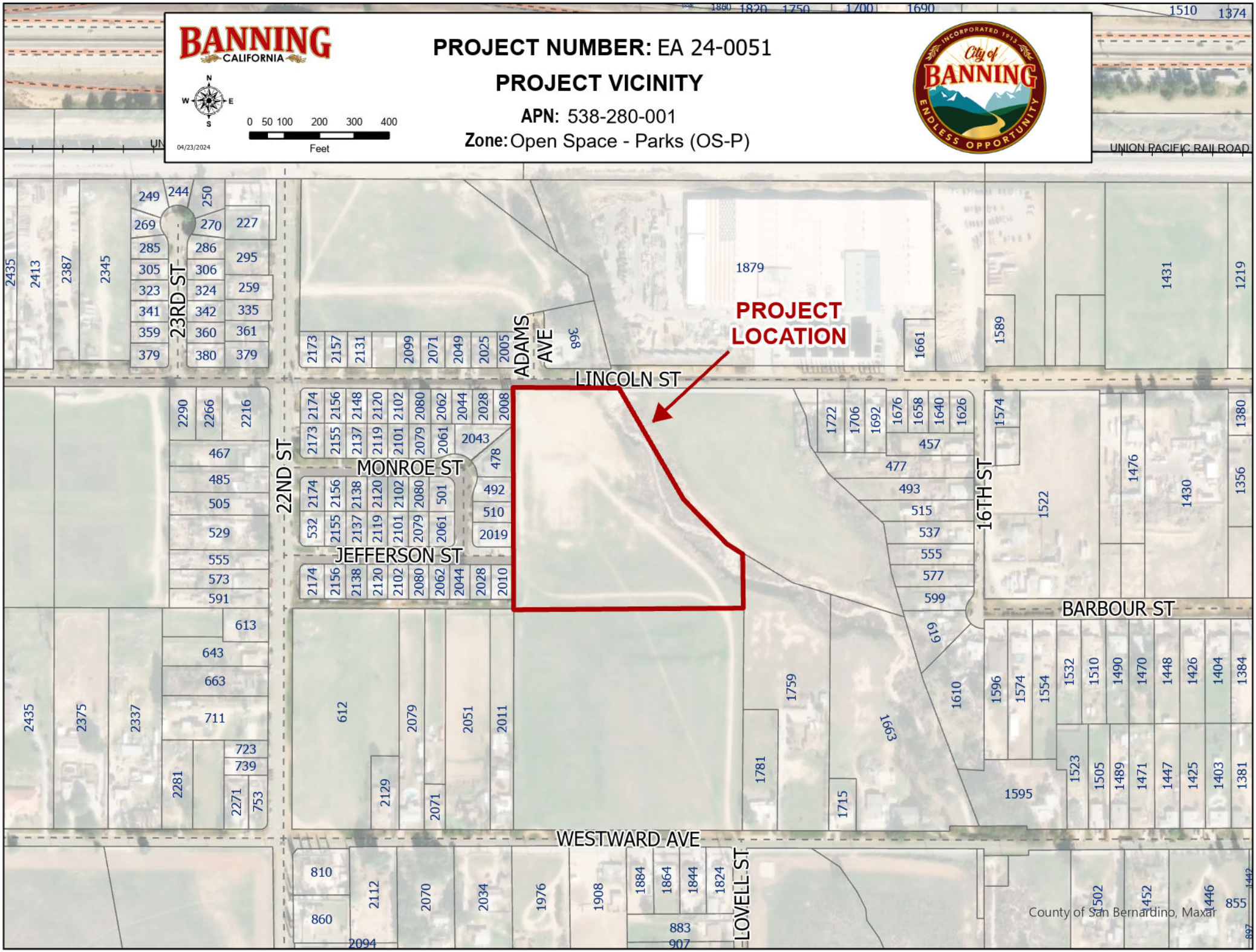
All parties interested in speaking either in support of or in opposition to this item are invited to attend the hearing by accessing the videoconference or by sending their written comments by email to scalderon@banningca.gov or by mail to the Community Development Department, Planning Division, City of Banning at 99 E. Ramsey Street, Banning, California, 92220.

If you challenge any decision regarding the above proposal in court, you may be limited to raising only those issues you or someone else raised in written correspondence delivered to the Planning Commission Recording Secretary prior to, at, or during the time the Planning Commission makes its recommendation on the proposal; or, you or someone else raised at the public hearing or in written correspondence delivered to the hearing body at, or prior to, the hearing (California Government Code, Section 65009).

BY ORDER OF THE COMMUNITY DEVELOPMENT DIRECTOR OF THE CITY OF BANNING, CALIFORNIA

Adam Rush, M.A., AICP
Community Development Director

Dated: April 23, 2024
Publish: April 26, 2024


BANNING
CALIFORNIA
PROJECT NUMBER: EA 24-0051
PROJECT VICINITY
APN: 538-280-001
Zone: Open Space - Parks (OS-P)
0 50 100 200 300 400
Feet
04/23/2024
City of BANNING
INCORPORATED 1913
ENDLESS OPPORTUNITY
PROJECT LOCATION
UNION PACIFIC RAILROAD
LINCOLN ST
ADAMS AVE
23RD ST
22ND ST
MONROE ST
JEFFERSON ST
16TH ST
BARBOUR ST
WESTWARD AVE
LOVELL ST
County of San Bernardino, Maxar

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

FOR

NP-2 Booster Station and Reservoir Project

Prepared for:

City of Banning
99 E. Ramsey Street
Banning, CA 92220
Contact: Arturo Vela, Director of Public Works
(951) 922-3130

Prepared by:

Albert A. Webb Associates
3788 McCray Street
Riverside, CA 92506
(951) 686-10707

April 24, 2024

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ACRONYMS LIST

Acronym	Definition
AB52	Assembly Bill 52
ACBCI	Agua Caliente Band of Cahuilla Indians
AE	Applied Earthworks
ALUC	Airport Land Use Commission
APN	Assessor Parcel Number
AQ/GHG	Air Quality/Greenhouse Gas Analysis
AQMP	Air Quality Management Plan
BMC	Banning Municipal Code
BMPs	Best Management Practices
BTR	Biological Technical Report
BSA	Biological study area
CARB	California Air Resources Board
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CGP	Construction General Stormwater Permit
CHSC	California Health and Safety Code
City	City of Banning
CMP	Congestion Management Program
CNDDB	California Natural Diversity Data Base
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CRI	Cultural Resources Investigation
CRHR	California Register Historical Resources
dB	Decibels
dBA	A-Weighted Decibels
DBESP	Determination of Biologically Equivalent or Superior Preservation
DTSC	California Department of Toxic Substances Control
EIC	Eastern Information Center
DEIR	Draft Environmental Impact Report
FEMA	Federal Emergency Management Agency
FHSZ	Fire Hazard Severity Zone
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FMMP	Farmland Mapping Management Program
GHG	Greenhouse Gas
GP	City of Banning Comprehensive General Plan and Zoning Ordinance
GPA	General Plan Amendment

Acronym	Definition
GSA	Groundwater Sustainability Agencies
GSP	Groundwater Sustainability Plan
Ha	High A
Hb	High B
HDR-20	High Density Residential 20
I-MR	Industrial-Mineral Resources
IS/MND	Initial Study Mitigated Negative Declaration
ISO	Insurance Service Office
LDR	Low Density Residential
LST	Localized Significance Threshold
LRA	Local Responsibility Area
LRTP	Long Range Transportation Plan
MBMI	Morongo Band of Mission Indians
MBTA	Migratory Bird Treaty Act
MDP	Master Drainage Plan
MDR	Medium Density Residential
MLD	Most Likely Descendant
MRZ	Mineral Resources Zone
MSHCP	Western Riverside County Multiple Species Habitat Conservation Plan
NAHC	Native American Heritage Commission
NEPSSA	Narrow Endemic Plant Species Survey Area
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historical Places
OS-P	Open Space – Parks
PM-2.5	Particulate Matter Less Than 2.5 Microns in Diameter
PM-10	Particulate Matter Less Than 10 Microns in Diameter
PQP	Public quasi-public lands
Qf	Pleistocene-age Alluvial fan of the San Gorgonio Pass
Qof	Older Alluvial fan
RCFD	Riverside County Fire Department
RCTC	Riverside County Transportation Commission
RTA	Riverside Transit Agency
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board
SB 743	Senate Bill 743
SF	Square Feet
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District

Acronym	Definition
SCE	Southern California Edison
SLF	Sacred Lands File
SMARA	Surface Mining and Reclamation Act
SRA	State Responsibility Area
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
USACE	US Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
VHFHSZ	Very High Fire Severity Zone
VLDR	Very Low Density Residential
VMT	Vehicle Miles Traveled
WEAP	Workers Environmental Awareness Program

ENVIRONMENTAL CHECKLIST FORM

1. **Project title**
   NP-2 Booster Station and Reservoir

2. **Lead agency name and address**
   City of Banning
   99 E. Ramsey Street
   Banning, CA 92220
   (951) 922-3131

3. **Contact person email address and phone number**
   Arturo Vela, Director of Public Works
   Public Works Department
   avela@banningca.gov
   (951) 922-3130

4. **Project location:**
   The Project site is located on the south side of West Lincoln Street, within the City of Banning, California, in Riverside County, generally south of the Interstate 10 (I-10) freeway and east of 22nd Street, as shown in **Figure 1 – Vicinity Map, Figure 2 – Aerial Map** and **Figure 3 – USGS Topographic Map**. The Project site consists of Assessor's Parcel Number (APN) 538-280-001 and is approximately 7.51 acres. The Project site is located within Township 3S, Range, 1E, Section 8, San Bernardino Base and Meridian.

5. **Project sponsor's name and address**
   Public Works Department
   City of Banning
   99 E. Ramsey Street
   Banning, CA 92220
   (951) 922-3130

6. **General Plan Land Use Designations:**
   The Project site has a City of Banning General Plan (GP) land use designation of Open Space – Parks (OS-PA). See **Figure 4 – General Plan Land Use and Zoning Designations**.

7. **Zoning:**
   The Project's zoning is the same as the City of Banning GP land use designation of OS-PA. The proposed Project's facilities are permitted uses under the OS-PA designation of the City of Banning Municipal Code (BMC) (BMC, 17.20.020). See **Figure 4 – General Plan Land Use and Zoning Designations**.

8. **Project Description:**
   Background
   The Project is a part of the City of Banning's ("the City") expansion of non-potable water system identified in the City's Integrated Master Plan (IMP) (BIMP, 2018). The City's existing customer of non-potable water (otherwise known as recycled water) is the Sun Lakes Country Club golf course. Future potential customers

may include: Lions Park, Banning High School, Dysart Park, a neighborhood park and the Rancho San Gorgonio development. The proposed Project was not specifically identified in the City's IMP; however, it is needed to provide non-potable water supplies to existing and potential customers on the west side of the City.

Project Location and Setting

The Project is located south of the I-10 freeway in the City as shown on **Figure 2**, and is more specifically located on vacant land south of Lincoln Street between South 22nd Street and South 16th Street within APN 538-280-001, which is approximately 7.51 acres. There is an existing wood and chain link fence along the western Project site boundary. The Project site receives routine weed abatement and sits at an elevation between 2,401 to 2,403 feet above mean sea level (amsl).

Description of Project

The Project entails the construction and operation of a new non-potable water storage reservoir with a capacity of approximately 61,000 gallons, associated appurtenances, on-site access road, and the construction and operation of a new booster pump station designed for the future ultimate flow of 2,500 gallons per minute (gpm). The proposed Project will only utilize a portion of the parcel it is located on. The total disturbance area during construction is approximately 1.39 acres, which includes construction staging. This is approximately 18.4 percent of the parcel. Once construction is complete, the proposed Project's disturbance area is approximately 0.48 acres, which represents approximately 6.4 percent of the total parcel acreage. The proposed Project characteristics are further described below and shown on **Figure 5 – Project Site Plan**.

Reservoir

The reservoir entails the construction of a circular above-ground, bolted steel tank measuring 24-feet in diameter with a shell height of 21 feet which will sit on an elevation of 2,404.20 amsl. The reservoir will have a capacity to store approximately 60,910 gallons of non-potable water. The reservoir will be designed in accordance with the American Water Works Association (AWWA) D103 standards, which sets guidelines for the construction of welded steel water tanks. The interior of the reservoir will be factory-coated in epoxy and the exterior will be coated with polyester powder coating that will blend in with the local surrounding environment. Interior support columns and foundations will be provided as needed. The reservoir will include standard tank appurtenances such as roof vent, roof hatch and platform, exterior stairway, ladder, minimum ring wall, valves, piping, inspection hatch, level gauge and transmitter, and conduits.

Reservoir design also includes an overflow catch basin located on the southeastern side of the reservoir that is 3-feet wide and 8-feet long. From the catch basin, approximately 160 linear feet of 18-inch diameter storm drain pipeline will be installed underground and will outlet through the proposed headwall at Lincoln Street.

The reservoir will connect to the existing 24-inch diameter non-potable water transmission pipeline in Lincoln Street. Non-potable water will be diverted to the reservoir, routed to the proposed booster pump station and ultimately pumped back into the existing pipeline.

Booster Station

The booster station building will be located at the north of the reservoir at an elevation of approximately 2,403 feet amsl, on a concrete slab on grade foundation with split face masonry exterior walls and tile roof. The building will be approximately 38-feet long. 24-feet wide and 12-feet tall. Roof hatches will be provided over each pump to facilitate pump removal. The building will be ventilated with a power exhaust fan and automatic air inlet wall louvers. Interior and exterior lights will be provided along with intrusion alarms and cameras.

The booster pumps will be vertical turbine pumps designed for an ultimate future flow of 2,500 gpm. Space for three electric pumps will be provided. Two 75 horsepower (hp) pumps will be constructed (one for standby) and space for a third pump will be provided. The two pumps will be sized for existing non-potable

water demand of 1,000 gpm each and both will have variable speed pump controls. The third pump will be sized for a capacity of 1,500 gpm. The ultimate future flow of 2,500 gpm assumes three (3) pumps at 1,250 gpm each. Two (2) firm pumps and one (1) standby pump. The booster pumps will connect to the existing non-portable water transmission main located in Lincoln Street. Appurtenances for the booster station will include a motor control center, flow meter, valves, pressure transmitter, and one portable diesel-fueled emergency generator that will only be used during emergencies and routine testing.

A new SCADA system will be installed on the Project site. The system will include a control panel process controller and software components to communicate with the City's SCADA system. The SCADA antennae will be mounted on the top of the reservoir and the antennae will not extend more than five feet above the top of the reservoir.

Site Access

Access to the Project site consists of a new asphalt driveway near the western Project site boundary that will transition to a 20-foot-wide asphalt access road leading to the reservoir and booster station. A cable railing fence will be installed near the driveway entrance, extending to the western property boundary from the northwest corner of a proposed perimeter wall that encloses the booster station building and reservoir. A 20-foot-wide swinging pipe gate will be installed across the access road, connecting to the cable railing fence. A new cable railing fence will also be installed between the western property boundary and the southwest corner of the perimeter wall; this fence will include a swinging gate for access to the rest of the parcel.

The booster station building and reservoir will be enclosed by an approximately 6-foot tall combination masonry block wall topped with a four-foot-tall tubular steel fence that is accessible on the western boundary via a 20-foot-wide sliding gate. Inside the perimeter wall, the 20-foot-wide access road is paved and bisects the two structures (the booster station building and reservoir). The area south of the access road surrounding the reservoir will be paved whereas the area north of the access road that surrounds the booster station building will include both concrete and gravel.

Lighting and Security

Light and camera poles will be installed within the perimeter wall surrounding the booster station building and reservoir. Lighting will be shielded or downward facing to avoid light pollution or light spillage and will be installed in accordance with Section 17.24.100 (Lighting) of the City Municipal Code.

Electrical

New electrical service will be required for the Project site and provided by the City of Banning from an existing adjacent electrical system source. The Project site is proposing to connect to an existing overhead electric pole on the north side of Lincoln Street, across from the proposed Project driveway. The Project will require a 480/240 volt electrical system sized for two booster pumps. The new electric line will be underground, and service will include a new electrical vault and transformer. Fiber optic service to the site is also proposed with the electrical.

Drainage

Currently, storm water generally sheet flows across the Project site in a southeasterly direction. The proposed Project improvements will increase impervious surfaces on the site and is expected to result in a negligible increase in storm water runoff that will maintain the existing drainage pattern. All on-site storm water will be captured on site in accordance with State and Regional Water Quality Control Board requirements. A concrete drainage swale will surround the reservoir and convey storm water to the proposed 18-inch diameter storm drain pipeline east of the perimeter wall. The runoff from the booster station area will be collected in a four-inch diameter pipeline and connect to the proposed 18-inch diameter storm drain pipeline east of the

perimeter wall. Storm water discharged to the 18-inch storm drain pipeline will be conveyed off-site where it would flow east to the municipal storm drain system at Lincoln Street.

Frontage Improvements

The Project proposes to widen the southern portion of Lincoln Street within existing right-of-way along the Project frontage and create a new paved driveway for access. Pavement width will vary from approximately two to eight feet wide. The existing pavement edge will be sawcut and the surface will be ground and overlaid with new pavement. An asphalt curb will be installed at the new edge of pavement.

Construction

Construction activities include removal of existing on-site vegetation, grading and excavation, paving, construction of the proposed facilities in addition to associated improvements and utility connections. The construction footprint is approximately 1.39 acres. Construction staging will occur on site within the construction footprint and south of the proposed reservoir as shown on **Figure 5 – Project Site Plan**. During remedial grading, on-site soils will be excavated and recompacted and are expected to require approximately 317 cubic yards of import. The maximum depth of excavation is approximately six feet. During Project construction, it is possible there would be temporary lane closures along Lincoln Street. Construction is anticipated to take approximately 12 months and will begin in August 2024.

Maintenance

During operations, routine maintenance will occur and may include, but is not limited to, daily maintenance vehicle trips to inspect the booster station and reservoir. Maintenance vehicles would visit the Project site during the City's normal business hours.

9. Surrounding land uses and setting:

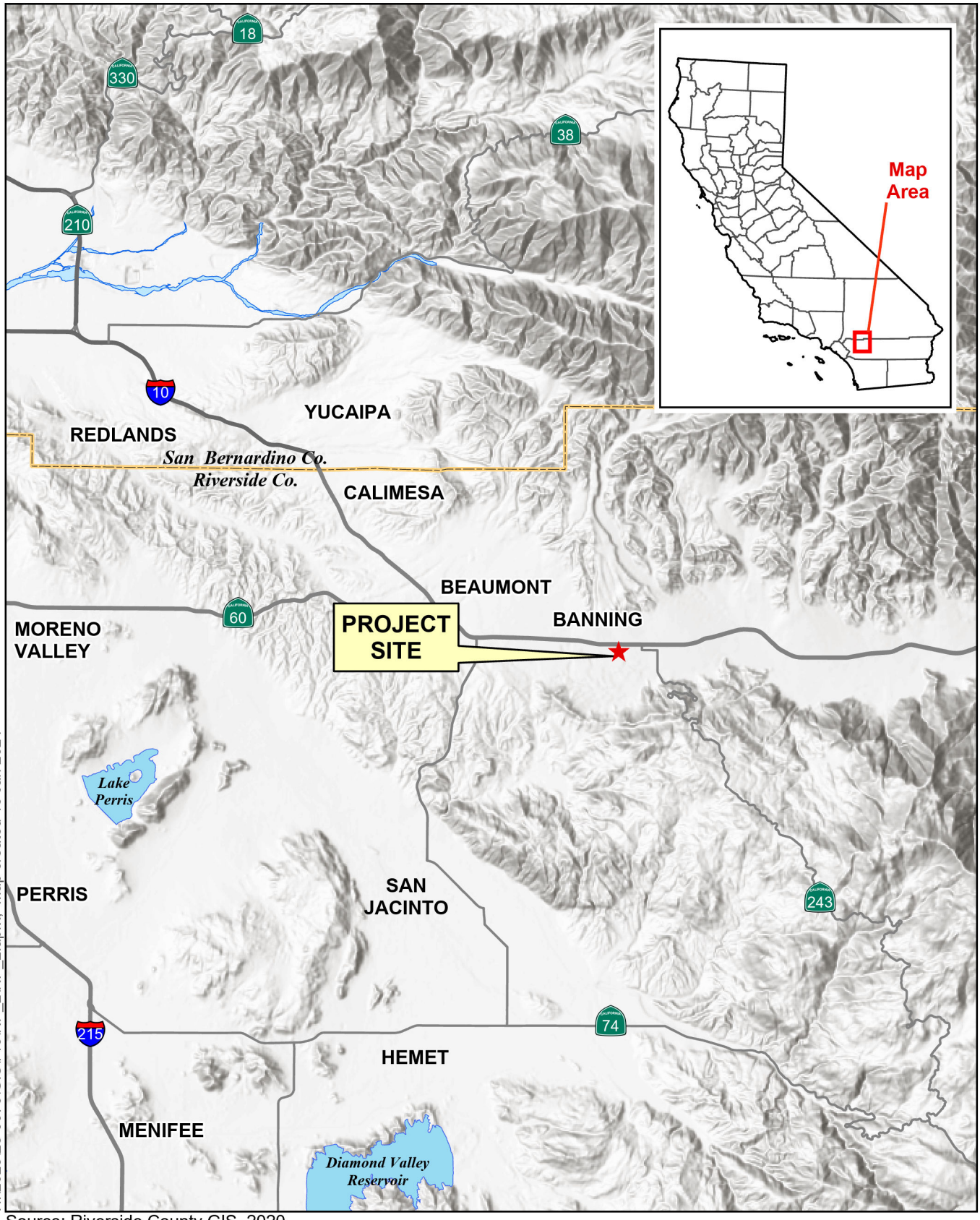
The area to the north, west and northwest includes residential homes; the adjacent area to the south is vacant and undeveloped land; the adjacent area to the east is Montgomery Creek followed by vacant and undeveloped area; the area to the northeast is industrial buildings.

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

- County of Riverside, American Resue Plan Act (ARPA) – funding allocation through the Coronavirus State and Local Fiscal Recovery Funds Final Rule
- Regional Water Quality Control Board (RWQCB), Colorado River Region – National Pollutant Discharge Elimination System (NPDES) Construction General Permit and Stormwater Pollution Prevention Plan (SWPPP)
- South Coast Air Quality Management District – permit for backup generator

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

The City of Banning provided Assembly Bill (AB 52) notification to Tribes that have previously requested such a notice. The consultation process is discussed under Threshold XVIII, Tribal Cultural Resources, of this Initial Study.



Source: Riverside County GIS, 2020

0 2 4 6 Miles

Figure 1 - Vicinity Map

NP-2 Booster Pump Station and Reservoir Project

ALBERT A. WEBB ASSOCIATES

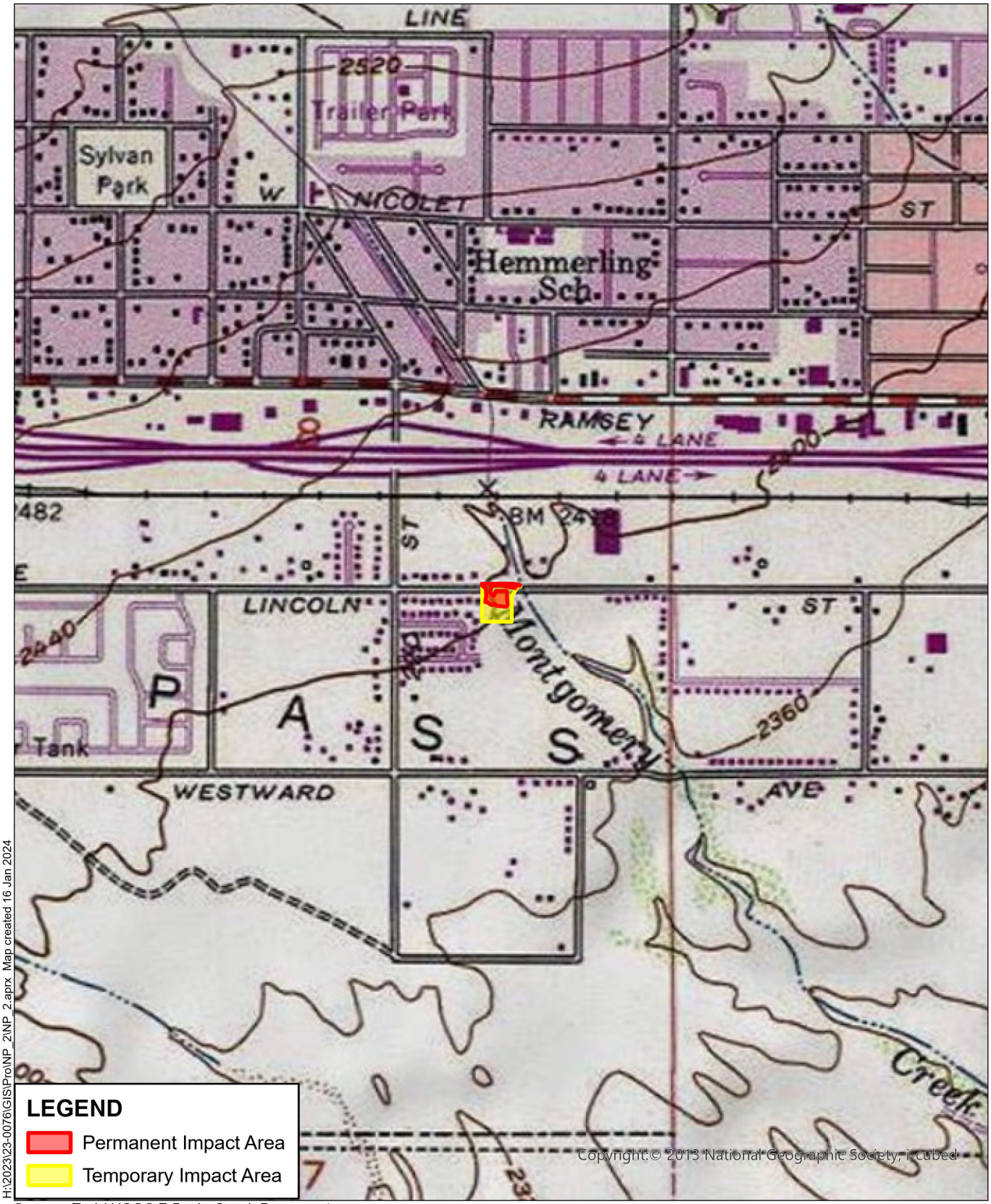
Source: Esri imagery, 2024.

0 100 200 300 Feet

Figure 2 - Aerial Map

NP-2 Booster Pump Station and Reservoir Project

ALBERT A. WEBB ASSOCIATES



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Source: Esri / USGS 7.5 min Quad: Beaumont,
Township: 3, Section: 8, Range: 1.

0 500 1,000 1,500 Feet

Figure 3 - USGS Topographic Map

NP-2 Booster Pump Station and Reservoir Project

ALBERT A. WEBB ASSOCIATES

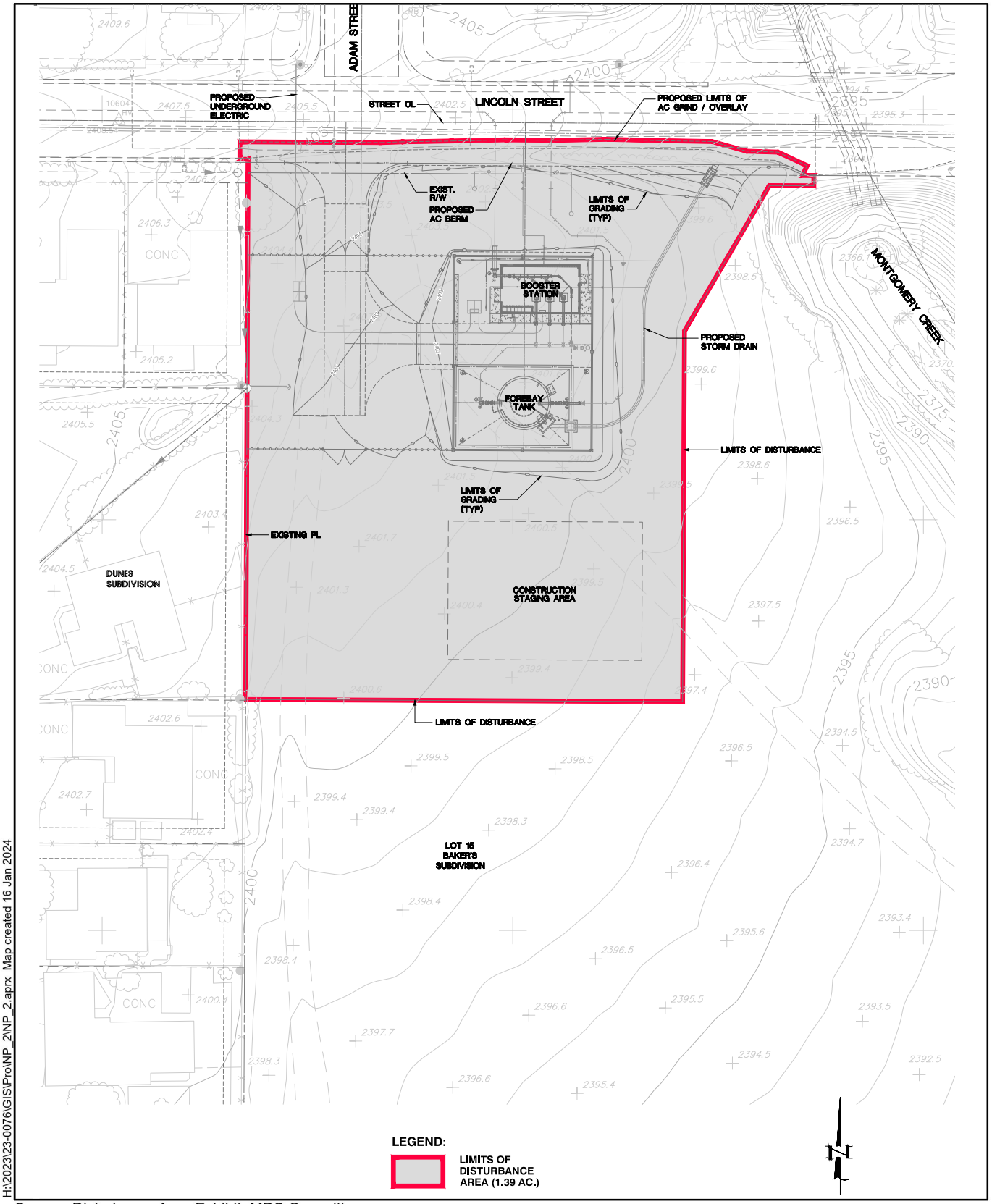
Source: City of Banning General Plan with Zoning Overlay, 2020; Esri imagery, 2024.

Figure 4 - General Plan Land Use and Zoning Designations

NP-2 Booster Pump Station and Reservoir Project

0 100 200 300 Feet

ALBERT A. WEBB ASSOCIATES



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Source: Disturbance Area Exhibit, MDS Consulting, Dec. 22, 2023.

Figure 5 - Project Site Plan

NP-2 Booster Pump Station and Reservoir Project

ALBERT A. WEBB ASSOCIATES

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

DETERMINATION

On the basis of this initial evaluation:

☐ 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 4/25/24

Arturo Vela, Director of Public Works
Printed Name

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved *(e.g., the project falls outside a fault rupture zone)*. A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards *(e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis)*.

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063©(3)(D). In this case, a brief discussion should identify the following:

    a. **Earlier Analysis Used.** Identify and state where they are available for review.
    b. **Impacts Adequately Addressed.** Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c. **Mitigation Measures.** For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts *(e.g., general plans, zoning ordinances)*. Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

a. the significance criteria or threshold, if any, used to evaluate each question; and
b. the mitigation measure identified, if any, to reduce the impact to less than significant.

ENVIRONMENTAL FACTORS: ENVIRONMENTAL CHECKLIST	*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. 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 which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Aesthetics Discussion:

a) Have a substantial adverse effect on a scenic vista?

Less than significant impact. The City of Banning (City) defines visual resources as those physical features that enhance the City's aesthetic and scenic character. The majority of the City is located within the narrow east-west trending valley of the San Gorgonio Pass, which is dominated by the San Bernardino Mountains along the northern end of the valley and the San Jacinto Mountains along the southern end of the valley. (GP DEIR, p. III-189.) These mountain ranges present impressive viewsheds and dramatic scenery, including frequently snow-covered mountain peaks and ranges with rugged slopes. The San Bernardino Mountains which can be seen from the Project site towards the northern horizon have a peak elevation of approximately 11,499 feet above sea level. The San Jacinto Mountains seen from the Project site towards the southern horizon have a peak at an approximate elevation of 10,804 feet above sea level. (GP DEIR, p. III-189.)

The Project site is located at an elevation of approximately 2,400 feet above sea level. The Project's largest structure would be the 21-foot-tall reservoir with the SCADA antenna that extends 5 feet above the reservoir. However, given the differences in elevation between the Project site and the mountains and the relative lack of massing of both the reservoir and SCADA antenna, the proposed Project would not obscure views of the San Bernardino Mountains or the San Jacinto Mountains. Construction equipment and related construction activity at the Project site may result in limited, short term, and undesirable visuals; however, this will be a temporary condition, which will cease after construction is completed. Therefore, impacts regarding a substantial adverse effect on a scenic vista will be less than significant.

Sources: GP DEIR; Project Description

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No impact. A portion of State Highway 243 is designated as a state scenic highway where it occurs in the City's southern Sphere of Influence; however, the City's GP Draft Environmental Impact Report (DEIR) determined that development pursuant to the City's GP would have a limited impact to viewsheds along this corridor. (GP DEIR, p. III-190.) Moreover, the portion of Highway 243 designated as a state scenic highway is approximately 1.5 miles east from the Project site. As such, the Project will not physically affect scenic resources within a state scenic highway. Therefore, no impact will occur.

Source: GP DEIR

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?

Less than significant impact. CEQA Section 21071(a) defines an incorporated city as being an urbanized area if it meets either of the following criteria:

(1) Has a population of at least 100,000 persons.
(2) Has a population of less than 100,000 persons if the population of that city and not more than two contiguous incorporated cities combined equals at least 100,000 persons.

The City is not categorized as an urbanized area because (i) the City's population is not at least 100,000 persons and (ii) the combined population of both the City and the City of Beaumont (the only contiguous city) is less than 100,000 persons. Based on July 1, 2022 United States Census Bureau data Banning has a population of approximately 30,683 persons and Beaumont has a population of 56,349 persons, totaling to a population of approximately 85,553 persons. (USCB.) The January 1, 2023, California Department of Finance population estimate for Banning and Beaumont is approximately 31,250 and 56,590, respectively. (DOF.) Since the City is not an urbanized area, this analysis is based on whether Project implementation would substantially degrade the existing visual character or quality of public views of the Project site and its surroundings.

Public views of the Project site are from (i) W. Lincoln Street (between S. 22nd Street and S. 16th Street, (ii) W. Westward Avenue (between S. 22nd and Lowell Street). The Project site may also be briefly visible from motorists traveling in the westbound lanes of I-10, which is approximately 0.20 of a mile north of the Project site.

Although the Project site will be visible from public access points and will change the view of the Project site from vacant land to water conveyance infrastructure, this will not substantially degrade the visual character or quality of public views of the site or its surroundings. Because above ground utilities are already present in proximity to the Project site and there are no unique items or visual interest present on the Project site. Additionally, existing commercial and industrial development that exceeds the height of the proposed Project facilities is located near the Project site. The proposed reservoir will not exceed 21 feet high and will be coated to blend in with the surrounding environment. The SCADA antenna will be mounted on top of the reservoir and will not extend more than five feet above the reservoir. The booster station will be about 12 feet tall and

will be a relatively small structure. Therefore, the Project does not include any above-grade features of significant mass that would alter or interfere with the dramatic and valuable viewsheds provided by the mountains. (GP, p. II-1.) For these reasons, Project implementation would not substantially degrade the existing visual character or quality of public views of the site or its surroundings and impacts would be less than significant.

Sources: Project Description; UCSB; DOF; GP

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less than significant impact. Light pollution may result due to introduction of new artificial light sources. The International Dark-Sky Association defines light pollution as any adverse effect of artificial light including sky glow, glare, light trespass, light clutter, decreased visibility at night and energy waste. (IDA.) Night lighting and glare can effect human vision, navigation, and other activities; however, it can also affect nocturnal wildlife particularly nigh-hunting or foraging animals, such as owls, rodents, and others. Glare is typically associated with installation of windows and other reflective surfaces.

The existing light sources within proximity to the Project site include: streetlights within Lincoln Street; streetlights and residential lighting from the residential neighborhood west of the Project site; and lighting from the commercial/industrial development north of the Project site. The Project site and surrounding area are therefore not generally dark at night. The proposed Project will introduce a new source of light. Security lighting will be installed along the perimeter of the booster station and reservoir. However, on-site lighting will be shielded or downward facing to avoid light pollution or light spillage and will be installed in accordance with the City's standards. Project implementation will not introduce a source of substantial glare to the surrounding area. Therefore, impacts will be less than significant.

Sources: Project Description; IDA

ENVIRONMENTAL FACTORS:	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
II. AGRICULTURAL 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?	☐	☐	☐	☒

Agricultural Resources Discussion:

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?

No impact. The proposed Project site is not located within areas designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland). According to the California Department of Conservation *Farmland Mapping and Monitoring Program* (FMMP), the Project site consists of Urban and Built Up Land, and is adjacent to other vacant lands. Thus, implementation of the proposed Project will not convert any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Therefore, no impact will occur.

Source: FMMP

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No impact. The proposed Project is not located within a Williamson Act contract. As of 2004, there were three Williamson Act contracts in effect over approximately 3,500 acres within the City's GP planning area. These include lands located in the City limits near the Banning Bench, in the northwest portion of the planning area between Highland Springs Avenue and Highland Home Road, and in the City's southerly sphere of influence south of Westward Avenue/Sun Lakes Boulevard. (GP, p. IV-22.) These lands are being phased out due to urbanization, although residential land uses that allow for agricultural and ranching activities are provided for under the GP. (GP DEIR, p. III-11.) Per **Figure 3 – General Plan Land Use and Zoning Designations**, the Project site is zoned as Open Space-Parks. The City zones the surrounding areas as General Commercial, Low-Density Residential, and Very Low Density Residential. Therefore, there are no agricultural zoning/land use designations adjacent to the Project site (see **Figure 3**). The Project will not encroach Williamson Act land or change a land use in the vicinity of a Williamson Act contract. Therefore, no impacts will occur**.**

Sources: GP; GP DEIR

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))?

Forest land, as defined in Public Resources Code (PRC) section 12220(g) is land that can support 10 percent of native tree cover of any species under natural conditions and that allows for the management of one or more forest resources. Timberland, as defined in PRC section 4526, means land other than land owned by the federal government and land designated as experimental forest land, which is capable of growing a crop of trees for any commercial species, including Christmas trees.

No impact. The Project does not propose or require rezoning. As shown on **Figure 3**, the proposed Project site is within the City of Banning. Banning does not have a zoning designation for forest land, timberland, or timberland zoned Timberland Production within City limits. Therefore, there is no zoned forest land, timberland, or timberland zoned Timberland Production within the Project site and surrounding areas. Further, according to Table 17.08.020 of Banning's Municipal Code, farming uses are prohibited in the City's LDR, MDR, and HDR-20 zones. Community gardens are a permitted use in the City's OS-R, zone; however, a community garden would not allow commercial tree production as defined in PRC section 12220(g).

Given the location and City's zoning designations, the Project site does not traverse through or adjacent to areas zoned for forest land, or Timberland Production, no impacts would occur.

Sources: GP; PRC 12220; PRC 4526; BMC

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No impact. There is no forest land in proximity to the Project site. Implementation of the Project would not result in the loss or conversion of forest land; thus, there would be no impact in this regard**.**

Sources: GP

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?

No impact. As discussed in Response IIa, there is no designated Farmland on or in proximity to the Project site. As stated in Response IId, there is no forest land within or adjacent to the Project site. As such, implementation of the proposed Project will not result in the conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use**.** Therefore, there will be no impacts.

Sources: FMMP; GP

ENVIRONMENTAL FACTORS:	*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?	☐	☐	☒	☐

Air Quality Discussion:

a) Conflict with or obstruct implementation of the applicable air quality plan?

Less than significant impact. The City of Banning is in the South Coast Air Basin (Basin). The South Coast Air Quality Management District (SCAQMD) prepares the Air Quality Management Plan (AQMP) for the Basin. The AQMD sets forth a comprehensive program that will lead the Basin into compliance with all federal and state air quality standards. (SCAQMD 2022, pp. ES-2 and 1-4.) The control measures and related emission reduction estimates included in the AQMP are based on emissions projections for a future development scenario derived from land use, population, and employment estimates defined in consultation with local governments. To do this, the AQMP utilizes the population and growth estimates compiled by the Southern California Association of Governments (SCAG) in their 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). (SCAQMD 2022, pp. 4-51 – 4-52.) SCAG's population and employment projections for the City are based on the City's growth projections (SCAG RTP/SCS, p. 70.), which are outlined in the GP. Accordingly, if a project demonstrates compliance with local land use plans and/or population projections, then the AQMP would have taken into account such uses when it was developed, and the project would not conflict with implementation of such a plan.

The proposed Project consists of the construction and operation of infrastructure to provide non potable water supplies in the City. The proposed Project would not alter population projections and is an allowable use under the OS-PA designation of the BMC (BMC, 17.20.020), and is consistent with the City's existing land use designations. As such, the proposed Project would not conflict with or obstruct implementation of the AQMP. Therefore, impacts will be less than significant.

Sources: BMC; SCAG RTP/SCS; SCAQMD 2022

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?

Less than significant impact. The portion of the Basin within which the proposed Project is located is designated as a non-attainment area for ozone, particulate matter less than 10 microns in diameter (PM-10), and particulate matter less than 2.5 microns in diameter (PM-2.5) under the State standards and for ozone and PM-2.5 under Federal standards. (CARB 2024) The SCAQMD considers the thresholds for project-specific impacts and cumulative impacts to be the same. (SCAQMD 2003.) Therefore, projects that exceed project-specific significance thresholds are considered by SCAQMD to be cumulatively considerable. Based on SCAQMD's regulatory jurisdiction over regional air quality, it is reasonable to rely on its thresholds to determine whether there is a cumulative air quality impact.

Air quality impacts can be described in a short- and long-term perspective. Short-term impacts occur during site grading and Project construction and consist of fugitive dust and other particulate matter, as well as exhaust emissions generated by construction-related vehicles. Long-term impacts occur once the Project is in operation. Operational emissions sources are limited because the booster station pumps are electric. The primary source of operational emissions is the routine visits by vehicles driven by maintenance personnel and are considered negligible; therefore, only short-term impacts were quantified.

The Project will be required to comply with existing SCAQMD rules for the reduction of fugitive dust emissions. SCAQMD Rule 403 establishes these procedures. Compliance with this rule is achieved through application of standard best management practices in construction and operation activities, such as application of water or chemical stabilizers to disturbed soils, managing haul road dust by application of water, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 mph, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph and establishing a permanent, stabilizing ground cover on finished sites. In addition, projects that disturb 50 or more acres or more of soil or move 5,000 cubic yards of materials per day are required to submit a Fugitive Dust Control Plan or a Large Operation Notification Form to SCAQMD. Based on the size of this Project's footprint (approximately 0.48 acres) a Fugitive Dust Control Plan or a Large Operation Notification Form would not be required.

An Air Quality/Greenhouse Gas analysis (AQ/GHG Analysis) was prepared for the Project by Albert A. Webb Associates dated January 2, 2024 (WEBB(a)) and is included in Appendix A to this Initial Study. Short-term emissions from Project construction were evaluated using the California Emissions Estimator Model (CalEEMod) version 2022.1. The results of this analysis are summarized in **Table A –Estimated Maximum Daily Construction Emissions**, below.

Table A – Estimated Maximum Daily Construction Emissions

Activity	Peak Daily Emissions (lb/day)					
	VOC	NO_X	CO	SO_2	PM-10	PM-2.5
SCAQMD Daily Construction Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
2024	**1.60**	**14.70**	**15.90**	**0.03**	**2.39**	**1.43**
2025	1.50	13.70	15.80	0.03	0.84	0.55
Maximum[1]	**1.60**	**14.70**	**15.90**	**0.03**	**2.39**	**1.43**
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: WEBB(a), Table 2 – Unmitigated Estimated Maximum Daily Construction Emissions
Note: [1] See the detailed model output reports attached herewith. Numbers are the maximum of summer or winter emissions in a given year and may not match due to rounding within the model.

As shown in **Table A** above, the emissions from construction of the Project are below the SCAQMD daily construction thresholds for all criteria pollutants. As such, the Project will not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is in non-attainment and the impacts will be less than significant. No mitigation is required.

Sources: CARB 2024; SCAQMD 2003; WEBB(a); Project Description

c) Expose sensitive receptors to substantial pollutant concentrations?

Less than significant impact. A sensitive receptor is a person in the population who is particularly susceptible to health effects due to exposure to an air contaminant including children, the elderly, and persons with pre-existing respiratory and/or cardiovascular illness. SCAQMD defines a "sensitive receptor" as a land use or facility such as residences, schools, child care centers, athletic facilities, playgrounds, retirement homes, and convalescent homes where these persons are typically located. (SCAQMD 1993.)

The nearest sensitive receptors are residential properties adjacent to and west of the Project site. Residential uses are also located north and northwest of the Project site, across Lincoln Street. (WEBB(a), p. 5.)

According to the LST methodology, only on-site emissions need to be analyzed. Emissions associated with vendor and worker trips are mobile source emissions that occur off site. The emissions analyzed under the LST methodology are NO_2, CO, PM-10, and PM-2.5. SCAQMD has provided LST lookup tables to allow users to readily determine if the daily emissions for proposed construction or operational activities could result in significant localized air quality impacts for projects five acres or smaller. Based on SCAQMD guidance, the Project will disturb approximately one acre per day during grading. Therefore, the one-acre LST was used to compare the on-site emissions estimated by CalEEMod. (WEBB(a), pp. 4-5.)

The LST thresholds are estimated using the maximum daily disturbed area (in acres) and the distance of the Project to the nearest sensitive receptors (in meters). The closest receptor distance on the LST look-up tables is 25 meters. According to LST methodology, projects with boundaries closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters. Therefore, a receptor distance of 25 meters (82 feet) was used to ensure a conservative analysis. (WEBB(a), p. 5.) The results are summarized below.

Table B – LST Results for Daily Construction Emissions

Activity	Peak Daily Emissions (lb/day)			
	NO_X	CO	PM-10	PM-2.5
LST for 1-acre at 25 meters	**103**	**1,000**	**6**	**4**
Grading-2024	12.80	12.30	**2.27**	**1.40**
Booster Station Construction-2024	**6.79**	**6.93**	0.26	0.24
Booster Station Construction -2025	6.31	6.88	0.23	0.21
Tank Construction-2024	**7.38**	**7.78**	0.31	0.28
Tank Construction-2025	6.84	7.72	0.27	0.25
Tank Coating-2025	3.04	2.81	0.11	0.11
Paving-2025	3.58	4.97	0.17	0.15
Maximum[1]	**14.17**	**14.71**	**2.27**	**1.40**
Exceeds Threshold?	**No**	**No**	**No**	**No**

Source: WEBB(a), Table 3 – LST Results for Daily Construction Emissions.
Note: [1]. Maximum emissions are the greater of either each activity along or the sum of Booster Station Construction and Tank Construction in 2024 or 2025 as these activities overlap. Maximum emissions are shown in bold.

Emissions from construction of the Project will be below the LST established by SCAQMD for the Project. Therefore, localized construction impacts will be less than significant.

Regarding the Project's long-term localized impacts, LSTs only apply to the operational phase if a project includes stationary sources or on-site mobile equipment generating on-site emissions. The proposed Project does not include such uses. The long-term emissions from the Project, as discussed previously in Response IIIb, are primarily from the pumps and in the form of mobile source emissions, with no stationary sources of emissions present. The new booster station pumps will be electric powered. The booster station will also have a diesel-powered emergency generator. Because the emergency generator will only be used during emergency power outages and routine testing, emissions would be negligible. The City of Banning will be required to obtain an SCAQMD permit to install and operate the emergency generator. The SCAQMD permitting process would ensure that the Project meets regulatory requirements through the application review process and by placing specific operating conditions on the permit such as operating hour limits. Therefore, no long-term LST analysis is needed and localized operational emissions would be less than significant.

Based on the preceding analysis, the proposed Project will not expose sensitive receptors to substantial pollutant concentrations. Therefore, impacts are considered less than significant. No mitigation is required.

Sources: SCAQMD 1993; WEBB(a); Project Description

d) Result in other emissions (such as those leading to odors) affecting a substantial number of people?

Less than significant impact. The Project presents the potential for generation of other emissions such as odors in the form of diesel exhaust during construction in the immediate vicinity of the Project site. Odors generated during construction will be short-term and will not result in a long-term odorous impact to the surrounding area. After completion of the proposed improvements, only infrequent maintenance will be required.

The California Air Resources Board (CARB) has developed an Air Quality and Land Use Handbook to outline common sources of odor complaints, including: sewage treatment plants, landfills, recycling facilities, and petroleum refineries. (CARB 2005, p. 2-2.) The Project proposes a non-potable water reservoir and booster station which is not included on CARB's list of uses that are known to generate odors. No other emissions are anticipated to result from the Project that could adversely affect substantial numbers of people. Therefore, impacts are less than significant.

Source: CARB 2005

ENVIRONMENTAL FACTORS:	*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?	☐	☒	☐	☐

Biological Resource Discussion:

The analysis this section is based on the findings in the *Biological Technical Report and MSHCP Consistency Analysis,* January 19, 2024 *(*hereinafter referred to as the *BTR)*, which was prepared by Albert A. Webb Associates (WEBB(b)). This document is included as Appendix B of this Initial Study. Webb conducted literature reviews and searches of the California Department of Fish and Wildlife's (CDFW's) California Natural Diversity Data Base (CNDDB), the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants of California, U.S Geological Survey, Soil Survey data, Western Riverside MSHCP, U.S Fish and Wildlife (USFWS) Information for Planning and Consultation, National Wetlands Inventory, and USGS National Hydrography Dataset. In addition to the literature review and database searches, a reconnaissance-level field assessment of the proposed Project footprint was conducted including a 100-foor survey buffer, herein defined as the biological study area (BSA). The BSA plus Project footprint totals 4.53 acres. (WEBB(b), pp. 6-7.)

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 Wildlife or U.S. Fish and Wildlife Service?

Less than significant with mitigation incorporated. According to the *BTR*, the Project site is currently characterized as disturbed and undeveloped, with no existing structures and is composed of the following four vegetation communities: Urban/Developed lands, Disturbed habitat, Riversidian Alluvial Fan Sage Scrub, and Unvegetated Channel. Implementation of the proposed Project will result in permanent and temporary impacts to two of these four communities, as shown below in **Table C – Vegetation Communities Present on the Project Site**. (WEBB(b), p. 15.)

Table C - Vegetation Communities Present on the Project Site

Vegetation Community	Description	Present within Project footprint	Total (acres)
Urban/Developed (URB/DEV)	Areas that have undergone construction or significant physical alterations, to an extent that native vegetation is no longer supported.	Present	1.88
Disturbed Habitat (DH)	Areas that have not been developed but have experienced physical disturbances caused by human activities. These areas still retain a soil substrate and are primarily covered by non-native species.	Present	2.56
Riversidian Alluvial Fan Sage Scrub (RAFSS)	Usually occurs on alluvial fans in southern California, particularly in Riverside and San Diego counties. This variant of sage scrub is adapted to the unique conditions found on alluvial fans, which typically have well-drained, rocky soils.	Not present located in the Montgomery Creek	0.06
Unvegetated Channel (UVC)	Sandy, gravelly, or rocky area along waterways or flood channels where vegetation does not typically grow on a permanent basis	Not present located in the Montgomery Creek	0.03
Total			4.53

Permanent and temporary impacts to vegetation communities and land cover types as a result of Project implementation are quantified and summarized in **Table D**.

Table D - Summary of Impacts to Vegetation Communities and Land Cover Types

Vegetation Community / Land Cover Type	Permanent (acre)	Temporary (acre)	Total
Urban/Developed (URB/DEV)	0.09	0.01	0.1
Disturbed Habitat (DH)	0.39	0.90	1.29
Total Project Footprint	0.48	0.91	1.39

Source: WEBB(b), Table 3

Neither of these vegetation habitat types are considered sensitive. Permanent impacts total 0.48 acre and temporary impacts total 0.91 acre within these land cover types. (WEBB(b), p. 19.)

Special Status Sensitive Vegetation Communities

RAFSS is classified as a sensitive vegetation community; therefore, any potential impacts to this community would necessitate mitigation measures. Although RAFSS are present in Montgomery Creek, which is within the BSA but not within the Project footprint, no impacts are anticipated on this community as a result of Project implementation. (WEBB(b), p. 18.) To ensure the RAFSS associated with Montgomery Creek are avoided during construction activities, mitigation measure **MM BIO-1**, which requires the installation of temporary exclusionary construction fencing, shall be implemented to minimize the risk of accidental impacts to the RAFSS within the BSA. (WEBB(b), p. 28.)

> **MM BIO-1 Temporary Exclusionary/Construction Fencing.** To protect Montgomery Creek sensitive habitats (RAFSS) and the riverine habitat which are adjacent to the Project footprint, within the BSA, temporary exclusionary construction fencing will be installed at the Project footprint boundary where they are adjacent to Montgomery Creek with the Project Biologist present to ensure the fencing is placed in the correct areas of the site (see Figure 6 – Exclusionary Fencing of Appendix B). The purpose of fencing shall be to prevent disturbances to adjacent sensitive habitats and to avoid the spread of debris from the construction zone into adjacent areas.

Special Status Plant Species

No special-status plant species were observed during the general habitat assessment. Most of the BSA and all of the impact footprint is composed of disturbed lands that lack suitable habitat for special-status plants. Therefore, with implementation of mitigation measure **MM BIO-1**, no direct or indirect impact to special-status plant species are expected. (WEBB(b), pp.18, 21.)

Special Status Wildlife Species

No special-status wildlife species were observed during the habitat assessment and no special-status wildlife species are expected to occur. Given the disturbed nature of the Project site and associated habitat types no direct or indirect impacts to special status wildlife species are expected. (WEBB(b), pp. 18, 21.)

The Project site does not contain suitable nesting habitat for bird species protected under the federal Migratory Bird Treaty Act (MBTA) and the Fish and Game Code. Suitable habitat such as trees and bushes are

not present within the Project footprint. Ground nesters are unlikely due to the disturbed vegetation and frequency of mowing. Therefore, no impacts to nesting birds are anticipated to occur. (WEBB(b), pp. 18, 22.)

The BSA does not contain suitable habitat such as vernal pools for fairy shrimp or riparian birds. The BSA is not located within a survey area for Narrow Endemic Species. (WEBB(b), p. 24.)

The Project site is located within the boundaries of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The City of Banning is a permittee to the MSHCP and therefore the Project must not conflict with the plan. As discussed in Response IVf, the BSA is not located within MSHCP survey areas for Narrow Endemic Plant Species, Criteria Area Plant Species, amphibians, burrowing owl, or mammals. There are approximately 0.06 acres of RAFSS within Montgomery Creek, which is within the BSA but outside of the Project footprint. This is considered a riverine resource per the MSHCP. Project implementation would not result in any direct impacts to the RAFSS habitat. Indirect impacts to the RAFSS habitat in Montgomery Creek would be avoided through implementation of Best Management Practices (BMPs) listed in MSHCP Volume 1, Appendix C.

Thus, with implementation of **MM BIO-1** and compliance with MSHCP BMPs, the proposed Project will not have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. Therefore, impacts will be less than significant with mitigation.

Sources: WEBB(b)

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 Wildlife or U.S. Fish and Wildlife Service?

Riparian/riverine areas are lands which contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or which depend upon soil moisture from a nearby fresh water source; or areas with fresh water flow during all or a portion of the year (WEBB(b), p. 23.)

Less than significant impact with mitigation incorporated. According to the MSHCP Consistency Analysis of the *BTR,* the Project site does not support soils or plants suitable to support vernal pools, nor were vernal pools identified during site investigation. No vernal pools or other suitable fairy shrimp were found. Additionally, no suitable habitat for riparian bird species was found. Therefore, no direct or indirect impacts are expected to occur in relation to vernal pools or fairy shrimp.

Riparian/riverine areas are located within the Project's BSA. Montgomery Creek, an ephemeral channel exhibiting steeply incised banks, traverses the eastern portion of the BSA. This feature is considered an MSHCP riverine resource. Within this reach, Montgomery Creek exhibits eroded banks with vertical spans surpassing 25 feet, while active flood plain maintains an average width of approximately 4 feet. The Creek's southern ingress into the BSA is facilitated by two 3-foot corrugated steel culverts originating beneath West Lincoln Road. The Creek intersects the BSA, the Creek is absent from the Project footprint and therefore no direct impacts are anticipated to occur. (WEBB(b), p. 17.) With implementation of mitigation measure **MM BIO-1**,

which requires the installation of exclusionary fencing and compliance with the BMPs listed in MSHCP Volume 1, Appendix C, indirect impacts to the riverine resource in Montgomery Creek will be less than significant with mitigation.

Sources: WEBB(b)

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?

Less than significant impact with mitigation incorporated. The site investigations conducted found no evidence of wetlands. Therefore, no fairy shrimp habitat, or riparian bird habitat is located within the Project footprint or the BSA. (WEBB(b), pp. 17, 24.)

As discussed in Response IVb., Project implementation will not have any direct impacts to wetland features. Montogomery Creek is located within the BSA but is not within the Project footprint. Therefore, indirect impacts may occur if construction activities stray outside of the Project footprint. In order to protect the sensitive habitat from accidental disturbance, implementation of mitigation measure **MM BIO-1** and compliance with the BMPs listed in MSHCP Volume 1, Appendix C will reduce impacts regarding state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means to less than significant.

Source: WEBB(b)

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?

Wildlife corridors are linear features that join large spans of natural open space that enable the movement of animals throughout the landscape. Habitat linkages are areas that provide connectivity between habitat patches as well as opportunities for foraging, reproduction, and dispersal habitat for plants and animals. Habitat linkages help minimize the effects of habitat fragmentation as they function as steppingstones for wildlife dispersal. (WEBB(b), p. 19.)

No impact. The Project site is not located within designated wildlife corridors or habitat linkages identified in the South Coast Missing Linkages analysis conducted by South Coast Wildlands (2008). The proposed Project site does not have any adjacency or on-site connection to existing MSHCP Conservation Areas or lands designated for conservation purposes. There are no native wildlife nursery sites within proximity to the Project site. (WEBB(b), p. 22.)

Because the Project is not located in or adjacent to an MSHCP Conservation Area and no MSHCP linkages are identified in the Project area. There would be no impacts related to 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. (WEBB(b), p. 22.)

Source: WEBB(b)

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less than significant impact. City of Banning Municipal Code Section 17.32.060 addresses the removal or destruction of trees; however, this section of the municipal code is not applicable to capital projects. Further, according to the site investigation conducted by Webb, no tress or bushes were present within the Project footprint. Therefore, Project implementation would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance and impacts are less than significant.

Sources: Project Description; BMC; WEBB(b)

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?

Less than significant impact with mitigation incorporated. According to the MSHCP Consistency Analysis within the *BTR*, the Project site does not lie within and is not adjacent to any MSHCP Conservation Areas. Although the Project does not have a requirement to set aside land for an MSCHP Conservation Area, the City is a Permittee to the MSHCP and therefore must ensure that all projects comply with MSHCP Sections 6.1.2 (Protection of Species within Riparian/Riverine Areas and Vernal Pools), 6.1.3 (Protection of Narrow Endemic Plant Species), 6.1.4 (Urban Wildlands Interface), 6.3.2 (Additional Survey Needs and Procedures), Appendix C (Standard Best Management Practices), and 7.5.3 (Construction Guidelines).

As discussed in Response IVb, Project implementation will not directly or indirectly impact riparian/riverine resources. Montgomery Creek is not within the Project footprint, but is within the BSA. Because no impacts are expected to Montgomery Creek, no Determination of Biologically Equivalent or Superior Preservation (DBESP) or specific mitigation is necessary. As discussed in Response IVa, no fairy shrimp habitat, vernal pools, or riparian bird habitat was identified on the Project site. Therefore, the proposed Project will not conflict with MSHCP Section 6.1.2. (WEBB(b), p. 24.)

Section 6.1.3 requires assessments of sites in a designated survey area for narrow endemic plants to be completed. As discussed in Response IVa, the Project footprint and BSA are not located within a Narrow Endemic Plant Species Survey Area (NEPSSA). Therefore, the proposed Project will not conflict with MSHCP Section 6.1.3. (WEBB(b), p. 24.)

Section 6.1.4 outlines the minimization of indirect effects associated with locating development in proximity to a MSHCP Conservation Area. The Project site is not located in proximity to a MSHCP Conservation Area. As such, the Project is not in conflict with the MSHCP Section 6.1.4. (WEBB(b), p. 24.)

MSHCP Section 6.3.2 requires additional surveys for certain species depending upon the location of a given project. The Project site is not located within an MSHCP-designated criteria area species survey area for plants amphibians, burrowing owl, or mammals; therefore, no surveys are needed for these species. Therefore, the Project will not conflict with MSHCP Section 6.3.2. (WEBB(b), p. 24.)

The MSHCP lists standard best management practices (Appendix C) that will minimize potential impacts to sensitive habitats in the vicinity of a project. The guidelines relate to water pollution and erosion control, equipment storage, fueling, and staging, dust control, exotic plant control and timing of construction. The Project applicant, in this case the City, is required to implement measures from Appendix C. The Project is not located in the Criteria Area or PQP Lands, so Section 7.5.3 guidelines are not applicable. Implementation of mitigation measure **MM BIO-1** will address potential indirect construction impacts. Therefore, with mitigation the proposed Project is consistent with MSHCP Appendix C and Section 7.5.3.

For the reasons set forth above, implementation of the proposed Project will not conflict with the provisions of an adopted conservation plan and impacts will be less than significant with mitigation.

Sources: WEBB(b)

ENVIRONMENTAL FACTORS:	*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 §15064.5?	☐	☐	☒	☐
b. Cause a substantial adverse change in the significance of an archeological resource pursuant to §15064.5?	☐	☒	☐	☐
c. Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☐	☒

Cultural Resource Discussion:

The analysis this section is based on the findings in the *Cultural Resource Investigation for the Banning NP-2 Booster Pump Sation and Reservoir Project, City of Banning, Riverside County*, which was prepared by Applied EarthWorks (AE) and is included as Appendix C of this Initial Study (hereinafter referred to as the *CRI*). As part of the *CRI*, AE conducted archaeological literature and records searches on August 9, 2023 at the Eastern Information Center (EIC) of the California Historical Resources Information Center (CHRIS), located at the University of California, Riverside. The EIC is the official cultural resource records repositories for Riverside County. AE reviewed maps and records on file at the EIC for previously identified cultural resources in or within a 0.5-mile radius around the Project site and existing cultural resources reports pertaining to the vicinity. The Native American Heritage Commission was contacted by AE on June 22, 2023, for a review of the Sacred Lands File (SLF). The SLF search was negative. AE archaeologists conducted an intensive pedestrian survey of the Project site to observe and note the condition of the Project site on August 23, 2023. The survey was completed in 15-meter transects oriented north-south, moving eastward through the Project site. Approximately 90 percent of the Project area was accessible during the survey. (AE(a), pp. 13, 18.)

The EIC records show that eight (8) previous cultural resource studies have been conducted and documented with the 0.5-mile search radius. Three of these studies specifically involved portions of the Project site, as such, 100 percent of the Project site has been previously studied. (AE(a), p. 13.)

a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

Less than significant impact. Determination of National Register of Historic Property (NRHP) eligibility for cultural resources is made according to the following criteria of evaluation (36 CFR 60.4):

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling and association, and:

A. that are associated with events that have made a significant contribution to the broad patterns of our history;

B. that are associated with the lives of persons significant in our past;

C. that embody the distinctive characteristics of a type, period, method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack distinction; or

D. that has yielded, or is likely to yield, information important to prehistory or history.

A property must meet one or more of these specific criteria to qualify as a good representative of a significant historical theme or pattern. It must be associated with important historical events or persons (Criteria A and B); convey important technical, aesthetic, or environmental values (Criterion C); or have potential to provide important scientific or scholarly information (Criterion D). Unless a site is of exceptional importance, it is not eligible for listing in the NRHP until it is 50 years of age. (36 CFR 60.4., AE(a), p. 4.)

For purposes of CEQA, a historical resource is any object, building, structure, site, area, place, record, or manuscript listed in, or eligible for listing in the CRHR (California Public Resources Code [PRC] Section 21084.1). A resource is eligible for listing in the CRHR if it meets any of the following criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
2. Is associated with the lives of persons important in our past.
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
4. Has yielded, or may be likely to yield, information important in prehistory or history.

The California Code of Regulations (CCR) further provides that cultural resources of local significance are CRHR-eligible. (Title 14 CCR, Section 4852) (AE(a), pp. 4–5.)

The previous cultural resources investigations conducted within the Project site identified a total of 46 cultural resources have been identified; five archaeological resources that date to the historic period and 41 built-environment resources. The five archaeological resources that date to the historic period include: one water diversion system, one concrete foundation, one refuse scatter, one rubble deposit, and one concrete well box. The 44 built environment resources consist of historical houses and commercial buildings. (AE(a), pp. 14-15.) None of the previously recorded cultural resources are documented within the Project site and are not listed as eligible on the NRHP or CRHR.

In addition to the EIC research, AE also reviewed historical maps. Specifically, AE consulted the USGS topographic quadrangle maps: San Jacinto 1901 30 minute, Southern California 1901 30 minute, Banning 1943 15 minute, Beaumont 1953 7.5 minute, Banning 1956 15 minute, and Sana Ana 1965 30 minute, to assess land use and development within the Project site. All of the maps after 1901 exhibit several buildings outside of the Project site north and south of modern-day Lincoln Street. The Southern Pacific Railroad appears north of the Project site on all of the examined maps. The same structures appear on aerial photographs as early as 1966. No structures, roads, or other features of historical interest are shown within, or in the vicinity of, the Project site on any of the reviewed historical maps. (AE(a), p. 15.) Moreover, the Project site is highly disturbed

and appears to have been previously plowed, and used as a staging area in the past, indicating that significant previous ground disturbance has previously occurred. (AE(a), p. 18.)

Because the only three historic cultural resources documented within the Project site were not found during the pedestrian survey and were previously evaluated and recommended as ineligible for listing on the NRHP and CRHR, it is concluded that no historic properties (NRHP-eligible) or historical resources (CRHR-eligible) are present. Because the Project site has been previously disturbed by dirt pathways, plowing, and staging activity, there is a low likelihood that intact significant historical resources are buried. Additionally, geological data indicates no Ab (buried) horizons which would be conducive to preserving archaeological deposits are present. (AE(a), pp. ii, 18-19.) Thus, implementation of the proposed Project will not cause any adverse change in the significance of a historical resource pursuant to §15064.5. Therefore, impacts would be less than significant and no mitigation is required.

Sources: AE(a); GP

b) Cause a substantial adverse change in the significance of an archeological resource pursuant to §15064.5?

Less than significant with mitigation incorporated. As discussed above, none of the 46 historical/archaeological resources were recorded within or immediately adjacent to the Project site. AE contacted the Native American Heritage Commission (NAHC) on June 22, 2023 for a review of the SLF. The objective of the SLF search was to determine if the NAHC had any knowledge of Native American cultural resources within the immediate vicinity of the Project site. The NAHC responded on July 19, 2023, stating that the SLF was completed with negative results. The NAHC requested AE contact Native American individuals and organizations to elicit information regarding cultural resource issues related to the proposed Project, if any.

AE sent out Project scoping letters via email and U.S. Postal Service to 11 individuals and organizations traditionally and culturally affiliated with the geographic region of the Project area on September 8, 2023. As of November 20, 2023, AE received two responses from The Agua Caliente Band of Cahuilla Indians and The Morongo Band of Mission Indians requesting a copies of records and site searches, shapefiles, and cultural resources inventory of the Project area by a qualified archaeologist before any development activities commence and to be contact immediately if any resources are discovered.

Geologic data indicate two soil series within the Project site: Greenfield and Ramona soils. These soil types typically retain water for three months out of the year during warm seasons, and foster sufficient plant growth. None of the soil series mapped in the Project site include buried A (Ab) horizons which are conducive to buried archaeological deposits. All other archaeological sensitivity indicators reflect low potential for buried archaeological resources. Past disturbances from dirt pathways, plowing, and staging activities have disturbed the Project site. The records search conducted as part of the *CRI* did not identify any documented prehistoric resources within a 0.5-mile radius of the Project site. Finally, the field archaeologists that conducted the pedestrian surveys for the *CRI*, did not encounter any archaeological deposits or features within the Project site. (AE(a), pp. 5, 13, 20.)

The lack of reported prehistoric archaeological remains with the Project study area suggests that the property is not highly sensitive for prehistoric archaeological resources. Therefore, the Project site contains a relatively low potential to encounter intact, subsurface archaeological deposits. (AE(a), p. 20.) Although the potential to encounter intact and significant buried archaeological deposits is unlikely, the Project shall implement mitigation measure **MM CR-1** to reduce impacts to unknown archaeological resources to a less than significant level. Therefore, impacts would be less than significant with mitigation incorporated.

> **MM CR-1: Inadvertent Discovery**. In the event cultural resources are discovered during Project construction, all ground disturbance activities within 100 feet of the discovered cultural resource shall be halted until a qualified archaeologist (meeting the Secretary of the Interior Standards) can visit the site of discovery, assess the significance and integrity of the find, and determine the appropriate treatment (documentation, recovery, avoidance, etc.) and disposition of the cultural resource. Further ground disturbance shall not resume within the area of the discovery until the appropriate treatment has been accomplished. Work on the other portions of the Project outside of the buffered area may continue. Any such discoveries and subsequent evaluation and treatment, shall be documented and submitted to the EIC for archival purposes.

Source: AE(a)

c) Disturb any human remains, including those interred outside of dedicated cemeteries?

Less than significant impact. The proposed Project site is not located on any known cemetery and human remains are not expected to be disturbed during Project construction. However, if human remains are encountered during Project construction, the steps and procedures specified in the California Health and Safety Code § 7050.5, State CEQA Guidelines § 15064.5(d), and California Public Resource Code § 5097.98, in accordance with PRC § 5097.98, must be implemented. In accordance with PRC § 5097.98, the Riverside County Coroner must be notified within 24 hours of the discovery of potentially human remains. The Coroner must then determine within two working days of being notified if the remains are subject to his or her authority. If the Coroner recognizes the remains to be Native American, he or she must contact the NAHC by phone within 24 hours, in accordance with PRC § 5097.98. The NAHC then designates a Most Likely Descendant (MLD) with respect to the human remains within 48 hours of notification. The MLD will then have the opportunity to recommend to the Project proponent, in this instance the City Public Works Department, means for treating or disposing of, with appropriate dignity, the human remains and associated grave goods within 24 hours of notification. Therefore, through regulatory compliance impacts will be less than significant.

Sources: HSC 7050.5; PRC 5097.98

ENVIRONMENTAL FACTORS:	*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?	☐	☐	☐	☒

Energy Discussion:

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less than significant impact. As an infrastructure project, the majority of impacts will be short-term. As described in the AQ/GHG Analysis prepared (WEBB(a)) and included as Appendix A of this Initial Study, the Project's short-term construction would last approximately 12 months. Project construction would require the use of construction equipment for grading and paving, as well as construction workers and vendors traveling to and from the Project site. Construction equipment requires diesel as the fuel source and construction worker and vendor trips use both gasoline and diesel fuel. Project-related fuel consumption was estimated in Energy Tables (WEBB(c)), which are included as Appendix D to this Initial Study. Construction of the Project is estimated to use approximately 20,310 gallons of diesel fuel and 1,777 gallons of gasoline.

Fuel consumption from on-site heavy-duty construction equipment during construction would be temporary in nature and uses a limited number of equipment, which would represent a negligible demand on energy resources. Construction equipment is also required to comply with regulations limiting idling to five minutes or less (13 CCR § 2449(d)(3)). Furthermore, there are no unusual Project site characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable construction sites in other parts of the state. For comparison, the State of California consumed 14 billion gallons of gasoline and 3 billion gallons of diesel fuel in 2023, which is the most recent published data. (CAL-A.) Thus, the fuel usage during Project construction would account for a negligible percent of the existing gasoline and diesel fuel related energy consumption in the State of California. Furthermore, it is expected that construction-related fuel consumption associated with the Project would not be any more inefficient, wasteful, or unnecessary than at other construction sites in the region.

Energy used during operation of the Project would primarily result from electricity usage from the proposed booster station pumps. Based on the estimated pump sizing, the estimated electricity consumption is approximately 11,332 megawatt-hours (MWh) per year (WEBB(a), p. 6). This represents a negligible demand on City of Banning Electric Utility, which produced approximately 151.55 gigawatt-hours (one gigawatt-hour is 1,000 MWh) in 2022 (CEC) and therefore would not operate in a manner that is wasteful or inefficient.

For these reasons, the Project would not result in a potentially significant impact due to wasteful, inefficient, or unnecessary consumption of energy during Project construction or operation. Impacts will be less than significant. No mitigation is required.

Sources: WEBB(a); WEBB(c); CAL-A; CEC; Project Description

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. As discussed above in Response VIa, implementation of the Project will not result in inefficient, unnecessary, or wasteful consumption. The proposed Project would be required to comply with state and federal energy conservation measures related to construction and operations, as noted above. As such, impacts to obstructing a state or local plan for renewable energy or energy efficiency during construction or operation will be less than significant.

Source: Project Description

ENVIRONMENTAL FACTORS:	*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?	☐	☒	☐	☐

Geology and Soils Discussion:

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

The discussion to this response is based on findings and recommendations from the *Supplemental Geotechnical Investigation* which was prepared by Geocon West, Inc. and is included as Appendix E.1 of this Initial Study (hereinafter referred to as the *SGI*). The *SGI* includes the results of subsurface investigation with borings to maximum depths of 50 ½ feet below the existing ground surface and laboratory tests; preliminary seismic evaluation and recommendations for new pavements, earthwork, utility trench backfill, lateral design, drainage and moisture protection, and additional field work and laboratory testing. (Geocon, Appendix A, pp. 3, 5–16.)

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.

Less than significant impact. The Project site is not located within a State of California Fault Hazard Zone or a Riverside County Fault Hazard Zone. The closest fault to the Project site is located along the San Gorgonio Pass, which is approximately 4,900 feet north of the booster pump station. The Project site is not located on any known active earthquake fault trace; therefore, the potential for ground rupture due to active faulting on the Project site is considered to be low. (Geocon, p. 4.)

Additionally, due to the nature of the proposed Project it does not pose a substantial risk of loss, injury, or death as it does not propose any habitable structures and will be designed and constructed in accordance with the City's standard specifications and the recommendations of the *SGI.* Therefore, potential substantial adverse impacts resulting from the rupture of a known earthquake fault are considered less than significant.

Sources: GP; GP DEIR; Geocon

ii) Strong seismic ground shaking?

Less than significant impact. Given its physical and geologic location, the Banning area, like most regions in Southern California, is susceptible to potential intense seismic ground shaking that could affect the safety and welfare of the general community. (GP DEIR, p. III-74.) A preliminary seismic evaluation was conducted as part of the Project's *SGI* using information from the San Andreas, San Gorgonio Pass, and San Jacinto faults. Based on the results of the preliminary seismic evaluation, field exploration, and laboratory testing, the *SGI* includes recommendations for design and construction of the proposed Project. As recommended by *SGI*, the booster station building will be a masonry block building supported by conventional shallow foundations with a slab-on grade floor. The reservoir tank will be a bolted steel tank with steel reinforcement bars constructed on a shallow perimeter ring and slab foundation system. Flexible couplings and seismic shut-off switches are amongst other design and construction elements that will be implemented. Since the Project will be designed and constructed in accordance with applicable City standards and incorporate the recommendations of the *SGI*, potential substantial adverse impacts resulting from strong seismic ground-shaking will be less than significant.

Source: GP DEIR, Geocon

iii) Seismic-related ground failure, including liquefaction?

Less than significant impact. Liquefaction occurs when shallow, fine to medium-grained sediments saturated with water are subjected to strong seismic ground shaking. It generally occurs when the underlying water table is 50 feet or less below the surface. According to the City's GP, the Project site is located in an area with moderate liquefaction susceptibility (GP, Exhibit V-4; GP DEIR, Exhibit III-14, Geocon, p. 6.).

According to the Project's *SGI*, the Project site is located within areas mapped as having a "moderate" potential for liquefaction. (Geocon, p. 6.) The subsurface investigation conducted as part of the Project's *SGI* did not encounter shallow groundwater during the investigation. Historical well data at the site of the pump station is reported to be 735 feet deep, screened from 460-680 feet and have a water depth of 425 feet. (Geocon, p. 4.) Due to the lack of shallow groundwater and the dense nature of alluvial soils, neither liquefaction nor seismic "dry-sand" settlement is a design consideration for the site. Moreover, the nature of the Project will not expose people to substantial risk from seismic-related ground failure including liquefaction, since there are no habitable structures proposed. Further, the Project will incorporate and implement the recommendations from the Project's *SGI* in addition to standard engineering and construction protocols to address ground failure/liquefaction. Therefore, Project impacts will be less than significant.

Sources: Geocon; GP; GP DEIR

iv) Landslides?

Less than significant impact. The proposed Project site is not located adjacent to any areas with low, moderate, or high risk of seismically induced settlement and slope instability and no known landslides have occurred in the Project vicinity. (GP, Exhibit V-2; GP DEIR, Exhibit III-15, Geocon, p. 7.) No topographical features that could potentially create landslides are located within the immediate vicinity of the Project site. Therefore, impacts will be less than significant.

Sources: GP; GP DEIR, Geocon

b) Result in substantial soil erosion or the loss of topsoil?

Less than significant impact. Construction of the proposed Project will entail grading, excavation, and construction in unpaved areas, may lead to localized erosion as wind and water carry loose soils offsite. The proposed grading of the Project site is not expected to include the construction of significant cut or fill slopes. (Geocon, p. 7.) Compliance with current regulations and implementation of a State-required Storm Water Pollution Prevention Plan (SWPPP) that incorporates effective erosion and sediment control measures would reduce these impacts to less than significant.

Source: Project Description, GP, GP-DEIR, Geocon

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?

Less than significant impact. Impacts related to landslides are addressed in Response VIa.iv, above; impacts related to liquefaction are addressed in Response VIa.iii, above; both were found to have less than significant impacts. The following analysis addresses impacts related to unstable soils, as a result of lateral spreading, subsidence, or collapse.

Lateral spreading refers to the lateral movement of gently to steeply sloping saturated soil deposits caused by earthquake-induced liquefaction. As discussed in Response VIa.iii, above, the Project site is mapped in an

area of moderate liquefaction susceptibility; however, due to the lack of shallow groundwater and the dense nature of alluvial soils, neither liquefaction nor seismic "dry-sand" settlement is a design consideration for the site. Nonetheless, during an earthquake lateral spreading could occur. Subsidence in the Banning area is closely associated with groundwater levels and the most populated part of the City occurs in an area with geologic conditions vulnerable to ground subsidence. In particular, the alluvial sediments within the groundwater basins from which the City's water is withdrawn are subject to subsidence if rapid groundwater extraction occurs in response to increased water demands as a result of population growth or prolonged drought. (GP DEIR, p. III-69.) Structures sensitive to slight changes in elevation, such as canals, sewers and drainage improvements are generally sensitive to the effects of subsidence and may be damaged if subsidence occurs. (GP DEIR, p III-80). As discussed in Response VIa.iii, the shallowest groundwater in the Project area is 243 to 271 feet below ground surface. (Geocon, p. 4.)

A substantial portion of the City's valley and canyon areas are underlain by potentially compressible and/or collapsible soils consisting of young sediments with low density that will settle under the added weight of fill embankments or buildings. (GP DEIR, p. III-81.) The Project will be designed and constructed in accordance with applicable City standards and incorporate the recommendations of the *SGI*, and will incorporate engineering and construction protocols to address, among other things, lateral spreading and collapse, Therefore, Project impacts will be less than significant.

Sources: Geocon; GP DEIR

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?

Less than significant impact. Expansive soils are those that contain significant amount of clay particles that have a high shrink (dry) and swell (wet) potential. The upward pressures induced by the swelling of expansive soils under moist condition can have harmful effect upon structures. In the City, expansive soils are primarily associated with areas underlain by older fan deposits containing argillic (clay-rich) soil profiles, which are in the moderately expansive range. Since the low-lying areas of the City are underlain by alluvial fan sediments that are composed primarily of granular soils, the expansion potential ranges from very low to moderately low. (GP DEIR, p. III-69.)

The *SGI* found that the geologic material within the Project area consisted of Pleistocene-age Young Alluvial fan (Qf), and Older Alluvial fan (Qof) deposits. (Geocon, p. 3.) Laboratory testing of site soils indicated these soils are "non-expansive" with an Expansion Index of 7 and 11 which is classified as "very low". These are granular soils and, as indicated in the GP DEIR, the potential for expansion ranges from very low to moderately low. Since the Project will be designed and constructed in accordance with applicable City standards and incorporate the recommendations of the *SGI*, potential substantial direct or indirect risks from expansive soil will be less than significant.

Sources: Geocon; GP DEIR

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?

No impact. The Project does not include wastewater or tying into existing infrastructure for disposal of wastewater and no septic tanks or alternative wastewater disposal systems will be required. Therefore, no impact will occur.

Source: Project Description

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The discussion to this response is based on findings and recommendations from the *Paleontological Resource Assessment for the Banning NP-2 Booster Pump Station and Reservoir Project City of Banning, Riverside County, California,* (hereinafter referred to as the Paleontological Assessment) prepared by Applied EarthWorks (AE), December 2023. The Paleontological Assessment is included as Appendix E.2 of this Initial Study. The Paleontological Assessment was prepared by AE paleontology staff who meet the Society of Vertebrate Paleontology qualification standards following guidelines developed by the County of Riverside to determine the likelihood of the presence of paleontological resources at the Project site.

Following the County's established process, baseline information is used to assign the paleontological sensitivity of a geologic unit(s) (or members thereof) to one of five categories - N/A, Low, Undetermined, High A (Ha), and High B (Hb) potential. Geologic units are "sensitive" for paleontological resources and have a High paleontological resource potential if they are known to contain significant fossils anywhere in their extent, even if outside the Project site. High A (Ha) sensitivity is based on the occurrence of fossils that may be present at the ground surface of the Project site, while High B (Hb) sensitivity is based on the occurrence of fossils at or below 4 feet of depth, which may be impacted during construction activities. (AE(b), p. 8.) AE found that the west and southwest portions of the Project area as well as in the center to southeast corner have a high potential of preserving significant paleontological resources. AE's desktop studies and field survey indicate the Project area has High A, High B, and Low sensitivity for paleontological resources (AE(b), pp. 19-20.)

Less than significant with mitigation incorporated. Geology at the Project site is characterized by middle to late Pleistocene old alluvial fan deposits, early to middle Holocene young alluvial fan deposits, and late Holocene alluvial wash deposits. Pleistocene-age alluvial deposits are mapped in the west to southwest and central to southeast portions of the Project area, and are known to be potentially fossiliferous. Early-middle age Holocene alluvial deposits are mapped from the northwest corner through the south-central portion, those less than 5,000 years old, are typically too young for the fossilization process to occur. Late Holocene-age alluvial deposits are mapped along the eastern boundary of the Project area within Montgomery Creek, these deposits are too young for fossilization but may overlie older Holocene- and Pleistocene-age alluvial deposits. The older deposits have yielded significant fossils throughout Southern California from the coastal areas to the inland valleys. (AE(b), pp. 11-13.)

AE conducted a record search of paleontological resources at Project site. No specimens or localities are listed on the Project site; however numerous localities are within 10 miles of the Project site which include subsurface geologic units likely found in the Project site at unknown depths. There is a high likelihood of fossil preservation underlying the Project site. This finding supports the Project site's mapping as High A (Ha) and

High B (Hb), as the surficial Holocene-age alluvial deposits overlie very shallow Pleistocene deposits with recorded vertebrate fossils throughout Southern California. (AE(b), pp. 11-13, 17-19.) Since the proposed Project will entail excavations to depths greater than three feet, there is a high likelihood to encounter paleontological resources. Therefore, in order to reduce potential direct or indirect impacts to unique paleontological resources or sites or unique geologic features, mitigation measure **MM GEO-1,** which requires construction crews to receive Paleontological Worker Environmental Awareness Program (WEAP) training, mitigation measure **MM GEO-2**, which requires preparation of a paleontological resources monitoring plan, and mitigation measure **MM GEO-3**, which sets forth the process to follow in the event of a fossil discovery, shall be implemented. Therefore, the Project will have less than significant impacts with mitigation.

MM GEO-1: Paleontological Resources Workers Environmental Awareness Program (WEAP). To educate construction crews about the types of paleontological resources that may be encountered at the NP-2 Booster Pump Station and Reservoir Project, prior to the start of the construction the City of Banning shall retain a professional paleontologist (the "Project Paleontologist") to prepare a Paleontological Resources Workers Environmental Awareness Program (WEAP). The Paleontological Resources WEAP shall provide a description of the laws and ordinances protecting fossil resources, the types of fossil resources that may be encountered in the area, the role of the paleontological monitor, outline steps to follow in the event that a fossil discovery is made, and provide contact information for the Project Paleontologist. The Project Paleontologist or designee(s) shall present the Paleontological Resources WEAP to the construction contractor and each of the construction crews working on the Project during a preconstruction meeting. The Paleontological Resources WEAP shall be taped and presented to any construction crew members not present at the preconstruction meeting during which it was initially presented prior to such crew members working on the Project. This training may be conducted concurrent with other preconstruction training (e.g., biological resources, safety).

MM GEO-2: Paleontological Mitigation Monitoring. Prior to the commencement of ground-disturbing activities, the Project Paleontologist (retained under **MM GEO-1**) shall prepare and implement a Paleontological Resources Mitigation Monitoring Plan (PRMMP) for the Project. The PRMMP shall describe the monitoring required during excavations that extend into older Quaternary (Pleistocene) age sediments, and the location of areas deemed to have a high paleontological resource potential. Paleontological Monitoring shall entail the visual inspection of excavated or graded areas and trench sidewalls. If the Project Paleontologist determines full-time monitoring is no longer warranted, based on the geologic conditions at depth, the Project Paleontologist may recommend monitoring be reduced or ceased entirely.

MM GEO-3: Fossil Discoveries. In the event that a paleontological resource is discovered, the Project Paleontologist shall have the authority to temporarily divert the construction equipment around the find until it is assessed for scientific significance and, if appropriate, collected. If the resource is determined to be of scientific significance, the Project Paleontologist shall complete the following:

1. Salvage of Fossils. If fossils are discovered, all work in the immediate vicinity should be halted to allow the paleontological monitor, and/or Project Paleontologist to evaluate the discovery and determine if the fossil may be considered significant. If the fossils are determined to be potentially significant, the Project Paleontologist (or paleontological monitor) should recover them following standard field procedures for collecting paleontological as outlined in the PRMMP prepared per **MM GEO-1**. Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (such as complete skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case the Project Paleontologist shall have the authority to temporarily direct, divert or halt construction activity to ensure that the fossil(s) can be removed in a safe and timely manner.

2. Fossil Preparation and Curation. The PRMMP shall identify the museum that has agreed to accept fossils that may be discovered during project-related excavations. Upon completion of fieldwork, all significant fossils collected shall be prepared in a properly equipped laboratory to a point ready for curation. Preparation may include the removal of excess matrix from fossil materials and stabilizing or repairing specimens. During preparation and inventory, the fossil specimens will be identified to the lowest taxonomic level practical prior to curation at an accredited museum. The fossil specimens must be delivered to the accredited museum or repository no later than 90 days after all fieldwork is completed. The cost of curation will be assessed by the repository and will be the responsibility of the City of Banning.

3. Final Paleontological Mitigation Report. Upon completion of ground disturbing activity (and curation of fossils if necessary) for the Project, the Project Paleontologist shall prepare a final mitigation and monitoring report outlining the results of the mitigation and monitoring program. The report shall include discussion of the location, duration and methods of the monitoring, stratigraphic sections, any recovered fossils, and the scientific significance of those fossils, and where fossils were curated.

Source: AE(b)

ENVIRONMENTAL FACTORS:	*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?	☐	☐	☒	☐

Greenhouse Gas Emissions Discussion:

Greenhouse gases (GHG) are not presented in lbs/day like criteria pollutants; they are typically evaluated on an annual basis using the metric system. Additionally, unlike the criteria pollutants, GHG do not have adopted significance thresholds associated with them at this time. Several agencies, at various levels, have proposed draft GHG significance thresholds for use in CEQA documents. SCAQMD has been working on GHG thresholds for development projects. The most recent draft proposal was in September 2010 and included significance thresholds for residential, commercial, and mixed-use projects at 3,500, 1,400, and 3,000 metric tonnes per year of carbon dioxide equivalents ($MTCO_2E$/yr), respectively. Alternatively, a lead agency has the option to use 3,000 $MTCO_2E$/yr as a threshold for all non-industrial projects. Although both options are recommended by SCAQMD, a lead agency is advised to use only one option and to use it consistently. In December 2008, the SCAQMD adopted a threshold of 10,000 $MTCO_2E$/yr for stationary source projects where SCAQMD is the lead agency. The SCAQMD significance thresholds evaluate construction emissions by amortizing them over an expected project life of 30 years. The analysis herein uses the threshold of 3,000 $MTCO_2E$/yr.

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less than significant impact. The AQ/GHG Analysis prepared for the Project (WEBB(a)) estimated GHG emissions from fuel usage by construction equipment and construction-related activities, such as construction worker trips, for the Project.

Table E - Project Construction Equipment GHG Emissions

Year	Metric Tons per year (MT/yr)				
	Total CO_2	Total CH_4	Total N_2O	Total R	Total CO_2E
2024	116	0.00	0.00	0.02	117
2025	114	0.00	0.00	0.03	115
Total	**230**	**0.00**	**0.00**	**0.05**	**232**
				Amortized[1]	**7.73**

Source: WEBB(a), Table 4 - Project Construction Equipment GHG Emissions

Note: [1] Construction emissions were amortized over a 30-year period, as recommended by SCAQMD.

Evaluation of the table above indicates that an estimated 232 $MTCO_2E$ will occur from Project construction equipment over the course of the estimated 12-month construction period. The draft SCAQMD GHG threshold guidance document released in October 2008 recommends that construction emissions be amortized for a project lifetime of 30 years to ensure that GHG reduction measures address construction GHG emissions as part of the operational reduction strategies. Therefore, the total GHG emissions from Project construction were amortized and are included above.

Operational GHG emissions would primarily result from the electric pump at the booster station and infrequent visits by vehicles driven by maintenance personnel. Two pumps will be constructed (one for standby) and space for a third pump will be provided. GHG emissions from the operation of the electric pumps were evaluated in the AQ/GHG Gas Analysis prepared for the Project (WEBB(a)) and calculated using the annual electricity consumption from the booster station and the City of Banning's carbon intensity data. The electricity consumption is estimated to be 11,332 MWh per year and the resulting GHG emissions will be approximately 2,340 $MTCO_2E$ per year. There will also be limited lighting on the Project site. However, the GHG emissions from electricity usage will be negligible.

The Project's GHG emissions do not exceed the SCAQMD recommended screening level of 3,000 $MTCO_2E$/year. Due to the estimated amount of emissions from Project construction and booster station pump electricity usage during operations we well as nominal emissions from routine maintenance, site lighting and electricity use, the proposed Project will not generate GHG emissions that exceed the draft screening thresholds.

Therefore, the Project will not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment, and therefore the Project impacts will be less than significant.

Sources: WEBB(a); Project Description

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less than significant impact. As the proposed Project involves the construction of public utility improvements, it is not considered a significant source of operational GHG emissions. The Project will not result in any changes to the existing land use patterns within the Project area and its construction does not generate significant amounts of GHG (refer to Response VIIIa). Further, the Project will not obstruct implementation of any applicable plan, policy, or regulation for the reduction in GHG emissions. Impacts are considered to be less than significant.

Source: WEBB(a)

ENVIRONMENTAL FACTORS:	*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 one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d. Be located on a site which 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 two 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?	☐	☐	☒	☐

Hazards and Hazardous Materials Discussion:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less than significant impact. Project construction will include the transport of fuels, lubricants, and various other liquids for operation of construction equipment. These materials will be transported to the Project site by equipment service trucks. In addition, workers will commute to the Project via private vehicles and will operate construction vehicles and equipment on the Project site and public streets. The booster station will be equipped with a portable diesel-fueled emergency generator that will only be used during emergencies and routine testing. A number of federal and state agencies prescribe strict regulations for the safe transportation of hazardous materials. Hazardous material transport, storage and response to upsets or accidents are primarily subject to federal regulation by the U.S. Department of Transportation, Office of Hazardous Materials Safety in accordance with Title 49 of the Code of Federal Regulations (CFR). California regulations applicable to hazardous material transport, storage, and response to upsets or accidents are codified in Title 13 (Motor Vehicles), Title 8 (Cal/OSHA), Title 22 (Management of Hazardous Waste), Title 26

(Toxics) of the California Code of Regulations (CCR), and the Chapter 6.95 of the Health and Safety Code (Hazardous Materials Release Response Plans and Inventory). These hazardous materials regulations were established at the state level to ensure compliance with federal regulations intended to reduce the risk to human health and the environment from the routine use of hazardous substances. Compliance with the measures is intended to significantly reduce a project's risk to the environment. To ensure that workers and others at the Project site and surrounding area are not exposed to unacceptable levels of risk associated with the use and handling of hazardous materials, the City and its construction contractor are required to implement existing hazardous materials regulations, with compliance monitored by state (e.g., OSHA in the workplace or DTSC for hazardous waste) and local jurisdictions. Compliance with existing safety standards related to the handling, use, and storage of hazardous materials, and compliance with the safety procedures mandated by applicable federal, state, and local laws and regulations (as noted above) would be required for the proposed Project. Compliance with all applicable laws and regulations regarding the transportation, use, storage, and response to upsets or accidents that may involve hazardous materials would reduce the likelihood and severity of upsets and accidents during transit and storage. Therefore, potential impacts in this regard would be less than significant. No mitigation is required.

Sources: Project Description; CCR 8; CCR 13; CCR 22; CCR 26; CFR; CHSC 6.95, BMC

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?

Less than significant impact. As discussed in Response IXa above, there is a potential for hazardous materials and chemicals to be stored at the site for short periods of time prior to transport and distribution, which could cause a release. However, the storage and transport of these products would be regulated by federal, state, and local policies regarding storage and transportation of hazardous waste. Post construction, only infrequent and routine maintenance activities would occur, which would also be required to be regulated by federal, state, and local policies. Nonetheless, the Department of Toxic Substances EnviroStor Database identified two hazards material cleanup sites located approximately within a mile to the east of the Project site: Banning High School Expansion site (ID: 60001998) and Banning USD Proposed School (ID: 600002517). As of February 24, 2015 and October 22, 2018, respectively, DTSC determined that there is no further action. (DTSC-A, DTSC-B.) Therefore, impacts would be less than significant, and no mitigation is required.

Sources: Project Description; DTSC-A, DTSC-B

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Less than significant impact. There are no existing or proposed schools within one-quarter mile of the Project site. As previously discussed in Response IXa, during Project construction hazardous materials and substances would be introduced to the Project site. Hazards materials and substances that could be found on the Project site would consist of; fuels, lubricants and other liquids required for operation of construction equipment. Nonetheless, these materials and substances would be limited to the Project site. Additionally, Project construction would comply with state and federal regulations governing the use and transport of hazardous materials. Therefore, the proposed Project will not expose nearby schools to hazardous materials, substances or waste and impacts would be than significant.

Source: GP

d) Be located on a site which 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?

No impact. The Project site, and adjacent areas are not listed on the Department of Toxic Substance Control's Cortese List, compiled pursuant to Government Code Section 65962.5. (DTSC-C.) Thus, because the proposed Project site and its adjacent areas are not on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, the Project will not create a significant hazard to the public or the environment. Therefore, no impacts will occur.

Source: DTSC-C

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two 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?

Less than significant impact. The Banning Municipal Airport is located approximately two miles to the east of the Project site. Land use designations within the City have been arranged to accommodate for continued safe operation of the Banning Municipal Airport. (GP DEIR, p. III-62.) The Project site is not within the Banning Municipal Airport Land Use Compatibility Plan (ALUC). Additionally, the proposed Project is a booster station and reservoir identified in the City's Integrated Master Plan (IMP) and does not propose housing or job centers. Thus, the proposed Project will not result in a safety hazard for people working or residing in the Project area. Therefore, impacts will be less than significant.

Sources: ALUC; GP DEIR

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less than significant impact. The City adopted the Multi-Hazard Functional Planning Guidance document in 1996. The document is organized into three-parts, which include: 1) the Banning Emergency Plan; 2) twelve functional Annexes that describe the emergency response organization; and 3) a listing of operational data such as resources, key personnel, and essential facilities and contacts. (GP, p. VI-42.) According to the City's GP, the City does not have established evacuation routes, although depending on the location and extent of emergency, major surface streets could be utilized to route traffic through the City. (GP, p. VI-45.) The Project is not proposed to need lane closure, therefore any utilization of Lincoln Street in an emergency would not affect the community or construction. Further, as an infrastructure project, implementation would not interfere with an adopted response plan or emergency evacuation plan. Therefore, Project impacts will be less than significant.

Source: GP

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Less than significant impact. The proposed Project site is located south of the City's Very High and High Fire Hazard Zones, within which relief is minimal and hardscape (concrete, asphalt, and structures) and landscaping vegetation predominate. (GP, Exhibit V-10.) The proposed Project is the construction and operation of a non-potable water storage reservoir and a booster pump station, which would not likely aid the spread of wildland fires. Further, since the Project does not include habitable structures, Project implementation would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires. Therefore, Project impacts would be less than significant impact.

Source: GP

ENVIRONMENTAL FACTORS:	*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 which 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 which 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?	☐	☐	☒	☐

Hydrology and Water Quality Discussion:

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less than significant impact. Construction of the Project may result in the discharge of sediment and other construction by-products to surface waters. The proposed Project will disturb more than one acre of land, therefore, a Storm Water Pollution Prevention Plan (SWPPP) is required to comply with the statewide Construction General Permit (CGP) issued by the State Water Resources Control Board (SWRCB) (Order No. 2012-0006-DWQ, NPDES No. CAS000002). The SWPPP must be developed by a Qualified SWPPP Developer (QSD) and implemented onsite for the duration of the Project by a Qualified SWPPP Practitioner (QSP). The focus of a construction SWPPP is to minimize soil disturbance, non-stormwater discharges, construction materials, and construction wastes during the construction phase of the Project to prevent discharge of polluted runoff from the construction site. Coverage under the CGP requires submittal of a Notice of Intent (NOI) and payment of fees and annual reporting to the State Water Resources Control Board (SWRCB). Staff from the RWQCB may inspect the construction site periodically to ensure compliance with the SWPPP.

Development of the Project site will add impervious surfaces associated with the reservoir, booster station, driveways, and other site improvements. During Project operation, the Project has minimal potential to introduce sources of water pollution from the frequent maintenance vehicle trips.

The Project will maintain the existing drainage pattern. A concrete drainage swale will surround the reservoir and convey storm water to the proposed storm drain pipeline east of the perimeter wall. The runoff from the booster station area will be collected in a pipeline and connect to the proposed storm drain pipeline east of the perimeter wall. Storm water discharged to the storm drain pipeline will be conveyed off-site where it would flow east to the municipal storm drain system at Lincoln Street. These future improvements in and of themselves will not contribute to a violation of water quality standards or waste discharge requirements. Through Project design and compliance with existing regulations related to water quality standards and waste discharge requirements, impacts will be less than significant.

Sources: Project Description; CGP

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less than significant impact. Groundwater basins are naturally recharged through the percolation of runoff, direct precipitation, subsurface inflow, and artificial recharge. The Banning Canyon area receives water from percolation of canyon flows through the gravelly soils of the canyon bottom. In addition, a stone ditch running southerly though the Banning Canyon provides intake areas to distribute water to spreading ditches, which interconnect with spreading ponds to enhance percolation. The San Gorgonio Subbasin is also recharged naturally with runoff from the adjacent San Jacinto and San Bernardino Mountain. (GP, p. IV-2.)

The Project site is not a groundwater recharge site. The Project entails the construction of a non-potable water storage reservoir and a booster pump, and does not propose the extraction of groundwater. Because Project implementation will not substantially deplete groundwater supplies or interfere with groundwater recharge, impacts are less than significant.

Sources: Project Description; GP

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 which would:

i) Result in substantial erosion or siltation on- or off-site?

Less than significant impact. The Project site is generally flat and receives routine weed abatement. The Project will disturb no more than 1.39 acres, which includes frontage road improvements (widening, curb and gutter) along the existing ROW of the southern portion of Lincoln Street at the new edge of pavement. The area within the construction footprint will be graded, compacted, and paved around the proposed reservoir and booster station. The Project site will be generally flat after construction is complete and the onsite storm water runoff will collect in a drainage swale that will be conveyed to the proposed storm drain pipeline where it would flow to the municipal storm drain outlet at Lincoln Street. Through Project design, and compliance with existing regulations and policies for the control of erosion, the Project does

not substantially alter the existing drainage patterns already existing in the area and would not result in substantial erosion or siltation on- or off-site. Therefore, impacts will be less than significant.

Source: Project Description

ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site?

Less than significant impact. The Project site is located within flood hazard zone "X" as designated by the Federal Emergency Management Agency's (FEMA's) Flood Insurance Rate Map (FIRM) No. 06065C0817G (Effective August 28, 2008). Flood hazard zone X includes "areas of 0.2 percent annual chance flood [500-year flood]; areas of 1 percent annual chance flood [100-year flood] with average depths of less than one foot or with drainage areas less than 1 square mile; and areas protected by levees from 1 percent annual chance flood [100-year flood]."

There are no watercourses or wetlands located on the Project site. Stormwater runoff on the Project site currently flows into existing drainages or percolates into the undeveloped dirt area. As discussed in Response Xc.i the overall drainage pattern of the site will remain unchanged. Through Project design, and compliance with existing regulations and policies for proper drainage, the Project does not substantially alter the existing drainage patterns already existing in the area and would not result in flooding on- or off-site. Therefore, impacts will be less than significant.

Sources: Project Description; CGP, FEMA

iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Less than significant impact. The proposed drainage system consists of a storm drain line located east of the Project site perimeter wall which will then convey storm water off-site flowing east to the municipal storm drain headwall at Lincoln Street. The proposed Project improvements will increase impervious surfaces on the site and is expected to result in a negligible increase in storm water runoff that will maintain the existing drainage pattern. All on-site storm water will be captured on site in accordance with State and Regional Water Quality Control Board requirements. A concrete drainage swale will surround the reservoir and convey storm water to the proposed storm drain pipeline. Runoff associated with the booster station will be collected in a four-inch pipeline and connect to the proposed storm drain line. Therefore, through Project design, the proposed Project would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Project impacts will be less than significant.

Source: Project Description

iv) Impede or redirect flood flows?

Less than significant impact. The Project area is within Federal Emergency Management Agency Flood Insurance Rate Map (FIRM) Panel 06065C0817G, which indicates that the Project site is not within the

100-year flood hazard area. (FEMA.) As such, in the unlikely event that flood flows pass through the site, there is little to impede or redirect flows by substantial structures. Thus, the Project will not place structures within a 100-year flood hazard area or impede or redirect flood flows. Therefore, impacts will be less than significant.

Sources: Project Description; FEMA

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Less than significant impact. As shown on FEMA Panel No. 06065C0817G, the proposed Project does not have any identified levees or dams within the Project boundary. Additionally, because the proposed Project is located within flood hazard zone X, as classified by FEMA, the Project is not in a Special Flood Hazard Area and the likelihood of flooding at the Project site is very limited. Regarding the release of pollutants, in the post-Project condition, pollutants that could be released from the Project in the event the roadway is inundated are gasoline, oil, grease, dirt, and trash/debris. Regarding flooding, as discussed in Response Xc)iv, the Project site is not within a 100-year flood hazard area. (FEMA.) Therefore, Project implementation would not result in an increased risk for the release of pollutants due to inundation.

Tsunamis are large waves that occur in coastal areas. The City is not located in a coastal area; therefore, there is no risk for the release of pollutants due to Project inundation by tsunami.

Seiches are seismically-induced oscillation or sloshing of water contained in enclosed bodies including lakes, ponds, reservoirs, and swimming pools. This hazard is dependent upon the frequency of seismic waves, distance and direction from the epicenter, and site-specific design criteria of the enclosed body of water. The reservoir will be designed in accordance with the American Water Works Association (AWWA) D103 standards, which sets guidelines for the construction of welded steel water tanks. Project design will consist of interior support columns and foundations. As such, the risk for the release of pollutants due to Project inundation by seiche would be less than significant.

For the reasons set forth in the preceding paragraphs, Project impacts regarding the release of pollutants due to inundation would be less than significant.

Sources: Project Description; GP, FEMA

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less than significant impact. The Project site is located within the boundaries of the water quality control plan (Basin Plan) for the Colorado River Regional Water Quality Control Board (RWQCB). The Basin Plan is the primary document supporting the RWQCB's regulatory efforts. As previously described, the Project will implement the requirements of an effective SWPPP during construction pursuant to the CGP. Through implementation of a SWPPP during construction and the proposed storm drain infrastructure, Project implementation is consistent with the requirements of the Basin Plan and will not conflict with or obstruct its implementation.

The Project site is located within the boundaries of the Banning Storage Unit. Pursuant to the Sustainable Groundwater Management Act of 2014 (SGMA), the San Gorgonio Pass Subbasin Groundwater Sustainability Agency (GSA) has formed and prepared a Groundwater Sustainability Plan (GSP) dated January 2022 that includes the Banning Storage Unit. Because the GSP does not identify the Project site as part of future projects, compliance with existing regulations to protect water quality during construction and post-construction, the impacts to a sustainable groundwater plan are less than significant.

Sources: Project Description, SGMA, RWQCB GSP

ENVIRONMENTAL FACTORS:	*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?	☐	☐	☒	☐

Land Use and Planning Discussion:

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?

Less than significant impact. The physical division of an established community typically refers to the construction of a physical feature (such as a wall, interstate highway, or railroad tracks) or the removal of a means of access (such as a local road or bridge) that would impair mobility. The area to the north, west and northwest includes residential homes; the adjacent area to the south is vacant and undeveloped land; the adjacent area to the east is Montgomery Creek followed by vacant and undeveloped area; the area to the northeast is industrial buildings.

The Project is a part of the City's expansion of non-potable water systems identified in the City's Integrated Master Plan (IMP). The Project site is designated as OS-PA Open Space-Parks and as identified in BMC 17.20.020, Public Utility Facilities are a permitted use for this land use designation and zoning.

The Project will not physically divide an established community. Due to the Project being consistent with the General Plan Land Use Designations and the Project carrying out the implementation of a portion of the IMP. The Project will not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, impacts will be less than significant.

Source: Project Description, BMC

ENVIRONMENTAL FACTORS:	*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?	☐	☐	☐	☒

Mineral Resources Discussion:

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?

Less than significant impact. Sand and gravel, collectively referred to as aggregate, is the primary mineral resource that is actively being developed in the eastern portion of the City. Weathering, erosion, and other geological processes have deposited materials from the surrounding mountains and hills, forming an alluvial fan with significant deposits of these mineral resources. The Surface Mining and Reclamation Act (SMARA) was developed to assure the preservation of mineral resources while concurrently addressing the need for protecting the environment. Under the direction of SMARA, the State of California Department of Conservation, Division of Mines and Geology, released a report identifying regionally significant mineral deposits in an effort to conserve and develop them; and to help in anticipating aggregate production needs of the region. (GP, p. IV-82.)

Although the Project site is located within Mineral Resource (MRZ) Zone 3, which is an area that contains mineral deposits; the significance of these deposits cannot be evaluated from available data. (GP, Exhibit IV-8 and p. IV-83.) The City has specific areas designated as Industrial-Mineral Resources (I-MR) land use in the City's GP to allow for surface mining operations on lands designated by the City or State as having significant potential for mineral resources. (GP DEIR, Table I-18.) As shown on **Figure 4**, the Project site is not within one of these zones, and is therefore not targeted for of mineral resources mining by either the City or the State. Additionally, due to the existing residential development to the west and east of the Project site, it is unlikely that a mining operation could operate at the Project site. Therefore, Project impacts regarding the loss of availability of a known mineral resource that would be of value to the region and the residents of the state will be less than significant.

Sources: GP; GP DEIR

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?

No impact. An approximately 6.5-acre area of MRZ 2, where adequate information indicates that significant mineral deposits are present or that a high likelihood for their presence exists, is located in the eastern portion of the City along the alluvial fan of the San Gorgonio River that lies southeast of the Banning Bench, north and

south of Interstate 10. (GP Exhibit IV-8 and p. IV-83.) The Banning Quarry, operated by Robertson's Ready Mix, was the only aggregate producer within the MRZ-2 designated area of the City. (GP, p. IV-83.)

The proposed Project is not located within or adjacent to the Banning Quarry or any other locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Further, as described in Response XIIa, above, the Project site is not within the Industrial-Mineral Resources land use designation in the City's GP. Therefore, Project implementation will not 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 and there will be no impact in this regard.

Source: GP

ENVIRONMENTAL FACTORS:	*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 two 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?	☐	☐	☐	☒

Noise Discussion:

Temporary increases to ambient noise levels would occur during Project construction. Noise would derive from the use of various types of construction equipment such as compactors, cranes, excavators, generators and from a worker-related increase in traffic within the vicinity of the Project site. Sensitive receptors would include any residences, educational institutions and public parks located within 250 feet of the Project site. The nearest sensitive receptor (residence) to the Project site is located approximately 70 feet to the west.

Noise is generally defined as loud, unpleasant, unexpected or undesired sound typically associated with human activity and that interferes with or disrupts normal activities. Constant noise levels which varies with each area is called ambient noise. Human response to noise events is influenced by the type of noise, perceived importance of the noise and its appropriateness in the setting, time of day and type of activity during which the noise occurs and the sensitivity of the individual. The intensity of a sound's loudness is measured in decibels (dB). Studies have shown that the smallest perceptible change in sound level for a person with normal hearing sensitivity is approximately 3 dBA. A change of at least 5 dBA would be noticeable and would likely evoke a community reaction. A 10 dBA increase is subjectively heard as a doubling in loudness and would cause a community response. Since community noise fluctuates over a time, a single measure called Equivalent Sound Level (Leq) is used to describe time-varying character of community nose. The Leq is the energy-averaged A-weighted sound level during a measured time interval, and is equal to the level of a continuous steady sound containing the same total acoustical energy over the averaging time period as the actual time varying sound. The Community Noise Equivalent Level (CNEL) is a descriptor representing a 24-hour, time-weighted annual average noise level based on the "A-weighted" decibel. (GP, p. V-40-41.)

Exterior noise standard for sensitive land uses, such as residences, schools, hotels, motels, churches, and hospitals is 65 dBA CNEL. (GP FEIR Noise p. 6.)

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?

Less than significant impact. During construction, temporary increases to ambient noise levels may occur as a result of the use of construction equipment such as cranes, tractors, loaders and from a worker-related increase in traffic within the vicinity of the Project site. During operation, the primary source of noise would be from the booster station pumps, which will be enclosed in a masonry block building that attenuates noise. Sensitive receptors that may be affected by Project generated noise during construction and operation include private residences near the proposed reservoir and booster station.

However, Title 8 (Health and Safety) of the BMC outlines regulations related to noise in Chapter 8.44 (Noise). According to Title 8, Chapter 8.44.085, sound emanating from capital improvement projects of a governmental agency is exempt from the provisions of Chapter 8.44. "Capital Improvement" is defined as major construction, acquisition, or maintenance/repair projects. Typical examples of major construction would include new street improvements, park development and construction of public buildings or structures, and treatment plants. Structures include lighting, sewer and water pipelines and other related utility structures including treatment plants, gas, electric and other infrastructure, landscaping and drainage facilities, and all other public infrastructure.

Since the proposed Project involves construction and operation of a non-potable water storage reservoir and booster pump station that is identified as a capital improvement project, the Project is exempt from any noise restrictions during construction. Any maintenance or repair of the reservoir and booster station once operational will also be exempt from noise restrictions. The Project will be required to comply with all applicable City noise standards and codes. Thus, the Project is not anticipated to be a significant new source of noise. Therefore, impacts will be less than significant.

Sources: Project Description; GP; BMC; BOC; Ord. 847

b) Generation of excessive groundborne vibration or groundborne noise levels?

Less than significant impact. Construction has the potential to generate ground-borne vibration. In general, demolition of structures preceding construction generates the highest vibrations. The proposed Project site is currently vacant and does not necessitate demolition of any existing structures. Construction equipment such as vibratory compactors or rollers, pile drivers and pavement breakers can generate perceptible vibration during construction activities. Heavy trucks can also generate ground-borne vibrations that vary depending on vehicle type, weight and pavement conditions. Other than the typical construction equipment and methods needed to construct the Project components, no significant ground-borne vibration or noise is expected. Further, development of the proposed facilities will not involve the use of highly vibratory equipment within 25 feet of the Project property line adjacent to a sensitive receptor.

Since the Project construction methods are not anticipated to generate any significant sources of ground-borne vibration or noise above those that would normally be associated with construction, and any noise generated during construction will adhere to the Banning Municipal Code standards. Thus, the Project will not expose persons to or generate excessive ground-borne vibration or ground-borne noise levels. Therefore, impacts will be less than significant.

Source: BMC

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 two 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?

No impact. The nearest airport to the Project site is the Banning Municipal Airport, which is located approximately two miles east of the Project site. The Project site is located outside of the Airport Influence Boundary and the Airport Compatibility Zones of the Banning Municipal Airport Land Use Compatibility Plan. (ALUC.) The Project does not propose any habitable structures. Therefore, Project implementation will not result in the exposure of people to excessive noise levels sourced from airports and no impacts will occur in this regard.

Sources: ALUC; GP DEIR

ENVIRONMENTAL FACTORS:	*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?	☐	☐	☐	☒

Population and Housing Discussion:

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)?

Less than significant impact. The proposed Project involves the construction and operation of a booster station and reservoir identified in the City's IMP to meet the current and planned future non-potable water demands. This Project is in response to the population growth planned for and envisioned in the GP. The Project does not include new homes, businesses, or other infrastructure, which would remove an impediment to growth. The Project will not substantially induce direct or indirect unplanned population growth that was not previously analyzed and disclosed in the City's GP EIR. Therefore, impacts are considered less than significant.

Source: Project Description, GP, GP DEIR

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No impact. The proposed Project site is a vacant undeveloped lot with no existing housing. Therefore, implementing the proposed Project will not displace existing people or housing, nor necessitate the construction of replacement housing elsewhere. Therefore, no impacts are anticipated.

Source: Project Description

ENVIRONMENTAL FACTORS:	*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 public services:				
i. Fire protection?	☐	☐	☐	☒
ii. Police protection?	☐	☐	☐	☒
iii. Schools?	☐	☐	☐	☒
iv. Parks?	☐	☐	☐	☒
v. Other public facilities?	☐	☐	☐	☒

Public Service Discussion:

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 public services?

i) Fire protection?

No impact. Fire protection services are provided to the City through a contractual agreement with the Riverside County Fire Department, which in turn contracts with CalFire. The contract provides various fire related services, including emergency medical services, fire prevention, disaster preparedness, fire safety inspections, hazardous materials business plan programs and plan reviews. When an emergency call is received, the station that is physically closest to the emergency will respond, even if the emergency is located outside the station's official "jurisdiction." (GP, p. VI-35.)

Per the Riverside County Fire Department, there are two fire stations that serve the City: Fire Station 63, located at 49575 Orchard Road, and Fire Station 89, located at 172 North Murray Road (RCFD). Fire Station 20, located in the City of Beaumont at 1550 E. 6th Street, also responds to fire emergencies that occur in the City. Fire Station 20 is approximately 3 miles to the northwest of the Project site. The closest fire station in the City is Fire Station 89, approximately 1.7 miles to the northeast of the Project and would likely provide emergency response services to the Project site. The Riverside County Fire Department is rated as Class 4 by the Insurance Service Office (ISO), a private company, which rates fire departments throughout the country based on a scale of 1 to 10, with Class 1 being the highest possible score. The City aims for a ratio of above 0.70 fire personnel per 1,000 residents, which would be 58 firefighters at GP buildout. (GP DEIR, p. III-202.)

As discussed in Response XIV, the Project will not increase population. As such, implementation of the Project will not necessitate additional fire services and would not adversely impact service ratios, response times, or performance objectives. Therefore, the Project has no impact.

Sources: GP; GP DEIR; RCFD

ii. Police protection?

No impact. Police protection services within City limits are provided by the Banning Police Department (GP, p. VI-32). The Banning Police Department has 35 sworn officers and maintains a ratio of 1.4 sworn officers for every 1,000 residents. (GP DEIR, p. III-200.) The City's police station is located at 125 East Ramsey Street, approximately 1.7 miles east of the Project site.

As discussed in Response XIV, the Project will not increase population. As such, implementation of the Project will not necessitate additional police services and would not adversely impact service ratios, response times, or performance objectives. Therefore, the Project has no impact.

Sources: GP; GP DEIR

iii. Schools?

No impact. Most of the City is served by the Banning Unified School District, with a small area in the western portion of the City served by the Beaumont Unified School District. (GP, pp. VI-24 – VI-25.)

As discussed in Response XIV, the Project will not increase population. As such, implementation of the Project will not necessitate additional school services and would not adversely affect performance objectives. Therefore, the Project has no impact.

Source: GP

iv. Parks?

No impact. Parks and recreation services within the City are provided by the City Community Services Department. The Riverside County Regional Park and Open Space District also provides recreational facilities and services at County owned parks facilities within the City. (GP, p. III-83.)

As discussed in Response XIV, the Project will not increase population. As such, implementation of the Project will not necessitate additional park services. Therefore, the Project has no impact.

Source: GP

v. Other public facilities?

No impact. Other public facilities in the City include one U.S. Post Office, the Banning Municipal Airport, San Gorgonio Memorial Hospital, and several public utility facilities operated by the City Public Works Department.

As discussed in Response XIV, the Project will not increase population. As such, implementation of the Project will not necessitate other public facilities. Therefore, the Project has no impact.

Source: GP

ENVIRONMENTAL FACTORS:	*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 which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Recreation Discussion:

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?

No impact. Parks and recreation services within the City are provided by the City Community Services Department. The Riverside County Regional Park and Open Space District also provides recreational facilities and services at County owned parks facilities within the City. (GP, p. III-83.) The Project involves the construction and operation of a non-potable water storage reservoir and a booster pump station identified in the City's Integrated Master Plan (IMP). As discussed in Response XIV, the Project will not increase population. As such, the Project would not necessitate additional park facilities. Therefore, no impacts are anticipated.

Sources: GP; Project Description

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

No impact. The proposed Project involves the construction of a non-potable water storage reservoir and a booster pump station. As discussed in Response XIV, the Project will not increase population. As such additional park facilities will not be required. Therefore, no impacts are anticipated.

Source: Project Description

ENVIRONMENTAL FACTORS:	*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?	☐	☐	☒	☐

Transportation and Traffic Discussion:

a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

No impact. Each county in California is required to develop a Congestion Management Program (CMP) that analyzes the links between land use, transportation, and air quality. The Riverside County Transportation Commission (RCTC) is the County of Riverside's Congestion Management Agency. The RCTC prepares and periodically updates the County's CMP to meet federal Congestion Management System guidelines and state CMP legislation. The most recent CMP is included within RCTC's Long Range Transportation Plan (LRTP), which was completed in December 2019. According to Appendix A of the LRTP, in the 2011 Riverside County Congestion Management Program, Interstate 10 and Highway 243 are the only roads in proximity to the Project site listed as part of the CMP System of Highways and Roadways. These roads are not directly adjacent to the Project site. Thus, the Project will not conflict with a CMP due to the distance between the Project site and these covered roadways have been accounted for in the GP. Construction of the Project may require temporary land closures along Lincoln Street. Road closure will not be required for maintenance or pedestrian facilities. No new traffic will be generated by the proposed Project.

The GP identifies that sidewalks, bike lanes, off-street trails and golf cart routes are especially important along major roadways in the community. There are currently no bikeways within the planning area. Several Class II and III bikeways have been proposed along City streets. However, development of a network of bikeways is constrained by the existing condition of street rights-of-way (GP, p II-65). The City of Banning provides transit service via operation of the Banning Connect transit system and has local routes in and serves Banning, Beaumont and Cabazon and is considered as part of the City's local transit network. Regional bus service is provided by the Riverside Transit Agency (RTA), with service to Hemet/San Jacinto (Route 31), Moreno Valley (Route 35), and Calimesa/Redlands (Route 36).

The Project site is not directly adjacent to Interstate 10 and Highway 243 or near any existing or future transit routes and would not conflict with CPM or transit plan. For these reasons implementation of the proposed Project will not conflict with any program, plan, ordinance, or policy addressing the circulation system,

including transit, roadway, bicycle, and pedestrian facilities; therefore, there would be no impacts in this regard.

Sources: GP; LRTP; PASS; RTA

b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

CEQA Guidelines section 15064.3(a) describes specific considerations for evaluating a project's transportation impacts and states "Generally, vehicle miles traveled is the most appropriate measure of transportation impacts." As stated in CEQA Guidelines section 15064.3(b)(2), "projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact."

Less than significant impact. Construction of the booster station and reservoir would temporarily increase traffic in the area as a result of construction-related vehicles. However, since water facilities are not trip generators and no new travel lanes are proposed with the street frontage improvements, there would be no net increase in vehicle miles traveled (VMT). Therefore, Project implementation would not conflict with or be inconsistent with CEQA Guidelines section 15064.3. subdivision (b). Impacts would be less than significant.

Sources: SB 743;

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less than significant impact. The Project proposes to widen the southern portion of Lincoln Street within existing right-of-way along the Project frontage and create a new paved driveway for access. Pavement width will vary from approximately two to eight feet wide. The existing pavement edge will be sawcut and the surface will be ground and overlaid with new pavement. A concrete curb will be installed at the new edge of pavement. All work will be performed consistent with City Public Works Standards. The Project does not include a substantially different land use to the area and will be compatible with adjacent uses. The Project will not increase hazards due to a design feature or incompatible use. Therefore, implementation of the proposed Project will result in less than significant impacts.

Sources: Project Description.

d) Result in inadequate emergency access?

Less than significant impact. Construction and operation of the proposed Project would not impact emergency access. Potential temporary lane closures along Lincoln Street may occur during Project construction. The Project will be designed with a new asphalt driveway near the western Project site boundary that will transition to a 20-foot-wide asphalt access road leading to the reservoir and booster station. Moreover, the Project's design will be reviewed by City Planning, Police, and Fire Department staff to ensure that there is sufficient emergency access provided. As the Project will be required to comply with the recommendations of applicable reviewers, it will not result in inadequate emergency access. Therefore, impacts will be less than significant.

Sources: Project Description; GP

ENVIRONMENTAL FACTORS:	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
XVIII. TRIBAL CULTURAL RESOURCES Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resource 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:				
a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resource Code section 5020.1(k), or	☐	☒	☐	☐
b. 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.	☐	☒	☐	☐

Tribal Cultural Resources Discussion:

a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resource Code section 5020.1(k)

b. 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.

Less than significant with mitigation incorporated. On November 13, 2024, the City of Banning transmitted notices for AB 52 consultation opportunities to Tribes identified on the NAHC distribution list concerning the proposed project. The City of Banning received replies from the Agua Caliente Band of Cahuilla Indians on November 21, 2023, and the Morongo Band of Mission Indians on December 14, 2023, requesting review of documents, and that the review of documents does not conclude consultation. Documents were transmitted via email to the Agua Caliente Band and the Morongo Band on February 6, 2024. At the time this document was released for public review and comment, the City has not concluded the AB 52 consultation process with either Tribe and will accept and respond to any comments that may be submitted by either of the Tribes during the 30-Day public review and comment period.

As discussed in Response Va Cultural Resources, the *CRI* (included as Appendix C) concluded there are no CRHR-eligible resources present on the Project site and since the Project site has been previously disturbed by dirt pathways, plowing, and staging activities, there is a low likelihood that intact significant historical resources are buried. (AE(a), p. 20.) Regarding inclusion on a local register of historical resources, there are six (6) historical sites in the central core of the City that are designated as Riverside County Landmarks. (GP DEIR, p. III-137.) These historical resources are not within or in proximity to the Project site. As also discussed

in Response Va, the results of the NAHC SLF did not indicate the presence of any sacred sites or locations or religious or ceremonial importance within the Project's APE.

Although no tribal cultural resources have yet to be identified during the Project's AB 52 consultation process, the Project will implement, mitigation measure **MM CR-1**, which requires the construction in the vicinity of any find to be halted until a qualified archaeologist makes a determination as to the significance of the find. For these reasons, Project implementation would not result in a substantial adverse change to any tribal cultural resources and impacts would be reduced to less than significant with mitigation incorporated.

Sources: AE(a); GP DEIR

ENVIRONMENTAL FACTORS:	*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 storm water drainage, electric power, natural gas, or telecommunications, 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 which 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?	☐	☐	☐	☒

Utilities and Service Systems Discussion:

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Less than significant impact. The Project entails the construction of new non-potable water facilities, a new underground electrical line to connect to an existing an existing electrical pole, installation of an electric vault and transformer and fiber optic service on the Project site, and on-site drainage facilities. The impacts of which are evaluated in this IS. The proposed Project is expected to maintain the existing storm water drainage pattern. All on-site storm water will be captured on site in accordance with State and Regional Water Quality Control Board requirements. The Project will not require natural gas, water, or wastewater services. No new or expanded utilities are proposed or required to serve the Project. As indicated in the analysis in this IS, because Project implementation will not require relocation or construction of new or expanded utility facilities that cause significant environmental effects, impacts are less than significant.

Sources: Project Description; GP DEIR

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?

Less than significant impact. The City Public Works Department provides domestic water services to the City of Banning. The proposed Project is implementing a portion of the City's IMP, including a non-potable water

storage reservoir and booster station that will not create a demand for water. Water usage during construction activities will be only that which is necessary for construction. Therefore, impacts to water supplies will be less than significant.

Source: GP; UWMP

c) Result in a determination by the wastewater treatment provider which 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?

No impact. The City of Banning Public Works Department provides sanitary wastewater services to the City of Banning, including the Project site. (GP, p. VI-2.) The Project consists of a non-potable water storage reservoir and booster station and there is no Project component that would produce wastewater requiring treatment. Therefore, the Project has no impact.

Source: Project Description; GP

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?

Less than significant impact. The proposed Project is a non-potable water storage reservoir and booster station and after construction is complete would not generate solid waste. Solid waste would be generated during Project construction; however, since the Project site is vacant no structures are anticipated to be demolished and construction waste is expected to be minimal.

Solid waste collection and disposal services are provided by Waste Management Inland Empire and trash collected from the City is disposed at the Lamb Canyon Sanitary Landfill, El Sobrante Landfill, and the Badlands Landfill. (GP DEIR, p. III-211.) According to CalRecycle databases, the Badlands Landfill will remain operational until 2059, Lamb Canyon Landfill until 2032, and El Sobrante Landfill until 2051. (CAL-R.) Given the number of landfills to which the solid waste could be redirected and their estimated closure dates, sufficient capacity is expected for the temporary increase of solid waste produced during construction as a result of Project implementation.

Thus, since the Project will only produce minimal construction waste and there are three landfills that could potentially accept construction generated solid waste, the Project will have a less than significant impact.

Source: CAL-R; GP DEIR

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

No impact. The collection and disposal of solid waste would conform to applicable federal, state, and local plans and regulations, including AB 939 (Integrated Waste Management Act) that require local jurisdictions divert at least 50% of all solid waste. Implementation of the Project would adhere to all federal, state and local regulations related to solid waste during construction and operation. Therefore, the proposed Project

would have no impact in terms of complying with federal, state, and local statutes and regulations related to solid waste.

Source: AB 939

ENVIRONMENTAL FACTORS:	*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?	☐	☐	☒	☐

Wildfire Discussion:

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

Less than significant impact. California Department of Forestry and Fire Protection (CalFire) adopted Fire Hazard Severity Zone (FHSZ) maps for State Responsibility Areas (SRA) and Local Responsibility Areas (LRA) in November 2007. According to CalFire's most recent FHSZ maps, the Project site is not located within a FHSZ SRA or LRA. The Project site is located within the City's High Fire Threat Zone, within which topographic relief is minimal and hardscape (concrete, asphalt, and structures) and landscaping vegetation predominate. (GP, Exhibit V-10.) The Project is not within or immediately adjacent to an SRA or LRA classified very high fire hazard severity zone (VHFHSZ). (CalFire.) As such, implementation of the proposed Project would not substantially impair an adopted emergency response plan or emergency evacuation plan. Impacts would be less than significant.

Sources: GP; CalFire

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?

Less than significant impact. As discussed in the previous Response XXa, the Project site is not within or immediately adjacent to a SRA or LRA classified very high fire hazard severity zone (VHFHSZ). (CalFire.) The Project involves the construction and operation of a non-potable water storage reservoir and booster station. The Project site is generally flat and there are no slopes within surrounding areas. The proposed Project will not have habitable structures. The facility would only be visited by a few people for service and maintenance.

Therefore, implementation of the proposed Project would not expose Project occupants to pollutants from a wildfire or the uncontrolled spread of a wildfire due to slope, prevailing winds, and other factors, as the Project site is not within a very high fire hazard severity zone. Impacts would be less than significant.

Source: CalFire

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?

Less than significant impact. As noted above in Response XXa, the Project site is not within or immediately adjacent to a SRA or LRA classified very high fire hazard severity zone (VHFHSZ). (CalFire.) The Project involves the construction and operation of a non-potable water storage reservoir and booster station, construction of underground electrical line on the Project site, and widening the portion of Lincoln Road in front of the Project site. The proposed Project would also comply with safety construction and operational regulations for all proposed infrastructure as required by OSHA and NESC. For these reasons, the implementation of the proposed Project would not exacerbate the level of fire risk or result in temporary or ongoing impacts to the environment. Impacts would be less than significant.

Source: CalFire

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?

Less than significant impact. As noted above in Response XXa, the Project site is not within or immediately adjacent to a SRA or LRA classified very high fire hazard severity zone (VHFHSZ). (CalFire.) The proposed Project does not include habitable structures, nor would it substantially alter existing drainage patterns. This proposed Project would be constructed in a relatively flat area. Therefore, impacts to exposing people or structures to significant risk including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes, are less than significant.

Source: CalFire

ENVIRONMENTAL FACTORS:	*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 an 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 which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Mandatory Findings of Significance Discussion:

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 an endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Less than significant with mitigation incorporated.

Potential to Degrade Quality of Environment: Implementation of the proposed Project would not have the potential to degrade the quality of the environment. As indicated in the foregoing analysis, either no impacts, less than significant impacts, or less than significant impacts with mitigation incorporated would occur with regard to each to the environmental issues analyzed in this Initial Study.

Potential to Impact Biological Resources: As discussed in Section IV Biological Resources, implementation of the proposed Project would not:

- substantially reduce the habitat of a fish or wildlife species;
- cause a fish or wildlife population to drop below self-sustaining levels; or
- threaten to eliminate a plant or animal community.

The results of the *BTR*, (included in Appendix B of this Initial Study), and the analysis in Section IV Biological Resources indicate that with implementation of mitigation measure **MM BIO-1**impacts to biological resources would be less than significant.

Potential to Eliminate Important Examples of the Major Periods of California History or Prehistory: As discussed in the response to Section V Cultural Resources, according to the *CRI*, there are no historic period built-environment resources present on the Project site. Although the potential to encounter intact and significant buried archaeological deposits are unlikely, with implementation of mitigation measure **MM CR-1**, potential impacts regarding the elimination of important examples of California History or Prehistory would be less than significant.

Sources: Above Environmental Checklist; AE(a); WEBB(b)

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)?

Less than significant impact. The proposed Project is implementing the City's IMP and as such is consistent with local and regional plans. The Project's air quality emissions do not exceed established thresholds of significance. The Project adheres to all other City land use plans and policies, and would not increase VMT. The Project is not considered growth-inducing as defined by CEQA Guidelines Section 15126.2(d) and would not induce, either directly or indirectly, population and/or housing growth beyond what is envisioned by the Banning GP. Therefore, impacts would be less than significant.

Source: Above Environmental Checklist; WEBB(a)

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less than significant. Effects on human beings were evaluated as part of the aesthetics, air quality, cultural resources as it relates to human remains, geology and soils, GHGs, hazards and hazardous materials, hydrology and water quality, noise, population and housing, public services, recreation, transportation, and utilities and service systems sections in this Initial Study. All impacts would be less than significant.

Source: Above Environmental Checklist; AE(a); AE(b) Geocon; WEBB(a)

Note: Authority cited: Sections 21083 and 21083.05, Public Resources Code. Reference: Sections 65088.4, Gov. Code; Sections 210808(c), 21080.1, 21080.3, 21083, 21083.05, 21083.3, 21093, 21094, 21095, and 21151, Public Resources Code; *Sundstrom v. County of Mendocino,* (1988) 202 Cal.App.3d 296; *Leonoff v. Monterey Board of Supervisors,* (1990) 222 Cal.App.3d 1337; *Eureka Citizens for Responsible Govt. v. City of Eureka* (2007) 147 Cal.App.4th 357; P*rotect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th at 1109*; San Francisco Upholding the Downtown Plan v. City and County of San Francisco* (2002) 102 Cal.App.4th 656

EARLIER ANALYSES

Earlier analysis may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration as per California Code of Regulations section 1503 (c) (3) (D).

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Appendix A

Air Quality/Greenhouse Gas Impact Memo

ALBERT A. WEBB ASSOCIATES

Technical Memorandum

To: Arturo Vela, P.E., Director of Public Works

From: Eliza Laws, Senior Environmental Analyst
Noemi Avila, Assistant Environmental Analyst

Date: January 2, 2024

Re: Air Quality/Greenhouse Gas Analysis for the NP-2 Booster Station and Reservoir Project

The following air quality assessment was prepared to evaluate whether the expected criteria air pollutant emissions generated as a result of construction and operation of the proposed Project would cause exceedances of the South Coast Air Quality Management District's (SCAQMD) thresholds for air quality in the Project area. The greenhouse gas (GHG) assessment was prepared to evaluate whether the construction and operation of the proposed Project would exceed the SCAQMD draft GHG screening thresholds. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000 et seq.). The methodology follows the *CEQA Air Quality Handbook* prepared by the SCAQMD for quantification of emissions and evaluation of potential impacts to air resources. As recommended by SCAQMD staff, the **Cal**ifornia **E**missions **E**stimator **Mod**el® version 2022.1 (CalEEMod) was used to quantify Project-related emissions.

The analysis herein evaluates the NP-2 Booster Station and Reservoir Project ("Project") located on an approximately 7.1-acre parcel south of West Lincoln Street, within the City of Banning, in Riverside County, California. The Project consists of grading, construction, operation, and maintenance of a new non-potable water storage reservoir with a capacity of approximately 60,910 gallons, associated appurtenances, on-site access road, and the construction and operation of a new booster pump station designed for the future ultimate flow of 2,500 gallons per minute (gpm). The booster station will be equipped with two electric pumps with space for a third future pump. Each pump will be rated at 75 horsepower.

▪ Regional Significance Thresholds

The thresholds contained in the *SCAQMD CEQA Air Quality Handbook*[1] (SCAQMD 1993) and posted in a supplemental table as mass daily thresholds on SCAQMD's website[2] are considered regional thresholds and are shown in **Table 1 – SCAQMD CEQA Daily Regional Significance Thresholds**, below. These regional thresholds were developed based on the SCAQMD's treatment of a major stationary source.

Table 1 – SCAQMD CEQA Daily Regional Significance Thresholds

Emission Threshold	Units	VOC	NO_X	CO	SO_X	PM-10	PM-2.5
Construction	lbs/day	75	100	550	150	150	55
Operation	lbs/day	55	55	550	150	150	55

[1] South Coast Air Quality Management District, *CEQA Air Quality Handbook*, November 1993. (Available at SCAQMD.)
[2] Air Quality Analysis Handbook (aqmd.gov)

Air quality impacts can be described in a short- and long-term perspective. Short-term impacts occur during site grading and Project construction and consist of fugitive dust and other particulate matter, as well as exhaust emissions generated by construction-related vehicles. Long-term air quality impacts occur once the Project is in operation. Operational emissions sources are limited because the booster station pumps are electric. The primary source of operational emissions is the routine visits by vehicles driven by maintenance personnel and are considered negligible.

The Project will be required to comply with existing SCAQMD rules for the reduction of fugitive dust emissions. SCAQMD Rule 403 establishes these procedures. Compliance with this rule is achieved through application of standard best management practices in construction and operation activities, such as the application of water or chemical stabilizers to disturbed soils, reducing haul road dust by application of water, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 mph, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph and establishing a permanent, stabilizing ground cover on finished sites. In addition, projects that disturb 50 or more acres or more of soil, or move 5,000 cubic yards of materials per day are required to submit a Fugitive Dust Control Plan or a Large Operation Notification Form to SCAQMD. Based on the size of this Project's footprint (approximately 0.48 acres total), a Fugitive Dust Control Plan or a Large Operation Notification Form would not be required.

Short-Term Analysis

Short-term emissions from Project construction were evaluated using the CalEEMod program. The estimated construction period for the proposed Project is approximately 12 months, as identified below. The default parameters within CalEEMod were used, except as identified below, and these default values generally reflect a worst-case scenario, which means that Project emissions are expected to be equal to or less than the estimated emissions. In addition to the default values used (shown in the CalEEMod output Attachment to this memo), assumptions for the Project relevant to model inputs for short-term construction emission estimates used are:

- Construction is anticipated to begin no sooner than August 2024. The construction of the reservoir (tank) will overlap with the construction of the booster station. The modeled construction schedule for the Project is shown below:

Construction Activity	Start Date	End Date	Total Working Days
Grading	August 1, 2024	October 2, 2024	45 days
Booster Station Construction	October 3, 2024	January 22, 2025	80 days
Tank Construction	December 1, 2024	May 17, 2025	120 days
Tank Coating	May 18, 2025	July 19, 2025	45 days
Paving	July 20, 2025	August 1, 2025	10 days

- The off-road equipment to be used for each activity during the construction of the Project is shown below and based on City engineering estimates. The engine tier for each piece of equipment is calculated using CalEEMod defaults for the statewide fleet average emissions factors.

Construction Activity	Off-Road Equipment	Unit Amount	Hours per Day
Grading	Rubber Tired Dozers	1	8
	Tractor/Loader/Backhoes	2	8
Booster Station Construction	Concrete/Industrial Saw	1	8
	Crane	1	8
	Tractor/Loader/Backhoes	1	8

Construction Activity	Off-Road Equipment	Unit Amount	Hours per Day
Tank Construction	Cranes	1	8
	Forklift	1	8
	Tractor/Loader/Backhoes	1	8
	Welder	1	8
Tank Coating	Air Compressor	1	8
	Pump (Dehumidifier, 11hp)[1]	1	24
Paving	Pavers	1	8
	Rollers	1	8
	Tractor/Loader/Backhoes	1	8

Note: [1] The CalEEMod equipment list does not include a dehumidifier. The Pump was used as a proxy for the dehumidifier because it most closely resembles the dehumidifier. While the precise specifications for the dehumidifier are currently unknown, it is anticipated to be an industrial sized piece of equipment that is diesel fueled. The dehumidifier will only be required for a single day but will run for 24 hours. For modeling purposes, this equipment was assumed to operate the entire duration of this activity, which provides a worst-case scenario.

- To evaluate Project compliance with SCAQMD Rule 403 for fugitive dust control, the Project utilized the option of watering the Project site three times daily which achieves a control efficiency of 74 percent for PM-10 and PM-2.5 emissions. Two (2) one-way vendor trips per day were added to the Grading, Booster Station Construction, Tank Construction and Paving activities to account for water truck trips.

- Four (4) one-way vendor trips per day added to the Tank Construction, Booster Station Construction and Paving activities to account for material delivery and removal.

- Approximately 9,050 square feet was assumed to be paved for on-site and off-site street improvements.

- Architectural coating includes both the coating of the interior and exterior of the new tank being constructed. The surface area to be coated for both the interior and exterior tank surfaces was calculated and entered into CalEEMod to estimate the emissions from these activities.

- The Project site will require 317 cubic yards of soil import. Based on the CalEEMod default truck capacity of 16 cubic yards, approximately 64 total truck trips would occur during grading, or approximately 32 truckloads of soil would be delivered. The import site is approximately 1.5 miles from the Project site.

- The CalEEMod default for worker trips for Booster Station Construction, Tank Construction and Tank Coating were zero because typical building construction is not proposed. Therefore, worker trips for the Tank and Booster Station Construction and Tank Coating were estimated at a rate of 1.25 workers per piece of off-road equipment, which is the CalEEMod default rate for other construction activities (i.e., grading) contained in the User Guide Appendix C.

The results of this analysis are summarized below in **Table 2**.

Table 2 – Unmitigated Estimated Daily Construction Emissions

Activity	Peak Daily Emissions (lb/day)					
	VOC	NO_X	CO	SO_2	PM-10	PM-2.5
SCAQMD Daily Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
2024	**1.60**	**14.70**	**15.90**	**0.03**	**2.39**	**1.43**
2025	1.50	13.70	15.80	0.03	0.84	0.55
Maximum	**1.60**	**14.70**	**15.90**	**0.03**	**2.39**	**1.43**
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: See the detailed model output reports attached herewith. Numbers are the maximum of summer or winter emissions in a given year and may not match due to rounding within the model.

As shown in **Table 2**, above, the emissions from construction of the Project are below the SCAQMD daily construction thresholds for all the criteria pollutants in 2024 and 2025.

Long-Term Analysis

Long-term air quality impacts occur once the Project is in operation. Operational emissions refer to a full range of activities that can or may generate pollutant emissions when a project is functioning in its intended use, and typically include vehicle emissions, area source emissions that include stationary combustion of natural gas used for space and water heating, landscape maintenance, use of consumer products, and energy use.

Operational emissions related to the proposed reservoir and booster station would be primarily from the electric pumps and from the routine visits by vehicles driven by maintenance personnel and are considered negligible because the electricity consumption does not result in direct on-site emissions and this Project will be part of the City's routine maintenance operations. As such, the proposed Project's facilities are not anticipated to increase the frequency of ongoing maintenance routines.

▪ Localized Significance Threshold Analysis

Background

As part of the SCAQMD's environmental justice program, attention has been focused on localized effects of air quality. Staff at SCAQMD has developed localized significance threshold (LST) methodology[3] that can be used by public agencies to determine whether or not a project may generate significant adverse localized air quality impacts (both short- and long-term). LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area (SRA). The Project is located in SRA 29.

Short-Term Analysis

According to the LST methodology, only on-site emissions need to be analyzed. Emissions associated with vendor and worker trips are mobile source emissions that occur off site. The emissions analyzed under the LST methodology are NO_2, CO, PM-10, and PM-2.5. SCAQMD has provided LST lookup tables[4] to allow users to readily determine if the daily emissions for proposed construction or operational activities could result in significant localized air quality impacts for projects five acres or smaller. The LST tables can be used as a screening tool to determine if dispersion modeling would be necessary. If project-related emissions are below the LST table emissions, no further analysis is necessary.

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[3] South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, Revised July 2008. (Available at http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds, accessed January 2024.)

[4] http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds

The SCAQMD's Fact Sheet for Applying CalEEMod to Localized Significance Thresholds is used to determine the maximum site acreage that is actively disturbed.[5] Based on this SCAQMD guidance, the Project will disturb approximately one acre per day during grading. Therefore, the one-acre LST was used to compare the on-site emissions estimated by CalEEMod.

The LST thresholds are estimated using the maximum daily disturbed area (in acres) and the distance of the Project to the nearest sensitive receptors (in meters). The nearest sensitive receptors are residential properties adjacent to and west of the Project site. Residential uses are also located north and northwest of the Project site, across Lincoln Street. According to LST methodology, projects with boundaries closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters. Therefore, a receptor distance of 25 meters (85 feet) was used to ensure a conservative analysis. The results are summarized below **Table 3**.

Table 3 – Unmitigated LST Results for Daily Construction Emissions

Pollutant	Peak Daily Emissions (lb/day)			
	NO_X	CO	PM-10	PM-2.5
LST for 1-acre at 25 meters	**103**	**1,000**	**6**	**4**
Grading-2024	12.80	12.30	**2.27**	**1.40**
Booster Station Construction-2024	**6.79**	**6.93**	0.26	0.24
Booster Station Construction -2025	6.31	6.88	0.23	0.21
Tank Construction-2024	**7.38**	**7.78**	0.31	0.28
Tank Construction-2025	6.84	7.72	0.27	0.25
Tank Coating-2025	3.04	2.81	0.11	0.11
Paving-2025	3.58	4.97	0.17	0.15
Maximum[1]	**14.17**	**14.71**	**2.27**	**1.40**
Exceeds Threshold?	**No**	**No**	**No**	**No**

Note: [1] Maximum emissions are the greater of either each activity along or the sum of Booster Station Construction and Tank Construction in 2024 or 2025 as these activities overlap. Maximum emissions are shown in bold.

As shown in **Table 3,** emissions from construction of the Project are below the LST established by SCAQMD.

Long-Term Analysis

The Project involves construction of a new non-potable water reservoir and booster station. The long-term emissions from the booster station, as discussed previously, are primarily from the pumps and in the form of mobile source emissions, with no stationary sources of emissions present. The new booster station pumps are electric powered. The booster station will also have a diesel-powered emergency generator. According to the LST methodology, LSTs only apply to the operational phase if a project includes stationary sources or on-site mobile equipment generating on-site emissions. Because the emergency generator will only be used during emergency power outages and routine testing, emissions would be negligible. The City of Banning will be required to obtain an SCAQMD permit to install and operate the emergency generator. The SCAQMD permitting process would ensure that the Project meets regulatory requirements through the application review process and by placing specific operating conditions on the permit such as operating hour limits. As such, no further analysis of the emergency generator was prepared.

[5] http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf?sfvrsn=2

▪ Greenhouse Gas Analysis

Greenhouse gases (GHG) are not presented in lbs/day like criteria pollutants; they are typically evaluated on an annual basis using the metric system. Several agencies, at various levels, have proposed draft GHG significance thresholds for use in CEQA documents. One of those agencies is the SCAQMD, which was working on GHG thresholds for development projects. In December 2008, the SCAQMD adopted a threshold of 10,000 metric tonnes per year of carbon dioxide equivalents ($MTCO_2E$/yr) for stationary source projects where SCAQMD is the lead agency. The most recent draft proposal was in September 2010[6] and included screening significance thresholds for residential, commercial, and mixed-use projects at 3,500, 1,400, and 3,000 $MTCO_2E$/yr, respectively. Alternatively, a lead agency has the option to use 3,000 $MTCO_2E$/yr as a threshold for all non-industrial projects. Although both options are recommended by SCAQMD, a lead agency is advised to use only one option and to use it consistently. The SCAQMD significance thresholds also evaluate construction emissions by amortizing them over an expected project life of 30 years.

Short-Term Analysis

Construction-Related Emissions

The CalEEMod model calculates GHG emissions from fuel usage by construction equipment and construction-related activities, like construction worker trips, for the Project. CalEEMod also calculates the indirect GHG emissions related to electricity consumption (CalEEMod Version 2022.1 User's Guide, p. 2). The CalEEMod output results for construction-related GHG emissions provide for CO_2, methane (CH_4), nitrous oxide (N_2O), refrigerants (R), and CO_2E[7] as shown on **Table 4**.

Table 4 – Project Construction Equipment GHG Emissions

Year	Metric Tons per year (MT/yr)				
	Total CO_2	Total CH_4	Total N_2O	Total R	Total CO_2E
2024	116	0.00	0.00	0.02	117
2025	114	0.00	0.00	0.03	115
Total	**230**	**0.00**	**0.00**	**0.05**	**232**
				Amortized[1]	**7.73**

Note: [1]Construction emissions were amortized over a 30-year period, as recommended by SCAQMD.

Results indicate that an estimated 232 $MTCO_2E$ will occur from Project construction equipment over the course of the estimated approximately 12-month construction period, which is approximately 7.73 $MTCO_2E$ amortized for a project lifetime of 30 years.

Long-Term Analysis

Energy-Related Emissions

GHG emissions from the operation of the electric pumps for the proposed booster station were calculated outside of CalEEMod using the estimated annual electricity consumption from the new booster station and the Banning Electric Utility [8]carbon intensity data from CalEEMod (455 pounds of CO_2E per megawatt-hour (MWh)). Two pumps will be constructed (one for standby) and space for a third pump will be provided. The total estimated energy consumption for three pumps is estimated to be approximately 11,332 MWh per year.[9] Therefore, the estimated GHG emissions from operation of the proposed booster station will be approximately 2,340 $MTCO_2E$ per year. There will also be limited lighting on the Project site. However, the GHG emissions from electricity usage will be negligible.

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[6] http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-main-presentation.pdf?sfvrsn=2

[7] CO_2E is the sum of CO_2 emissions estimated plus the sum of CH_4, N_2O and refrigerant emissions estimated multiplied by their respective global warming potential (GWP).

[8] CalEEMod's default statewide average carbon intensity was utilized because the Banning Electric Utility was not available.

[9] 11.332 MWh per year is an engineering estimate, which assumes that each pump operates at 3,777,408 kilowatts (kW) per year (six hours daily).

The proposed Project does not fit into the categories provided (industrial, commercial, and residential) in either the draft thresholds from SCAQMD. The Project's GHG emissions do not exceed the SCAQMD recommended screening level of 3,000 MTCO2E/year. Due to the estimated amount of emissions from Project construction and booster station pump electricity usage during operations we well as nominal emissions from routine maintenance, site lighting and electricity use, the proposed Project will not generate GHG emissions that exceed the draft screening thresholds.

Conclusion

The conclusion of this analysis indicates that construction of the proposed Project will not exceed criteria pollutant thresholds established by SCAQMD on a regional or localized level. The Project will also not generate a substantial amount of GHG emissions. No mitigation is required.

Should you have any questions, please contact me at (951) 686-1070.

CalEEMod Output Files

Banning NP-2 Booster Station and Reservoir Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Banning NP-2 Booster Station and Reservoir
Construction Start Date	8/1/2024
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	19.2
Location	33.92141057528512, -116.89859684921888
County	Riverside-South Coast
City	Banning
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5635
EDFZ	11
Electric Utility	City of Banning Electric Department
Gas Utility	Southern California Gas
App Version	2022.1.1.21

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
Parking Lot	9.05	1000sqft	0.21	0.00	—	—	—	—

Other Non-Asphalt Surfaces	11.8	1000sqft	0.27	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.	1.59	1.33	12.9	12.9	0.02	0.57	1.82	2.39	0.52	0.90	1.43	—	2,135	2,135	0.09	0.05	1.04	2,147
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.91	1.60	14.7	15.9	0.03	0.58	1.82	2.39	0.53	0.90	1.43	—	3,770	3,770	0.15	0.09	0.05	3,801
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.41	0.38	3.30	3.41	0.01	0.14	0.26	0.40	0.13	0.12	0.25	—	700	700	0.03	0.02	0.16	705
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.08	0.07	0.60	0.62	< 0.005	0.02	0.05	0.07	0.02	0.02	0.04	—	116	116	< 0.005	< 0.005	0.03	117

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.59	1.33	12.9	12.9	0.02	0.57	1.82	2.39	0.52	0.90	1.43	—	2,135	2,135	0.09	0.03	0.61	2,147
2025	0.95	1.03	7.09	8.56	0.02	0.27	0.18	0.46	0.25	0.04	0.30	—	1,965	1,965	0.08	0.05	1.04	1,982
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.91	1.60	14.7	15.9	0.03	0.58	1.82	2.39	0.53	0.90	1.43	—	3,770	3,770	0.15	0.09	0.05	3,801
2025	1.79	1.50	13.7	15.8	0.03	0.51	0.33	0.84	0.47	0.08	0.55	—	3,760	3,760	0.15	0.09	0.05	3,791
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.41	0.35	3.30	3.41	0.01	0.14	0.26	0.40	0.13	0.12	0.25	—	700	700	0.03	0.01	0.13	705
2025	0.37	0.38	2.67	3.11	0.01	0.10	0.07	0.17	0.09	0.02	0.11	—	691	691	0.03	0.02	0.16	696
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.08	0.06	0.60	0.62	< 0.005	0.02	0.05	0.07	0.02	0.02	0.04	—	116	116	< 0.005	< 0.005	0.02	117
2025	0.07	0.07	0.49	0.57	< 0.005	0.02	0.01	0.03	0.02	< 0.005	0.02	—	114	114	< 0.005	< 0.005	0.03	115

3. Construction Emissions Details

3.1. Tank Construction (2024) - 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	0.95	0.79	7.38	7.78	0.02	0.31	—	0.31	0.28	—	0.28	—	1,641	1,641	0.07	0.01	—	1,646
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	0.06	0.05	0.45	0.47	< 0.005	0.02	—	0.02	0.02	—	0.02	—	99.5	99.5	< 0.005	< 0.005	—	99.9
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	0.08	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	16.5	16.5	< 0.005	< 0.005	—	16.5
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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.06	0.63	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	132	132	0.01	< 0.005	0.01	134

Vendor	0.01	0.01	0.22	0.07	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	186	186	< 0.005	0.03	0.01	195
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	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.13	8.13	< 0.005	< 0.005	0.01	8.24
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	11.3	11.3	< 0.005	< 0.005	0.01	11.8
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	—	1.35	1.35	< 0.005	< 0.005	< 0.005	1.36
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.87	1.87	< 0.005	< 0.005	< 0.005	1.96
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

3.3. Tank Construction (2025) - 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	0.89	0.74	6.84	7.72	0.02	0.27	—	0.27	0.25	—	0.25	—	1,641	1,641	0.07	0.01	—	1,646
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	0.89	0.74	6.84	7.72	0.02	0.27	—	0.27	0.25	—	0.25	—	1,641	1,641	0.07	0.01	—	1,646
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	0.24	0.20	1.83	2.07	< 0.005	0.07	—	0.07	0.07	—	0.07	—	440	440	0.02	< 0.005	—	441
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	0.04	0.33	0.38	< 0.005	0.01	—	0.01	0.01	—	0.01	—	72.8	72.8	< 0.005	< 0.005	—	73.1
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	0.05	0.04	0.04	0.77	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	141	141	0.01	< 0.005	0.52	143
Vendor	0.01	< 0.005	0.20	0.06	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	184	184	< 0.005	0.03	0.52	193
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	0.05	0.04	0.05	0.58	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	130	130	0.01	< 0.005	0.01	131
Vendor	0.01	< 0.005	0.21	0.06	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	184	184	< 0.005	0.03	0.01	192
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	0.01	0.17	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	35.2	35.2	< 0.005	< 0.005	0.06	35.7
Vendor	< 0.005	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	49.2	49.2	< 0.005	0.01	0.06	51.5
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	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.82	5.82	< 0.005	< 0.005	0.01	5.91
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	8.15	8.15	< 0.005	< 0.005	0.01	8.53
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. Grading (2024) - 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	1.54	1.29	12.8	12.3	0.02	0.57	—	0.57	0.52	—	0.52	—	1,959	1,959	0.08	0.02	—	1,966
Dust From Material Movement	—	—	—	—	—	—	1.70	1.70	—	0.88	0.88	—	—	—	—	—	—	—
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	1.54	1.29	12.8	12.3	0.02	0.57	—	0.57	0.52	—	0.52	—	1,959	1,959	0.08	0.02	—	1,966
Dust From Material Movement	—	—	—	—	—	—	1.70	1.70	—	0.88	0.88	—	—	—	—	—	—	—
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	0.19	0.16	1.58	1.51	< 0.005	0.07	—	0.07	0.06	—	0.06	—	242	242	0.01	< 0.005	—	242
Dust From Material Movement	—	—	—	—	—	—	0.21	0.21	—	0.11	0.11	—	—	—	—	—	—	—
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	0.29	0.28	< 0.005	0.01	—	0.01	0.01	—	0.01	—	40.0	40.0	< 0.005	< 0.005	—	40.1
Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—	—
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	0.04	0.04	0.63	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	108	108	< 0.005	< 0.005	0.43	110

Vendor	< 0.005	< 0.005	0.07	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	62.1	62.1	< 0.005	0.01	0.17	65.1
Hauling	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.99	5.99	< 0.005	< 0.005	0.01	6.30
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.04	0.47	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	99.2	99.2	< 0.005	< 0.005	0.01	100
Vendor	< 0.005	< 0.005	0.07	0.02	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	0.01	—	62.1	62.1	< 0.005	0.01	< 0.005	65.0
Hauling	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.02	6.02	< 0.005	< 0.005	< 0.005	6.32
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	12.4	12.4	< 0.005	< 0.005	0.02	12.6
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.66	7.66	< 0.005	< 0.005	0.01	8.01
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.74	0.74	< 0.005	< 0.005	< 0.005	0.78
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.05	2.05	< 0.005	< 0.005	< 0.005	2.08
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.27	1.27	< 0.005	< 0.005	< 0.005	1.33
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.12	0.12	< 0.005	< 0.005	< 0.005	0.13

3.7. Booster Station Construction (2024) - 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	0.85	0.71	6.79	6.93	0.01	0.26	—	0.26	0.24	—	0.24	—	1,525	1,525	0.06	0.01	—	1,530

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	0.13	1.20	1.22	< 0.005	0.05	—	0.05	0.04	—	0.04	—	269	269	0.01	< 0.005	—	270
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	0.22	0.22	< 0.005	0.01	—	0.01	0.01	—	0.01	—	44.5	44.5	< 0.005	< 0.005	—	44.6
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	0.04	0.04	0.04	0.47	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	99.2	99.2	< 0.005	< 0.005	0.01	100
Vendor	0.01	0.01	0.22	0.07	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	186	186	< 0.005	0.03	0.01	195
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	0.01	0.09	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	17.7	17.7	< 0.005	< 0.005	0.03	17.9
Vendor	< 0.005	< 0.005	0.04	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	32.8	32.8	< 0.005	< 0.005	0.04	34.3
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	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.93	2.93	< 0.005	< 0.005	0.01	2.97
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.43	5.43	< 0.005	< 0.005	0.01	5.69
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. Booster Station Construction (2025) - 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	0.80	0.67	6.31	6.88	0.01	0.23	—	0.23	0.21	—	0.21	—	1,525	1,525	0.06	0.01	—	1,530
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	0.03	0.03	0.27	0.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	65.7	65.7	< 0.005	< 0.005	—	65.9
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	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.9	10.9	< 0.005	< 0.005	—	10.9
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	0.04	0.03	0.04	0.44	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	97.2	97.2	< 0.005	< 0.005	0.01	98.4
Vendor	0.01	< 0.005	0.21	0.06	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	184	184	< 0.005	0.03	0.01	192
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	—	4.24	4.24	< 0.005	< 0.005	0.01	4.30
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.91	7.91	< 0.005	< 0.005	0.01	8.28
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	—	0.70	0.70	< 0.005	< 0.005	< 0.005	0.71
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.31	1.31	< 0.005	< 0.005	< 0.005	1.37
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. Site Improvements (2025) - 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	0.47	0.39	3.58	4.97	0.01	0.17	—	0.17	0.15	—	0.15	—	748	748	0.03	0.01	—	751
Paving	—	0.05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.01	0.01	0.10	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	20.5	20.5	< 0.005	< 0.005	—	20.6
Paving	—	< 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	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.39	3.39	< 0.005	< 0.005	—	3.40
Paving	—	< 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	0.04	0.03	0.03	0.58	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	106	106	< 0.005	< 0.005	0.39	107
Vendor	0.01	< 0.005	0.20	0.06	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	184	184	< 0.005	0.03	0.52	193
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	—	2.70	2.70	< 0.005	< 0.005	< 0.005	2.73
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.03	5.03	< 0.005	< 0.005	0.01	5.27
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	—	0.45	0.45	< 0.005	< 0.005	< 0.005	0.45
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.83	0.83	< 0.005	< 0.005	< 0.005	0.87
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. Tank Coating (2025) - 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	0.51	0.42	3.04	2.81	0.01	0.11	—	0.11	0.11	—	0.11	—	423	423	0.02	< 0.005	—	424
Architectural Coatings	—	0.59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.06	0.05	0.38	0.35	< 0.005	0.01	—	0.01	0.01	—	0.01	—	52.1	52.1	< 0.005	< 0.005	—	52.3
Architectural Coatings	—	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.07	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.63	8.63	< 0.005	< 0.005	—	8.66
Architectural Coatings	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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	0.03	0.02	0.02	0.39	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	70.5	70.5	< 0.005	< 0.005	0.26	71.5
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	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.09	8.09	< 0.005	< 0.005	0.01	8.20
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	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.34	1.34	< 0.005	< 0.005	< 0.005	1.36
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

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
Tank Construction	Site Preparation	12/1/2024	5/17/2025	5.00	120	Tank Construction
Grading	Grading	8/1/2024	10/2/2024	5.00	45.0	—
Booster Station Construction	Building Construction	10/3/2024	1/22/2025	5.00	80.0	—
Site Improvements	Paving	7/20/2025	8/1/2025	5.00	10.0	—
Tank Coating	Architectural Coating	5/18/2025	7/19/2025	5.00	45.0	—

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
Tank Construction	Cranes	Diesel	Average	1.00	8.00	367	0.29
Tank Construction	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Tank Construction	Forklifts	Diesel	Average	1.00	8.00	82.0	0.20
Tank Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37

Booster Station Construction	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Booster Station Construction	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Booster Station Construction	Cranes	Diesel	Average	1.00	8.00	367	0.29
Site Improvements	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Site Improvements	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Site Improvements	Rollers	Diesel	Average	1.00	8.00	36.0	0.38
Tank Coating	Air Compressors	Diesel	Average	1.00	8.00	37.0	0.48
Tank Coating	Pumps	Diesel	Average	1.00	24.0	11.0	0.74

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Tank Construction	—	—	—	—
Tank Construction	Worker	10.0	18.5	LDA,LDT1,LDT2
Tank Construction	Vendor	6.00	10.2	HHDT,MHDT
Tank Construction	Hauling	0.00	20.0	HHDT
Tank Construction	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	7.50	18.5	LDA,LDT1,LDT2
Grading	Vendor	2.00	10.2	HHDT,MHDT
Grading	Hauling	0.89	1.50	HHDT
Grading	Onsite truck	—	—	HHDT
Booster Station Construction	—	—	—	—
Booster Station Construction	Worker	7.50	18.5	LDA,LDT1,LDT2

Booster Station Construction	Vendor	6.00	10.2	HHDT,MHDT
Booster Station Construction	Hauling	0.00	20.0	HHDT
Booster Station Construction	Onsite truck	—	—	HHDT
Site Improvements	—	—	—	—
Site Improvements	Worker	7.50	18.5	LDA,LDT1,LDT2
Site Improvements	Vendor	6.00	10.2	HHDT,MHDT
Site Improvements	Hauling	0.00	20.0	HHDT
Site Improvements	Onsite truck	—	—	HHDT
Tank Coating	—	—	—	—
Tank Coating	Worker	5.00	18.5	LDA,LDT1,LDT2
Tank Coating	Vendor	0.00	10.2	HHDT,MHDT
Tank Coating	Hauling	0.00	20.0	HHDT
Tank Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

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)
Tank Coating	0.00	0.00	2,487	2,015	1,248

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)

Tank Construction	—	—	0.00	0.00	—
Grading	317	—	22.5	0.00	—
Site Improvements	0.00	0.00	0.00	0.00	0.48

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Parking Lot	0.21	100%
Other Non-Asphalt Surfaces	0.27	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	453	0.03	< 0.005
2025	0.00	453	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	31.8	annual days of extreme heat
Extreme Precipitation	5.45	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	23.6	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	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	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	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
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	97.0
AQ-PM	45.3
AQ-DPM	53.7
Drinking Water	59.0
Lead Risk Housing	41.8
Pesticides	0.00
Toxic Releases	20.7
Traffic	79.7
Effect Indicators	—
CleanUp Sites	53.4
Groundwater	0.00
Haz Waste Facilities/Generators	81.5
Impaired Water Bodies	0.00
Solid Waste	25.7
Sensitive Population	—
Asthma	89.4
Cardio-vascular	98.2

Low Birth Weights	26.6
Socioeconomic Factor Indicators	—
Education	82.8
Housing	30.2
Linguistic	47.1
Poverty	87.6
Unemployment	77.8

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	25.92069806
Employed	1.000898242
Median HI	28.89772873
Education	—
Bachelor's or higher	27.90966252
High school enrollment	100
Preschool enrollment	4.260233543
Transportation	—
Auto Access	44.50147568
Active commuting	21.84011292
Social	—
2-parent households	53.68920826
Voting	36.84075452
Neighborhood	—
Alcohol availability	73.73283716

Park access	22.95649942
Retail density	14.44886437
Supermarket access	40.24124214
Tree canopy	1.642499679
Housing	—
Homeownership	52.86795842
Housing habitability	69.62658796
Low-inc homeowner severe housing cost burden	47.17053766
Low-inc renter severe housing cost burden	91.21006031
Uncrowded housing	34.15886052
Health Outcomes	—
Insured adults	21.67329655
Arthritis	0.0
Asthma ER Admissions	8.2
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	33.4
Cognitively Disabled	30.7
Physically Disabled	12.7
Heart Attack ER Admissions	0.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0

Pedestrian Injuries	88.4
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	0.9
SLR Inundation Area	0.0
Children	56.6
Elderly	42.0
English Speaking	60.7
Foreign-born	38.6
Outdoor Workers	41.1
Climate Change Adaptive Capacity	—
Impervious Surface Cover	90.7
Traffic Density	62.4
Traffic Access	23.0
Other Indices	—
Hardship	63.7
Other Decision Support	—
2016 Voting	39.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	72.0

Healthy Places Index Score for Project Location (b)	13.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
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	Per City
Construction: Off-Road Equipment	Per City
Construction: Trips and VMT	Two (2) daily vendor trips added for water trucks during grading, booster station and tank construction, and paving activities. Four (4) daily truck trips are assumed for material delivery and removal during tank construction, booster station construction and paving. One-way trip length for soil hauling trucks is approximately 1.5 miles. Worker trips added for booster station construction, tank construction and tank coating because no defaults were generated by model. Worker trips estimated per CalEEMod User Guide Section 4.6.1 default for workers based on equipment list.
Construction: Architectural Coatings	Tank surface area to be painted estimated for based on CalEEMod User Guide for nonresidential use.

Appendix B

Biological Technical Report and MSHCP Consistency Analysis

BIOLOGICAL TECHNICAL REPORT and MSHCP CONSISTENCY ANALYSIS

For:

City of Banning

NP-2 Booster Pump Station and Reservoir Project

Prepared By:

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January 19, 2024

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EXECUTIVE SUMMARY

Albert A Webb Associates (WEBB) has prepared this Biological Technical Report (BTR) for the proposed NP-2 Booster Pump Station and Reservoir Project ("Project") as requested by the City of Banning Public Works Department (City) located in Riverside County, California.

The objective of this BTR is to provide an assessment of the existing biological conditions within the Project footprint (1.39 acres) and the surrounding biological study area (BSA; 100-foot survey buffer) for a total area of 4.53 acres. The BTR includes an analysis of the Project's potential impacts to common and sensitive biological resources and potentially jurisdictional water resources. This report serves as the necessary biological resources documentation for the City's review process under the California Environmental Quality Act (CEQA).

The BSA contains a total of four land cover types and vegetation communities, including Urban/Developed lands, Disturbed Habitat, Riversidean alluvial fan sage scrub (RAFSS), and Unvegetated Channel. Additionally, a steeply incised ephemeral channel called Montgomery Creek bisects the northeastern corner of the BSA but does not intersect with the Project footprint. The Project footprint contains only Urban/Developed land and Disturbed Habitat. No special-status biological resources were observed during the field assessment, and none are expected to occur in the Project footprint. Further, no potentially jurisdictional water resources are present in the Project footprint.

The Project proposes permanent impacts to 0.09-acre of Urban/Developed lands and 0.39-acre of Disturbed habitat. Temporary impacts will occur to 0.01-acre of Urban/Developed lands and 0.90-acre of Disturbed habitat.

The Project is located within the boundaries of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The City of Banning is a permittee to the MSHCP and the Project is consistent with the MSHCP.

Recommendations of this BTR include temporary construction fencing, construction Best Management Practices, and nesting bird and raptor avoidance measures.

1.0 INTRODUCTION

This Biological Technical Report (BTR) presents the findings of a study conducted by Albert A. Webb Associates (WEBB) for the NP-2 Booster Pump Station and Reservoir Project (Project) proposed by the City of Banning Public Works Department (City) located in Banning, Riverside County, California. The purpose of the BTR is to provide the City, resource agencies, and the public with current biological data required for the review of the project under the California Environmental Quality Act (CEQA), as well as to ensure compliance with federal, state, and local regulations for biological resources.

The BTR provides an overview of the Project site's existing biological conditions, including vegetation communities, and documents the plant and wildlife species observed or detected during surveys. It identifies sensitive resources within the Project area and highlights the potential presence of special-status species. Additionally, this BTR assesses the impacts of the Project and provides recommendations to address potential adverse effects on sensitive biological resources that may occur as a result of Project implementation.

1.1 PROJECT LOCATION

The proposed Project is located in the City of Banning, California, within the County of Riverside (Figure 1 - Regional Map; all figures are provided in Appendix A). The Project is located just south of West Lincoln Street, approximately 0.2 miles south of Interstate-10 and one mile east of Sunset Avenue (Figure 2- Project Vicinity). The Project site falls within Sections 8 of Township 3 South, Range 1 East, as depicted in the Beaumont 7.5-minute quadrangle map on Assessor Parcel Number (APN) 538-280-001 and totals 7.51 acres (Figure 3 – USGS Topo Map). Photos of the Project site are located in Appendix B.

1.2 PROJECT DESCRIPTION

The City is proposing to expand the non-potable water system through the construction and operation of a new non-potable water storage reservoir that is 24-feet in diameter and 21-feet tall with a capacity of approximately 60,910 gallons, associated appurtenances, on-site access road, and the construction and operation of a new booster pump station designed for the future ultimate flow of 2,500 gallons per minute (gpm). The total area of disturbance, including Project construction footprint and construction staging area is 1.39 acre. A 100-foot survey buffer was surveyed as part of this study making the total biological study area (BSA) 4.53 acres.

2.0 METHODS

2.1 Literature Review

Literature and authoritative database queries were performed to assist in determining the presence or potential occurrences of special-status plant and animal species on the Project site or vicinity of the Project site. The following resources were reviewed:

- U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles (Beaumont, Cabazon, El Casco, Yucaipa, Forest Falls, San Gorgonio Mountain, Lake Fulmor, San Jacinto, Lakeview) (USGS 2023A)
- U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2023)
- Western Riverside Multiple Species Habitat Conservation Plan (MSHCP 2004)
- California Department of Fish Wildlife (CDFW) California Natural Diversity Database (CNDDB) (CNDDB 2023)
- the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants (CNPS 2023)
- U.S Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPAC 2023A)
- USFWS National Wetlands Inventory (USFWS 2023B)
- USGS National Hydrography Dataset (USGS 2023B)

2.2 General Biological Survey

On June 2nd, 2023, WEBB Senior Biologist Marshall Paymard, conducted a reconnaissance-level field assessment of the proposed Project footprint, including a 100-foot survey buffer, herein defined as the biological study area (BSA). The BSA plus Project footprint totals 4.53 acres. The field assessment was conducted on-foot to systematically assess and document the BSA for sensitive biota and their habitats, including other environmental attributes such as: topography, soil type, water features, and vegetation communities. Table 1 below provides the date, time, and average weather field conditions of the field assessment.

Table 1. General Biological Field Survey Conditions

Date/Time	Climatic Conditions
June 2nd 2023 / 0900-1200	Air Temperature: 64-66°F; Wind: 0-1 miles per hour (MPH); Cloud Cover: 10%

Vegetation Community and Land Cover Mapping

Vegetation communities and land cover types present in the BSA were mapped directly in the field on a 200-foot scale, aerial satellite imagery-based field map. Following completion of the

field assessment, all vegetation communities were digitized and quantified using ArcGIS Pro software. Vegetation communities were mapped according to Holland (1986).

Plants

Plant species observed during the field assessment of the BSA were identified by morphology and recorded in a standard field notebook. Plant species that could not be identified immediately in the field were identified in the laboratory using taxonomic keys. Latin and common names for plant species included in this report follow, The Jepson Manual: Vascular Plants of California (Baldwin et al. 2012).

Wildlife

Wildlife species detected during field assessments by sight, calls, tracks, scat, or other signs were recorded in a standard field notebook. General information regarding wildlife species present in the region was obtained Center of North American Herpetology (2023) for amphibians and reptiles, the American Ornithologists' Union (2023) for birds, the North American Butterfly Association (NABA 2023) for butterflies, and Bradley et al. (2014) for mammals.

Jurisdictional Non-Wetland Waters and Wetlands

Satellite aerial imagery and USGS topographic maps were reviewed prior to the field survey to detect any potential Waters of the United States, including wetlands, under the jurisdiction of the U.S. Army Corps of Engineers (USACE), pursuant to Section 404 of the federal Clean Water Act; Waters of the State under the jurisdiction of the California Regional Water Quality Control Board (RWQCB), pursuant to Section 401 of the federal Clean Water Act and the Porter–Cologne Act; and Streambeds under the jurisdiction of California Department of Fish and Wildlife (CDFW), pursuant to Section 1602 of the California Fish and Game Code. All potential jurisdictional resources, if present in the BSA, were mapped in the field and then digitized using ArcGIS Pro software.

2.3 Special-Status Biological Resources

Special-status biological resources are defined herein as follows: plant or animal species listed or proposed for listing as threatened or endangered under the Federal Endangered Species Act (FESA) or candidates for possible future listing as threatened or endangered under the ESA; plants and animals considered by CDFW to be rare, threatened, endangered, or a Species of Special Concern (SSC) in California, which includes plants and animals tracked by CNDDB, and plants tracked by the CNPS as California Rare Plant Rank (CRPR) 1, 2, 3, or 4; plants and animals considered locally significant in local or regional plans, policies, or ordinances; habitat areas or plant communities that are unique, are of relatively limited distribution, or are of particular value to wildlife; jurisdictional wetlands and non-wetland waters; and, wildlife corridors and habitat linkages.

A list of special-status plants and wildlife species evaluated for the BSA is provided as Appendix C to this report; the animal list is derivative of a nine-quad search performed in CNDDB (CNDDB 2023) and the plant list is derivative of a nine-quad search performed in CNDDB (2023) and CNPS (2023).

3.0 REGULATORY SETTING

3.1 Federal Regulations

Federal Endangered Species Act (FESA)

The FESA provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead federal agencies for implementing FESA are the USFWS and the U.S National Oceanic and Atmospheric Administration (NOAA) Fisheries Service. Actions that jeopardize endangered or threatened species and the habitats upon which they rely are considered a “take” under the FESA. Section 9(a) of the FESA defines take as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” “Harm” and “harass” are further defined in federal regulations and case law to include actions that adversely impair or disrupt a listed species’ behavioral patterns.

FESA Section 7 is called "Interagency Cooperation," and it is the mechanism by which Federal agencies ensure the actions they take, including those they fund or authorize, do not jeopardize the existence of any listed species. A Section 7 consultation (formal or informal) is required when there is a nexus between endangered species’ use of a site and there is an associated federal action for a proposed impact.

Under the provisions of FESA Section 10(a), permits may be issued for the incidental take of endangered or threatened species, accompanied by the preparation of a Habitat Conservation Plan (HCP), regardless of the presence of a federal nexus. The term "incidental" denotes taking that is secondary to, and not the primary purpose of, a lawful activity. To obtain Section 10(a) permits, an HCP must be submitted, demonstrating how the taking will be minimized and ensuring the species' survival. For instance, the MSHCP serves as a regional HCP developed in accordance with FESA Section 10(a), allowing for the take of listed species, provided the project is in compliance with the MSHCP.

The USFWS designates critical habitat for endangered and threatened species. Critical habitat is the specific areas within the geographic area, occupied by the species at the time it was listed, that contain the physical or biological features that are essential to the conservation of endangered and threatened species and that may need special management or protection. Critical habitat may also include areas that were not inhabited by the species at the time of listing but are crucial to its conservation. Critical habitat designations affect only Federal agency actions or federally funded or permitted activities. Critical habitat designations do not affect activities by private landowners if there is no Federal “nexus”, or no Federal funding or authorization associated with a project. Federal agencies are required to avoid “destruction” or “adverse modification” of designated critical habitat.

Migratory Bird Treaty Act (MBTA)

The Migratory Bird Treaty Act (MBTA) prohibits the take of protected migratory bird species without prior authorization by the USFWS. Additionally, Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds," requires that any project with federal involvement address impacts of federal actions on migratory birds with the purpose of promoting conservation of migratory bird populations (66 FR 3853–3856). The list of migratory bird species protected by the law is primarily based on bird families and species included in the four international treaties (Canada 1916, Mexico 1936, Japan 1972, and Russia 1976). In the Code of Federal Regulations one can locate this list under Title 50 Part 10.13 (10.13 list). The 10.13 list was updated in 2020, incorporating the most current scientific information on taxonomy and natural distribution.

A migratory bird species is included on the list if it meets one or more of the following:

- It occurs in the United States or U.S. territories as the result of natural biological or ecological processes and is currently, or was previously listed as, a species or part of a family protected by one of the four international treaties or their amendments.
- Revised taxonomy results in it being newly split from a species that was previously on the list, and the new species occurs in the United States or U.S. territories as the result of natural biological or ecological processes.
- New evidence exists for its natural occurrence in the United States or U.S. territories resulting from natural distributional changes and the species occurs in a protected family.

The Migratory Bird Treaty Reform Act of 2004 (MBTRA) amended the MBTA by stating the MBTA applies only to migratory bird species that are native to the United States or U.S. territories, and that a native migratory bird species is one that is present as a result of natural biological or ecological processes (USFWS 2023C). The MBTRA requires the USFWS to publish a list of all non-native, human-introduced bird species to which the MBTA does not apply, and an updated list was published in 2020. The 2020 update identifies species belonging to biological families referred to in treaties the MBTA implements but are not protected because their presence in the United States or U.S. territories is solely the result of intentional or unintentional human-assisted introductions (USFWSC 2023).

In general, the MBTA is used to place restrictions on disturbance of active bird nests during the nesting season (generally February 1 to August 31). In addition, the USFWS commonly places restrictions on disturbances allowed near active raptor nests. Currently, birds are considered to be nesting under the MBTA when there are eggs or chicks, which are dependent are on the nest.

Clean Water Act

Section 404 of the Clean Water Act (CWA) establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Activities in waters of the United States regulated under this program include fill for development, water resource

projects (such as dams and levees), infrastructure development (such as highways and airports) and mining projects (EPA 2023). Section 404 requires a permit before dredged or fill material may be discharged into waters of the United States, unless the activity is exempt from Section 404 regulation (e.g., certain farming and forestry activities).

Proposed activities are regulated through a permit review process. An individual permit is required for potentially significant impacts. Individual permits are reviewed by the U.S. Army Corps of Engineers or an approved State/Tribal 404(g) Program which evaluates applications under a public interest review, as well as the environmental criteria set forth in the CWA Section 404(b)(1) Guidelines, regulations promulgated by EPA (EPA 2023).

For most discharges that will have only minimal adverse effects, a general permit may be suitable. General permits are issued on a nationwide, regional, or state basis for particular categories of activities. The general permit process eliminates individual review and allows certain activities to proceed with little or no delay, provided that the general or specific conditions for the general permit are met. For example, minor road activities, utility line backfill, and bedding are activities that can be considered for a general permit (EPA 2023).

3.2 State Regulations

California Endangered Species Act (CESA)

Originally enacted in 1970, CESA was repealed and replaced by an updated version in 1984 and amended in 1997. Plant and animal species may be designated threatened or endangered under CESA after a formal listing process by the California Fish and Game Commission (CDFW 2023). Approximately 250 species are currently listed under CESA. A CESA-listed species, or any part or product of the plant or animal, may not be imported into the state, exported out of the state, “taken” (i.e., killed), possessed, purchased, or sold without proper authorization. CESA Section 2053 requires that state agencies may not approve projects that will jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy (CDFW 2023). The CESA authorizes that private entities may “take” plant or wildlife species listed as endangered or threatened under the FESA and CESA, pursuant to a federal Incidental Take Permit if the CDFW certifies that the incidental take is consistent with CESA (CFG Code Section 2080.1[a]). For state-only listed species, Section 2081 of CFG Code authorizes the CDFW to issue an Incidental Take Permit for state listed threatened and endangered species if specific criteria are met. “Take” is defined in Section 86 of the California Fish and Game Code as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” The California ESA allows for take incidental to otherwise lawful development projects.

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) serves to: inform governmental decision makers and the public about the potential significant environmental effects of proposed

activities; identify ways that environmental damage can be avoided or significantly reduced; prevent significant, avoidable damage to the environment by requiring feasible project alternatives and mitigation measures; and disclose to the public the reasons for a governmental approval despite the project causing significant environmental effects. Moreover, CEQA affords protections to threatened and endangered species that are not listed on the federal or state list of protected species, and may consider some species as, rare or endangered if the species can be shown to meet certain specified criteria. CEQA Guidelines Section 15380(b)(1) defines endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors" (14 CCR 15000 et seq.). A rare animal or plant is defined in CEQA Guidelines Section 15380(b)(2) as a species that, although not presently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or …the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the Federal Endangered Species Act." Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guidelines Section 15380(c). CEQA also requires identification of a project's potentially significant impacts on riparian habitats (such as wetlands, bays, estuaries, and marshes) and other sensitive natural communities, including habitats occupied by endangered, rare, and threatened species.

Native Plant Protection Act

The Native Plant Protection Act (NPPA) was enacted in 1977 and allows the Fish and Game Commission to designate native plants as rare or endangered. There are 64 species, subspecies, and varieties of plants that are protected as rare under the NPPA. The NPPA prohibits take of endangered or rare native plants, unless authorized by CDFW via a permit or other agreement pursuant to the applicable regulations, or under certain other limited circumstances. The CESA of 1984 (Fish and Game Code Section 2050-2116) provided further protection for rare and endangered plant species, but the NPPA remains part of the California Fish and Game Code (California Fish and Game Code §§ 1900-1913).

Fully Protected Species

The State of California first began to designate species as "fully protected" prior to the creation of the FESA and the CESA. The designation and protection of fully protected species is established by FGC sections 3511, 4700, 5050, and 5515. Except in very limited circumstances such as pursuant to necessary scientific research, including efforts to recover a species, or an approved Natural Community Conservation Plan (NCCP), fully protected species may not be taken or possessed.

California Fish and Game Code

The California Fish and Game Code regulates the taking of birds, mammals, fish, amphibians, and reptiles, as well as natural resources such as wetlands and waters of the state. According

to Section 3503, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 states that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto. Section 3513 states that is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA. CDFW currently defines an active nest as one that is under construction or in use and includes existing nests that are being modified. For example, if a hawk is adding to, or maintaining an existing stick nest in a tree, then the nest is deemed active and protected under these Fish and Game Code Sections.

In Section 1602 of the Fish and Game Code, the CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. A Streambed Alteration Agreement is required for impacts to jurisdictional wetlands in accordance with Section 1602 of the California Fish and Game Code.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (the Act) is a California state law that was enacted in 1969 to protect and manage the state's water resources. The intent of the Porter–Cologne Water Quality Control Act is to protect water quality and the beneficial uses of water, and it applies to both surface water and groundwater. The Act establishes a framework for regulating discharges of pollutants into the state's waters and provides for the issuance of permits to regulate discharges. Under this Act, the State Water Resources Control Board (SWRCB) develops statewide water quality plans, and the Regional Water Quality Control Boards (RWQCB) develop basin plans that identify beneficial uses, water quality objectives, and implementation plans. The RWQCBs have the primary responsibility to implement the provisions of both statewide and basin plans.

Projects with impacts to jurisdictional waters must demonstrate compliance with the goals of the Act by developing Stormwater Pollution Prevention Plans, Standard Urban Storm Water Mitigation Plans, and other measures to obtain a CWA Section 401 certification.

Under the Porter-Cologne Act, the SWRCB and the RWQCBs have the authority to:

- Regulate the discharge of pollutants into the state's waters.
- Establish water quality objectives and standards for surface waters.
- Develop and implement programs to protect and improve water quality.
- Conduct investigations and take enforcement actions to prevent violations of water quality standards and regulations.
- Regulate the use of groundwater to prevent contamination of surface waters.
- Regulate activities that may impact the quality of the state's waters, such as land use activities and mining operations.

3.3 Local Regulations

The Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) is a long-term conservation plan designed to protect and manage a diverse array of plant and animal species and their habitats in western Riverside County, California. The City of Banning is Permittee to the MSHCP. The MSHCP was developed through a collaborative effort between federal, state, and local agencies, along with conservation groups, landowners, and other stakeholders. The plan covers an area of over 1.26 million acres and provides for the conservation and management of over 146 plant and animal species. The MSHCP includes several conservation measures, such as habitat restoration, enhancement, and creation, as well as the preservation of key wildlife corridors and the acquisition of conservation easements and fee title interests. The MSHCP also includes provisions for monitoring and adaptive management to ensure that the conservation measures are effective in achieving their intended goals.

, Because the City is a Permittee to the MSHCP, the Project must not conflictwith the local adopted habitat conservation plans, such as the MSHCP. An MSHCP Consistency Analysis is provided in Section 6 of this report.

4.0 RESULTS

4.1 Land Uses

The majority of the BSA is characterized by a disturbed and undeveloped vacant lot. In the western boundary of the BSA, there are single-family homes and in the eastern section of the BSA, is Montgomery Creek, a steeply incised channel is present. The northern part of the BSA consists of West Lincoln Street and additional single-family homes (Figure 2).

4.2 Soils

The NRCS Web Soil Survey (USDA 2023) identifies four soil map units in the BSA (Figure 4-USDA Soils). The soils present in the BSA are as follows:

- RaB2 Ramona sandy loam, 2 to 5 percent slopes, eroded
- GyC2 Greenfield sandy loam, 2 to 8 percent slopes, eroded
- TeG Terrace escarpments
- RaC2 Ramona sandy loam, 5 to 8 percent slopes, eroded

4.3 Vegetation and Land Cover Types

The BSA contains a total of four land cover types and vegetation communities; including, Urban/Developed lands, Disturbed habitat, Riversidian Alluvial Fan Sage Scrub, and Unvegetated Channel (Figure 5-Vegetation Communities and Land Cover Types). These land cover types and vegetation communities are summarized in Table 2 and discussed below. (Representative photos are provided in Appendix B).

Table 2. Vegetation Communities and Land Cover Types in BSA

Vegetation Community/ Land Cover Type	Total (acres)
Urban/Developed (URB/DEV)	1.88
Disturbed Habitat (DH)	2.56
Riversidian Alluvial Fan Sage Scrub (RAFSS)	0.06
Unvegetated Channel (UVC)	0.03
Total	**4.53**

Urban/Developed Lands (DEV)

According to Holland (1986), urban/developed lands refer to areas that have undergone construction or significant physical alterations, to an extent that native vegetation is no longer supported. These lands are typically characterized by the presence of permanent or semi-

permanent structures, pavement, hardscape, and landscaped areas featuring various ornamental plants.

Urban/developed lands occupy approximately 1.88-acres in the BSA. These lands are characterized by single-family residences, a paved roadway (i.e., West Lincoln Street), and ornamental plantings.

Disturbed Habitat (DH)

Disturbed Habitat refers to areas that have not been developed but have experienced physical disturbances caused by human activities. These areas still retain a soil substrate and are primarily covered by non-native species (Holland 1986).

A total of 2.56-acres of Disturbed Habitat dominates the BSA. Disturbed Habitat within the BSA is characterized by bare and gravel grounds with an herbaceous cover dominated by non-native species, such as, foxtail brome (*Bromus rubens*), dove weed (*Croton setiger*), horse weed (*Erigeron canadensis*) short-pod mustard (*Hirschfeldia incana*), foxtail barley (*Hordeum murinum*), and *Erodium spp*. Areas mapped as Disturbed Habitat within the BSA show evidence of repeated mowing.

Riversidian Alluvial Fan Sage Scrub (RAFSS)

Riversidian alluvial fan sage scrub (RAFSS) usually occurs on alluvial fans in southern California, particularly in Riverside and San Diego counties. This variant of sage scrub is adapted to the unique conditions found on alluvial fans, which typically have well-drained, rocky soils.

A total of 0.06-acre of RAFSS occurs in the BSA within the banks of Montogomery Creek and none is present in the Project footprint. This community is dominated by California buckwheat, California sage brush, and an occasional single scale broom (*Lepidospartum squamatum*).

Unvegetated Channel (UVC)

Unvegetated channel refers to a sandy, gravelly, or rocky area along waterways or flood channels where vegetation does not typically grow on a permanent basis. The presence of variable water lines inhibits the establishment and growth of vegetation, although some weedy grass species may be found along the outer edges of the channel. Vegetation cover in these areas is usually less than 10% (Holland 1986).

A total of 0.03-acre of unvegetated channel occurs in the BSA as the bed of Montgomery Creek and none occurs in the Project footprint.

4.4 Common Plants

Common plant species observed in the BSA were typical of disturbed habitat and included: foxtail brome, dove weed, horse weed, short-pod mustard, foxtail barley, *Erodium spp*., and occasional patches of California buckwheat and California sagebrush.

4.5 Common Wildlife

Common wildlife species observed in the BSA during the field assessment include, American crow (*Corvus brachyrhynchos*), mourning dove (*Zenaida macroura*), western fence lizard (*Sceloporus occidentalis*), house finch (*Haemorhous mexicanus*), and song sparrow (*Melospiza melodia*).

4.6 Jurisdictional Non-Wetland Waters and Wetlands

Montgomery Creek (Creek), an ephemeral channel exhibiting steeply incised banks, traverses the eastern portion of the BSA (Figure-5). This feature is considered an MSHCP riverine resource which is also discussed in Section 6.3.1 of this report. Within this reach, the Creek exhibits eroded banks with vertical spans surpassing 25 feet, while active flood plain maintains an average width of approximately 4 feet. The Creek's southern ingress into the BSA is facilitated by two 3-foot corrugated steel culverts originating beneath West Lincoln Road. The Creek intersects the BSA, however it should be noted that the Creek is absent from the Project footprint and therefore no impacts are anticipated to this feature.

4.7 Special-Status Biological Resources

4.7.1 Sensitive Vegetation Communities

The CDFW assesses the rarity of vegetation communities, also known as natural communities, using the NatureServe's Heritage Methodology. This methodology evaluates communities at both the global level, encompassing their full natural range within and outside of California, and the state level, focusing specifically on their occurrence within California. Each community is assigned a single rank, denoted as G (global) and S (state), on a scale of 1 to 5. A rank of 1 indicates a community that is very rare and threatened, while a rank of 5 signifies a community that is demonstrably secure.

When a vegetation community receives a Rarity Ranking of S1 (critically imperiled), S2 (imperiled), or S3 (vulnerable), the CDFW considers it a sensitive natural community. These sensitive communities are to be addressed during the environmental review process of CEQA and its equivalent regulations.

Vegetation community descriptions used by the CDFW follow the National Vegetation Classification System (NVCS) using the Manual of California Vegetation (MCV), 2nd Edition (Sawyer et al. 2009). The MCV classifies vegetation communities based on floristic and structural details that are represented as alliances and associations. Vegetation communities mapped within the BSA, and described within this report, follow the descriptions and classifications as defined in Holland (1986). However, all Holland (1986) classifications used in this report were translated to the comparable classification unit under MCV to determine the sensitivity of the vegetation community being analyzed. If a natural community described under Holland (1986) did not have an appropriate direct translation within MCV, then professional judgement was used by the biologist to find the best corresponding association or alliance that would not jeopardize the conservation value of the vegetation community being analyzed.

RAFSS is classified as a sensitive vegetation community with a state ranking of S3 and a global ranking of G3. Due to its sensitivity, any potential impacts to this community would necessitate mitigation measures. However, no impacts are anticipated on this community as a result of the Project implementation.

4.7.2 Special-Status Plant Species

Special status plant species are defined herein as, plants listed or proposed for listing as threatened or endangered under the FESA or candidates for possible future listing as threatened or endangered under the FESA; plants considered by CDFW to be "rare, threatened or endangered in California", which includes plants tracked by the CNDDB and the CNPS as CRPR 1 or 2; plants that may warrant consideration on the basis of declining trends, recent taxonomic information, or other factors, which may include plants tracked by the CNDDB and CNPS as CRPR 3 or 4; and plants considered locally significant or plants that are not rare from a statewide perspective but are rare or uncommon in a local context such as within a county or region, or as designated in local or regional plans (e.g., MSHCP), policies, or ordinances.

No special-status plant species were observed during the general habitat assessment. Most of the BSA and all of the impact footprint is composed of disturbed lands that lack suitable habitat for special-status plants.

4.7.3 Special-Status Wildlife Species

Special-status wildlife species are defined herein as, animal species listed or proposed for listing as threatened or endangered under the FESA or candidates for possible future listing as threatened or endangered under the FESA; animals considered by CDFW to be "rare, threatened, endangered, or a SSC in California", which includes animals tracked by the CNDDB; and, animals considered locally significant in local or regional plans, policies, or ordinances.

No special-status wildlife species were observed during the habitat assessment and no special-status wildlife species are expected to occur.

4.8 Nesting Birds

The Project footprint does not contain vegetation that could provide suitable nesting habitat for bird species protected under the MBTA and the Fish and Game Code. There are no trees or bushes within the Project footprint. Ground nesters are unlikely on the Project because of the regular frequency of mowing that occurs on the Project footprint. Limited suitable vegetation for foraging is within the Creek but are few in number and spread out. Because of the regular frequency of mowing and lack of brush or trees, nesting birds are not expected to occur in the BSA.

4.9 Wildlife Corridors and Habitat Linkages

Wildlife corridors are linear features that join large spans of natural open space that enable the movement of animals throughout the landscape. Habitat linkages are areas that provide connectivity between habitat patches as well as opportunities for foraging, reproduction, and dispersal habitat for plants and animals. Habitat linkages help minimize the effects of habitat fragmentation as they function as steppingstones for wildlife dispersal.

The Project site is not located within designated wildlife corridors or habitat linkages identified in the South Coast Missing Linkages analysis conducted by South Coast Wildlands (2008). The proposed Project is located within the disturbed lands that are adjacent to a predominantly urban landscape. Because the Project is not located in or adjacent to an MSHCP Conservation area and no MSHCP linkages are identified in the Project area.

5.0 IMPACTS ANALYSIS

The purpose of the impact analysis presented in this report is to identify potential direct and indirect impacts that may arise from the implementation of the Project. The analysis has been conducted in accordance with the requirements of CEQA and the MSHCP.

Pursuant to the CEQA Guidelines, three types of impacts or effects are defined:

Direct impacts, also known as primary effects, are actions caused by the Project that occur at the same time and place. These impacts involve the loss, modification, or disturbance of habitats, directly affecting the flora and fauna within those habitats. Additionally, direct impacts encompass the destruction of individual plants or animals. Permanent impacts are direct impacts.

Indirect impacts, also referred to as secondary effects, are reasonably foreseeable and caused by the Project but occur at different times or locations. The CEQA Guidelines describe indirect impacts as follows: "An indirect physical change in the environment is a physical change... which is not immediately related to the project, but which is caused indirectly by the project. If a direct physical change in the environment in turn causes another change in the environment, then the other change is an indirect change in the environment" (Section 15064 (d)(2)). Examples of indirect impacts include increased ambient levels of noise or light, predation by domestic pets, competition with exotic plants and animals, introduction of toxins (including pesticides), and human disturbances such as hiking, off-road vehicle use, or unauthorized dumping.

Cumulative impacts or effects refer to the combined effects of two or more individual impacts that, when considered together, are substantial or contribute to the amplification of other environmental impacts. Cumulative impacts can arise from multiple effects of the same Project or from several different projects. They can result from individually minor but collectively significant actions occurring over a period of time.

The impact analysis in this report examines these three types of impacts to provide a comprehensive understanding of the potential consequences associated with the Project. Permanent and temporary impacts to vegetation communities and land cover types as a result of Project implementation are quantified and summarized in Table 3 (Figure 5).

Table 3. Summary of Impacts to Vegetation Communities and Land Cover Types

Vegetation Community / Land Cover Type	Permanent (acre)	Temporary (acre)	Total
Urban/Developed (URB/DEV)	0.09	0.01	0.1
Disturbed Habitat (DH)	0.39	0.90	1.29
Total Project Footprint	**0.48**	**0.91**	**1.39**

5.1 Impacts to Vegetation Communities and Land Cover Types

5.1.1 Direct Impacts

As shown in Table 3, the Project footprint supports two of the four land cover types and vegetation communities within the BSA: Urban/Developed lands and Disturbed Habitat. Neither of these vegetation habitat types are considered sensitive. Permanent impacts total 0.48 acre and temporary impacts total 0.91 acre within these land cover types.

5.1.2 Indirect Impacts

No indirect impacts outside of the Project footprint, within the BSA, are anticipated to occur to sensitive vegetation communities. Although approximately 0.06-acre of RAFSS related to Montgomery Creek occurs in the BSA, the project permanent and temporary impact areas do not affect the RAFSS.

To ensure construction activities avoid the RAFSS associated with Montgomery Creek, recommendation **BIO-1** (Temporary Exclusionary/Construction Fencing) is provided in Section 7 of this report. This measure will minimize the risk of accidental impacts to the RAFFS within the BSA.

5.2 Impacts to Special-Status Plant Species

5.2.1 Direct Impacts

As shown in Table 3, Project impacts affect Urban/Developed lands and Disturbed Habitat, which do not provide suitable habitat for special-status plants. In addition, no special-status plants were identified during the biological assessment or focused wildlife surveys conducted within the Project footprint. Therefore, no direct impacts are expected to occur to special-status plant species because of Project implementation.5.2.2 Indirect Impacts

No special-status plants occur in the Project within the Project BSA. As such, no indirect impacts are anticipated to occur to special-status plants.

5.3 Impacts to Special-Status Wildlife Species

5.3.1 Direct Impacts

No special-status wildlife species were observed during the habitat assessment and no special-status wildlife species are expected to occur given the disturbed nature of the site and associated habitat types. Therefore, no direct impacts to special status wildlife are expected to occur.

5.3.2 Indirect Impacts

No special-status wildlife species were observed during the habitat assessment and no special-status wildlife species are expected to occur within the BSA. Therefore, no indirect impacts are expected to occur to special status wildlife species.

5.4 Impacts to Jurisdictional Non-Wetland Waters and Wetlands

5.4.1 Direct Impacts

No potentially jurisdictional waters occur in the Project footprint. Therefore, no direct impacts are anticipated.

5.4.2 Indirect Impacts

Montgomery Creek occurs in the BSA. Therefore, indirect impacts to Montgomery Creek could occur as a result of Project implementation if Project activities stray outside the Project footprint and the appropriate measures are not taken. As such, Recommendations **BIO-1** (Temporary Exclusionary/Construction Fencing) and **BIO-2** (Construction Best Management Practices) are included in Section 7.0 to avoid indirect impacts to Montgomery Creek.

5.5 Impacts to Wildlife Corridors and Habitat Linkages

5.5.1 Direct Impacts

No wildlife corridors or linkages occur within the Project footprint or BSA. As such, no direct impacts or interferences are anticipated to occur to wildlife corridors and habitat linkages.

5.5.2 Indirect Impacts

No wildlife corridors or linkages occur within the BSA. As such, no indirect impacts or indirect interferences are anticipated to occur to wildlife corridors and habitat linkages.

5.6 Impacts to Nesting Birds

No suitable habitat for nesting birds is located within the BSA, including the Project footprint. Ground nesters are not expected in the Project footprint because of frequent mowing. There is limited suitable habitat for foraging birds within the Creek. Because Project impacts are limited to the Project footprint and the quality of vegetation is scarce in the Creek and more suitable for foraging then nesting, no impacts to nesting birds are anticipated to occur.

5.7 Cumulative Impacts

It is anticipated that the proposed Project will not result in cumulative impacts on the biological resources within the Project area or the surrounding region. This conclusion is based on several factors. Firstly, the Project is situated within an already established semi-urban environment where urban and developed lands dominate. Secondly, the impacts associated with the Project will occur in existing disturbed lands. Therefore, the overall cumulative effects on the biological resources are expected to be minimal.

6.0 REGIONAL RESOURCE PLANNING / MSHCP CONSISTENCY ANALYSIS

To check consistency of the proposed Project with the MSHCP, a consistency analysis was conducted as part of this BTR. Shapefiles obtained from the Riverside County Mapping Portal (Riverside 2023) were downloaded and integrated into GIS to determine if the Project site falls within the MSHCP Criteria Area, Public/Quasi Public Lands (PQP Lands), or intersects with any required biota survey areas, including Sub Area Plan boundaries.

6.1 Reserve Assembly Analysis

The Project is a Public Project (Permittee-sponsored) and does not occur in the Criteria Area; therefore, a Reserve Assembly Analysis is not required. The Project will not conflict with Section 3.0 of the MSCHP.

6.2 Public Quasi-Public Lands in Reserve Assembly Analysis

The proposed Project does not occur in, or adjacent to, PQP Lands. No direct or indirect impacts will occur to PQP lands.

6.3 Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools (MSHCP Section 6.1.2)

6.3.1 Riparian / Riverine

Riparian/riverine areas are lands which contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or which depend upon soil moisture from a nearby fresh water source; or areas with fresh water flow during all or a portion of the year (MSHCP 2004).

Results: Riparian/riverine resources were assessed during the biological assessment in the Project footprint and BSA, as described in Section 2.2 of this report. No riparian/riverine resources are present in the Project impact footprint and therefore no direct impacts to MSHCP riparian habitat are anticipated. However, riverine resources (i.e., Montgomery Creek with 0.06-acre of RAFSS) do occur in the Project BSA outside of the direct impact footprint and could be subject to indirect impacts if Project activities stray outside the Project footprint. No riparian habitat is within the Project footprint and BSA. Recommendations **BIO-1** and **BIO-2** are included in Section 7.0 to avoid indirect impacts to riparian/riverine resources. Therefore, because no impacts directly or indirectly are proposed to Montgomery Creek which is the area of the BSA that has riverine resources, no DBESP or mitigation is necessary.

6.3.2 Vernal Pools

Vernal pools are seasonal wetlands that occur in depression areas that have wetlands indicators of all three parameters (i.e., soils, vegetation, and hydrology) during the wetter portion of the growing season but normally lack wetlands indicators of hydrology and/or

vegetation during the drier portion of the growing season. Obligate hydrophytes and facultative wetland plant species are normally dominant during the wetter portion of the growing season, while upland species (annuals) may be dominant during the drier portion of the growing season.

Results: The project site does not support soils or plants suitable to support vernal pools. Additionally, no areas of seasonal ponding identified during aerial photo reviews, nor vernal pools were identified in the Project footprint or the BSA during the site investigation. Therefore, no direct or indirect impacts are expected to occur.

6.3.3 Fairy Shrimp

No vernal pools or other suitable fairy shrimp habitat (i.e., ponding or suitable soils) were found in the Project footprint or BSA during the site investigation and historical aerial reviews. Therefore, fairy shrimp surveys were not conducted as part of the Project evaluation due to the absence of suitable habitat. No impacts to listed fairy shrimp species are expected to occur.

6.3.4 Riparian Birds

No suitable habitat is present for riparian bird species (i.e., least Bell's vireo, southwestern willow flycatcher, or yellow-billed cuckoo) in the Project footprint or BSA. Therefore, no direct or indirect impacts are expected to occur to riparian birds.

6.4 Narrow Endemic Plant Species (MSHCP Section 6.1.3)

The Project footprint and BSA are not located in a Narrow Endemic Plant Species Survey Area. Therefore, the Project would not conflict with Section 6.1.3 of the MSHCP.

6.5 Additional Survey Needs and Procedures (MSHCP Section 6.3.2)

6.5.1 Criteria Area Plant Species

The proposed Project footprint and BSA is not located in a Section 6.3.2 mapped survey area for Criteria Area Plant species. Therefore, the Project would not conflict with Section 6.3.2 of the MSHCP.

6.5.2 Amphibians

The proposed Project footprint and BSA is not located in a survey area for amphibians. Therefore, the Project would not conflict with Section 6.3.2 of the MSHCP, addressing amphibians.

6.5.3 Burrowing Owl

The proposed Project footprint and BSA is not located in a survey area for burrowing owl. Therefore, the Project would not conflict with Section 6.3.2 of the MSHCP.

6.5.4 Mammals

The proposed Project footprint and BSA is not located in a survey area for mammals. Therefore, the Project would not conflict with Section 6.3.2 of the MSHCP.

6.6 Information on Other Species

6.6.1 Delhi Sands Flower Loving Fly

The proposed Project is not located within an area with mapped Delhi soils. No suitable habitat is present for this species within the BSA or Project footprint. Therefore, the Project would not conflict with Section 6.3.2 of the MSHCP, addressing the Delhi sands flower-loving fly.

6.6.2 Coastal California Gnatcatcher

The BSA contains RAFSS; however, the Project footprint does not contain RAFSS, therefore suitable habitat for coastal California gnatcatcher will not be directly or indirectly impacted and the Project would not conflict with Section 6.3.2 of the MSHCP.

6.6.3 Species Not Adequately Covered

No suitable habitat for the MSHCP Table 9-3 species (a total of 28 species) is present on the Project site, and none of the species were observed on the Project footprint or BSA during the field investigation. Therefore, the Project would not directly or indirectly impact species not adequately covered listed in Table 9-3.

6.7 Guidelines Pertaining to the Urban/Wildlands Interface (MSHCP Section 6.1.4)

The proposed Project does not have any adjacency or on-site connection to existing MSHCP Conservation areas or lands designated for conservation purposes. The Project will not conflict with Section 6.1.4 of the MSHCP.

6.8 Construction Guidelines (MSHCP Section 7.5.3)

The Project is not located in the Criteria Area or PQP Lands, therefore the construction guidelines of Section 7.5.3 are not applicable.

6.9 Best Management Practices (MSHCP Volume I, Appendix C)

The Best Management Practices (BMPs) listed in MSHCP Volume 1, Appendix C and replicated below, are applicable to all projects.

1. A condition shall be placed on grading permits requiring a qualified biologist to conduct a training session for project personnel prior to grading. The training shall include a description of the species of concern and its habitats, the general provisions of the Endangered Species Act (Act) and the MSHCP, the need to adhere to the provisions of

the Act and the MSHCP, the penalties associated with violating the provisions of the Act, the general measures that are being implemented to conserve the species of concern as they relate to the project, and the access routes to and project site boundaries within which the project activities must be accomplished.

2. Water pollution and erosion control plans shall be developed and implemented in accordance with RWQCB requirements.

3. The footprint of disturbance shall be minimized to the maximum extent feasible. Access to sites shall be via pre-existing access routes to the greatest extent possible.

4. The upstream and downstream limits of projects disturbance plus lateral limits of disturbance on either side of the stream shall be clearly defined and marked in the field and reviewed by the biologist prior to initiation of work.

5. Projects should be designed to avoid the placement of equipment and personnel within the stream channel or on sand and gravel bars, banks, and adjacent upland habitats used by target species of concern.

6. Projects that cannot be conducted without placing equipment or personnel in sensitive habitats should be timed to avoid the breeding season of riparian identified in MSHCP Global Species Objective No. 7.

7. When stream flows must be diverted, the diversions shall be conducted using sandbags or other methods requiring minimal instream impacts. Silt fencing of other sediment trapping materials shall be installed at the downstream end of construction activity to minimize the transport of sediments offsite. Settling ponds where sediment is collected shall be cleaned out in a manner that prevents the sediment from reentering the stream. Care shall be exercised when removing silt fences, as feasible, to prevent debris or sediment from returning to the stream.

8. Equipment storage, fueling, and staging areas shall be located on upland sites with minimal risks of direct drainage into riparian areas or other sensitive habitats. These designated areas shall be located in such a manner as to prevent any runoff from entering sensitive habitat. Necessary precautions shall be taken to prevent the release of cement or other toxic substances into surface waters. Project related spills of hazardous materials shall be reported to appropriate entities including but not limited to applicable jurisdictional city, FWS, and CDFG, RWQCB and shall be cleaned up immediately and contaminated soils removed to approved disposal areas.

9. Erodible fill material shall not be deposited into water courses. Brush, loose soils, or other similar debris material shall not be stockpiled within the stream channel or on its banks.

10. The qualified project biologist shall monitor construction activities for the duration of the project to ensure that practicable measures are being employed to avoid incidental disturbance of habitat and species of concern outside the project footprint.

11. The removal of native vegetation shall be avoided and minimized to the maximum extent practicable. Temporary impacts shall be returned to pre-existing contours and revegetated with appropriate native species.

12. Exotic species that prey upon or displace target species of concern should be permanently removed from the site to the extent feasible.

13. To avoid attracting predators of the species of concern, the project site shall be kept as clean of debris as possible. All food related trash items shall be enclosed in sealed containers and regularly removed from the site(s).

14. Construction employees shall strictly limit their activities, vehicles, equipment, and construction materials to the proposed project footprint and designated staging areas and routes of travel. The construction area(s) shall be the minimal area necessary to complete the project and shall be specified in the construction plans. Construction limits will be fenced with orange snow screen. Exclusion fencing should be maintained until the completion of all construction activities. Employees shall be instructed that their activities are restricted to the construction areas.

15. The Permittee shall have the right to access and inspect any sites of approved projects including any restoration/enhancement area for compliance with project approval conditions including these BMPs.

7.0 RECOMMENDATIONS

BIO-1 Temporary Exclusionary/Construction Fencing

To protect Montgomery Creek sensitive habitats (RAFSS) and the riverine habitat which are adjacent to the Project footprint, within the BSA, temporary exclusionary construction fencing will be installed at the Project footprint boundary where they are adjacent to Montgomery Creek with the Project Biologist present to ensure the fencing is placed in the correct areas of the site (see Figure 6 – Exclusionary Fencing of this report). The purpose of fencing shall be to prevent disturbances to adjacent sensitive habitats and to avoid the spread of debris from the construction zone into adjacent areas.

BIO-2 Construction Best Management Practices

Implement appropriate Best Management Practices (BMPs) to control erosion, manage stormwater runoff, and minimize the release of pollutants. Examples of BMPs include sediment and erosion control measures, including fiber rolls and silt fencing placed around off-site aquatic features in a manner to deter sediment deposition and potential pollutant run-off.

Implement measures to prevent the discharge of pollutants into storm drains or nearby water bodies. This may include proper storage and handling of construction materials, spill prevention and response procedures, and regular site clean-up.

Provide training to construction personnel in BMP implementation, and the importance of preventing pollution. Ensure all employees are aware of their responsibilities in implementing BMPs for stormwater protection.

Establish procedures for monitoring the effectiveness of the SWPP plan, including regular inspections, and reporting any incidents or deviations from the plan. Make necessary adjustments to the plan as needed.

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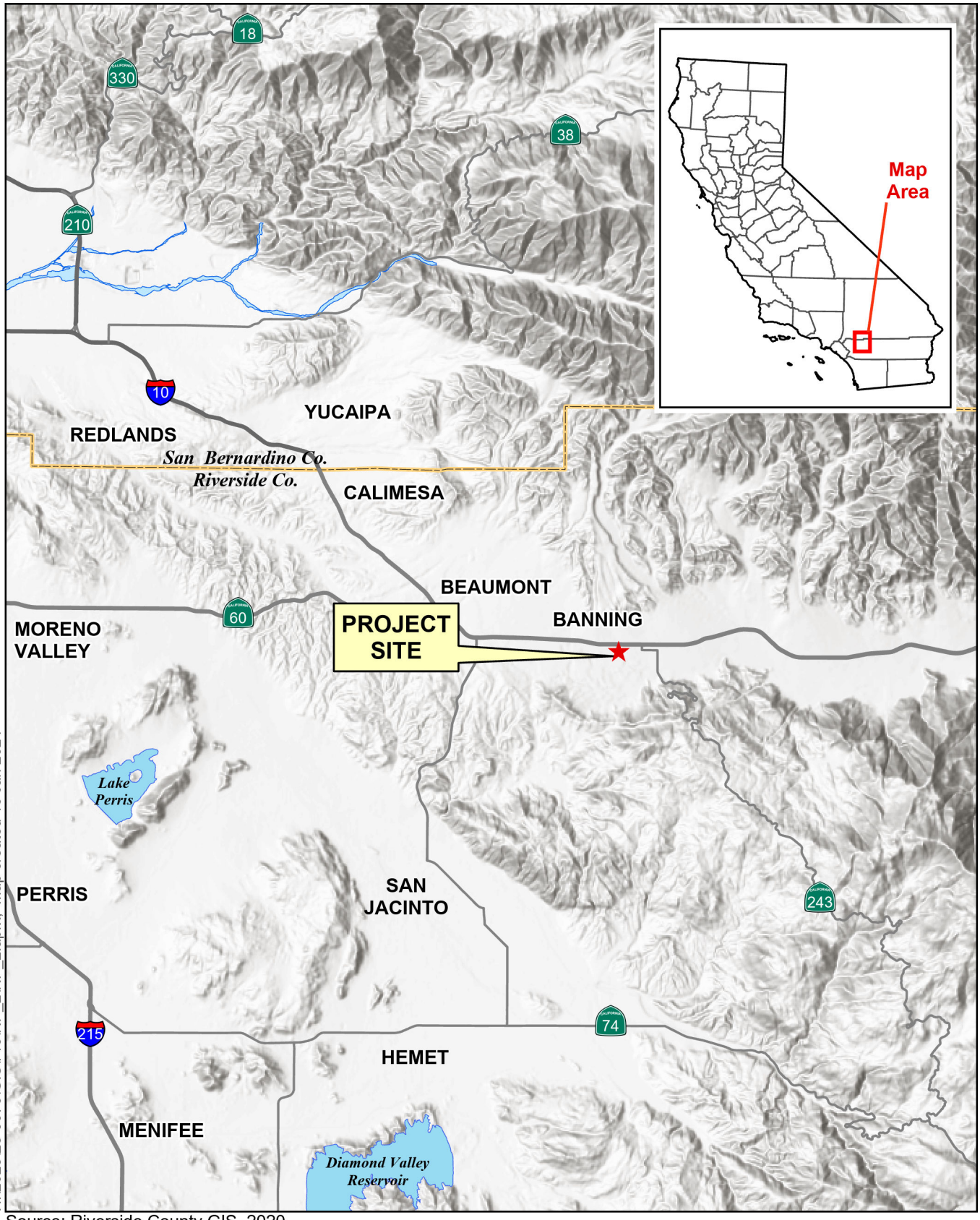
USFWS 2023B. National Wetlands Inventory [accessed May 2023]. https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper

USFWS 2023C. Migratory Bird Treaty Act of 1918. https://www.fws.gov/law/migratory-bird-treaty-act-1918. [accessed May 2023)

APPENDIX A



Source: Riverside County GIS, 2020

0 2 4 6 Miles

Figure 1 - Regional Map

NP-2 Booster Pump Station and Reservoir Project

ALBERT A. WEBB ASSOCIATES

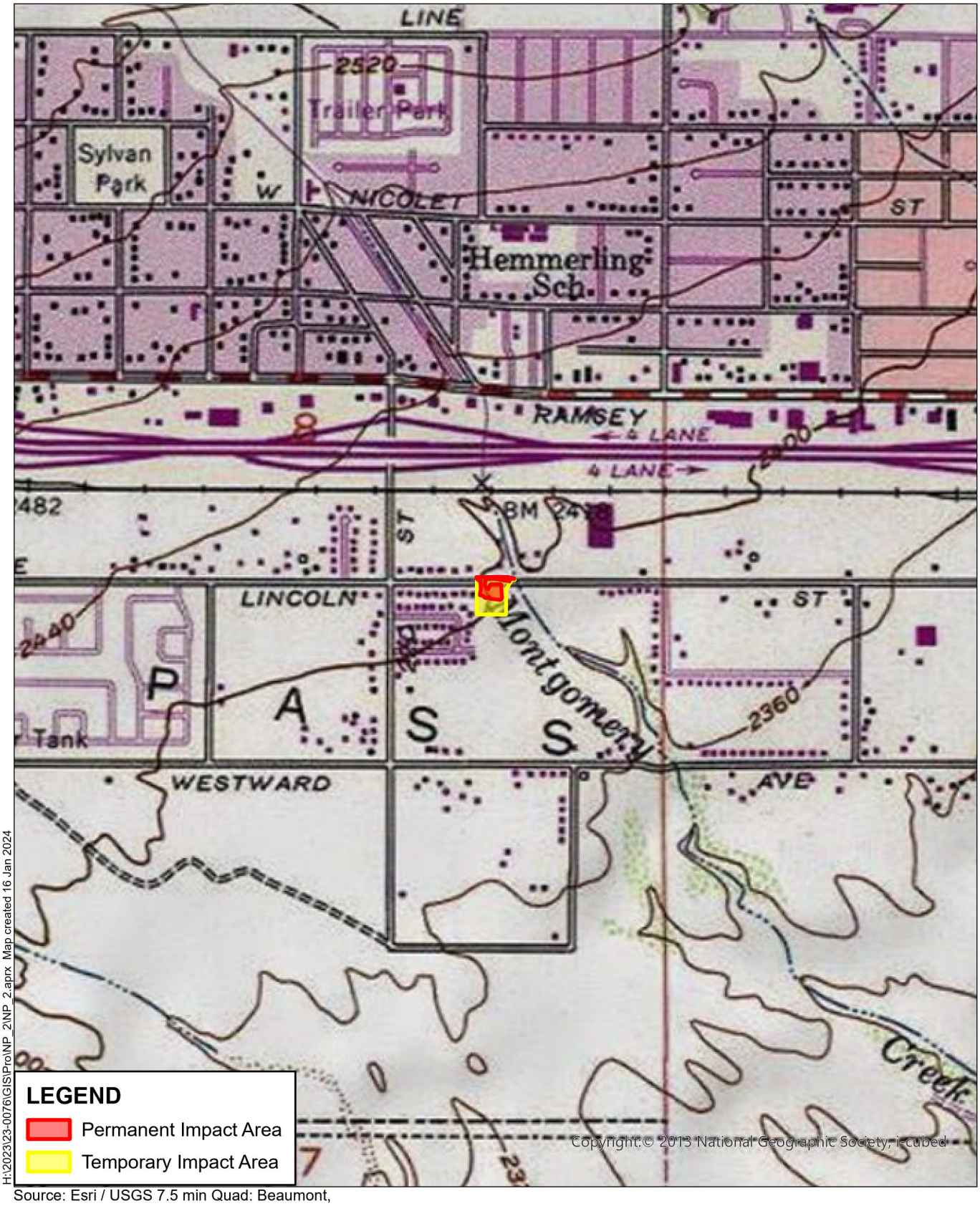
Source: Esri imagery, 2024.

Figure 2 - Vicinity Map

NP-2 Booster Pump Station and Reservoir Project

0 500 1,000 1,500 Feet

ALBERT A. WEBB ASSOCIATES



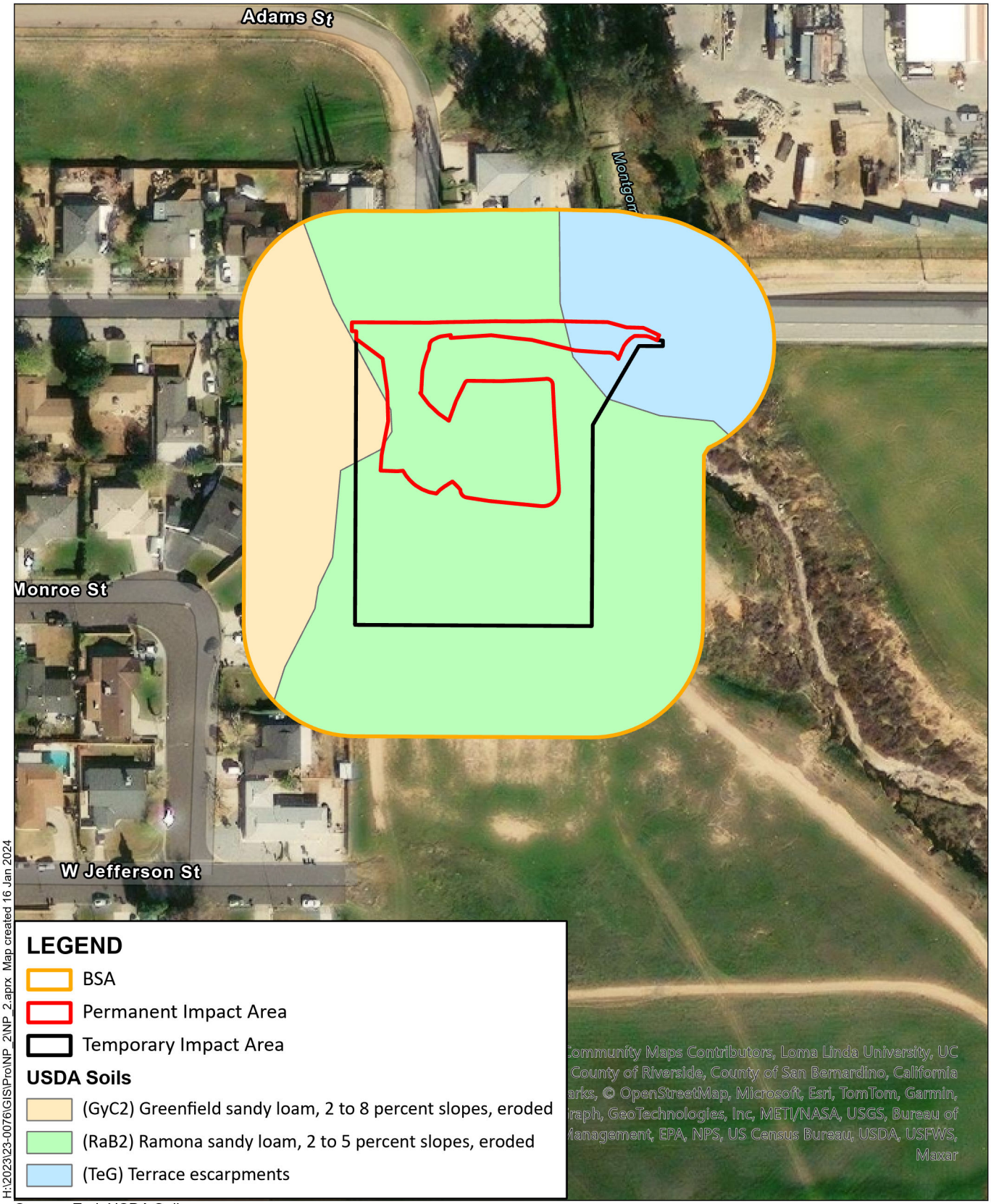
Source: Esri / USGS 7.5 min Quad: Beaumont,
Township: 3, Section: 8, Range: 1.

0 500 1,000 1,500 Feet

Figure 3 - USGS Map

NP-2 Booster Pump Station and Reservoir Project

ALBERT A. WEBB ASSOCIATES



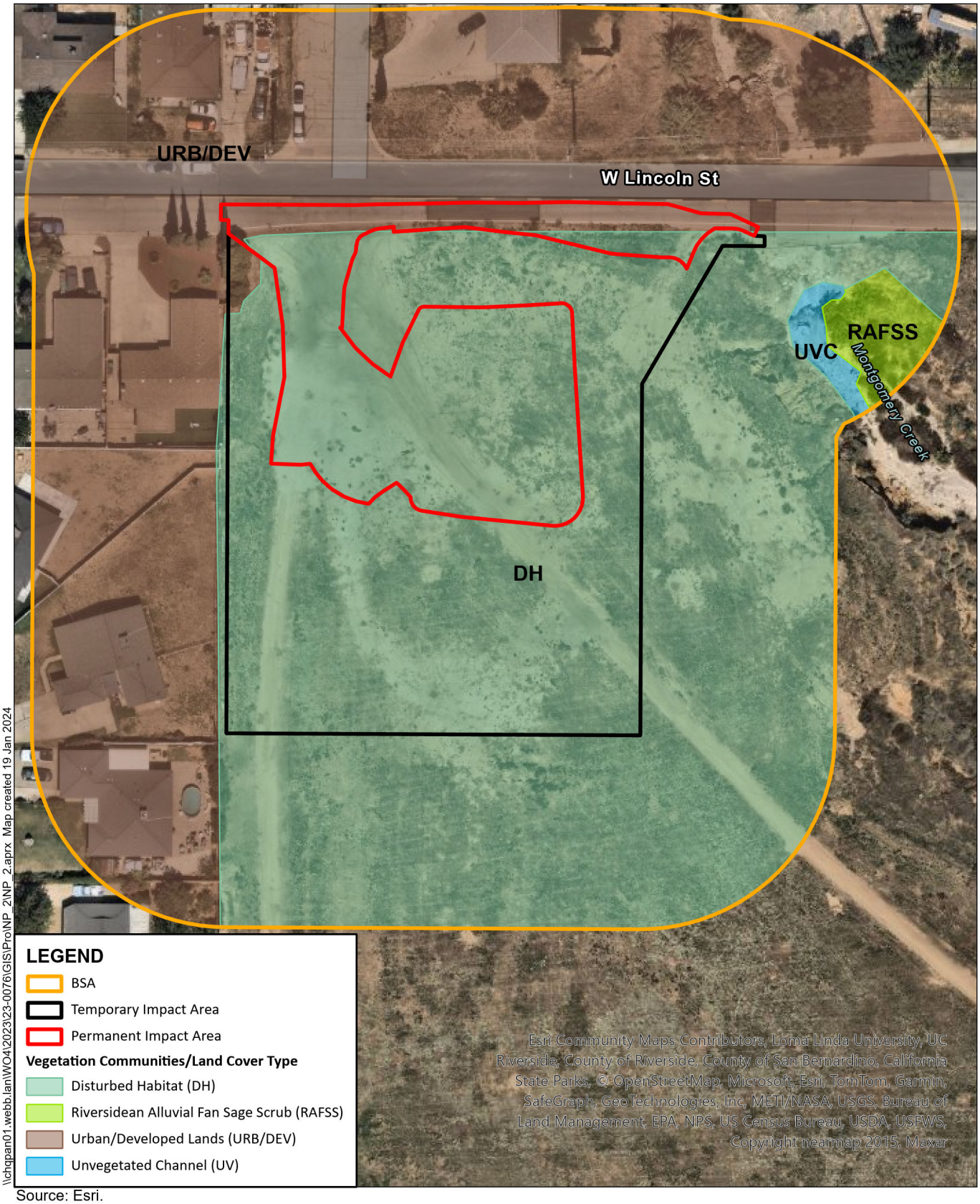
Source: Esri, USDA Soils.

0 100 200 300 Feet

Figure 4 - Soils Map

NP-2 Booster Pump Station and Reservoir Project

ALBERT A. WEBB ASSOCIATES



Source: Esri.

Figure 5 - Vegetation Communities and Land Cover Types

NP-2 Booster Pump Station and Reservoir Project

ALBERT A. WEBB ASSOCIATES

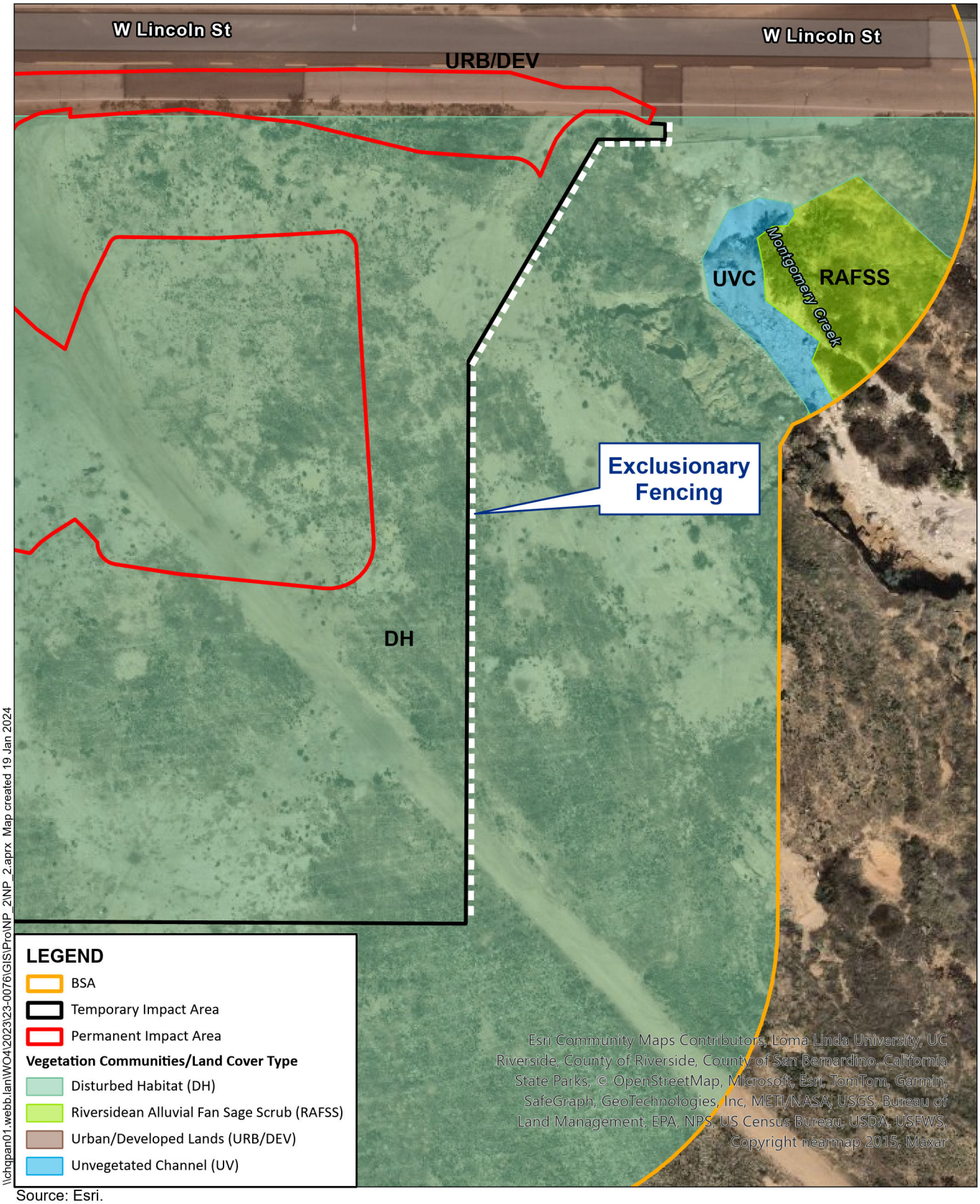
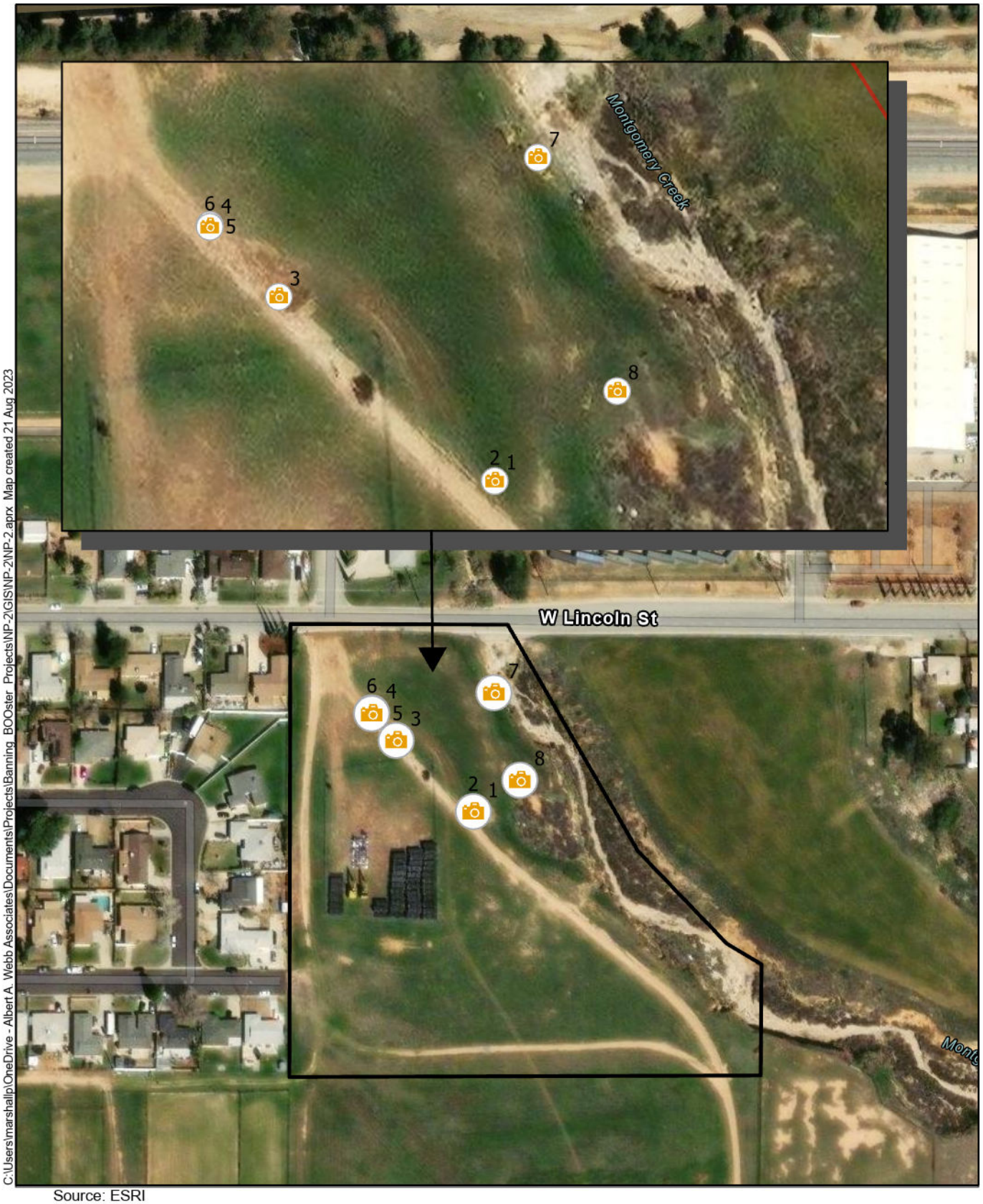


Figure 6 - Exclusionary Fencing

NP-2 Booster Pump Station and Reservoir Project

ALBERT A. WEBB ASSOCIATES

APPENDIX B



C:\Users\marshallp\OneDrive - Albert A. Webb Associates\Documents\Projects\Banning BOOster Projects\NP-2\GIS\NP-2\NP-2.aprx Map created 21 Aug 2023

Source: ESRI

not to scale

Appendix B-Photograph Index

NP-2 Booster Pump Station and Reservoir Project

ALBERT A. WEBB ASSOCIATES

Albert A. Webb Associates PHOTOGRAPHIC RECORD	
Client: City of Banning	**Job Number:** 2023-0076
Site Name: NP-2 Booster Pump Station and Reservoir Project	**Location:** Banning CA
Photographer: Marshall Paymard	**Date:** June 2, 2023

Photograph No. 1

Photo 1: Facing northwest in disturbed habitat.

Photograph No. 2

Photo 2: Facing west in disturbed habitat.

Albert A. Webb Associates PHOTOGRAPHIC RECORD	
Client: City of Banning	**Job Number:** 2023-0076
Site Name: NP-2 Booster Pump Station and Reservoir Project	**Location:** Banning CA
Photographer: Marshall Paymard	**Date:** June 2, 2023

Photograph No. 3

Photo 3: Facing west. View of disturbed habitat and urban/developed.

Photograph No. 4

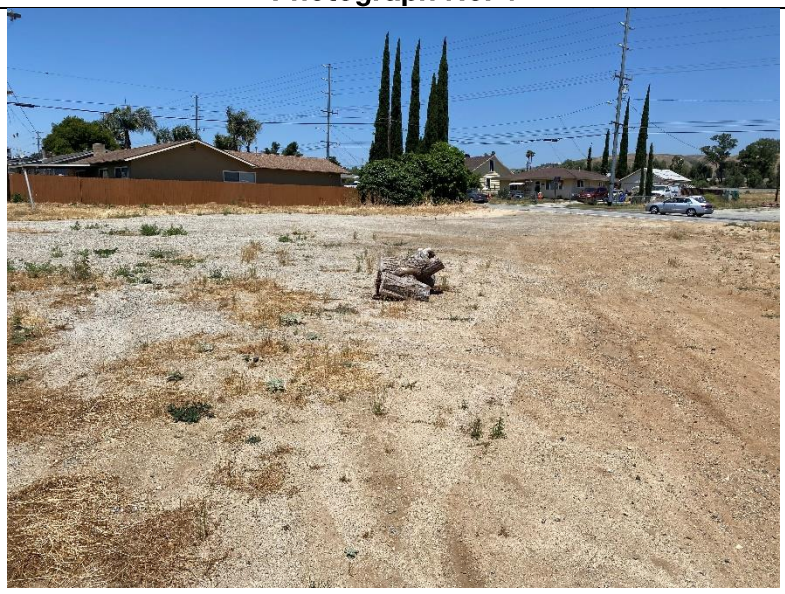


Photo 4: Facing northwest. View of disturbed habitat and urban/developed.

Albert A. Webb Associates PHOTOGRAPHIC RECORD	
Client: City of Banning	**Job Number:** 2023-0076
Site Name: NP-2 Booster Pump Station and Reservoir Project	**Location:** Banning CA
Photographer: Marshall Paymard	**Date:** June 2, 2023

Photograph No. 5

Photo 5: Facing south west. View of disturbed habitat and urban/developed.

Photograph No. 6

Photo 6: Facing east. View of disturbed habitat and urban/developed

Albert A. Webb Associates PHOTOGRAPHIC RECORD	
Client: City of Banning	**Job Number:** 2023-0076
Site Name: NP-2 Booster Pump Station and Reservoir Project	**Location:** Banning CA
Photographer: Marshall Paymard	**Date:** June 2, 2023

Photograph No. 7

Photo 7: Facing south. View of disturbed habitat channel bank

Photograph No. 8

Photo 8: Facing south. View of Riversidean sage scrub and channel.

APPENDIX C

Appendix C: Special-Status Plant Species Evaluated

Scientific Name / Common Name	CRPR / CESA / FESA	Blooming Period/ Elevation Range (AMSL; In Feet)	Habitat/ Microhabitat	Occurrence
Abronia villosa var. aurita/ chaparral sand-verbena	1B.1/None/None	(Jan)Mar-Sep/ 245-5250	Chaparral, Coastal scrub, Desert dunes. Sandy	Not expected to occur. No suitable habitat present.
Acanthoscyphus parishii var. cienegensis/ Cienega Seca oxytheca	1B.3/None/None	(May)Jun-Sep/ 6905-8040	Joshua tree "woodland", Pinyon and juniper woodland, Upper montane coniferous forest (granitic, sandy).	Not expected to occur. No suitable habitat present.
Allium marvinii/ Yucaipa onion	1B.2/None/None	Apr-May/ 2495-3495	Chaparral (clay, openings).	Not expected to occur. No suitable habitat present.
Antennaria marginata/ white-margined everlasting	2B.3/None/None	May-Aug/ 6955-11000	Lower montane coniferous forest, Upper montane coniferous forest.	Not expected to occur. No suitable habitat present.
Arenaria lanuginosa var. saxosa/ rock sandwort	2B.3/None/None	Jul-Aug/ 4775-8530	Subalpine coniferous forest, Upper montane coniferous forest. Mesic, Sandy	Not expected to occur. No suitable habitat present.
Astragalus hornii var. hornii/ Horn's milk-vetch	1B.1/None/None	May-Oct/ 195-2790	Meadows and seeps, Playas. Alkaline, Lake Margins	Not expected to occur. No suitable habitat present.
Astragalus lentiginosus var. borreganus/ Borrego milk-vetch	4.3/None/None	Feb-May/ 100-2935	Mojavean desert scrub, Sonoran desert scrub. Sandy	Not expected to occur. No suitable habitat present.
Astragalus lentiginosus var. coachellae/ Coachella Valley milk-vetch	1B.2/None/FE	Feb-May/ 130-2150	Desert dunes, Sonoran desert scrub (sandy).	Not expected to occur. No suitable habitat present.
Astragalus pachypus var. jaegeri/ Jaeger's milk-vetch	1B.1/None/None	Dec-Jun/ 1200-3200	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland. Rocky (sometimes), Sandy (sometimes)	Not expected to occur. No suitable habitat present.
Atriplex coronata var. notatior/ San Jacinto Valley crownscale	1B.1/None/FE	Apr-Aug/ 455-1640	Playas, Valley and foothill grassland (mesic), Vernal pools. Alkaline	Not expected to occur. No suitable habitat present.
Atriplex parishii/ Parish's brittlescale	1B.1/None/None	Jun-Oct/ 80-6235	Chenopod scrub, Playas, Vernal pools. Alkaline	Not expected to occur. No suitable habitat present.

Scientific Name / Common Name	CRPR / CESA / FESA	Blooming Period/ Elevation Range (AMSL; In Feet)	Habitat/ Microhabitat	Occurrence
Atriplex serenana var. davidsonii/ Davidson's saltscale	1B.2/None/None	Apr-Oct/ 35-655	Coastal bluff scrub, Coastal scrub. Alkaline	Not expected to occur. No suitable habitat present.
Boechera parishii/ Parish's rockcress	1B.2/None/None	Apr-May/ 5805-9810	Pebble (Pavement) plain, Pinyon and juniper woodland, Upper montane coniferous forest. Carbonate (sometimes), Rocky	Not expected to occur. No suitable habitat present.
Boechera peirsonii/ San Bernardino rockcress	1B.2/None/None	Mar-Aug/ 8860-10500	Subalpine coniferous forest (rocky).	Not expected to occur. No suitable habitat present.
Botrychium crenulatum/ scalloped moonwort	2B.2/None/None	Jun-Sep/ 4160-10760	Bogs and fens, Lower montane coniferous forest, Marshes and swamps (freshwater), Meadows and seeps, Upper montane coniferous forest.	Not expected to occur. No suitable habitat present.
Brodiaea filifolia/ thread-leaved brodiaea	1B.1/CE/FT	Mar-Jun/ 80-3675	Chaparral (openings), Cismontane woodland, Coastal scrub, Playas, Valley and foothill grassland, Vernal pools. Clay (often)	Not expected to occur. No suitable habitat present.
Calochortus palmeri var. palmeri/ Palmer's mariposa-lily	1B.2/None/None	Apr-Jul/ 2330-7840	Chaparral, Lower montane coniferous forest, Meadows and seeps. Mesic	Not expected to occur. No suitable habitat present.
Calochortus plummerae/ Plummer's mariposa-lily	4.2/None/None	May-Jul/ 330-5580	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland. Granitic, Rocky	Not expected to occur. No suitable habitat present.
Castilleja lasiorhyncha/ San Bernardino Mountains owl's-clover	1B.2/None/None	May-Aug/ 4265-7840	Chaparral, Meadows and seeps, Pebble (Pavement) plain, Riparian woodland, Upper montane coniferous forest. Mesic	Not expected to occur. No suitable habitat present.

Scientific Name / Common Name	CRPR / CESA / FESA	Blooming Period/ Elevation Range (AMSL; In Feet)	Habitat/ Microhabitat	Occurrence
Castilleja montigena/ Heckard's paintbrush	4.3/None/None	May-Aug/ 6400-9185	Lower montane coniferous forest, Pinyon and juniper woodland, Upper montane coniferous forest.	Not expected to occur. No suitable habitat present.
Caulanthus simulans/ Payson's jewelflower	4.2/None/None	(Feb)Mar-May (Jun)/ 295-7220	Chaparral, Coastal scrub. Granitic, Sandy	Not expected to occur. No suitable habitat present.
Centromadia pungens ssp. laevis/ smooth tarplant	1B.1/None/None	Apr-Sep/ 0-2100	Chenopod scrub, Meadows and seeps, Playas, Riparian woodland, Valley and foothill grassland. Alkaline	Not expected to occur. No suitable habitat present.
Chorizanthe leptotheca/ Peninsular spineflower	4.2/None/None	May-Aug/ 985-6235	Chaparral, Coastal scrub, Lower montane coniferous forest. Granitic	Not expected to occur. No suitable habitat present.
Chorizanthe parryi var. parryi/ Parry's spineflower	1B.1/None/None	Apr-Jun/ 900-4005	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland. Openings, Rocky (sometimes), Sandy (sometimes)	Not expected to occur. No suitable habitat present.
Chorizanthe xanti var. leucotheca/ white-bracted spineflower	1B.2/None/None	Apr-Jun/ 985-3935	Coastal scrub (alluvial fans), Mojavean desert scrub, Pinyon and juniper woodland. Gravelly (sometimes), Sandy (sometimes)	Not expected to occur. No suitable habitat present.
Deinandra mohavensis/ Mojave tarplant	1B.3/CE/None	(Jan-May) Jun-Oct/ 2100-5250	Chaparral, Coastal scrub, Riparian scrub. Mesic	Not expected to occur. No suitable habitat present.
Deinandra paniculata/ paniculate tarplant	4.2/None/None	(Mar)Apr-Nov/ 80-3085	Coastal scrub, Valley and foothill grassland, Vernal pools. Sandy (sometimes), Vernally Mesic (usually)	Not expected to occur. No suitable habitat present.
Delphinium parishii ssp. subglobosum/ Colorado Desert larkspur	4.3/None/None	Mar-Jun/ 1970-5905	Chaparral, Cismontane woodland, Pinyon and juniper woodland, Sonoran desert scrub.	Not expected to occur. No suitable habitat present.

Scientific Name / Common Name	CRPR / CESA / FESA	Blooming Period/ Elevation Range (AMSL; In Feet)	Habitat/ Microhabitat	Occurrence
Delphinium parryi ssp. purpureum/ Mt. Pinos larkspur	4.3/None/None	May-Jun/ 3280-8530	Chaparral, Mojavean desert scrub, Pinyon and juniper woodland.	Not expected to occur. No suitable habitat present.
Diplacus clevelandii/ Cleveland's bush monkeyflower	4.2/None/None	Apr-Jul/ 1475-6560	Chaparral, Cismontane woodland, Lower montane coniferous forest. Disturbed areas (often), Gabbroic, Openings, Rocky	Not expected to occur. No suitable habitat present.
Diplacus johnstonii/ Johnston's monkeyflower	4.3/None/None	May-Aug/ 3200-9580	Lower montane coniferous forest (disturbed areas, gravelly, roadsides, rocky, scree).	Not expected to occur. No suitable habitat present.
Dodecahema leptoceras/ slender-horned spineflower	1B.1/CE/FE	Apr-Jun/ 655-2495	Chaparral, Cismontane woodland, Coastal scrub (alluvial fans). Sandy	Not expected to occur. No suitable habitat present.
Eriastrum densifolium ssp. sanctorum/ Santa Ana River woollystar	1B.1/CE/FE	Apr-Sep/ 300-2000	Chaparral, Coastal scrub (alluvial fans). Gravelly (sometimes), Sandy (sometimes)	Not expected to occur. No suitable habitat present.
Erigeron breweri var. jacinteus/ San Jacinto Mountains daisy	4.3/None/None	Jun-Sep/ 8860-9515	Subalpine coniferous forest, Upper montane coniferous forest. Rocky	Not expected to occur. No suitable habitat present.
Eriogonum kennedyi var. alpigenum/ southern alpine buckwheat	1B.3/None/None	Jul-Sep/ 8530-11485	Alpine boulder and rock field, Subalpine coniferous forest. Granitic, Gravelly	Not expected to occur. No suitable habitat present.
Eriogonum umbellatum var. minus/ alpine sulfur-flowered buckwheat	4.3/None/None	Jun-Sep/ 5905-10065	Subalpine coniferous forest, Upper montane coniferous forest. Gravelly	Not expected to occur. No suitable habitat present.
Eriophyllum lanatum var. obovatum/ southern Sierra woolly sunflower	4.3/None/None	Jun-Jul/ 3655-8205	Lower montane coniferous forest, Upper montane coniferous forest. Loam, Sandy	Not expected to occur. No suitable habitat present.

Scientific Name / Common Name	CRPR / CESA / FESA	Blooming Period/ Elevation Range (AMSL; In Feet)	Habitat/ Microhabitat	Occurrence
Erythranthe diffusa/ Palomar monkeyflower	4.3/None/None	Apr-Jun/ 4005-6005	Chaparral, Lower montane coniferous forest. Gravelly (sometimes), Sandy (sometimes)	Not expected to occur. No suitable habitat present.
Galium angustifolium ssp. jacinticum/ San Jacinto Mountains bedstraw	1B.3/None/None	Jun-Aug/ 4430-6890	Lower montane coniferous forest.	Not expected to occur. No suitable habitat present.
Galium californicum ssp. primum/ Alvin Meadow bedstraw	1B.2/None/None	May-Jul/ 4430-5580	Chaparral, Lower montane coniferous forest. Granitic, Sandy	Not expected to occur. No suitable habitat present.
Galium jepsonii/ Jepson's bedstraw	4.3/None/None	Jul-Aug/ 5055-8205	Lower montane coniferous forest, Upper montane coniferous forest. Granitic, Gravelly (sometimes), Rocky (sometimes)	Not expected to occur. No suitable habitat present.
Galium johnstonii/ Johnston's bedstraw	4.3/None/None	Jun-Jul/ 4005-7545	Chaparral, Lower montane coniferous forest, Pinyon and juniper woodland, Riparian woodland.	Not expected to occur. No suitable habitat present.
Gentiana fremontii/ Fremont's gentian	2B.3/None/None	Jun-Aug/ 7875-8860	Meadows and seeps (mesic), Upper montane coniferous forest.	Not expected to occur. No suitable habitat present.
Gilia leptantha ssp. leptantha/ San Bernardino gilia	1B.3/None/None	Jun-Aug/ 4920-8400	Lower montane coniferous forest (gravelly, sandy).	Not expected to occur. No suitable habitat present.
Heuchera parishii/ Parish's alumroot	1B.3/None/None	Jun-Aug/ 4920-12470	Alpine boulder and rock field, Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest. Carbonate (sometimes), Rocky	Not expected to occur. No suitable habitat present.

Scientific Name / Common Name	CRPR / CESA / FESA	Blooming Period/ Elevation Range (AMSL; In Feet)	Habitat/ Microhabitat	Occurrence
Hordeum intercedens/ vernal barley	3.2/None/None	Mar-Jun/ 15-3280	Coastal dunes, Coastal scrub, Valley and foothill grassland (depressions, saline flats), Vernal pools.	Not expected to occur. No suitable habitat present.
Horkelia cuneata var. puberula/ mesa horkelia	1B.1/None/None	Feb-Jul (Sep)/ 230-2660	Chaparral (maritime), Cismontane woodland, Coastal scrub. Gravelly (sometimes), Sandy (sometimes)	Not expected to occur. No suitable habitat present.
Hulsea vestita ssp. callicarpha/ beautiful hulsea	4.2/None/None	May-Oct/ 3000-10005	Chaparral, Lower montane coniferous forest. Granitic, Gravelly (sometimes), Rocky (sometimes)	Not expected to occur. No suitable habitat present.
Hulsea vestita ssp. parryi/ Parry's sunflower	4.3/None/None	Apr-Aug/ 4495-9500	Lower montane coniferous forest, Pinyon and juniper woodland, Upper montane coniferous forest. Carbonate (sometimes), Granitic (sometimes), Openings, Rocky	Not expected to occur. No suitable habitat present.
Hulsea vestita ssp. pygmaea/ pygmy hulsea	1B.3/None/None	Jun-Oct/ 9300-12795	Alpine boulder and rock field, Subalpine coniferous forest. Granitic, Gravelly	Not expected to occur. No suitable habitat present.
Imperata brevifolia/ California satintail	2B.1/None/None	Sep-May/ 0-3985	Chaparral, Coastal scrub, Meadows and seeps (often alkali), Mojavean desert scrub, Riparian scrub. Mesic	Not expected to occur. No suitable habitat present.
Juglans californica/ Southern California black walnut	4.2/None/None	Mar-Aug/ 165-2955	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland.	Not expected to occur. No suitable habitat present.
Juncus duranii/ Duran's rush	4.3/None/None	Jul-Aug/ 5800-9200	Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest. Mesic	Not expected to occur. No suitable habitat present.

Scientific Name / Common Name	CRPR / CESA / FESA	Blooming Period/ Elevation Range (AMSL; In Feet)	Habitat/ Microhabitat	Occurrence
Lasthenia glabrata ssp. coulteri/ Coulter's goldfields	1B.1/None/None	Feb-Jun/ 5-4005	Marshes and swamps (coastal salt), Playas, Vernal pools.	Not expected to occur. No suitable habitat present.
Lepidium virginicum var. robinsonii/ Robinson's pepper-grass	4.3/None/None	Jan-Jul/ 5-2905	Chaparral, Coastal scrub.	Not expected to occur. No suitable habitat present.
Lilium humboldtii ssp. ocellatum/ ocellated Humboldt lily	4.2/None/None	Mar-Jul(Aug)/ 100-5905	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Riparian woodland. Openings	Not expected to occur. No suitable habitat present.
Lilium parryi/ lemon lily	1B.2/None/None	Jul-Aug/ 4005-9005	Lower montane coniferous forest, Meadows and seeps, Riparian forest, Upper montane coniferous forest. Mesic	Not expected to occur. No suitable habitat present.
Malaxis monophyllos var. brachypoda/ white bog adder's-mouth	2B.1/None/None	Jun-Aug/ 7220-9000	Bogs and fens, Meadows and seeps, Upper montane coniferous forest. Mesic	Not expected to occur. No suitable habitat present.
Mentzelia tricuspis/ spiny-hair blazing star	2B.1/None/None	Mar-May/ 490-4200	Mojavean desert scrub. Gravelly, Sandy, Slopes, Washes	Not expected to occur. No suitable habitat present.
Monardella macrantha ssp. hallii/ Hall's monardella	1B.3/None/None	Jun-Oct/ 2395-7200	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland.	Not expected to occur. No suitable habitat present.
Monardella nana ssp. leptosiphon/ San Felipe monardella	1B.2/None/None	Jun-Jul/ 3935-6085	Chaparral, Lower montane coniferous forest.	Not expected to occur. No suitable habitat present.
Muhlenbergia californica/ California muhly	4.3/None/None	Jun-Sep/ 330-6560	Chaparral, Coastal scrub, Lower montane coniferous forest, Meadows and seeps. Mesic, Seeps, Streambanks	Not expected to occur. No suitable habitat present.

Scientific Name / Common Name	CRPR / CESA / FESA	Blooming Period/ Elevation Range (AMSL; In Feet)	Habitat/ Microhabitat	Occurrence
Muilla coronata/ crowned muilla	4.2/None/None	Mar-Apr(May)/ 2200-6430	Chenopod scrub, Joshua tree "woodland", Mojavean desert scrub, Pinyon and juniper woodland.	Not expected to occur. No suitable habitat present.
Myosurus minimus ssp. apus/ little mousetail	3.1/None/None	Mar-Jun/ 65-2100	Valley and foothill grassland, Vernal pools (alkaline).	Not expected to occur. No suitable habitat present.
Nama stenocarpa/ mud nama	2B.2/None/None	Jan-Jul/ 15-1640	Marshes and swamps (lake margins, riverbanks).	Not expected to occur. No suitable habitat present.
Navarretia fossalis/ spreading navarretia	1B.1/None/FT	Apr-Jun/ 100-2150	Chenopod scrub, Marshes and swamps (shallow freshwater), Playas, Vernal pools.	Not expected to occur. No suitable habitat present.
Oreonana vestita/ woolly mountain-parsley	1B.3/None/None	Mar-Sep/ 5300-11485	Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest. Gravelly (sometimes), Talus (sometimes)	Not expected to occur. No suitable habitat present.
Oxytropis oreophila var. oreophila/ rock-loving oxytrope	2B.3/None/None	Jun-Sep/ 11155-12470	Alpine boulder and rock field, Subalpine coniferous forest. Gravelly (sometimes), Rocky (sometimes)	Not expected to occur. No suitable habitat present.
Packera ionophylla/ Tehachapi ragwort	4.3/None/None	Jun-Jul/ 4920-8860	Lower montane coniferous forest, Upper montane coniferous forest. Granitic, Rocky	Not expected to occur. No suitable habitat present.
Parnassia cirrata var. cirrata/ San Bernardino grass-of-Parnassus	1B.3/None/None	Aug-Sep/ 4100-8005	Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest. Mesic, Streambanks	Not expected to occur. No suitable habitat present.
Petalonyx linearis/ narrow-leaf sandpaper-plant	2B.3/None/None	(Jan-Feb) Mar-May (Jun-Dec)/- 80-3660	Mojavean desert scrub, Sonoran desert scrub. Rocky (sometimes), Sandy (sometimes)	Not expected to occur. No suitable habitat present.

Scientific Name / Common Name	CRPR / CESA / FESA	Blooming Period/ Elevation Range (AMSL; In Feet)	Habitat/ Microhabitat	Occurrence
Piperia leptopetala/ narrow-petaled rein orchid	4.3/None/None	May-Jul/ 1245-7300	Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest.	Not expected to occur. No suitable habitat present.
Pseudognaphalium leucocephalum/ white rabbit-tobacco	2B.2/None/None	(Jul)Aug-Nov(Dec)/ 0-6890	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland. Gravelly, Sandy	Not expected to occur. No suitable habitat present.
Quercus engelmannii/ Engelmann oak	4.2/None/None	Mar-Jun/ 165-4265	Chaparral, Cismontane woodland, Riparian woodland, Valley and foothill grassland.	Not expected to occur. No suitable habitat present.
Rupertia rigida/ Parish's rupertia	4.3/None/None	Jun-Aug/ 2295-8205	Chaparral, Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Pebble (Pavement) plain, Valley and foothill grassland.	Not expected to occur. No suitable habitat present.
Saltugilia latimeri/ Latimer's woodland-gilia	1B.2/None/None	Mar-Jun/ 1310-6235	Chaparral, Mojavean desert scrub, Pinyon and juniper woodland. Granitic (often), Rocky (sometimes), Sandy (sometimes), Washes (sometimes)	Not expected to occur. No suitable habitat present.
Sedum niveum/ Davidson's stonecrop	4.2/None/None	Jun-Aug/ 6810-9845	Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest. Rocky	Not expected to occur. No suitable habitat present.
Senecio astephanus/ San Gabriel ragwort	4.3/None/None	May-Jul/ 1310-4920	Chaparral, Coastal bluff scrub. Rocky, Slopes	Not expected to occur. No suitable habitat present.
Sidalcea hickmanii ssp. parishii/ Parish's checkerbloom	1B.2/CR/None	(May)Jun-Aug/ 3280-8200	Chaparral, Cismontane woodland, Lower montane coniferous forest.	Not expected to occur. No suitable habitat present.

Scientific Name / Common Name	CRPR / CESA / FESA	Blooming Period/ Elevation Range (AMSL; In Feet)	Habitat/ Microhabitat	Occurrence
Sidalcea malviflora ssp. dolosa/ Bear Valley checkerbloom	1B.2/None/None	May-Aug/ 4905-8810	Lower montane coniferous forest (meadows, seeps), Meadows and seeps, Riparian woodland, Upper montane coniferous forest (meadows, seeps).	Not expected to occur. No suitable habitat present.
Sidalcea neomexicana/ salt spring checkerbloom	2B.2/None/None	Mar-Jun/ 50-5020	Chaparral, Coastal scrub, Lower montane coniferous forest, Mojavean desert scrub, Playas. Alkaline, Mesic	Not expected to occur. No suitable habitat present.
Sidotheca caryophylloides/ chickweed oxytheca	4.3/None/None	Jul-Sep(Oct)/ 3655-8530	Lower montane coniferous forest (sandy).	Not expected to occur. No suitable habitat present.
Silene krantzii/ Krantz's catchfly	1B.2/None/None	Apr-Sep/ 10615-11515	Alpine dwarf scrub. Gravelly (usually), Rocky (sometimes), Sandy (usually)	Not expected to occur. No suitable habitat present.
Solorina spongiosa/ fringed chocolate chip lichen	2B.2/None/None	Blank/ 9500-9500	Meadows and seeps, Subalpine coniferous forest (seeps). Carbonate	Not expected to occur. No suitable habitat present.
Streptanthus bernardinus/ Laguna Mountains jewelflower	4.3/None/None	May-Aug/ 2200-8205	Chaparral, Lower montane coniferous forest.	Not expected to occur. No suitable habitat present.
Streptanthus campestris/ southern jewelflower	1B.3/None/None	(Apr)May-Jul/ 2955-7545	Chaparral, Lower montane coniferous forest, Pinyon and juniper woodland. Rocky	Not expected to occur. No suitable habitat present.
Symphyotrichum defoliatum/ San Bernardino aster	1B.2/None/None	Jul-Nov/ 5-6695	Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Marshes and swamps, Meadows and seeps, Valley and foothill grassland (vernally mesic). Streambanks	Not expected to occur. No suitable habitat present.
Taraxacum californicum/ California dandelion	1B.1/None/FE	May-Aug/ 5315-9185	Meadows and seeps (mesic).	Not expected to occur. No suitable habitat present.

Scientific Name / Common Name	CRPR / CESA / FESA	Blooming Period/ Elevation Range (AMSL; In Feet)	Habitat/ Microhabitat	Occurrence
Tortula californica/ California screw moss	1B.2/None/None	Blank/ 35-4790	Chenopod scrub, Valley and foothill grassland. Sandy	Not expected to occur. No suitable habitat present.
Trichocoronis wrightii var. wrightii/ Wright's trichocoronis	2B.1/None/None	May-Sep/ 15-1425	Marshes and swamps, Meadows and seeps, Riparian forest, Vernal pools. Alkaline	Not expected to occur. No suitable habitat present.

CRPR-CALIFORNIA RARE PLANT RANK
1A- Plants presumed extirpated in California and either rare or extinct elsewhere
1B- Plants rare, threatened, or endangered in California and elsewhere
2A- Plants presumed extirpated in California but common elsewhere
2B- Plants rare, threatened, or endangered in California but more common elsewhere
3- Review List: Plants about which more information is needed
4- 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)
STATE DESIGNATIONS CE-STATE ENDANGERED
FEDERAL DESIGNATION FE-FEDERALLY ENDANGERED, FT-FEDERALLY THREATENED

Species	Status: Federal/State	Habitat/Micro Habitat	Potential to Occur
Amphibians			
Rana muscosa southern mountain yellow-legged frog	Endangered/WL	Aquatic. Often encountered within a few feet of water. Tadpoles may require 2 - 4 yrs to complete their aquatic development.	No suitable habitat present.
Spea hammondii western spadefoot	None/ SSC	Cismontane woodland, Coastal scrub, Valley & foothill grassland, Vernal pool, Wetland. Vernal pools are essential for breeding and egg-laying.	No suitable habitat present.
Birds			
Accipiter cooperii cooper's hawk	None/ WL	Cismontane woodland, riparian forest, riparian woodland, upper montane coniferous forest. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	No suitable habitat present.
Agelaius tricolor tricolored blackbird	None/Threatened	Freshwater marsh, marsh & swamp, swamp, wetland. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	No suitable habitat present.
Aimophila ruficeps canescens southern California rufous-crowned sparrow	None/WL	Chaparral, coastal scrub. frequents relatively steep, often rocky hillsides with grass and forb patches.	No suitable habitat present.
Aquila chrysaetos golden eagle	None/FP	Broadleaved upland forest, cismontane woodland, coastal prairie, great basin grassland, great basin scrub, lower montane coniferous forest, pinon & juniper woodlands, upper montane coniferous forest, valley & foothill grassland. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	No suitable habitat present.
Artemisiospiza belli belli Bell's sparrow	None/ SSC	Chaparral, coastal scrub.	No suitable habitat present.
Athene cunicularia burrowing owl	None/None/S	Coastal prairie, coastal scrub, great basin grassland, great basin scrub, Mojavean desert scrub, Sonoran desert scrub, valley & foothill grassland. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	No suitable habitat present.
Buteo regalis ferruginous hawk	None/WL	Great Basin grassland, great basin scrub, pinon & juniper woodlands, valley & foothill grassland.	No suitable habitat present.
Buteo swainsoni Swainson's hawk	None/Threatened	Great Basin grassland, riparian forest, riparian woodland, valley & foothill grassland. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	No suitable habitat present.

Species	Status: Federal/State	Habitat/Micro Habitat	Potential to Occur
Campylorhynchus brunneicapillus sandiegensis coastal cactus wren	None/ SSC	Coastal scrub. Wrens require tall opuntia cactus for nesting and roosting.	No suitable habitat present.
Coccyzus americanus occidentalis western yellow-billed cuckoo	Threatened/Endangered	Riparian forest. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	No suitable habitat present.
Cypseloides niger black swift	None/SSC	Breeds in small colonies on cliffs behind or adjacent to waterfalls in deep canyons and sea-bluffs above the surf; forages widely.	No suitable habitat present.
Elanus leucurus white-tailed kite	None/FP	Cismontane woodland, marsh & swamp, Riparian woodland, valley & foothill grassland, wetland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	No suitable habitat present.
Empidonax traillii extimus southwestern willow flycatcher	Endangered/Endangered	Riparian woodland.	No suitable habitat present.
Eremophila alpestris actia California horned lark	None/ WL	Marine intertidal & splash zone communities, meadow & seep. Short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.	No suitable habitat present.
Icteria virens yellow-breasted chat	None/ SSC	Riparian forest, riparian scrub, riparian woodland. nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 ft of ground.	No suitable habitat present.
Lanius ludovicianus loggerhead shrike	None/ SSC	Broadleaved upland forest, desert wash, Joshua tree woodland, Mojavean desert scrub, pinon & juniper woodlands, riparian woodland, Sonoran desert scrub. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	No suitable habitat present.
Plegadis chihi white-faced ibis	None/ WL	Marsh & swamp, wetland. Dense tule thickets for nesting, interspersed with areas of shallow water for foraging.	No suitable habitat present.
Polioptila californica californica coastal California gnatcatcher	Threatened/ SSC	Coastal bluff scrub, Coastal scrub. Low, coastal sage scrub in arid washes, on mesas and slopes.	No suitable habitat present.
Progne subis purple martin	None/ SSC	Broadleaved upland forest, lower montane coniferous forest. Nests in old woodpecker cavities mostly; also in human-made structures. Nest often located in tall, isolated tree/snag.	No suitable habitat present.
Setophaga petechia yellow warbler	None/ SSC	Riparian forest, riparian scrub, riparian woodland. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.	No suitable habitat present.

Species	Status: Federal/State	Habitat/Micro Habitat	Potential to Occur
Toxostoma lecontei Le Conte's thrasher	None/SSC	Desert wash, Mojavean desert scrub, Sonoran desert scrub. Commonly nests in a dense, spiny shrub or densely branched cactus in desert wash habitat, usually 2-8 feet above ground.	No suitable habitat present.
Vireo bellii pusillus least Bell's vireo	Endangered/Endangered	Riparian forest, riparian scrub, riparian woodland. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, *Baccharis*, mesquite.	No suitable habitat present.
Xanthocephalus xanthocephalus yellow-headed blackbird	None/SSC	Marsh & swamp, wetland. Nests only where large insects such as Odonata are abundant, nesting timed with maximum emergence of aquatic insects.	No suitable habitat present.
Fish			
Oncorhynchus mykiss irideus pop 10 steelhead - southern California DPS	Endangered/Candidate Endangered	Aquatic, south coast flowing waters. Southern steelhead likely have greater physiological tolerances to warmer water and more variable conditions.	No suitable habitat present.
Rhinichthys osculus ssp8 Santa Ana speckled dace	None/ SSC	Aquatic, south coast flowing waters. Requires permanent flowing streams with summer water temps of 17-20 C. Usually inhabits shallow cobble and gravel riffles.	No suitable habitat present.
Insect			
Bombus crotchii Crotch bumble bee	None/Candidate Endangered	Grasslands, shrublands, and chapparal. Food plant genera include *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum*.	No suitable habitat present.
Diplectrona californica California diplectronan caddisfly	None/None	Aquatic.	No suitable habitat present.
Halictus harmonius haromonius halictid bee	None/None	Chapparal	No suitable habitat present.
Palaeoxenus dohrni Dohrn's elegant eucnemid beetle	None/None	Chapparal	No suitable habitat present.
Stenopelmatus cahuilaensis Coachella Valley jerusalem cricket	None/None	Desert dunes. Found in the large, undulating dunes piled up at the north base of Mt San Jacinto.	No suitable habitat present.
Mammals			
Antrozous pallidus pallid bat	None/ SSC	Chaparral, coastal scrub,desert wash, Great Basin grassland, Great Basin scrub, Mojavean desert scrub , Riparian woodland , Sonoran desert scrub , Upper montane coniferous forest , Valley & foothill grassland. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	No suitable habitat present.

Species	Status: Federal/State	Habitat/Micro Habitat	Potential to Occur
Chaetodipus californicus femoralis Dulzura pocket mouse	None/ SSC	Chaparral, Coastal scrub, valley & foothill grassland. Attracted to grass-chaparral edges.	No suitable burrows/ habitat present.
Chaetodipus fallax fallax northwestern San Diego pocket mouse	None/ SSC	Chaparral, coastal scrub. Sandy, herbaceous areas, usually in association with rocks or coarse gravel.	No suitable burrows/habitat present.
Chaetodipus fallax pallidus pallid San Diego pocket mouse	None/ SSC	Desert wash, Pinon & juniper woodlands, Sonoran desert scrub. Sandy, herbaceous areas, usually in association with rocks or coarse gravel.	No suitable burrows/habitat present.
Corynorhinus townsendii Townsend's big-eared bat	None/ SSC	Broadleaved upland forest , chaparral , chenopod scrub , Great Basin grassland , Great Basin scrub , Joshua tree woodland , Lower montane coniferous forest , meadow & seep , Mojavean desert scrub , riparian forest , riparian woodland , Sonoran desert scrub , Sonoran thorn woodland , upper montane coniferous forest , valley & foothill grassland. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	No suitable habitat present.
Dipodomys merriami parvus San Bernardino kangaroo rat	Endangered/Candidate Endangered	Coastal scrub. Needs early to intermediate seral stages.	No suitable habitat present.
Dipodomys stephensi Stephens' kangaroo rat	Threatened/Threatened	Coastal scrub, valley & foothill grassland. Prefers buckwheat, chamise, brome grass and filaree. Will burrow into firm soil.	No suitable burrows/habitat present.
Glaucomys oregonensis californicus San Bernardino flying squirrel	None/SSC	Broadleaved upland forest, lower montane coniferous forest. Needs cavities in trees/snags for nests and cover. Needs nearby water.	No suitable habitat present.
Lasiurus xanthinus western yellow bat	None/ SSC	Desert wash. Roosts in trees, particularly palms. Forages over water and among trees.	No suitable habitat present.
Leptonycteris yerbabuenae lesser long-nosed bat	Delisted /SSC	Mojavean desert scrub , Sonoran desert scrub , upper Sonoran scrub. Caves and mines are used as day roosts. Caves, mines, rock crevices, trees and shrubs, and abandoned buildings are used as night roosts for digesting meals. Nectar, pollen, and fruit eating bat; primarily feeding on agaves, saguaro, and organ pipe cactus.	No suitable habitat present.

Species	Status: Federal/State	Habitat/Micro Habitat	Potential to Occur
Lepus californicus bennettii San Diego black-tailed jackrabbit	None/ None	Coastal scrub. Coastal sage scrub habitats in Southern California.	No suitable habitat present.
Neotamias speciosus speciosus lodgepole chipmunk	None/ None	Chaparral , upper montane coniferous forest. Habitat is usually lodgepole pine forests in the San Bernardino Mts and chinquapin slopes in the San Jacinto Mts.	No suitable habitat present.
Neotoma lepida intermedia San Diego desert woodrat	None/ SSC	Coastal scrub. Moderate to dense canopies preferred. They are particularly abundant in rock outcrops, rocky cliffs, and slopes.	No suitable habitat present.
Nyctinomops femorosaccus pocketed free-tailed bat	None/ SSC	Joshua tree woodland, Pinon & juniper woodlands, riparian scrub, Sonoran Desert scrub. Rocky areas with high cliffs.	No suitable habitat present.
Onychomys torridus ramona southern grasshopper mouse	None/ SSC	Chenopod scrub.	No suitable habitat present.
Perognathus longimembris brevinasus Los Angeles pocket mouse	None/ SSC	Coastal scrub. Open ground with fine, sandy soils. May not dig extensive burrows, hiding under weeds and dead leaves instead.	No suitable habitat present.
Taxidea taxus American badger	None/ SSC	Alkali marsh, broadleaved upland forest, chaparral, chenopod scrub, cismontane woodland, closed-cone coniferous forest, coastal prairie, coastal scrub, desert dunes, desert wash, freshwater marsh, grassland, lower montane coniferous forest, Mojavean desert scrub, Montane dwarf scrub, Pavement plain, Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	No suitable habitat present.
Xerospermophilus tereticaudus chlorus Palm Springs round-tailed ground squirrel	None/ SSC	Chenopod scrub , Sonoran desert scrub. Prefers open, flat, grassy areas in fine-textured, sandy soil. Density correlated with winter rainfall.	No suitable habitat present.
Reptiles			
Anniella stebbinsi Southern California legless lizard	None/ SSC	Broadleaved upland forest, chaparral, coastal dunes, coastal scrub. Variety of habitats; generally in moist, loose soil. They prefer soils with a high moisture content.	No suitable habitat present.
Arizona elegans occidentalis California glossy snake	None/ SSC	Generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils.	No suitable habitat present.
Aspidoscelis hyperythra orange-throated whiptail	None/ WL	Chaparral, cismontane woodland, coastal scrub. Prefers washes and other sandy areas with patches of brush and rocks. Perennial plants necessary for its major food: termites.	No suitable habitat present.
Aspidoscelis tigris stejnegeri coastal whiptail	None/ SSC	Ground may be firm soil, sandy, or rocky.	No suitable habitat present.

Species	Status: Federal/State	Habitat/Micro Habitat	Potential to Occur
Charina umbratica southern rubber boa	None/Threatened	Meadow & seep , riparian forest , riparian woodland, upper montane coniferous forest , wetland. Found in vicinity of streams or wet meadows; requires loose, moist soil for burrowing; seeks cover in rotting logs, rock outcrops, and under surface litter.	No suitable habitat present.
Crotalus ruber red-diamond rattlesnake	None/ SSC	Chaparral, Mojavean desert scrub, Sonoran desert scrub. Occurs in rocky areas and dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.	No suitable habitat present.
Diadophis punctatus modestus San Bernardino ringneck snake	None/ None	Avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous veg.	No suitable habitat present.
Phrynosoma blainvillii coast horned lizard	None/SSC	Chaparral, cismontane woodland, coastal bluff scrub, coastal scrub, desert wash, pinon & juniper woodlands, riparian scrub, riparian woodland, valley & foothill grassland. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	No suitable habitat present.
Salvadora hexalepis virgultea coast patch-nosed snake	None/ SSC	Coastal scrub. Require small mammal burrows for refuge and overwintering sites.	No suitable habitat present.
Thamnophis hammondii two-striped gartersnake	None/ SSC	Marsh & swamp , riparian scrub , riparian woodland, Wetland. Highly aquatic, found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.	No suitable habitat present.

State Abbreviations
- FP: Fully Protected
- S: Sensitive
- SSC: Species of Special Concern
- WL: Watch List

Appendix C

Cultural Resource Investigation

Cultural Resource Investigation for the Banning NP-2 Booster Pump Station and Reservoir Project, City of Banning, Riverside County, California

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draft

USGS 7.5-Minute Topographic Quadrangle: Beaumont, CA
Level of Investigation: CEQA Phase I
Key Words: City of Banning; APN 538-280-001; 7.5 acres

MANAGEMENT SUMMARY

The City of Banning (City) proposes construction of a reservoir and booster pump station for the Banning NP-2 Booster Pump Station and Reservoir Project (Project). The Project is within Assessor's Parcel Number 538-280-001 (approximately 7.51 acres) located east of 22nd Avenue and immediately south of Lincoln Street in the city of Banning, Riverside County, California. Under contract to Albert A. Webb Associates, Applied EarthWorks, Inc. (Æ) conducted a cultural resource investigation of the Project in accordance with the California Environmental Quality Act (CEQA). The City is the lead agency for compliance with CEQA.

This report summarizes the methods and results of the cultural resource investigation including a records search and literature review, communication with Native American tribal representatives, and an archaeological survey of the Project area. The purpose of the investigation was to determine the potential for the proposed Project to impact historical resources eligible for or listed in the California Register of Historical Resources.

The literature and records search at the Eastern Information Center of the California Historical Resources Information System indicates 46 cultural resources have been documented within a 0.5-mile radius of the Project area. None of these previously identified cultural resources is within the Project area.

As part of the cultural resource investigation, Æ sent a request to the Native American Heritage Commission (NAHC) for a search of the Sacred Lands File. Results of the search indicate there are no known Native American cultural resources within the Project area. Per the NAHC's request, Æ contacted Native American individuals and organizations to elicit information on Native American resources within the Project area, if any. Of the 11 groups and/or individuals contacted, Æ received responses from representatives of two tribes—Agua Caliente Band of Cahuilla Indians, and Augustine Band of Cahuilla Indians. Their comments are summarized in the report that follows.

Æ Archaeologist Andrew DeLeon completed an intensive pedestrian archaeological survey of the approximately 7.5-acre Project area on August 23, 2023. No cultural resources were encountered within the Project area during the survey. The terrain throughout most of the Project area has been previously plowed and disturbed. In addition, geological data indicate no Ab (buried) horizons, which typically have an environment conducive to preserving buried archaeological deposits. Due to the low likelihood that archaeological deposits or features will be found during construction, no further cultural resource management of the Project area is recommended.

However, if potentially significant archaeological materials are encountered during construction activities, all work must be halted in the vicinity of the discovery until a qualified archaeologist can visit the site and assess the significance and integrity of the find. Additionally, Health and Safety Code Section 7050.5, CEQA Guidelines Section 15064.5(e), and Public Resources Code Section 5097.98 mandate the process to be followed in the unlikely event of an accidental discovery of human remains in a location other than a dedicated cemetery.

Field notes documenting the current investigation are on file at Æ's Hemet office. A copy of this report will also be submitted to the Eastern Information Center.

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1
INTRODUCTION

The City of Banning (City) proposes construction of a reservoir and booster pump station for the Banning NP-2 Booster Pump Station and Reservoir Project (Project). The Project area is within Assessor's Parcel Number (APN) 538-280-001 (approximately 7.51 acres) located east of 22nd Avenue and immediately south of Lincoln Street in the city of Banning, Riverside County, California. Under contract to Albert A. Webb Associates, Applied EarthWorks, Inc. (Æ) conducted a cultural resource investigation of the Project in accordance with the California Environmental Quality Act (CEQA). The City is the lead agency for compliance with CEQA.

Æ Principal Investigator M. Colleen Hamilton (M.A., Registered Professional Archaeologist [RPA] 12588), was responsible for overall quality control for the Project. Æ Senior Archaeologist Joan George (B.S., RPA 28093) served as project manager. Fieldwork was conducted by Æ Associate Archaeologist Andrew DeLeon (M.A., RPA 17087).

1.1 PROJECT LOCATION AND DESCRIPTION

The Project is within the southwestern portion of the city of Banning in Riverside County (Figure 1-1). Specifically, the Project is within Section 8 of Township 3 South, Range 1 East, as depicted on the U.S. Geological Survey (USGS) Beaumont, California 7.5-minute topographic quadrangle map (Figure 1-2). The elevation is approximately 2,400 feet above mean sea level.

The Project involves construction of a booster pump facility and reservoir tank. The station will consist of a housing facility designed to contain vertical turbine pumps capable of transmitting 2,500 gallons of non-potable water per minute. The associated reservoir tank is an above-ground structure which will store approximately 60,910 gallons of non-potable water during operation. All these facilities are water system improvements needed to supply non-potable water to Lions Park, Banning High School, Dysart Park, and the Sun Lakes development near Highland Home Road. The maximum depth of ground disturbance during Project construction is not expected to exceed 10 feet. Project construction is expected to disturb only approximately 0.5 acres of the total parcel.

1.2 REGULATORY CONTEXT

1.2.1 California Environmental Quality Act

The Project requires discretionary approval from the City and is therefore subject to the requirements of CEQA. The CEQA Statute and Guidelines directs lead agencies to determine whether a project will have a significant impact on historical resources. A cultural resource considered "historically significant" is considered a "historical resource," if it over 50 years of age and is included in a local register of historical resources or is listed in or determined eligible for listing in the California Register of Historical Resources under any one of the following criteria (California Code of Regulations [CCR], Title 14, §15064.5):

Figure 1-1 Project vicinity in Riverside County, California.

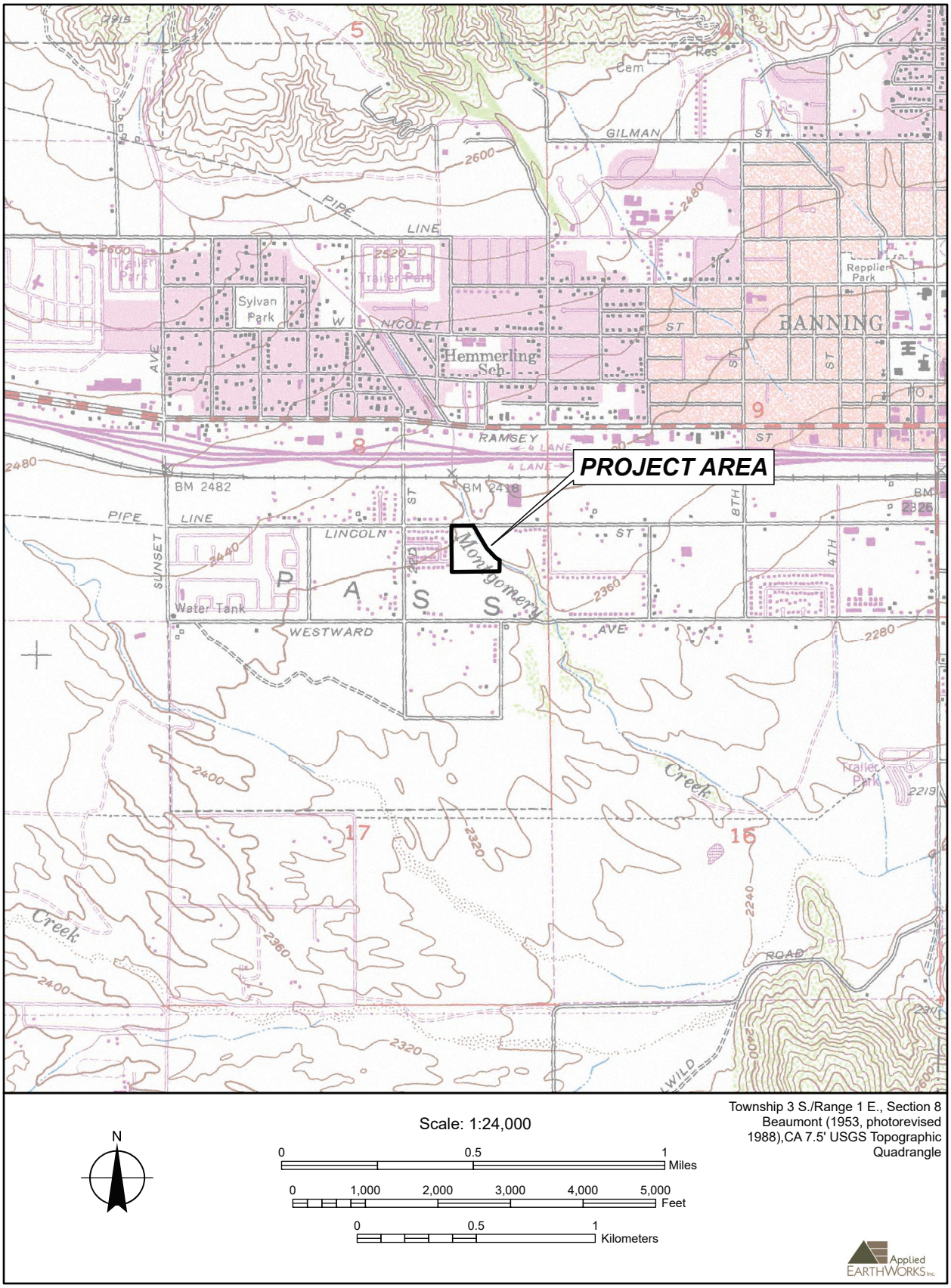

Figure 1-2 Project location on USGS Beaumont 7.5-minute topographic quadrangle.

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

2. Is associated with the lives of persons important in our past;

3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or,

4. Has yielded, or may be likely to yield, information important in prehistory or history.

Compliance with CEQA's cultural resource provisions typically involves several steps. Briefly, archival research and field surveys are needed, and identified cultural resources are inventoried and evaluated in prescribed ways. Prehistoric and historical archaeological sites, as well as standing structures, buildings, and objects deemed historically significant and sufficiently intact (i.e., historical resources), must be considered in project planning and development.

A project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment (14 CCR §15064.5[b]) and the lead agency is responsible for identifying potentially feasible measures to mitigate significant adverse changes in the significance of a historical resource (14 CCR §15064.5[b]4).

1.3 REPORT ORGANIZATION

This report documents the results of a cultural resource investigation of the proposed Project area. Chapter 1 has described the Project and its location, defined the scope of the cultural resource investigation, and stated the regulatory context. Chapter 2 summarizes the natural and cultural setting of the Project area and surrounding region. Chapter 3 presents the results of the archaeological literature and records search. Chapter 4 summarizes the Sacred Lands File (SLF) search with the Native American Heritage Commission (NAHC) and Native American communications. The field survey methods and results are discussed in Chapter 5. Cultural resource management recommendations are provided in Chapter 6, and bibliographic references are cited in Chapter 7. Results of the SLF search and correspondence with Native American groups are included as Appendix A.

2
SETTING

This chapter describes the prehistoric, ethnographic, and historical cultural setting of the Project to provide a context for understanding the nature and significance of cultural resources identified within the region. Prehistorically, ethnographically, and historically, the nature and distribution of human activities in the region have been affected by such factors as topography and the availability of water and natural resources. Therefore, prior to a discussion of the cultural setting, the environmental setting of the area is summarized below.

2.1 ENVIRONMENTAL SETTING

The Project is in western Riverside County and is situated on the interfluvial plain immediately north of Smith Creek. Annual precipitation in the area ranges from 18 to 20 inches. Surrounding sediments are composed of older Quaternary Alluvium deposits, derived as fan deposits from the San Bernardino Mountains to the north and possibly from the San Jacinto Mountains to the south. The Project lies within the South Coast Bioregion and is sparsely vegetated with scrub brush and grasses and populated by a variety of reptiles, small mammals, birds, and insects.

The natural setting of the Project area has been summarized by McLean et al. (2006). The Project is located in the San Gorgonio Pass (elevation 2,616 feet), which forms a natural break between the San Bernardino Mountains to the north and the San Jacinto Mountains to the south. It is an east-west trending lowland between the two mountain ranges. The surface of the lowland is composed of alluvial fan deposits, mainly from the San Bernardino Mountains. The northern foothills are underlain by upper Cenozoic nonmarine and marine sedimentary deposits (Morton 1999).

The San Bernardino Mountains are in the Transverse Ranges geomorphic province (Norris and Webb 1990:330). The Transverse Ranges are an east-west trending mountain range at the northeast end of the Los Angeles Basin. This range has some of the highest peaks south of the Sierra Nevada range (Norris and Webb 1990:330). The San Bernardino Mountains are about 65 miles long and 30 miles wide at their widest point. The San Jacinto Mountains are the northernmost of the Peninsular Ranges, which run 900 miles from Southern California to the southern tip of the Baja California Peninsula. At an elevation of 10,834 feet, San Jacinto Peak is the highest peak in the range (California State Parks 2002).

Soils in the Project area, as mapped by the U.S. Department of Agriculture Natural Resources Conservation Service, include two soil series. The Greenfield and Ramona soils are Alfisols, a taxonomic class of soil that typically retains water well for three months out of the year during warm seasons, which fosters sufficient plant growth (Soil Survey Staff 1999). None of the soil series mapped in the Project area include buried A (Ab) horizons.

2.2 PREHISTORIC SETTING

The prehistory of inland Southern California is less thoroughly understood than in the adjacent desert and coastal regions. This is partially a result of historical circumstances, such as ease of access, the location of universities, and public versus private land ownership, and partly due to

the nature of archaeological research in these interior valleys and mountains of Southern California (Goldberg and Arnold 1988). In the absence of absolute chronological indicators for inland sites, researchers generally employ typological cross-dating from either coastal or desert sequences, often as the sole means for assigning age to archaeological sites within the interior valleys, including the Project area.

Two large reservoir projects, Perris Reservoir project (O'Connell et al. 1974) and Eastside Reservoir project (ESRP) (Goldberg et al. 2001), generated large data sets to provide a basis for resolving some of these regional chronological sequencing problems. It is difficult to extrapolate the geographic extent of the prehistoric cultural patterns discerned from excavations at these two reservoirs, which are 12 miles apart in central western Riverside County. The ESRP is approximately 16 miles southwest of the Project, and it is almost certain that prehistoric patterns are similar to those discerned for the ESRP studies.

This discussion of the Project's prehistoric cultural setting is drawn from the cultural sequence developed for the ESRP. This chronology was based first on artifact cross-dating, and then refined with radiocarbon and obsidian hydration dates (Onken and Horne 2001; Robinson 1998, 2001); however, the ESRP chronology draws heavily on a cultural sequence defined by Warren (1984) for Southern California, which is based largely on archaeological work conducted in the Colorado and Mojave deserts. Because Warren's chronology used period names that suggest links to the Mojave, these were replaced in the ESRP chronology by value neutral terms. Because no sites dating to the Paleoindian Period (circa 12,000–9500 before present [B.P.]) have been documented within the region, the discussion below begins with the Early Archaic Period.

2.2.1 Early Archaic Period (circa 9500–7000 B.P.)

During this period, the environment of the interior deserts was more favorable for human occupation than the cismontane valleys of Southern California, where the Project is located. Populations in the interior valleys would have been tethered to the few reliable, drought-resistant water sources such as Lake Elsinore, Mystic Lake, and possibly the Cajalco Basin. In general, small, highly mobile groups traveled widely, utilizing highly portable tool kits to procure and process critical resources, with brief and anticipated intervals of seasonal sedentism near predictable water locations. Due to isolated locations where the conditions for occupation were met, Early Archaic Period sites are rare compared to later periods of prehistory (Goldberg et al. 2001; Grenda 1997; Horne and McDougall 2008; McDougall 1995).

2.2.2 Middle Archaic Period (circa 7000–4000 B.P.)

A gradual transition from wet pluvial conditions to arid desert conditions during the Early Holocene marks the transition to the Middle Archaic Period. Middle Archaic Period sites in Southern California include two in the ESRP, one at Lake Elsinore, the Stahl Site in Owens Valley, desert sites in Death Valley, Salt Springs, and at Pinto Basin in Joshua Tree National Park. Middle Archaic Period sites are associated with the margins of pluvial lakes and with now-extinct springs. Pinto-series projectile points, a type of basally notched or bifurcate base dart point, are the most distinctive artifact type of this period (Justice 2002). Other artifacts found at Middle Archaic Period sites include leaf-shaped bifacial knives, split cobble choppers and scrapers, scraper-planes, and small milling slabs and manos. With a few exceptions in the ESRP

area and the Stahl Site, most sites of this age are small surface deposits of lithic artifacts, suggestive of temporary and perhaps seasonal occupation by small groups of people.

2.2.3 Late Archaic Period (circa 4000–1500 B.P.)

The Late Archaic Period was one of cultural intensification coinciding with the Little Pluvial, a period when increased moisture allowed for more extensive occupation of the region. Sedentism likely increased during this period, with large occupation sites located adjacent to permanent water sources such as perennial springs and streams. Projectile points diagnostic of this period include Humboldt, Gypsum, and Elko-series dart points (Warren 1984), although Rose Spring arrow points appeared late within this period in the deserts. The mortar and pestle, used for processing acorns and hard seeds, also first appeared. A warming and drying trend began around 2100 B.P., leading to intensification of use of certain resources (Goldberg et al. 2001).

2.2.4 Saratoga Springs Period (circa 1500–750 B.P.)

Occupants of the region continued to adapt to the arid environment in the deserts (Warren 1984). Lake Cahuilla likely refilled the Coachella Valley around 1450 B.P. and was the focus of exploitation of fish and wetland resources. Occupation around large local water sources declined as these dried, however, and people became tethered to springs (Goldberg et al. 2001). Cultural trends continued from the Late Archaic Period, as Saratoga Springs projectile points, also associated with early use of the bow and arrow, appeared. The sparse assemblages found within the region obscure the timing of local adoption of the bow and arrow (Goldberg et al. 2001). Shoshonean language speakers likely moved into Southern California at this time. Brown and Buff Ware pottery first appeared on the lower Colorado River at about 1200 B.P. and started to diffuse across the California deserts by about 1100 B.P. (Moratto 1984). The warmer and drier Medieval Warm Period set in throughout the Southwest by about 1060 B.P. (Stine 1994; Warren 1984) and led to the withdrawal of Native American populations from marginal desert areas.

2.2.5 Late Prehistoric Period (circa 750–410 B.P.)

A period of lower temperatures and increased precipitation known as the Little Ice Age resulted in increased resource productivity in the region and subsequent population increase. Cottonwood Triangular points appear in inland assemblages and Obsidian Butte glass became much more common (Goldberg et al. 2001). Lake Cahuilla began to recede (Waters 1983), and the large Patayan populations occupying its shores moved westward to areas such as Anza Borrego, Coyote Canyon, the Upper Coachella Valley, the Little San Bernardino Mountains, and the San Jacinto Plain (Wilke 1976). The final recession of Lake Cahuilla, which had occurred by approximately 400 B.P., resulted in a population shift away from the lakebed into the Peninsular Ranges to the west and the Colorado River regions to the east.

2.2.6 Protohistoric Period (circa 410–180 B.P.)

Sedentism intensified during the Protohistoric Period. Increased hunting with bow and arrow and widespread exploitation of acorns, other hard nuts, and berries (indicated by the abundance of mortars and pestles) provided reliable and storable food resources. Reliable food sources likely prompted the establishment of small, completely sedentary villages with resource catchment areas around them (True 1966, 1970). Ceramic technology first appeared in the region around

350 B.P. Cottonwood Triangular points were supplemented by Desert Side-notched points. This period ended in 1769 A.D. when Spanish settlement began in Upper California.

2.3 ETHNOGRAPHIC SETTING

The Project area lies immediately west and north of the Morongo Indian Reservation. The Morongo Band of Mission Indians are a mixture of several different groups of California Native Americans, including Cahuilla, Serrano, and Cupeño. The native languages spoken by these groups are all part of the larger Takic family of Uto-Aztecan languages. An ethnographic overview of each of these groups is provided below.

2.3.1 Cahuilla

Ethnographically, the Project area lies within the traditional territory of the Pass (or Wanakik) Cahuilla. A wealth of information exists regarding traditional and historic Cahuilla society and culture (Bean 1978; Bean and Toenjes 2011). The Cahuilla language, divided into Desert, Pass, and Mountain dialects, has been assigned to the Cupan subfamily of the Takic branch of the Uto-Aztecan linguistic family. Territory traditionally claimed by the Cahuilla was topographically complex, including mountain ranges, passes, canyons, valleys, and desert. Bean (1978) described it as, ". . . from the summit of the San Bernardino Mountains in the north to Borrego Springs and the Chocolate Mountains in the south, a portion of the Colorado Desert west of Orocopia Mountain to the east, and the San Jacinto Plain near Riverside and the eastern slopes of Palomar Mountain to the west."

The Cahuilla in precontact times had nonpolitical, nonterritorial patrimoieties that governed marriage patterns, as well as patrilineal clans and lineages. The Cahuilla words for these moieties mean "Coyote" and "Wildcat." The Cahuilla had "political-ritual-corporate units (clans) composed of 3 to 10 lineages, dialectically different, named, claiming a common genitor, with one lineage recognized as the founding one" (Bean 1978). Clans owned a large territory in which each lineage owned a village site with specific resource areas. Clan lineages cooperated in defense, in large communal subsistence activities, and in performing rituals. Founding lineages often owned the office of ceremonial leader, the ceremonial house, and a ceremonial bundle (Bean 1978). Settlements, occupied by one or more lineages, could be politically autonomous or allied with several villages under one chief. The hereditary chiefs had religious, economic, and military power and were role models for their people. They were aided in their duties by one or more assistants. The chiefs and their families, along with the very wealthy, were the elites of the society. The acquisition of wealth was important, but the acquisition of extreme material wealth was prevented by the custom of burning or burying the possessions of the deceased.

The Cahuilla were, for the most part, hunting, collecting, harvesting, and protoagricultural peoples. A diverse habitat provided an immense variety of floral resources, which the Cahuilla used for food, medicine, and manufacture of tools and shelter (Bean 1978:578). Acorns, screw beans, mesquite, pinyon, cactus fruits, seeds, wild berries, tubers, roots, and greens were valuable food resources. Acorns and hard berries were pounded in stone mortars, while hard seeds were ground on stone metates. Softer foods, like honey mesquite, were pounded in wooden mortars. Various basket and pottery forms were used to process and cook plant foods. Stone-lined pit ovens were used to cook yucca, agave, and tule-potatoes. At ancient Lake Cahuilla in the Coachella Valley, periods of high lake stands brought Cahuilla from the mountain areas

down to the valley floor to exploit the freshwater aquatic resources such as fish, shellfish, waterfowl, and shoreline vegetation (Wilke 1976:8, from Blake 1856:98).

Cahuilla pottery was manufactured by the coil method and paddle-and-anvil technique and was often painted or incised. Their pottery forms included cooking pots, ollas, bowls, dishes, and tobacco pipes. Basketry was produced by a stitched coil method, and forms included flat plates or trays for winnowing seeds, both shallow and deep baskets, conical baskets, and round flat-bottomed baskets, which were often decorated with cosmological motifs (Bean 1978:579). Arrow-shaft straighteners were made of soapstone and incised with designs that reflected ownership. Bows were made of willow or mesquite and were strung with mescal fiber or sinew. Ceremonial items included charmstones, bull-roarers, clappers, rattles, feathered headdresses, wands, and eagle feather skirts and capes. Clothing included sandals made of mescal fiber, rabbit skin or other hide blankets, and skirts made of tule, or the soft inner bark of mesquite or cottonwood.

2.3.2 Serrano

The Serrano, or "mountaineers" in Spanish, occupied the territory of the San Bernardino Mountains east to Mount San Gorgonio, the San Gabriel Mountains west to Mount San Antonio, and portions of the desert to the north and the fringe of the San Bernardino Valley to the south (Kroeber 1925:615–616). Numbering no more than perhaps 1,500 people, the Serrano were scattered over a rugged, expansive landscape. The Serrano were Shoshonean peoples, speakers of languages in the Takic subfamily of the larger Uto-Aztecan language family, and their ancestors are presumed to have entered Southern California some 1,500 years ago from the Great Basin (Kroeber 1925:578–579). Their most intensive cultural contacts were with the Pass Cahuilla, who occupied the territory to the southeast, and the Gabrielino, who occupied the lands westward to the Pacific coast.

Serrano clans were politically autonomous and both patrilineal and exogamous. A moiety structure conditioned Serrano social life, all clans belonging to either the Coyote or Wildcat moiety. These moieties were exogamous. Each Serrano clan had a hereditary leader, or *kika*, and an assistant who was a ceremonial leader, or *paha* (Strong 1929:17–18). These individuals were central to the ritual life of the Serrano, providing leadership during yearly ceremonial periods. Kroeber (1925:617) indicated that villages were generally where streams emerged from the foothills. Bean et al. (1981:85–86) indicated groups of lineages lived in villages at the valley margins in the winter and in smaller encampments at higher elevations in the summer. Proximity to water sources and adequate arrays of resources predictably dictated settlement location choices. Bean et al. (1981:85) noted also that individual homes were quite scattered across the landscape in order to ensure privacy, to the extent that some "villages" covered up to 5 square miles. This clearly has important implications for archaeological interpretations of occupation sites.

Subsistence during winter months consisted mostly of reliance on stored foods (acorns, pinyon nuts, mesquite beans) and some fresh meats and greens. In the spring, agave, cacti, greens, and a mix of game provided the bulk of the food resources. Many fruits and seeds became available during the summer months, but perhaps the richest season was autumn, when major harvests of acorns, pinyon nuts, mesquite beans, and screwbeans occurred, and when communal rabbit hunts took place in the context of much feasting and ritual activity (Bean et al. 1981:86–87). In

addition to occupation sites and food procurement sites, rock cairns ("offerings" places along trails), cupule petroglyph sites, hot springs (sacred areas), sources of lithic materials suitable to produce stone tools and other artifacts, and trails represent important land uses by the Serrano.

2.3.3 Cupeño

The Cupeño are considered one of the smallest linguistic groups in Southern California (Bean and Smith 1978). The traditional territory of the Cupeño is located near the headwaters of the San Luis Rey River in northern San Diego County. Today, there are several Native American groups (Pala Band of Luiseño Indians, the Morongo Band of Mission Indians, and the Los Coyotes Band of Cahuilla and Cupeño Indians) that include Cupeño members. As discussed by Bean and Smith (1978:588), Cupeño social organization reflects an amalgamation of several different groups that dates back at least 800 years. Cahuilla elements of social organization found among the Cupeño include exogamous moieties, patrilineal clans, and ceremonial exchange parties. The Cupeño also practice some Chingichngish religious rituals that were acquired from the Luiseño, with additional ceremonies adopted from the Ipai.

Ethnographic information on the Cupeño indicates that clans owned the most productive food-gathering spots with communal ownership of intervening areas for hunting and gathering. The head of each clan lived in the clan's ceremonial dance house and was responsible for keeping the clan bundle. A hereditary office that usually passed from father to eldest son, the duties of the clan leader included controlling trade with non-Cupeño groups, overseeing the production and distribution of goods, regulating intra- and interclan relationships, and organizing ceremonies (Bean and Smith 1978:588–589). Clan leaders could also be shamans.

In terms of ritual, the most significant ceremonies for the Cupeño were those held in connection with deaths in the clan. Immediately following the death of an individual, the body was burned. This was followed by the burning of the deceased's possessions a few weeks to several months later. An annual or biannual image-burning ceremony was held at a later point, in which images of all those who had died since the last ceremony were burned (Bean and Smith 1978:589). Another ceremony held in memory of the dead was the eagle-killing ritual, which was held once a year.

2.4 HISTORICAL SETTING

The Spanish occupation of Alta California and the founding of the San Diego de Alcalá mission in San Diego occurred in 1769 resulting availability of written records. The following historic context of California was taken primarily from Clark and Smallwood (2015). Exploration of the California coast in the sixteenth and seventeenth centuries was the basis for the Spanish claim to the region. In the eighteenth century, Spain recognized that to strengthen its claim, it would have to settle Alta California to preclude encroachment by the Russians and British traders. Therefore, in the latter half of the eighteenth century, Spain and the Franciscan Order founded a series of presidios, or military camps, and 21 missions along the California coast, beginning at San Diego in 1769. The Spanish also carried out exploratory expeditions into the interior regions, including the Mojave Desert, to identify travel routes to the coast and to establish interior agricultural settlements.

With the signing of the Treaty of Guadalupe-Hidalgo on February 2, 1848, California formally became an American territory, and two years later, on September 9, 1850, California became the thirty-first state in the Union. Between those two years came a large influx of eastern immigrants seeking their fortunes; the catalyst for this influx was James Marshall's 1848 discovery of gold at Sutter's Mill (Starr 2005). The population and wealth in the early statehood years were concentrated in the northern part of the state. Ranching was the main occupation in the southern counties providing meat and supplies to the north. The floods and drought of the 1860s brought that era to a close, and the completion of the transcontinental railroad in 1869 opened California to agricultural settlement.

Southern California was promoted as an ideal agricultural area, with fertile soil and a mild climate. Contemporary reviews of California painted beautiful pictures that appealed to both Americans and Europeans alike. There were three land booms tied to railroad expansion: (1) after the transcontinental railroad was completed, enabling easy travel to California; (2) late 1870s after the Southern Pacific Railroad (SPRR) was completed; and (3) 1886–1888, when the Santa Fe transcontinental line was completed. Competition between these lines incited a rate war, and both tourists and potential settlers took advantage of the low fares to come to California (Lech 2004:222).

2.4.1 Local History

Banning is located in the San Gorgonio Pass, the principle opening between the San Bernardino Mountains to the north and the San Jacinto Mountains to the south that allows east-west travel between the coast and desert regions. Therefore, it was the route of early trails and stage roads, as well as the SPRR and Interstate 10.

Banning, originally Moore City, was founded in early 1877, near the "confluence" of the railroad and the flume (Lech 2004:254). By July of the same year, the name was changed to Banning. The 1886 Land Office map clearly shows Banning located north of the SPRR, as a town of about four blocks east-west and three blocks north-south. The Banning Land and Water Company flume is depicted traveling north from town along what is now San Gorgonio Avenue. Grain fields and isolated cabins and houses are depicted around Banning, particularly southwest of town. The Bradshaw Stage Route, which was located north of Banning, is no longer shown on the map (General Land Office 1886). The first commercial grain crop was barley; subsequently both oats and wheat were also successful cash crops (Hughes 1938:205). At the same time that farmers and ranchers settled in Banning, it also became known as a health resort. In 1888, the town was described as "unsurpassed" as a resort, with water "as pure as ever flowed from Nature's fountain" (quoted in Lech 2004:259). In 1890, the Sisters of St. Joseph founded the St. Boniface Indian School near Banning (Deferrari 1942:541).

Incorporated in 1913, Banning was similar to many other small towns throughout Southern California and the country, proud of every achievement, eager for further growth and development in a positive way, and full of hope for the future. Banning continued to grow both as an agricultural area and as a resort. In the 1920s, Banning's population was around 3,000 (Banning Chamber of Commerce 1927). In that decade, almond trees, at the peak of their success in California, were grown on approximately 1,000 acres in and around Banning; the area was considered the largest almond-growing region in Southern California (Holtzclaw 2005:25, 41).

At the same time, Banning had maintained its reputation as a "health haven . . . as attested by the sanitariums and private rest homes in and near the city" (Hughes 1938:205).

In 1931, the news of the construction of the Colorado River Aqueduct by the Metropolitan Water District of Southern California (MWD) was well-received in Banning. In anticipation of the economic boost the city would receive, "Banning staged a victory jubilee in celebration of the voting of bonds for aqueduct construction" (Hughes 1938:59). The MWD field headquarters were located at the intersection of San Gorgonio Avenue and the Union Pacific Railroad. Construction work for MWD headquarters began in 1932. Through the years of the Great Depression, Banning was home to the MWD engineer's field office. In addition, the concrete testing laboratory was located in Banning. Boring the San Jacinto Tunnel began in 1933 and continued until the "holing through" on November 18, 1938. During these seven years, the headquarters provided a boost to the local economy, as did the construction workers who lived in the town and commuted to work.

At the beginning of World War II, General George C. Patton established the Desert Training Center in the Mojave Desert in eastern Riverside and San Bernardino counties. In Banning, a 1,000-bed hospital, aid station, and artillery range contributed to the training effort. During the war, 1.6 million people moved to California to work in war industries, and many of the servicemen trained in the state settled in Banning after the war was over (Starr 2005:237). By 1962, California had the highest population of any state.

Banning's growth continues to rise into the present day due to investments in capital improvements projects, which include over 1,673 new housing units (City of Banning 2023). Currently, the city of Banning is home to an estimated population of 30,683, according to the U.S. Census Bureau (2022).

3
CULTURAL LITERATURE AND RECORDS SEARCH

On August 9, 2023, prior to the field survey of the Project area, Æ conducted a literature and records search at the Eastern Information Center (EIC) of the California Historical Resource Information System, housed at the University of California, Riverside. The objective of this records search was to determine whether any prehistoric or historical cultural resources had been recorded previously within the Project area and a 0.5-mile search radius of the proposed Project.

Results of the records search indicated eight cultural resource studies have been conducted previously within the 0.5-mile search radius (Table 3-1). Three of the previous studies involved the Project area. As a result, 100 percent of the Project area has been investigated previously.

Table 3-1
Previous Cultural Resource Studies in the 0.5-Mile Search Radius

EIC Reference #	Authors(s)	Date	Title
RI-02210	Underwood, J., J. Cleland, C. M. Wood, and R. Apple	1986	Preliminary Cultural Resources Survey Report for the US Telecom Fiber Optic Cable Project, from San Timoteo Canyon to Socorro, Texas; The California Segment
RI-07339[a]	Tang, Bai "Tom", Josh Smallwood, and Melissa Hernandez	2007	Identification and Evaluation of Historic Properties: Wastewater Treatment Plant Expansion and Recycled Water System, City of Banning, Riverside, California
RI-08374	Eckhardt, William T., Stacie Wilson, Carol Serr, and Karolina Chmiel	2009	Final—Cultural Resources Inventory of the Proposed SCE Devers to Valley Substation Project, Riverside County, California: Volume I
RI-08449[a]	Tang, Bai "Tom", Michael Hogan, Josh Smallwood, and Terri Jacquemain	2004	Cultural Resources Technical Report City of Banning General Plan
RI-08668	Bonner, Wayne H. and Arabesque Said	2011	Letter Report: Cultural Resources Records Search and Site Visit Results for T-Mobile USA Candidates IE24909-H
RI-08978	DeCarlo, Matthew M.	2013	Cultural Resources Inventory of Late Engineering Construction Components, Southern California Edison (SCE) Devers-Palo Verde 2 (DPV2) Project, Riverside County, California
RI-09167	McLean, Roderic, Natalie Brodie, Jacqueline Hall, Shannon Carmack, Phil Fulton, Ingri Quon, Erin Martinelli, Richard Erickson, and Jay Michals	2013	Cultural Resources Assessment and Class III Inventory Volume I West of Devers Project San Bernardino and Riverside Counties, California.
RI-09540[a]	Brunzell, David	2013	Cultural Resources Assessment Rancho San Gorgonio Planned Community Project City of Banning, Riverside County, Riverside County, California

a - Study overlaps with the Project area.

The records search resulted in the identification of 46 previously recorded cultural resources within the 0.5-mile search radius. All five of the archaeological resources are historical: one water diversion system, one concrete foundation, one refuse scatter, one rubble deposit, and one concrete well box. In addition, 41 built-environment resources were identified within the 0.5-mile search radius (Table 3-2). None of the previously recorded cultural resources are documented within the Project area.

Table 3-2
Previously Recorded Cultural Resources in the 0.5-Mile Search Radius

Primary	Trinomial	Description
Historic Resources		
33-014366	CA-RIV-7815	Water diversion system
33-014367	CA-RIV-7816	Concrete foundations
33-014368	CA-RIV-7817	Refuse scatter
33-025807	—	Concrete and masonry rubble
33-025814	—	Concrete well box
Built-Environment Resources		
33-009150	—	Vernacular wood frame house
33-009159	—	1915 Vernacular wood frame house
33-015809	—	1950 California Ranch–style house
33-015810	—	1950 California Ranch–style house
33-015811	—	1947 Doolittle House
33-015813	—	1947 Altered Spanish Eclectic–style house
33-015814	—	1947 Vernacular-style house
33-015815	—	1959 California Ranch–style house
33-015816	—	1959 California Ranch–style house
33-015817	—	1960 California Ranch–style house
33-015818	—	1956 California Ranch–style house
33-015819	—	1959 California Ranch–style house
33-015820	—	1926 Craftsman Bungalow–style house
33-015821	—	1959 California Ranch–style house
33-015822	—	1961 California Ranch–style house
33-015823	—	1957 California Ranch–style house
33-015824	—	1950s California Ranch–style house
33-015825	—	1961 California Ranch–style house
33-015826	—	1961 California Ranch–style house
33-015827	—	1961 California Ranch–style house
33-015828	—	1947 California Ranch–style house
33-015829	—	1960 California Ranch–style house
33-015830	—	1961 California Ranch–style house
33-015831	—	1961 California Ranch–style house
33-015833	—	1940s Minimal Traditional–style house

Table 3-2
Previously Recorded Cultural Resources in the 0.5-Mile Search Radius

Primary	Trinomial	Description
33-015835	—	1959 California Ranch–style house
33-015837	—	1950 California Ranch–style house
33-015838	—	1961 California Ranch–style house
33-015839	—	1951 Vernacular-style commercial building
33-015840	—	1958 Vernacular-style house
33-015841	—	1950s California Ranch–style house
33-015842	—	1958 California Ranch–style house
33-017729	—	1960s Vernacular-style house
33-017731	—	1962 California Ranch–style house
33-017732	—	1962 California Ranch–style house
33-017733	—	1967 Vernacular-style farmhouse
33-017734	—	1967 Vernacular-style farmhouse
33-017742	—	1955 Cinder block commercial building
33-017744	—	1965 Commercial building
33-017745	—	1960s Commercial building
33-017748	—	1950s Vernacular-style commercial building

3.1 HISTORICAL MAP REVIEW

A series of historical maps were consulted to assess land use and development in the Project area. Maps consulted included USGS topographic quadrangle maps: San Jacinto 1901 30 minute, Southern California 1901 30 minute, Banning 1943 (photorevised 1952) 15 minute, Beaumont 1953 (photorevised 1988) 7.5 minute, Banning 1956 (photorevised 1961) 15 minute, and Santa Ana 1965 30 minute.

The Southern Pacific Railroad appears north of the Project area on all of the examined maps. All of the maps after 1901 also exhibit several buildings outside of the Project area north and south of modern-day Lincoln Street. The structures also appear on aerial photographs, viewed on historicaerials.com/viewer, as early as 1966. No other buildings, structures, or features of interest are shown in the Project area on any of the historical maps or photographs examined.

4
NATIVE AMERICAN COMMUNICATIONS

Æ contacted the NAHC on June 22, 2023, for a review of their SLF to determine if any known Native American cultural properties (e.g., traditional use or gathering areas, places of religious or sacred activity) are present within or adjacent to the Project area. The NAHC responded on July 19, 2023, stating the SLF search was completed with negative results. The NAHC requested Æ contact Native American individuals and organizations to elicit information regarding cultural resource issues related to the proposed Project, if any.

Upon review of the Native American contact list and after removing redundancies, Æ narrowed the list to 11 individuals and organizations traditionally and culturally affiliated with the geographic region of the Project area. Æ sent out Project scoping letters via email and U.S. Postal Service on September 8, 2023, describing the Project and asking these individuals and organizations for their input. Copies of the letters, the list of contacts, and received responses are included in Appendix A. Æ sent follow up email correspondence on September 22, 2023, to the organizations who had not responded to the initial request on September 8, 2023.

Individuals/organizations contacted include:

- Patricia Garcia-Plotkin, Director of the Tribal Historic Preservation Office for the Agua Caliente Band of Cahuilla Indians
- Amanda Vance, Chairperson of the Augustine Band of Cahuilla Indians
- Doug Welmas, Chairperson of the Cabazon Band of Mission Indians
- Bobby Ray Esparza, Cultural Director for the Cahuilla Band of Indians
- Ray Chapparosa, Chairman of the Los Coyotes Band of Cahuilla and Cupeño Indians
- Ann Brierty, Tribal Historic Preservation Officer for the Morongo Band of Mission Indians
- Jill McCormick, Historic Preservation Officer for the Quechan Tribe of the Fort Yuma Reservation
- John Gomez, Environmental Coordinator for the Ramona Band of Cahuilla
- Lovina Redner, Tribal Chair of the Santa Rosa Band of Cahuilla Indians
- Joseph Ontiveros, Tribal Historic Preservation Officer for the Soboba Band of Luiseño Indians
- Cultural Committee of the Torres-Martinez Desert Cahuilla Indians

As of October 17, 2023, Æ has received two responses. The Agua Caliente Band of Cahuilla Indians notes the Project falls within the Tribe's Traditional Use Area and a records check of the tribal registry indicates this area has not been previously surveyed for cultural resources. Therefore, the Tribe requests: A cultural resources inventory of the Project area by a qualified archaeologist before any development activities occur in the area, copies of any cultural resource documentation (report and site records) generated in connection with the Project, and a copy of the records search with associated survey reports and site records from the Information Center. The Augustine Band of Cahuilla Indians are unaware of any cultural resources that would be affected by the Project but wish to be contacted immediately if any resources are discovered during development. Complete responses from each Tribe are in Appendix A.

5
CULTURAL RESOURCE SURVEY METHODS AND RESULTS

This chapter details the methods and results of the intensive pedestrian survey of the Project area. Approximately 90 percent of the Project area was accessible during the survey. The intensive survey was completed by Æ Archaeologist Andrew DeLeon on August 23, 2023.

5.1 SURVEY METHODS

DeLeon began the survey on the northwest corner of the Project area (Figure 5-1). From there, the survey proceeded southward. The survey was conducted in 15-meter transects oriented north–south, moving eastward through the Project area. While surveying, DeLeon photographed the Project area at various locations to document its current condition.

5.2 SURVEY RESULTS

The entire Project area is highly disturbed and appears to have been previously plowed. There are several dirt pathways along the perimeters of the Project area, which are also visible on aerial satellite imagery. The center area of the Project appears to have been used as a staging area in the past, and the ground surface soils in that area contained more gravel. DeLeon also observed several pieces of asphalt debris on the northeastern edge of the Project which appear to have been dumped, as no other evidence of roadway or pavement debris was observed anywhere else

Figure 5-1 Overview from northwest corner of Project area, facing southeast.

within the Project area. The Project area also encompasses part of a steep drainage running along the eastern edge. The drainage channel was approximately 40 feet deep with steep sidewalls and was unable to be surveyed on foot.

Visibility throughout the Project area was generally poor at 15 percent, as the ground surface was covered in straw grasses, ragweed, and dove weed (Figure 5-2). The eastern side of the Project area contained patches of California buckwheat. When possible, DeLeon inspected exposed areas of soil within the Project area that consisted of a yellowish brown (10YR 5/4) sandy loam. The topography of the Project is relatively flat and uniform. DeLeon observed sparce patches of modern refuse throughout the Project area. No cultural resources were encountered within the Project area during the survey.

Figure 5-2 Overview from southeast corner of Project area facing northwest.

6
MANAGEMENT RECOMMENDATIONS

Æ did not encounter any cultural resources within the Project area during the intensive pedestrian survey. The entire Project area is highly disturbed and appears to have been previously plowed. Geological data indicate that soil series mapped within the Project area contain no Ab (buried) horizons which often produce an environment conducive to intact buried archaeological deposits. While the Greenfield and Ramona soil series contain well-developed A and B horizons, the integrity of those stratigraphic layers is questionable considering modern disturbances. Due to the low likelihood that archaeological deposits or features will be found during construction, no further cultural resource management of the Project area is recommended.

It should be noted that the Project is within Agua Caliente Band of Cahuilla Indian's Traditional Use Area and the Tribe requested a copy of the records search, survey reports, and site records from the Information Center, copies of any cultural resource documentation generated from the current Project, and shapefiles of the Project area. The Augustine Band of Cahuilla Indians are unaware of any cultural resources that would be affected by the Project but wish to be contacted immediately if any resources are discovered during development.

If potentially significant archaeological materials are encountered during any future construction activities, all work must be halted in the vicinity of the discovery until a qualified archaeologist can visit the site and assess the significance and integrity of the find. If intact and significant archaeological remains are encountered, the impacts of the Project must be mitigated appropriately. Any such discoveries, and subsequent evaluation and treatment, should be documented in a cultural resource report, which should be submitted to the EIC for archival purposes.

Additionally, Health and Safety Code Section 7050.5, CEQA Guidelines Section 15064.5(e), and Public Resources Code Section 5097.98 mandate the process to be followed in the unlikely event of an accidental discovery of human remains in a location other than a dedicated cemetery. Finally, if the Project area is expanded to include areas not covered by this survey or other recent cultural resource studies, additional cultural resource studies may be required.

7
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APPENDIX A

Native American Communications

LIST OF NATIVE AMERICAN CONTACTS AND RECORD OF RESPONSES

Name	Date	Responses
Patricia Garcia-Plotkin THPO Agua Caliente Band of Cahuilla Indians	September 8, 2023 September 15, 2023	Scoping letter sent via email. Email response received from Claritsa Duarte- Cultural Resources Analyst. The tribe states that the project area is not located within the boundaries of the ACBCI Reservation. However, it is within the Tribe's Traditional Use Area. Records check of the ACBCI registry indicates this area has not been surveyed for cultural resources. The tribe requests a cultural resources inventory of the project area by a qualified archaeologist before any development activities in this area—copies of any cultural resource documentation (report and site records) generated in connection with this project. A copy of the records search with associated survey reports and site records from the information center.
Amanda Vance Chairperson Augustine Band of Cahuilla Mission Indians	September 8, 2023 September 11, 2023	Scoping letter sent via email. Email response received from Geramy Martin, Tribal Secretary. The tribe states they are unaware of specific cultural resources that may be affected by the proposed project. However, if AE should discover any cultural resources during the development of this project, please contact their office immediately for further evaluation.
Doug Welmas Chairperson Cabazon Band of Mission Indians	September 8, 2023 September 22, 2023	Scoping letter sent via email. Follow up sent via email. No response received.
BobbyRay Esparza Cultural Director Cahuilla Band of Indians	September 8, 2023 September 22, 2023	Scoping letter sent via email. Follow up sent via email. No response received.
Ray Chapparosa Chairperson Los Coyotes Band of Cahuilla and Cupeno Indians	September 8, 2023 September 22, 2023	Scope letter sent via post. Follow up message via phone call, left voicemail. No response received.
Ann Brierty Tribal Historic Preservation Officer Morongo Band of Mission Indians	September 8, 2023 September 22, 2023	Scoping letter sent via email. Follow up sent via email. No response received.

Name	Date	Responses
Jill McCormick Historic Preservation Officer Quechan Tribe of the Fort Yuma Reservation	September 8, 2023 September 22, 2023	Scoping letter sent via email. Follow up sent via email. No response received.
John Gomez Environmental Coordinator Ramona Band of Cahuilla	September 8, 2023 September 22, 2023	Scope letter sent via post and email. Follow up sent via email. No response received.
Lovina Redner Tribal Chair San Manuel Band of Mission Indians	September 8, 2023 September 22, 2023	Scoping letter sent via email. Follow up sent via email. No response received.
Joseph Ontiveros cc Jessica Valdez Tribal Historic Preservation Officer Soboba Band of Luiseno Indians	September 8, 2023 September 22, 2023	Scoping letter sent via email. Follow up sent via email. No response received.
Cultural Committee Torres-Martinez Desert Cahuilla Indians	September 8, 2023 September 22, 2023	Scoping letter sent via email. Follow up sent via email. No response received.

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission
1550 Harbor Boulevard, Suite 100
West Sacramento, CA 95691
916-373-3710
916-657-5390 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Date: 6/22/23

Project: City of Banning Np-2 Booster Pump Station Reservoir Project

County: Riverside

USGS Quadrangle Name: Beaumont

Township: 3S **Range:** 1E **Section(s):** 8

Company/Firm/Agency: Applied EarthWorks, Inc.

Contact Person: Andrew DeLeon

Street Address: 3550 East Florida Avenue, Suite H

City: Hemet **Zip:** 92544

Phone: (951) 766-2000 ext.520

Fax: (951) 766-0020

Email: adeleon@appliedearthworks.com

Project Description: The Project involves the construction of a reservoir and booster pump station over an approximately 7.51 acre area. Ground disturbance is expected as a result of construction activities.

NATIVE AMERICAN HERITAGE COMMISSION

ACTING CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Sara Dutschke
Miwok

COMMISSIONER
Isaac Bojorquez
Ohlone-Costanoan

COMMISSIONER
Buffy McQuillen
Yokayo Pomo, Yuki, Nomlaki

COMMISSIONER
Wayne Nelson
Luiseño

COMMISSIONER
Stanley Rodriguez
Kumeyaay

COMMISSIONER
Vacant

COMMISSIONER
Vacant

COMMISSIONER
Vacant

EXECUTIVE SECRETARY
Raymond C. Hitchcock
Miwok, Nisenan

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

July 19, 2023

Andrew DeLeon
Applied EarthWorks, Inc.

Via Email to: adeleon@appliedearthworks.com

Re: City of Banning Np-2 Booster Pump Station Reservoir Project, Riverside County

Dear Mr. DeLeon:

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: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Riverside County
7/19/2023

Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties	Last Updated
Agua Caliente Band of Cahuilla Indians	F	Reid Milanovich, Chairperson	5401 Dinah Shore Drive Palm Springs, CA, 92264	(760) 699-6800	(760) 699-6919	laviles@aguacaliente.net	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	
Agua Caliente Band of Cahuilla Indians	F	Patricia Garcia-Plotkin, Director	5401 Dinah Shore Drive Palm Springs, CA, 92264	(760) 699-6907	(760) 699-6924	ACBCI-THPO@aguacaliente.net	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	
Augustine Band of Cahuilla Mission Indians	F	Amanda Vance, Chairperson	84-001 Avenue 54 Coachella, CA, 92236	(760) 398-4722	(760) 369-7161	hhaines@augustinetribe.com	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	
Cabazon Band of Mission Indians	F	Doug Welmas, Chairperson	84-245 Indio Springs Parkway Indio, CA, 92203	(760) 342-2593	(760) 347-7880	jstapp@cabazonindians-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	
Cahuilla Band of Indians	F	BobbyRay Esaprza, Cultural Director	52701 CA Highway 371 Anza, CA, 92539	(951) 763-5549		besparza@cahuilla-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	6/28/2023
Cahuilla Band of Indians	F	Anthony Madrigal, Tribal Historic Preservation Officer	52701 CA Highway 371 Anza, CA, 92539	(951) 763-5549		anthonymad2002@gmail.com	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	6/28/2023
Cahuilla Band of Indians	F	Daniel Salgado, Chairperson	52701 CA Highway 371 Anza, CA, 92539	(951) 972-2568	(951) 763-2808	chairman@cahuilla-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	6/28/2023
Los Coyotes Band of Cahuilla and Cupeño Indians	F	Ray Chapparosa, Chairperson	P.O. Box 189 Warner Springs, CA, 92086-0189	(760) 782-0711	(760) 782-0712		Cahuilla	Imperial,Riverside,San Bernardino,San Diego	
Morongo Band of Mission Indians	F	Ann Brierty, THPO	12700 Pumarra Road Banning, CA, 92220	(951) 755-5259	(951) 572-6004	abrierty@morongo-nsn.gov	Cahuilla Serrano	Imperial,Los Angeles,Riverside,San Bernardino,San Diego	
Morongo Band of Mission Indians	F	Robert Martin, Chairperson	12700 Pumarra Road Banning, CA, 92220	(951) 755-5110	(951) 755-5177	abrierty@morongo-nsn.gov	Cahuilla Serrano	Imperial,Los Angeles,Riverside,San Bernardino,San Diego	
Quechan Tribe of the Fort Yuma Reservation	F	Jill McCormick, Historic Preservation Officer	P.O. Box 1899 Yuma, AZ, 85366	(928) 261-0254		historicpreservation@quechantrib e.com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023
Quechan Tribe of the Fort Yuma Reservation	F	Jordan Joaquin, President, Quechan Tribal Council	P.O.Box 1899 Yuma, AZ, 85366	(760) 919-3600		executivesecretary@quechantrib e.com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023
Quechan Tribe of the Fort Yuma Reservation	F	Manfred Scott, Acting Chairman - Kw'ts'an Cultural Committee	P.O. Box 1899 Yuma, AZ, 85366	(928) 210-8739		culturalcommittee@quechantribe com	Quechan	Imperial,Kern,Los Angeles,Riverside,San Bernardino,San Diego	5/16/2023

Native American Heritage Commission
Native American Contact List
Riverside County
7/19/2023

Ramona Band of Cahuilla	F	John Gomez, Environmental Coordinator	P. O. Box 391670 Anza, CA, 92539	(951) 763-4105	(951) 763-4325	jgomez@ramona-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	8/16/2016
Ramona Band of Cahuilla	F	Joseph Hamilton, Chairperson	P.O. Box 391670 Anza, CA, 92539	(951) 763-4105	(951) 763-4325	admin@ramona-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	
Santa Rosa Band of Cahuilla Indians	F	Lovina Redner, Tribal Chair	P.O. Box 391820 Anza, CA, 92539	(951) 659-2700	(951) 659-2228	lsaul@santarosa-nsn.gov	Cahuilla	Imperial,Los Angeles,Orange,Riverside,San Bernardino,San Diego	
Soboba Band of Luiseno Indians	F	Jessica Valdez, Cultural Resource Specialist	P.O. Box 487 San Jacinto, CA, 92581	(951) 663-6261	(951) 654-4198	jvaldez@soboba-nsn.gov	Cahuilla Luiseno	Imperial,Los Angeles,Orange,Riverside,San Bernardino,San Diego	7/14/2023
Soboba Band of Luiseno Indians	F	Joseph Ontiveros, Tribal Historic Preservation Officer	P.O. Box 487 San Jacinto, CA, 92581	(951) 663-5279	(951) 654-4198	jontiveros@soboba-nsn.gov	Cahuilla Luiseno	Imperial,Los Angeles,Orange,Riverside,San Bernardino,San Diego	7/14/2023
Torres-Martinez Desert Cahuilla Indians	F	Cultural Committee,	P.O. Box 1160 Thermal, CA, 92274	(760) 397-0300	(760) 397-8146	Cultural-Committee@torresmartinez-nsn.gov	Cahuilla	Imperial,Riverside,San Bernardino,San Diego	

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 Resour Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed City of Banning Np-2 Booster Pump Station Reservoir Project, Riverside Cou

Record: PROJ-2023-003574
Report Type: List of Tribes
Counties: Riverside
NAHC Group: All

Applied EARTHWORKS Inc.

3550 E. Florida Ave., Suite H
Hemet, CA 92544-4937
O: (951) 766-2000 | F: (951) 766-0020
www.appliedearthworks.com

September 8, 2023

Ray Chapparosa
Chairperson
Los Coyotes Band of Cahuilla and Cupeno Indians
P.O. Box 189,
Warner Springs, CA, 92086-0189

Re: Cultural Resource Assessment for the Banning NP-2 Booster Pump Station and Reservoir Project, City of Banning, Riverside County, California.

Dear Mr. Chapparosa:

On behalf of Albert A. Webb Associates, Applied EarthWorks, Inc. (Æ) is conducting a cultural resource study for the Banning NP-2 Booster Pump Sation and Reservoir Project (Project). The Project involves the construction of a reservoir and booster pump station within Assessor's Parcel Number 538-280-001 on approximately 7.51 acres west of 22nd Avenue and immediately south of Lincoln Street in the City of Banning. The Project is subject to the California Environmental Quality Act (CEQA) and the City of Banning is the lead CEQA agency. As indicated on the attached map, the Project is located within Sections 8 and 17, Township 3 South, Range 1 East, as depicted on the U.S. Geological Survey Beaumont, California 7.5-minute topographic quadrangle map.

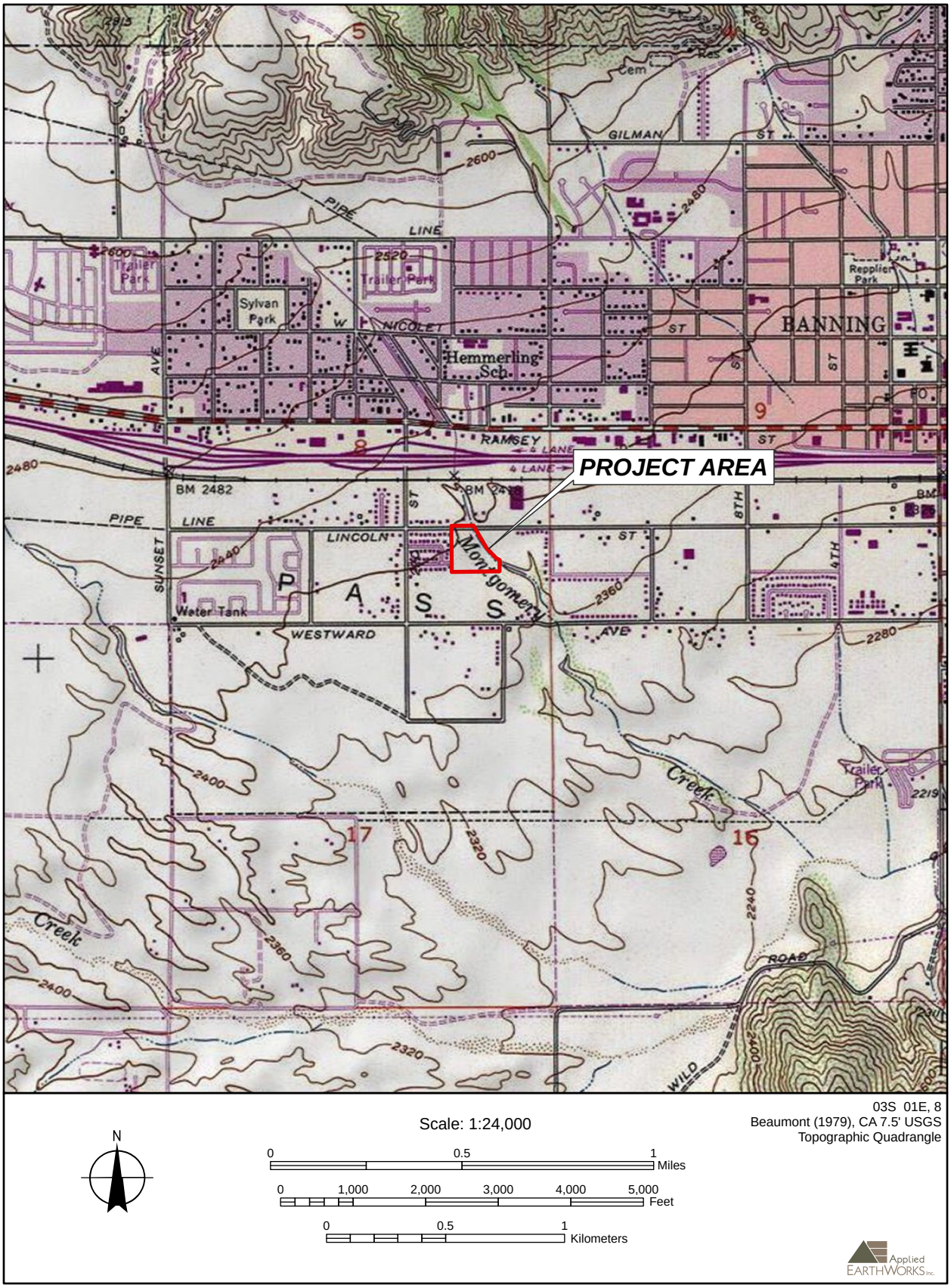
The archaeological literature and records search conducted at the Eastern Information Center housed at the University of California, Riverside, indicates that 46 cultural resources have been documented within a 0.5-mile radius of the Project area. None of these previously identified resources falls within the Project area. Æ was contracted to perform an archaeological survey of the Project area. The survey was completed on August 23, 2023. Transects spacing was 15 meters. No cultural resources were observed during the survey.

As part of the cultural resource assessment of the Project area, Æ requested a search of the *Sacred Lands File* by the Native American Heritage Commission (NAHC). Results of the search indicate there are no known Native American cultural resources within the Project area. Should your records show that cultural properties exist within or near the Project area shown on the enclosed map, or if you have any concerns regarding Native American issues related to the overall Project, please contact me at (951) 766-2000 or via letter expressing your concerns. You may also e-mail me at jcochrane@appliedearthworks.com. If I do not hear from you within the next two weeks, I will contact you with a follow-up phone call or email.

Please be aware that your comments and concerns are very important to us, as well as to the successful completion of this Project. I look forward to hearing from you in the near future. Thank you, in advance, for taking the time to review this request.

Respectfully yours,

Jessica Cochrane, BA
Staff Archaeologist
Applied EarthWorks, Inc



Project location map for the *Project - AE4506*.

Applied EARTHWORKS Inc.

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Hemet, CA 92544-4937
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www.appliedearthworks.com

September 8, 2023

Cultural Committee
Torres-Martinez Desert Cahuilla Indians
P.O. Box 1160
Thermal, CA, 92274

Re: Cultural Resource Assessment for the Banning NP-2 Booster Pump Station and Reservoir Project, City of Banning, Riverside County, California.

Dear Cultural Committee:

On behalf of Albert A. Webb Associates, Applied EarthWorks, Inc. (Æ) is conducting a cultural resource study for the Banning NP-2 Booster Pump Sation and Reservoir Project (Project). The Project involves the construction of a reservoir and booster pump station within Assessor's Parcel Number 538-280-001 on approximately 7.51 acres west of 22nd Avenue and immediately south of Lincoln Street in the City of Banning. The Project is subject to the California Environmental Quality Act (CEQA) and the City of Banning is the lead CEQA agency. As indicated on the attached map, the Project is located within Sections 8 and 17, Township 3 South, Range 1 East, as depicted on the U.S. Geological Survey Beaumont, California 7.5-minute topographic quadrangle map.

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Please be aware that your comments and concerns are very important to us, as well as to the successful completion of this Project. I look forward to hearing from you in the near future. Thank you, in advance, for taking the time to review this request.

Respectfully yours,

Jessica Cochrane, BA
Staff Archaeologist
Applied EarthWorks, Inc

Applied EARTHWORKS Inc.

3550 E. Florida Ave., Suite H
Hemet, CA 92544-4937
O: (951) 766-2000 | F: (951) 766-0020
www.appliedearthworks.com

September 8, 2023

Joseph Hamilton
Chairperson
Ramona Band of Cahuilla
P. O. Box 391670
Anza, CA, 92539

Re: Cultural Resource Assessment for the Banning NP-2 Booster Pump Station and Reservoir Project, City of Banning, Riverside County, California.

Dear Mr. Hamilton:

On behalf of Albert A. Webb Associates, Applied EarthWorks, Inc. (Æ) is conducting a cultural resource study for the Banning NP-2 Booster Pump Sation and Reservoir Project (Project). The Project involves the construction of a reservoir and booster pump station within Assessor's Parcel Number 538-280-001 on approximately 7.51 acres west of 22nd Avenue and immediately south of Lincoln Street in the City of Banning. The Project is subject to the California Environmental Quality Act (CEQA) and the City of Banning is the lead CEQA agency. As indicated on the attached map, the Project is located within Sections 8 and 17, Township 3 South, Range 1 East, as depicted on the U.S. Geological Survey Beaumont, California 7.5-minute topographic quadrangle map.

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September 8, 2023

Robert Martin
Chairperson
Morongo Band of Mission Indians
12700 Pumarra Road
Banning, CA, 92220

Re: Cultural Resource Assessment for the Banning NP-2 Booster Pump Station and Reservoir Project, City of Banning, Riverside County, California.

Dear Mr. Martin:

On behalf of Albert A. Webb Associates, Applied EarthWorks, Inc. (Æ) is conducting a cultural resource study for the Banning NP-2 Booster Pump Sation and Reservoir Project (Project). The Project involves the construction of a reservoir and booster pump station within Assessor's Parcel Number 538-280-001 on approximately 7.51 acres west of 22nd Avenue and immediately south of Lincoln Street in the City of Banning. The Project is subject to the California Environmental Quality Act (CEQA) and the City of Banning is the lead CEQA agency. As indicated on the attached map, the Project is located within Sections 8 and 17, Township 3 South, Range 1 East, as depicted on the U.S. Geological Survey Beaumont, California 7.5-minute topographic quadrangle map.

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Respectfully yours,

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Staff Archaeologist
Applied EarthWorks, Inc

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Hemet, CA 92544-4937
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September 8, 2023

Reid Milanovich
Chairperson
Agua Caliente Band of Cahuilla Indians
5401 Dinah Shore Drive,
Palm Springs, CA, 92264

Re: Cultural Resource Assessment for the Banning NP-2 Booster Pump Station and Reservoir Project, City of Banning, Riverside County, California.

Dear Mr. Milanovich:

On behalf of Albert A. Webb Associates, Applied EarthWorks, Inc. (Æ) is conducting a cultural resource study for the Banning NP-2 Booster Pump Sation and Reservoir Project (Project). The Project involves the construction of a reservoir and booster pump station within Assessor's Parcel Number 538-280-001 on approximately 7.51 acres west of 22nd Avenue and immediately south of Lincoln Street in the City of Banning. The Project is subject to the California Environmental Quality Act (CEQA) and the City of Banning is the lead CEQA agency. As indicated on the attached map, the Project is located within Sections 8 and 17, Township 3 South, Range 1 East, as depicted on the U.S. Geological Survey Beaumont, California 7.5-minute topographic quadrangle map.

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Applied EarthWorks, Inc

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Hemet, CA 92544-4937
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www.appliedearthworks.com

September 8, 2023

Joseph Ontiveros
Tribal Historic Preservation Officer
Soboba Band of Luiseno Indians
P.O. Box 487,
San Jacinto, CA, 92581

Re: Cultural Resource Assessment for the Banning NP-2 Booster Pump Station and Reservoir Project, City of Banning, Riverside County, California.

Dear Mr. Ontiveros:

On behalf of Albert A. Webb Associates, Applied EarthWorks, Inc. (Æ) is conducting a cultural resource study for the Banning NP-2 Booster Pump Sation and Reservoir Project (Project). The Project involves the construction of a reservoir and booster pump station within Assessor's Parcel Number 538-280-001 on approximately 7.51 acres west of 22nd Avenue and immediately south of Lincoln Street in the City of Banning. The Project is subject to the California Environmental Quality Act (CEQA) and the City of Banning is the lead CEQA agency. As indicated on the attached map, the Project is located within Sections 8 and 17, Township 3 South, Range 1 East, as depicted on the U.S. Geological Survey Beaumont, California 7.5-minute topographic quadrangle map.

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September 8, 2023

Lovina Redner
Tribal Chair
Santa Rosa Band of Cahuilla Indians
P.O. Box 391820
Anza, CA, 92539

Re: Cultural Resource Assessment for the Banning NP-2 Booster Pump Station and Reservoir Project, City of Banning, Riverside County, California.

Dear Ms. Redner:

On behalf of Albert A. Webb Associates, Applied EarthWorks, Inc. (Æ) is conducting a cultural resource study for the Banning NP-2 Booster Pump Sation and Reservoir Project (Project). The Project involves the construction of a reservoir and booster pump station within Assessor's Parcel Number 538-280-001 on approximately 7.51 acres west of 22nd Avenue and immediately south of Lincoln Street in the City of Banning. The Project is subject to the California Environmental Quality Act (CEQA) and the City of Banning is the lead CEQA agency. As indicated on the attached map, the Project is located within Sections 8 and 17, Township 3 South, Range 1 East, as depicted on the U.S. Geological Survey Beaumont, California 7.5-minute topographic quadrangle map.

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Respectfully yours,

Jessica Cochrane, BA
Staff Archaeologist
Applied EarthWorks, Inc

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September 8, 2023

Daniel Salgado
Chairperson
Cahuilla Band of Indians
52701 CA Highway 371
Anza, CA, 92539

Re: Cultural Resource Assessment for the Banning NP-2 Booster Pump Station and Reservoir Project, City of Banning, Riverside County, California.

Dear Mr. Salgado:

On behalf of Albert A. Webb Associates, Applied EarthWorks, Inc. (Æ) is conducting a cultural resource study for the Banning NP-2 Booster Pump Sation and Reservoir Project (Project). The Project involves the construction of a reservoir and booster pump station within Assessor's Parcel Number 538-280-001 on approximately 7.51 acres west of 22nd Avenue and immediately south of Lincoln Street in the City of Banning. The Project is subject to the California Environmental Quality Act (CEQA) and the City of Banning is the lead CEQA agency. As indicated on the attached map, the Project is located within Sections 8 and 17, Township 3 South, Range 1 East, as depicted on the U.S. Geological Survey Beaumont, California 7.5-minute topographic quadrangle map.

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September 8, 2023

Manfred Scott
Acting Chairman
Quechan Tribe of the Fort Yuma Reservation
P.O. Box 1899
Yuma, AZ, 85366

Re: Cultural Resource Assessment for the Banning NP-2 Booster Pump Station and Reservoir Project, City of Banning, Riverside County, California.

Dear Mr. Scott:

On behalf of Albert A. Webb Associates, Applied EarthWorks, Inc. (Æ) is conducting a cultural resource study for the Banning NP-2 Booster Pump Sation and Reservoir Project (Project). The Project involves the construction of a reservoir and booster pump station within Assessor's Parcel Number 538-280-001 on approximately 7.51 acres west of 22nd Avenue and immediately south of Lincoln Street in the City of Banning. The Project is subject to the California Environmental Quality Act (CEQA) and the City of Banning is the lead CEQA agency. As indicated on the attached map, the Project is located within Sections 8 and 17, Township 3 South, Range 1 East, as depicted on the U.S. Geological Survey Beaumont, California 7.5-minute topographic quadrangle map.

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Staff Archaeologist
Applied EarthWorks, Inc

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3550 E. Florida Ave., Suite H
Hemet, CA 92544-4937
O: (951) 766-2000 | F: (951) 766-0020
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September 8, 2023

Amanda Vance
Chairperson
Augustine Band of Cahuilla Mission Indians
84-001 Avenue 54
Coachella, CA, 92236

Re: Cultural Resource Assessment for the Banning NP-2 Booster Pump Station and Reservoir Project, City of Banning, Riverside County, California.

Dear Ms. Vance:

On behalf of Albert A. Webb Associates, Applied EarthWorks, Inc. (Æ) is conducting a cultural resource study for the Banning NP-2 Booster Pump Sation and Reservoir Project (Project). The Project involves the construction of a reservoir and booster pump station within Assessor's Parcel Number 538-280-001 on approximately 7.51 acres west of 22nd Avenue and immediately south of Lincoln Street in the City of Banning. The Project is subject to the California Environmental Quality Act (CEQA) and the City of Banning is the lead CEQA agency. As indicated on the attached map, the Project is located within Sections 8 and 17, Township 3 South, Range 1 East, as depicted on the U.S. Geological Survey Beaumont, California 7.5-minute topographic quadrangle map.

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September 8, 2023

Doug Welmas
Chairperson
Cabazon Band of Mission Indians
84-245 Indio Springs Parkway,
Indio, CA, 92203

Re: Cultural Resource Assessment for the Banning NP-2 Booster Pump Station and Reservoir Project, City of Banning, Riverside County, California.

Dear Mr. Welmas:

On behalf of Albert A. Webb Associates, Applied EarthWorks, Inc. (Æ) is conducting a cultural resource study for the Banning NP-2 Booster Pump Sation and Reservoir Project (Project). The Project involves the construction of a reservoir and booster pump station within Assessor's Parcel Number 538-280-001 on approximately 7.51 acres west of 22nd Avenue and immediately south of Lincoln Street in the City of Banning. The Project is subject to the California Environmental Quality Act (CEQA) and the City of Banning is the lead CEQA agency. As indicated on the attached map, the Project is located within Sections 8 and 17, Township 3 South, Range 1 East, as depicted on the U.S. Geological Survey Beaumont, California 7.5-minute topographic quadrangle map.

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Respectfully yours,

Jessica Cochrane, BA
Staff Archaeologist
Applied EarthWorks, Inc

AGUA CALIENTE BAND OF CAHUILLA INDIANS

TRIBAL HISTORIC PRESERVATION

03-020-2023-004

September 15, 2023

[VIA EMAIL TO:jcochrane@appliedearthworks.com]
Applied Earthworks
Jessica Cochrane
3550 E. Florida Ave
Hemet, CA 92544

Re: Banning NP-2 Booster Pump Station and Reservoir

Dear Jessica Cochrane,

The Agua Caliente Band of Cahuilla Indians (ACBCI) appreciates your efforts to include the Tribal Historic Preservation Office (THPO) in the Banning NP-2 Booster Pump Station and Reservoir project. The project area is not located within the boundaries of the ACBCI Reservation. However, it is within the Tribe's Traditional Use Area.A records check of the ACBCI registry indicates this area has not been surveyed for cultural resources. In consultation, the ACBCI THPO requests the following:

*A cultural resources inventory of the project area by a qualified archaeologist prior to any development activities in this area.

*Copies of any cultural resource documentation (report and site records) generated in connection with this project.

*A copy of the records search with associated survey reports and site records from the information center.

Again, the Agua Caliente appreciates your interest in our cultural heritage. If you have questions or require additional information, please call me at (760) 883-1134. You may also email me at ACBCI-THPO@aguacaliente.net.

Cordially,

Claritsa Duarte

Claritsa Duarte
Cultural Resources Analyst
Tribal Historic Preservation Office
AGUA CALIENTE BAND
OF CAHUILLA INDIANS

AUGUSTINE BAND OF CAHUILLA INDIANS
84-481 Avenue 54, Coachella CA 92236
Telephone: (760) 398-4722
Fax (760) 369-7161
Tribal Chairperson: Amanda Vance
Tribal Vice-Chairperson: Victoria Martin
Tribal Secretary: Geramy Martin

Date: 09/11/2023

Dear: Jessica Cochrane, BA
Staff Archaeologist
Applied EarthWorks, Inc

SUBJECT: Cultural Resource Assessment for the Banning NP-2 Booster Pump Station and Reservoir Project, City of Banning, Riverside County, California

Thank you for the opportunity to offer input concerning the development of the above-identified project. We appreciate your sensitivity to the cultural resources that may be impacted by your project and the importance of these cultural resources to the Native American peoples that have occupied the land surrounding the area of your project for thousands of years. Unfortunately, increased development and lack of sensitivity to cultural resources have resulted in many significant cultural resources being destroyed or substantially altered and impacted. Your invitation to consult on this project is greatly appreciated.

At this time, we are unaware of specific cultural resources that may be affected by the proposed project, however, in the event, you should discover any cultural resources during the development of this project please contact our office immediately for further evaluation.

Very truly yours,

Geramy Martin

Geramy Martin, Tribal Secretary
Augustine Band of Cahuilla Indians

Appendix D

Energy Tables

Table 1 – Total Construction-Related Fuel Consumption

NP-2 Booster Station and Reservoir Project

Fuel	Consumption	
Diesel		
On-Road Construction Trips[1]	1,922	Gallons
Off-Road Construction Equipment[2]	18,388	Gallons
Diesel Total	**20,310**	**Gallons**
Gasoline		
On-Road Construction Trips[1]	1,777	Gallons
Off-Road Construction Equipment[3]	-	Gallons
Gasoline Total	**1,777**	**Gallons**

Notes:

1. On-road mobile source fuel use based on vehicle miles traveled (VMT) from CalEEMod for construction in 2024 and fleet-average fuel consumption in gallons per mile from EMFAC2021 web based data for South Coast Air Basin. See Table 2 for calculation details.
2. Off-road mobile source fuel usage based on a fuel usage rate of 0.05 gallons of diesel per horsepower (HP)-hour, based on SCAQMD CEQA Air Quality Handbook, Table A9-3E.
3. All emissions from off-road construction equipment were assumed to be diesel.

Table 2 – On-Road Construction Trip Estimates

NP-2 Booster Station and Reservoir Project

Trip Type	Trips	Trip length	Vehicle Miles Traveled (VMT)	Fuel Efficiency	Annual Fuel Usage[1]	
	(trips)	(miles)	(miles)	(mpg)	(Fuel)	(gallon)
Worker[2,3]	2,438	18.5	45,094	25.9	Gasoline	1,777
Vendor[4]	1,350	10.2	13,770	7.5	Diesel	1,912
Hauling[5]	40	1.5	60	6.0	Diesel	10

Notes:

1. On-road mobile source fuel use based on vehicle miles traveled (VMT) from CalEEMod output for construction and fleet-average fuel consumption in gallons per mile from EMFAC2021 web based data for 2024 in South Coast Air Basin.
2. Worker trips were assumed to be 100% gasoline powered vehicles.
3. Per CalEEMod, worker Trips were assumed to be 25% LDA, 50% LDT1, and 25% LDT2.
4. Vendor trips were assumed to be 50% MHDT and 50% HHDT, split evenly between the MHDT and HHDT construction categories.
5. Per CalEEMod, hauling trips were assumed to be 100% HHDT.

Appendix E.1

Supplemental Geotechnical Investigation

APPROVED AS SUBMITTED

SUPPLEMENTAL GEOTECHNICAL INVESTIGATION

OFFSITE BOOSTER PUMP STATION ATWELL DEVELOPMENT BANNING, CALIFORNIA

APPROVED BY
CITY OF BANNING
MAR 23 2023
PUBLIC WORKS DEPT

GEOCON
WEST, INC.
GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

TRIPOINTE HOMES
CORONA, CALIFORNIA

FEBRUARY 9, 2023
PROJECT NO. T2305-22-10G

Project No. T2305-22-10G
February 9, 2023

TriPointe Homes
1250 Corona Pointe Court, Suite 600
Corona, California 92879

Attention: Mr. Michael Heishman, Director of Land Development

Subject: SUPPLEMENTAL GEOTECHNICAL INVESTIGATION
OFFSITE BOOSTER PUMP STATION
ATWELL DEVELOPMENT
BANNING, CALIFORNIA

Dear Mr. Heishman:

In accordance with our Work Order Authorization, dated December 20, 2022, Geocon West, Inc. (Geocon) performed a supplemental geotechnical investigation for the booster pump station located south of the intersection of Lincoln Street and Adams Street in the City of Banning, California. The accompanying geotechnical report presents the results of our study and includes our conclusions and recommendations pertaining to the geotechnical aspects of the design and construction of the proposed booster station site. Based on the results of our 2018 geotechnical investigation, our 2021 geotechnical update, and this study, it is our opinion that the sites are suitable for the proposed improvements, provided the recommendations of this report are followed.

Should you have questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON WEST, INC.

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UPDATED GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the findings of a supplemental geotechnical investigation for booster pump station improvements located south of the intersection of Lincoln Street and Adams Street in Banning, California, as depicted on the *Vicinity Map*, Figure 1. A booster pump station and reservoir tank are proposed at the project location.

The purpose of the investigation was to perform an assessment of the geologic conditions, identify potential geologic hazards, collect material samples, perform laboratory testing on select samples, and, based on the conditions encountered, provide recommendations regarding the geotechnical aspects of constructing the improvements at the site as presently proposed.

The site was originally explored by Geocon on August 28, 2018, including the drilling of one geotechnical boring within the booster pump station site, as documented in our *Preliminary Geotechnical Investigation* (dated September 20, 2018). The boring log associated with the previous drilling is included in Appendix A with pertinent laboratory data included in Appendix B. An *Updated Geotechnical Investigation* (dated April 2, 2021) was prepared to satisfy 2019 CBC requirements.

This supplemental investigation included performing a site reconnaissance and Underground Service Alert mark out and notification, drilling and logging of three geotechnical borings, performing laboratory testing, performing geotechnical analyses, reviewing published geotechnical/geologic reporting and data, and preparing of this report. A summary of the information reviewed for this study is presented in the *List of References.* The approximate locations of the exploratory excavations are depicted on the *Geologic Map (*Figure 2). A detailed discussion of the field investigation, including boring logs is presented in Appendix A.

Laboratory testing was performed on samples obtained from the exploratory borings to evaluate maximum dry density and optimum moisture content, expansion index, corrosivity, consolidation characteristics, in-situ and remolded shear strength properties, and in-situ moisture content and dry density. Details of the laboratory testing are presented in Appendix B.

2. SITE AND PROJECT DESCRIPTION

The booster pump station site is located on a vacant lot immediately south of Lincoln Street and its intersection with Adams Street at latitude 33.9214 degrees and longitude -116.8979 degrees. The lot has been vacant and relatively natural since at least 1966. Site elevations range from a high of 2,405 feet MSL at the northwestern corner to a low of 2,400 feet MSL in the southeastern corner. Montgomery Creek channel is at an approximate elevation of 2,375 feet MSL approximately 120 feet east of the booster station pad.

Based on the *Preliminary Site Plan Segment-B Booster Station* (MDS, 2020c), we understand that the proposed construction at the booster station will generally consist of a booster station building that will house three booster pumps and appurtenant systems. Proposed ancillary improvements include a sidewalk ALONG Lincoln Street, an aggregate access road from Lincoln Street A transformer and electrical conduit, sewer sump, and valve vault and valves, will be located outside of the booster station building. The booster station building and lot will be surrounded by a 6-foot masonry block wall with 24-inch tubular steel fence along the block wall. Based on the *Lincoln Street NP Booster and Reservoir Site Plan* (Steven Andrews Engineering, 2022), we understand the proposed reservoir tank at the booster pump station site will be a 24-foot-diameter and 24 feet tall bolted steel tank with 12-inch-diameter inlet and outlet systems.

Preliminary structural loading information for the booster station building and reservoir tank has not been provided to us at this time. We expect the proposed booster station building will be a masonry block building supported by conventional shallow foundations with a slab-on-grade floor, and the reservoir tank will be a bolted steel tank constructed on a shallow perimeter ring and slab foundation system. We expect that column loads for the proposed booster station will be up to 25 kips and wall loads will be up to 3 kips per linear foot. We expect the reservoir tank perimeter ring loads will be up to 3 kips per linear foot. If the booster station or reservoir details or loading vary significantly from those described herein, Geocon should be contacted to evaluate the necessity for review and possible revision of this report.

3. GEOLOGIC SETTING

The project site is located in the San Gorgonio Pass at the northern margin of the Peninsular Ranges Geomorphic Province. The Peninsular Ranges are bounded on the north by the Transverse Ranges (San Gabriel and San Bernardino Mountains) and on the east by the San Andreas Fault. The Peninsular Ranges Province extends southward into Mexico and westward past the Channel Islands. Geologic units within the Peninsular Ranges consist of granitic and metamorphic bedrock highlands and deep and broad alluvial valleys.

Locally, the sites lie within the valley between the San Jacinto and San Bernardino Mountains, west of the San Gorgonio River. Active drainages such as Smith and Montgomery Creeks flow southeast from the north before merging along the base of the San Jacinto mountains and continuing east to join the San Gorgonio River. This broad valley is filled with older alluvial fan materials consisting of sand, gravel and granitic detritus shed from the San Bernardino Mountains dissected by active stream channels with sand and gravel deposits.

4. GEOLOGIC MATERIALS

Site geologic materials encountered consist of topsoil and Pleistocene-age Young Alluvial Fan Deposits and Older Alluvial Fan Deposits. Across the site, topsoil was encountered within the upper 1 foot in all borings, however due to the thickness of the soil, it is not a mapped geologic unit. Geologic units and descriptions follow that of Dibblee (2003). Descriptions of the soil and geologic conditions are shown on the boring logs located in *Appendix A* and are generally described herein in order of increasing age.

4.1 Young Alluvial Fan Deposits (Qf)

Young Alluvial Fan Deposits were encountered below the topsoil to a depth of 5 feet in Boring B-5. These deposits consist primarily of clayey sand. The unit can be characterized as loose, dry , and is yellowish brown. Varying amounts of gravel may exist within the unit.

4.2 Older Alluvial Fan Deposits (Qof)

Older Alluvial Fan Deposits were encountered below the topsoil and Young Alluvial Fan Deposits to the maximum depths explored.. These deposits consist of silty sand with lesser amounts of poorly-graded sand, clayey sand, silty sand, and sandy clay, which is characterized as dense to very dense / hard, dry to damp, and is various shades of brown, with varying amounts of gravel and cobbles.

5. GROUNDWATER

Groundwater was not encountered during this investigation. We obtained well data from the California Water Library Well 03S01E14A at the site of the pump station. The well depth is reported to be 735 feet deep, screened from 460 to 680 feet and have a water depth of 425 feet. (DWR, 2021). Based on the valley geometry and sediments, we expect similar groundwater conditions throughout the project areas. Groundwater elevations are dependent on seasonal precipitation, irrigation, and land use, among other factors, and vary as a result.

6. GEOLOGIC HAZARDS

6.1 Surface Fault Rupture

The numerous faults in southern California include active, potentially active, and inactive faults. The criteria for these major groups are based on criteria developed by the California Geological Survey (CGS, formerly known as CDMG) for the Alquist-Priolo Earthquake Fault Zone Program (Bryant and Hart, 2007). By definition, an active fault is one that has had surface displacement within Holocene time (about the last 11,000 years). A potentially active fault has demonstrated surface displacement during Quaternary time (approximately the last 1.6 million years) but has had no known Holocene movement. Faults that have not moved in the last 1.6 million years are considered inactive.

The site is not located within a State of California Fault Hazard Zone. The mapped fault closest to the project is the San Gorgonio Pass fault which is located approximately 4,900 feet north of the booster pump station (Treiman, 1994). Faults within a 50-mile radius of the site are listed in Table 6.1a. Historic earthquakes in southern California of magnitude 6.0 and greater, their magnitude, distance, and direction from the site are listed in Table 6.1b.

Table 6.1a
Active Faults within 50 Miles of the Site

Fault Name	Maximum Magnitude (Mw)	Geometry (Slip Character)	Slip Rate (mm/yr)	Information Source	Distance from Site (mi)	Direction from Site
San Gorgonio Pass	7.0	THRUST	n/a	a	1	N
South Branch San Andreas	7.5	RL-SS	24.0	a	12	E
Pinto Mountain	7.2	LL-SS	2.5	a	12	NE
San Jacinto (Clark)	7.2	RL-SS	12.0	a	14	SW
San Jacinto (Casa Loma)	6.9	RL-SS	12.0	a	16	SW
North Branch San Andreas	7.4	RL-SS	30.0	a	17	E
San Andreas (San Bernardino)	7.5	RL-SS	24.0	a	18	NW
Johnson Valley	6.7	RL-SS	0.6	a	29	NE
North Frontal	7.2	R	1.0	a	30	N
Burnt Mountain	6.5	RL-SS	0.6	a	31	NE
Lenwood	7.5	RL-SS	0.6	a	31	NE
Helendale	7.3	RL-SS	0.6	a	31	N
Elsinore (Wildomar)	6.8	RL-SS	5.0	a	32	SW
Elsinore Fault (Glen Ivy)	6.8	RL-SS	5.0	a	34	SW
Glen Helen	6.7	RL-SS	12.0	a	36	NW
San Andreas Coachella Valley Branch	7.2	RL-SS	25.0	a	37	SE
Hildago/Calico	7.3	RL-SS	0.6	a	43	NE
Camp Rock/Emerson	7.0	RL-SS	0.6	a	44	NE
Chino	6.7	RL-R-O	1.0	a	46	W
San Jacinto (Coyote Creek)	6.8	RL-SS	4.0	a	47	SE
Cucamonga	6.9	R	5.0	a	49	NW

Geometry: BT = blind thrust, LL = left lateral, N = normal, O = oblique, R = reverse, RL = right lateral, SS = strike slip.
Information Sources: a = Cao, T., Bryant, W.A., Rowshandel, B., Branum, D., and Wills, C.J., 2003, The Revised 2002 California Probabilistic Seismic Hazard Maps, including Appendices A, B, and C, dated June; b = online Fault Activity Map of California website, maps.conservation.ca.gov/cgs/fam/, as of 1/2017.
n/a = data not available

Table 6.1b
Historic Earthquake Events with Respect to the Segment-B/C Booster Site

Earthquake (Oldest to Youngest)	Date of Earthquake	Magnitude	Distance to Epicenter (Miles)	Direction to Epicenter
Near Redlands	July 23, 1923	6.3	23	WNW
Long Beach	March 10, 1933	6.4	67	WSW
Tehachapi	July 21, 1952	7.5	144	WNW
San Fernando	February 9, 1971	6.6	95	WNW
Whittier Narrows	October 1, 1987	5.9	71	W
Sierra Madre	June 28, 1991	5.8	70	WNW
Landers	June 28, 1992	7.3	31	NE
Big Bear	June 28, 1992	6.4	20	N
Northridge	January 17, 1994	6.7	98	WNW
Hector Mine	October 16, 1999	7.1	58	NE
Ridgecrest China Lake Fault	July 5, 2019	7.1	135	NNW

6.2 Liquefaction and Seismic Settlement

Liquefaction is a phenomenon in which loose, saturated, relatively cohesion-less soil deposits lose shear strength during strong ground motions. Primary factors controlling liquefaction include intensity and duration of ground motion, gradation characteristics of the subsurface soils, in-situ stress conditions, and the depth to groundwater. Seismically induced settlement may occur whether the potential for liquefaction exists or not.

The current standard of practice as outlined in the *Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California* (SCEC, 1999) requires a liquefaction analysis to a depth of 50 feet below the lowest portion of the proposed structure. Liquefaction typically occurs in areas where the soils below the water table are composed of poorly consolidated, fine to medium-grained, primarily sandy soil. In addition to the requisite soil conditions, the ground acceleration and duration of the earthquake must also be of a sufficient level to induce liquefaction.

According to the Riverside County Information Technology *Map My County* online GIS system, the site is located within areas mapped as having a "moderate" potential for liquefaction.

Due to the lack of shallow groundwater and the dense nature of alluvial soils, neither liquefaction nor seismic "dry-sand" settlement is a design consideration for the site.

6.3 Expansive Soil

The surficial soils at the site generally consist of silty sand. Laboratory testing of site soils indicated these soils are "non-expansive" (Expansion Index [EI] less than 20) as defined by 2019 CBC Section 1803.5.3, with an Expansion Index of 7 and 11 for the site which is classified as 'very low' (EI between 0 and 20) in accordance with ASTM D4829.

6.4 Hydrocompression

Hydrocompression is the tendency of unsaturated soil structure to collapse upon wetting resulting in the overall settlement of the affected soil and overlying foundations or improvements supported thereon. Potentially compressible soils underlying the site are typically removed and recompacted during remedial site grading. However, if compressible soil is left in-place, a potential for settlement due to hydrocompression of the soil exists.

We tested soil samples obtained during our investigation of the sites for hydrocompression, which exhibited a collapse potential of approximately 2.2 percent under high-pressure loading conditions. We expect remedial grading and appropriate drainage measures will effectively reduce the collapse potential of site soils that could impact proposed improvements.

6.5 Landslides

The site is located within a broad alluvial valley. No hills are located on or adjacent to the site. No landslides are geologically mapped in the descending slopes of the San Jacinto Mountains to the south (Dibblee, 2004). The potential for landslides at the site is not a design consideration.

6.6 Slope Stability

Based on the relatively level topography at the project site, the proposed grading of the site is not expected to include the construction of significant cut or fill slopes. In general, permanent, graded fill slopes constructed of on-site soils with gradients of 2:1 (horizontal to vertical) or flatter and vertical heights of 5 feet or less are expected possess factors of safety of 1.5 or greater.

6.7 Rock Fall Hazards

The project area is located within a broad valley. No hill slopes or boulders are situated above the sites. Therefore, rock fall is not considered a hazard for the sites.

6.8 Tsunamis and Seiches

A tsunami is a series of long period waves generated in the ocean by a sudden displacement of large volumes of water. Causes of tsunamis include underwater earthquakes, volcanic eruptions, or offshore slope failures. The first order driving force for locally generated tsunamis offshore southern California is expected to be tectonic deformation from large earthquakes (Legg, *et al.*, 2002). The site is located 56 miles from the nearest coastline with two mountain ranges between at an elevation of more than 2,000 feet MSL, therefore, the risk associated with tsunamis is not a design consideration.

A seiche is a run-up of water within a lake or embayment triggered by fault- or landslide-induced ground displacement. The project sites are not located adjacent to a body of water, therefore, seiches are not a design consideration for the sites.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 General

7.1.1 Neither soil nor geologic conditions were observed which would preclude the construction of improvements at the site as presently proposed, provided that the recommendations of this report are followed and implemented during design and construction.

7.1.2 Potential geologic hazards at the sites consist of seismic shaking. Based on our investigation and available geologic information, active, potentially active, or inactive faults are not present underlying or trending toward the sites.

7.1.3 Samples tested for hydrocompression exhibited some collapse potential under high-pressure loading conditions. We expect remedial grading and appropriate drainage measures will effectively reduce the collapse potential of site soils that could impact proposed improvements.

7.1.4 The upper portion of the young alluvial fan deposits are considered unsuitable for the support of newly compacted fill or settlement-sensitive improvements. Remedial grading of the surficial soils will be required as discussed herein. New compacted fill and competent undisturbed alluvial fan deposits are considered suitable to support the proposed improvements.

7.1.5 The laboratory tests indicate that the site soils are non-expansive, and have a "very low" expansion potential (expansion index of 0 to 20) in accordance with ASTM D4829. The foundation recommendations in this report assume that the structures are founded in non-expansive material. Additional testing should be conducted during earthwork to confirm the expansion potential and additional recommendations provided, as needed.

7.1.6 Proper drainage should be maintained in order to preserve the engineering properties of the compacted fill in planned improvement areas. Recommendations for site drainage are provided herein.

7.1.7 Proposed structures can be supported on conventional shallow foundations with concrete slab floors.

7.1.7 Once design or civil grading plans are made available, the recommendations within this supplemental report should be reviewed and revised, as necessary. Additionally, as the project design progresses toward a final design, changes in the design, location, or elevation of any proposed improvement should be reviewed by this office. Geocon should be contacted to evaluate the necessity for review and possible revision of this report.

7.2 Soil and Excavation Characteristics

7.2.1 The in-situ soils at the site should generally be excavatable with moderate to heavy effort, using conventional earth moving equipment in proper functioning order.

7.2.2 Based on the material classifications and laboratory testing by Geocon, site soils generally possess a "very low" expansion potential, expansion index (EI) of 0 to 20, and are considered "non-expansive" as defined by 2019 CBC Section 1803.5.3. Table 7.2.2 presents soil classifications based on the EI.

TABLE 7.2.2
SOIL CLASSIFICATION BASED ON EXPANSION INDEX

Expansion Index (EI)	Expansion Classification	2019 CBC Expansion Classification
0 – 20	**Very Low**	**Non-Expansive**
21 – 50	Low	Expansive
51 – 90	Medium	
91 – 130	High	
Greater Than 130	Very High	

7.2.3 Excavations on the order of 3 feet or less are expected to meet finished grades for the site. Excavations should be performed in conformance with Cal-OSHA requirements. Some of the site soils may have little cohesion and may be subject to caving in un-shored excavations. The contractor should evaluate the necessity for layback of vertical cut areas.

7.2.4 Laboratory testing of select soil samples indicate that site soils possess a sulfate content of 0.0014 percent (14 parts per million [ppm]) equating to a S0 sulfate exposure to concrete structures, as defined by 2019 CBC Section 1904.3 and ACI 318-19. Table 7.2.4 presents a summary of concrete requirements set forth by 2019 CBC Section 1904.3 and ACI 318-19. The presence of water-soluble sulfates is not a visually discernible characteristic; therefore, other soil samples from the site could yield different concentrations. Additionally, over time landscaping activities (i.e., addition of fertilizers and other soil nutrients) may affect the concentration.

TABLE 7.2.4
REQUIREMENTS FOR CONCRETE
EXPOSED TO SULFATE-CONTAINING SOLUTIONS

Exposure Class	Water-Soluble Sulfate (SO4) Percent by Weight	Cement Type (ASTM C150)		Maximum Water to Cement Ratio by Weight1	Minimum Compressive Strength (psi)
S0	**SO_4<0.10**	**No Type Restriction**		**N/A**	**2,500**
S1	0.10≤SO_4<0.20	II		0.50	4,000
S2	0.20≤SO_4≤2.00	V		0.45	4,500
S3	SO_4>2.00	Option 1	V+Pozzolan or Slag	0.45	4,500
		Option 2	V	0.40	5,000

7.2.5 Laboratory testing indicates the site soils have a minimum electrical resistivity of 3,500 ohm-cm, possess 72 parts per million (ppm) chloride, 14 ppm sulfate, and have a pH of 7.1. As shown in Table 7.2.5, the sites would not be classified as "corrosive" to buried improvements in accordance with the Caltrans *Corrosion Guidelines* (Caltrans, 2021).

TABLE 7.2.5
CALTRANS CORROSION GUIDELINES

Corrosion Exposure	Resistivity (ohm-cm)	Chloride (ppm)	Sulfate (ppm)	pH
Corrosive	<1,500	500 or greater	1,500 or greater	5.5 or less

7.2.6 Geocon does not practice in the field of corrosion engineering. Therefore, further evaluation by a corrosion engineer may be performed if improvements that could be susceptible to corrosion are planned.

7.3 Grading

7.3.1 Earthwork should be observed, and compacted fill tested by representatives of Geocon.

7.3.2 Grading should be performed in accordance with the *Recommended Grading Specifications* contained in Appendix C and the Grading Ordinances of the City of Banning.

7.3.3 Prior to commencing grading operations, a preconstruction conference should be held at the site with a representative of the City of Banning, owner or developer, grading contractor, civil engineer, and geotechnical engineer in attendance. Special soil handling and/or the grading plans can be discussed at that time.

7.3.4 Site preparation should begin with the removal of deleterious material, debris, trash, and vegetation. The depth of removal should be such that material exposed in cut areas or soil to be used as fill is relatively free of organic matter. Material generated during stripping and/or site demolition should be exported from the site. If encountered, rock over 6 inches in diameter should be screened and removed, and not used in the fill.

7.3.5 The topsoil and upper portion of the alluvial fan deposits within a 1:1 (h:v) projection of the limits of grading should be removed to expose competent alluvium. Removals should extend at least 5 feet below existing grades or 3 feet below the bottom of the planned foundations, whichever is deeper. Removal bottoms should extend until encountering alluvium with 85 percent or greater relative compaction when compacted to the laboratory maximum dry density in accordance with ASTM D1557. Removals in pavement and walkway areas should extend at least 2 feet beneath the pavement or flatwork subgrade elevation. Areas of loose, dry, or compressible soils will require deeper excavation and processing prior to fill placement. The actual depth of removal should be evaluated by the engineering geologist during grading operations. Where over excavation and compaction is to be conducted, the excavations should be extended laterally a minimum distance of 5 feet beyond the foundation footprint or for a distance equal to the depth of removal, whichever is greater. The bottom of the excavations should be scarified to a depth of at least 1 foot, moisture conditioned near to slightly above optimum moisture content, and properly compacted.

7.3.6 Geocon should observe the removal bottoms to check the competence of the exposed soil. Deeper excavations may be required if dry, loose, soft, or porous materials are present at the base of the removals.

7.3.7 The fill placed within 3 feet of proposed foundations should possess a “very low” to “low” expansion potential (EI of 50 or less).

7.3.8 If perched groundwater or saturated materials are encountered during remedial grading, extensive drying and mixing with dryer soil may be required, if the saturated material is to be utilized as fill material in achieving finished grades. The excavated materials should then be moisture conditioned near to slightly above optimum moisture content prior to placement as compacted fill.

7.3.9 The site should be brought to finish grade elevations with fill compacted in layers. Oversize materials (greater than 6 inches in dimension) should be removed from the excavated soils prior to use as fill. Layers of fill should be no thicker than will allow for adequate bonding and compaction. Fill, including backfill and scarified ground surfaces, should be compacted to a dry density of at least 90 percent of the laboratory maximum dry density and moisture conditioned near to slightly above optimum moisture content as evaluated by ASTM D1557. Fill materials placed below the recommended moisture content may require additional moisture conditioning prior to placing additional fill.

7.3.10 If required, import fill should consist of granular materials with a "very low" to "low" expansion potential (EI of 50 or less), non-corrosive, generally free of deleterious material, and contain rock no larger than 6 inches. Geocon should be notified of the import soil source and should be afforded the opportunity to perform laboratory testing of the import soil prior to its arrival at the site to evaluate its suitability as fill material.

7.4 Earthwork Grading Factors

7.4.1 Estimates of shrinkage factors are based on empirical judgments comparing the material in its existing or natural state as encountered in the exploratory excavations to a compacted state. Variations in natural soil density and in compacted fill density render shrinkage value estimates as rough approximations. As an example, the contractor can compact the fill to a dry density of 90 percent or higher of the laboratory maximum dry density. Thus, the contractor has an approximately 10 percent range of control over the fill volume. Due to the variations in the actual shrinkage/bulking factors, a balance area should be provided to accommodate variations.

7.5 Utility Trench Backfill

7.5.1 Utility trenches should be properly backfilled in accordance with the requirements of the City of Banning and the latest edition of the *Standard Specifications for Public Works Construction* (Greenbook). The pipes should be bedded with well-graded crushed rock or clean sands (Sand Equivalent greater than 30) to a depth of at least one foot over the pipe. The use of well-graded crushed rock should be used in conjunction with filter fabric to prevent the gravel from having direct contact with soil. The remainder of the trench backfill may be derived from onsite soil or approved import soil. Backfill of utility trenches should not contain rocks greater than 3 inches in diameter. The use of 2-sack slurry and controlled low strength material (CLSM) are also acceptable as backfill. However, consideration should be given to the possibility of differential settlement where the slurry ends and earthen backfill begins. These transitions should be minimized and additional stabilization should be considered at these transitions.

7.5.2 Utility trench backfill should be played in layers no thicker than will allow for adequate bonding and compaction. Utility backfill should be compacted to a dry density of at least 90 percent of the laboratory maximum dry density and moisture conditioned near to slightly above optimum moisture content as evaluated by ASTM D1557. Backfill at the finish subgrade elevation of new pavements should be compacted to at least 95 percent of the maximum dry density. Backfill materials placed below the recommended moisture content may require additional moisture conditioning prior to placing additional fill.

7.6 Seismic Design Criteria

7.6.1 Table 7.6.1 summarizes site-specific seismic design criteria for the booster station site, obtained from the 2019 California Building Code (CBC; Based on the 2018 International Building Code [IBC] and ASCE 7-16), Chapter 16 Structural Design, Section 1613 Earthquake Loads. The data was calculated using the computer program U.S. Seismic Design Maps, provided by the USGS. The short spectral response uses a period of 0.2 second. We evaluated the Site Class based on the discussion in Section 1613.3.2 of the 2019 CBC and Table 20.3-1 of ASCE 7-16. The values presented below are for the risk-targeted maximum considered earthquake (MCER).

TABLE 7.6.1
2019 CBC BOOSTER STATION SITE SEISMIC DESIGN PARAMETERS

Parameter	Value	2019 CBC Reference
Site Class	D	Section 1613.3.2
MCE_R Ground Motion Spectral Response Acceleration – Class B (short), S_S	2.160g	Figure 1613.3.1(1)
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S_1	0.743g	Figure 1613.3.1(2)
Site Coefficient, F_A	1.2	Table 1613.3.3(1)
Site Coefficient, F_V	1.7*	Table 1613.3.3(2)
Site Class Modified MCE_R Spectral Response Acceleration (short), S_{MS}	2.593g	Section 1613.3.3 (Eqn 16-37)
Site Class Modified MCE_R Spectral Response Acceleration (1 sec), S_{M1}	1.264g*	Section 1613.3.3 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (short), S_{DS}	1.728g	Section 1613.3.4 (Eqn 16-39)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.843g*	Section 1613.3.4 (Eqn 16-40)

*Based on NEHRP-2015

7.6.2 Table 7.6.2 summarizes site-specific design criteria for the tank structure at the booster station site, obtained from the American Water Works Association (AWWA) Standard D100, Section 13, Seismic Design of Water Storage Tanks, (Based on ASCE 7-10). We evaluated the Site Class based on the discussion in Section 13.2.4 of the AWWA Standard D100. The values presented below are for the risk-targeted maximum considered earthquake (MCER).

TABLE 7.6.2
AWWA BOOSTER STATION RESERVOIR SEISMIC DESIGN PARAMETERS

Parameter	Value	AWWA D100 Reference
Site Class	D	Section 13.2.4
MCE_R Ground Motion Spectral Response Acceleration – Class B (short), S_S	1.750g	Figure 5
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S_1	0.750g	Figure 6
Site Coefficient, F_A	1.000	Table 26
Site Coefficient, F_V	1.500	Table 27
Site Class Modified MCE_R Spectral Response Acceleration (short), S_{MS}	1.750g	Section 13.2.7.2 (Eqn 13-5)
Site Class Modified MCE_R Spectral Response Acceleration (1 sec), S_{M1}	1.125g	Section 13.2.7.2 (Eqn 13-6)
5% Damped Design Spectral Response Acceleration (short), S_{DS}	1.167g	Section 13.2.7.3 (Eqn 13-7)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.750g	Section 13.2.7.3 (Eqn 13-8)

7.6.3 Table 7.6.3 presents the mapped maximum considered geometric mean (MCE_G) seismic design parameters for projects located in Seismic Design Categories of D through F in accordance with ASCE 7-16.

TABLE 7.6.3
2019 CBC BOOSTER STATION SITE ACCELERATION DESIGN PARAMETERS

Parameter	Value	ASCE 7-10 Reference
Mapped MCE_G Peak Ground Acceleration, PGA	0.883	Figure 22-7
Site Coefficient, F_{PGA}	1.2	Table 11.8-1
Site Class Modified MCE_G Peak Ground Acceleration, PGA_M	1.059g	Section 11.8.3 (Eqn 11.8-1)

7.6.4 The Maximum Considered Earthquake Ground Motion (MCE) is the level of ground motion that has a 2 percent chance of exceedance in 50 years, with a statistical return period of 2,475 years. According to the 2019 California Building Code and ASCE 7-16, the MCE is to be utilized for the evaluation of liquefaction, lateral spread, and seismic settlements. We understand the intent of the Building code is to maintain "Life Safety" during an MCE event.

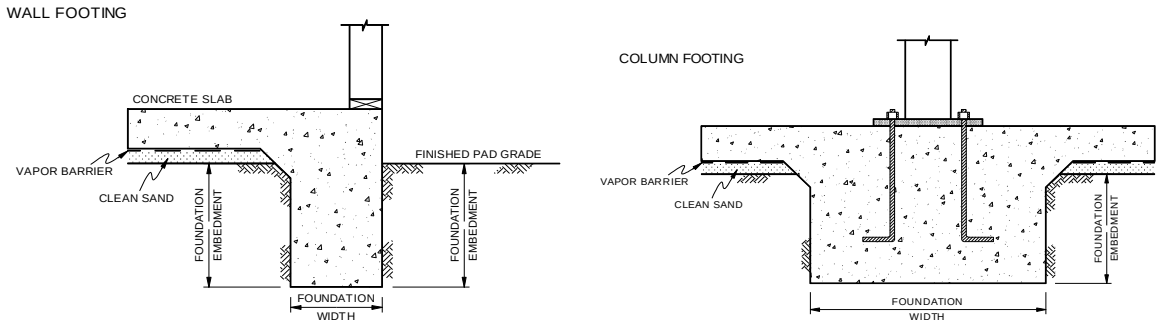
7.6.5 Deaggregation of the MCE peak ground acceleration was performed using the USGS online Unified Hazard Tool, Dynamic: Conterminous U.S. 2014 (update; 4.2.0). The result of the deaggregation analysis indicates that the predominant earthquake contributing to the MCE peak ground acceleration is characterized as a 7.06 magnitude event occurring at a hypocentral distance of 8.75 kilometers from the site.

7.6.6 Conformance to the criteria in the tables presented herein for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a large earthquake occurs. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

7.7 Foundations and Concrete Slabs-On-Grade

7.7.1 The foundation recommendations presented herein are applicable to the proposed booster building and perimeter ring foundations of the reservoir tank subsequent to the recommended remedial grading operations assuming that the building is founded in soils with an expansion index of 50 or less. If soils with a higher expansion potential are placed within 3 feet of finish grade, then Geocon should be contacted for additional recommendations. We anticipate that proposed structures will be supported on foundations deriving support in newly placed engineered fill.

7.7.2 Foundations for the structures may consist of either continuous strip footings and/or isolated spread footings. Conventionally reinforced continuous footings should be at least 12 inches wide and extend at least 18 inches below lowest adjacent pad grade. Isolated spread footings should have a minimum width of 24 inches and should extend at least 18 inches below lowest adjacent pad grade. A graphic depicting the foundation embedment is provided below.



Wall/Column Footing Detail

7.7.3 From a geotechnical engineering standpoint, concrete slabs-on-grade for the structures should be at least 4 inches thick and be reinforced with No. 3 reinforcing bars spaced 24 inches center-to-center in both directions. The concrete slab-on-grade recommendations are based on soil support characteristics only. The project structural engineer should evaluate the structural requirements of the concrete slab for supporting equipment, water tank and storage loads. A thicker concrete slab may be required for heavier loading conditions. To reduce the effects of differential settlement on the foundation system, thickened slabs and/or an increase in steel reinforcement can provide a benefit to reduce concrete cracking offset.

7.7.4 Following remedial grading, foundations for the structures at the sites may be designed for an allowable soil bearing pressure of 3,000 pounds per square foot (psf) (dead plus live load). The allowable bearing pressure may be increased by one-third for transient loads due to wind or seismic forces.

7.7.5 The maximum expected static settlement for the planned structures supported on conventional foundation systems with the above allowable bearing pressures, and deriving support in engineered fill is estimated to be ¾ of an inch and to occur below the heaviest loaded structural element. Settlement of the foundation system is expected to occur on initial application of loading. Differential settlement is not expected to exceed ½ inch over a horizontal distance of 40 feet.

7.7.6 Once the design and foundation loading configuration proceeds to a more finalized plan, the estimated settlements within this report can be reviewed and revised, if necessary.

7.7.7 Steel reinforcement for continuous footings should consist of at least two No. 4 steel reinforcing bars placed horizontally in the footings, one near the top and one near the bottom. Steel reinforcement for the spread footings and slabs should be designed by the project structural engineer.

7.7.8 Foundation excavation bottoms must be observed and approved in writing by a qualified representative of Geocon, prior to placement of reinforcing steel or concrete.

7.7.9 Slabs that may receive moisture-sensitive floor coverings or may be used to store moisture-sensitive materials should be underlain by a vapor retarder. The vapor retarder design should be consistent with the guidelines presented in the American Concrete Institute's (ACI) Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials (ACI 302.2R-06). The vapor retarder used should be specified by the project architect or developer based on the type of floor covering that will be installed and if the structure will possess a humidity-controlled environment.

7.7.10 The bedding sand thickness should be evaluated by the project foundation engineer, architect, and/or developer. However, we should be contacted to provide recommendations if the bedding sand is thicker than 4 inches. Placement of 3 inches and 4 inches of sand is common practice in southern California for 5-inch and 4-inch-thick slabs, respectively. The foundation engineer should provide appropriate concrete mix design criteria and curing measures that may be utilized to assure proper curing of the slab to reduce the potential for rapid moisture loss and subsequent cracking and/or slab curl. We suggest that the foundation design engineer present the concrete mix design and proper curing methods on the foundation plans. It is critical that the foundation contractor understands and follows the recommendations presented on the foundation plans.

7.7.11 Special subgrade presaturation is not deemed necessary prior to placing concrete; however, the exposed foundation and slab subgrade soil should be moisturized to maintain a moist condition as would be expected in any such concrete placement.

7.7.12 The recommendations of this report are intended to reduce the potential for cracking of slabs due to expansive soil (if present), differential settlement of existing soil or soil with varying thicknesses. However, even with the incorporation of the recommendations presented herein, foundations, walls, and slabs-on-grade placed on such conditions may still exhibit some cracking due to soil movement and/or shrinkage. The occurrence of concrete shrinkage cracks is independent of the supporting soil characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement and curing, and by the placement of crack control joints at periodic intervals, in particular where re-entrant slab corners occur.

7.7.13 Geocon should be consulted to provide additional design parameters as required by the structural engineer.

7.8 Lateral Resistance

7.8.1 To resist lateral loads, a passive pressure exerted by an equivalent fluid weight of 300 pounds per cubic foot (pcf) should be used for the design of footings or shear keys poured neat against newly compacted fill or dense alluvial materials. The allowable passive pressure assumes a horizontal surface extending at least 5 feet, or three times the surface generating the passive pressure, whichever is greater. The upper 12 inches of material in areas not protected by slabs or pavement should not be included in design for passive resistance.

7.8.2 If friction is to be used to resist lateral loads, an allowable coefficient of friction between soil and concrete of 0.38 should be used for design.

7.8.3 The passive and frictional resistant loads can be combined for design purposes. The lateral passive pressures may be increased by one-third when considering transient loads due to wind or seismic forces.

7.9 Preliminary Pavement Design

7.9.1 The final pavement design should be based on R-value testing of soils at the subgrade following grading at the site. Paved areas at the sites should be designed in accordance with the City of Banning *Street Standards* when final Traffic Indices and R-Value test results of subgrade soil are completed. Roadway classifications and traffic indices are based on the County of Riverside *Ordinance 461*. The civil engineer should evaluate the final traffic index for the pavements. Based on the soils classifications, we used an assumed R-value of 30 for the preliminary pavement design recommendations. Preliminary flexible pavement sections and an alternative full-depth aggregate base section are presented in Table 7.9.1, based on the County of Riverside *Ordinance 461* and the Caltrans Highway Design Manual.

TABLE 7.9.1
PRELIMINARY FLEXIBLE PAVEMENT SECTIONS

Road Classification/Use	Assumed Traffic Index	Assumed Subgrade R-Value	Asphalt Concrete (Inches)	Aggregate Base Materials (Inches)	Full-Depth Aggregate Base Materials (Inches)
Local Street / Parking Areas / Light Duty Vehicles	5.5	30	3.0	7.0	14
Collector / Medium Duty Vehicles	7.0	30	4.0	9.5	18
Industrial Collector / Heavy Duty Vehicles	8.0	30	5.0	10.5	20

7.9.2 The upper 12 inches of the subgrade soil should be compacted to a dry density of at least 95 percent of the laboratory maximum dry density near to slightly above optimum moisture content.

7.9.3 The aggregate base materials and asphalt concrete materials should conform to Section 200-2 and Section 203-6, respectively, of the Greenbook. Base materials should be compacted to a dry density of at least 95 percent of the laboratory maximum dry density near to slightly above optimum moisture content. Asphalt concrete should be compacted to a density of 95 percent of the laboratory Hveem density in accordance with ASTM D 2726.

7.9.4 A rigid Portland cement concrete (PCC) pavement section should be placed in driveway aprons and cross gutters. We calculated the rigid pavement section in general conformance with the procedure recommended by the American Concrete Institute report ACI 330R *Guide for Design and Construction of Concrete Parking Lots* using the parameters presented in Table 7.9.4.

TABLE 7.9.4
RIGID PAVEMENT DESIGN PARAMETERS

Design Parameter	Design Value
Modulus of subgrade reaction, k	125 pci
Modulus of rupture for concrete, M_R	500 psi
Traffic Category, TC	A, C, and D
Average daily truck traffic, ADTT	10, 100, and 700

7.9.5 Based on the criteria presented herein, the PCC pavement sections should have a minimum thickness as presented in Table 7.9.5.

TABLE 7.9.5
RIGID PAVEMENT RECOMMENDATIONS

Location	Portland Cement Concrete (inches)
Access Lanes (TC=A)	5.5
Entrance / Driveway Aprons (TC=C)	7.0
Heavy Truck Areas (TC=D)	8.0

7.9.6 The PCC pavement should be placed over subgrade soil that is compacted to a dry density of at least 95 percent of the laboratory maximum dry density near to slightly above optimum moisture. This pavement section is based on a minimum concrete compressive strength of approximately 3,000 psi (pounds per square inch). Base material will not be required beneath concrete improvements.

7.9.7 A thickened edge or integral curb should be constructed on the outside of concrete slabs subjected to wheel loads. The thickened edge should be 1.2 times the slab thickness or a minimum thickness of 2 inches, whichever results in a thicker edge, and taper back to the recommended slab thickness 4 feet behind the face of the slab (e.g., a 9-inch-thick slab would have an 11-inch-thick edge). Reinforcing steel will not be necessary within the concrete for geotechnical purposes with the possible exception of dowels at construction joints as discussed herein.

7.9.8 In order to control the location and spread of concrete shrinkage cracks, crack-control joints (weakened plane joints) should be included in the design of the concrete pavement slab in accordance with the referenced ACI report.

7.9.9 Performance of the pavements is highly dependent on providing positive surface drainage away from the edge of the pavement. Ponding of water on or adjacent to the pavement surfaces will likely result in pavement distress and subgrade failure. Drainage from landscaped areas should be directed to controlled drainage structures. Landscape areas adjacent to the edge of asphalt pavements are not recommended due to the potential for surface or irrigation water to infiltrate the underlying permeable aggregate base and cause distress. Where such a condition cannot be avoided, consideration should be given to incorporating measures that will significantly reduce the potential for subsurface water migration into the aggregate base. If planter islands are planned, the perimeter curb should extend at least 6 inches below the level of the base materials.

7.10 Concrete Flatwork

7.10.1 Exterior concrete flatwork not subject to vehicular traffic should be constructed in accordance with the recommendations herein assuming the subgrade materials possess an Expansion Index of 50 or less. Subgrade soils should be compacted to 90 percent relative compaction at a moisture content near to slightly above optimum as determined by ASTM D1557. Slab panels should be a minimum of 4 inches thick and when in excess of 8 feet square should be reinforced with 6x6-W2.9/W2.9 (6x6-6/6) welded wire mesh or No. 3 reinforcing bars spaced 24 inches center-to-center in both directions to reduce the potential for cracking. In addition, concrete flatwork should be provided with crack control joints to reduce and/or control shrinkage cracking. Crack control spacing should be determined by the project structural engineer based upon the slab thickness and intended usage. Criteria of the American Concrete Institute (ACI) should be taken into consideration when establishing crack control spacing. Subgrade soil for exterior slabs not subjected to vehicle loads should be compacted in accordance with criteria presented in the earthwork section prior to concrete placement. Subgrade soil should be properly compacted, and the moisture content of subgrade soil should be verified prior to placing concrete. Base materials will not be required below concrete improvements.

7.10.2 Even with the incorporation of the recommendations of this report, the exterior concrete flatwork has a potential to experience some uplift due to expansive soil beneath grade or differential settlement. The steel reinforcement should overlap continuously in flatwork to reduce the potential for vertical offsets within flatwork.

7.10.3 The recommendations presented herein are intended to reduce the potential for cracking of exterior slabs because of differential movement. However, even with the incorporation of the recommendations presented herein, concrete slabs will still crack. The occurrence of concrete shrinkage cracks is independent of the soil supporting characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, the use of crack control joints and proper concrete placement and curing. Crack control joints should be spaced at intervals no greater than 12 feet. Literature provided by the Portland Concrete Association (PCA) and American Concrete Institute (ACI) present recommendations for proper concrete mix, construction, and curing practices, and should be incorporated into project construction.

7.11 Temporary Excavations and Shoring

7.11.1 Excavations on the order of 5 to 10 feet in vertical height are expected during remedial grading and the construction of utilities. The contractor's competent person should evaluate the necessity for lay back of vertical cut areas. Vertical excavations up to 5 feet may be attempted where loose soils or caving sands are not present, and where not surcharged by existing structures or vehicle/construction equipment loads.

7.11.2 Vertical excavations greater than 5 feet will require sloping or shoring measures in order to provide a stable excavation. Due to the existing improvements within the roadways, we expect that shoring will be needed.

7.11.3 We expect that braced shoring, such as conventionally braced shields or cross-braced hydraulic shoring, will be utilized; however, the selection of the shoring system is the responsibility of the contractor. Shoring systems should be designed by a California licensed civil or structural engineer with experience in designing shoring systems.

7.11.4 We recommend that an equivalent fluid pressure based on the table below be utilized for design of shoring. These pressures are based on the assumption that the shoring is supporting a level backfill and there are no hydrostatic pressures above the bottom of the excavation.

TABLE 7.11.4
RECOMMENDED SHORING PRESSURES

HEIGHT OF SHORED EXCAVATION (FEET)	EQUIVALENT FLUID PRESSURE (Pounds Per Cubic Foot) (ACTIVE PRESSURE)	EQUIVALENT FLUID PRESSURE (Pounds Per Cubic Foot) (AT-REST PRESSURE)
Up to 10	30	50

7.11.5 Active pressures can only be achieved when movement in the soil (earth wall) occurs. If movement in the soil is not acceptable, such as adjacent to an existing structure or where braced shoring will be utilized, the at-rest pressure should be considered for design purposes.

7.11.6 Additional active pressure should be added for a surcharge condition due to sloping ground, construction equipment, vehicular traffic, or adjacent structures and should be designed for each condition as the project progresses.

7.11.7 In addition to the recommended earth pressure, the upper 10 feet of the shoring adjacent to roadways or driveway areas should be designed to resist a uniform lateral pressure of 100 psf, acting as a result of an assumed 300 psf surcharge behind the shoring due to normal street traffic. If the traffic is kept back at least 10 feet from the shoring, the traffic surcharge may be neglected. Higher surcharge loads may be required to account for construction equipment.

7.11.8 It is difficult to accurately predict the amount of deflection of a shored embankment. Some deflection will occur. We recommend that the deflection be minimized to prevent damage to existing structures and adjacent improvements. Where public right-of-ways are present or adjacent offsite structures do not surcharge the shoring excavation, the shoring deflection should be limited to less than 1 inch at the top of the shored embankment. Where offsite structures are within the shoring surcharge area, we recommend the beam deflection be limited to less than ½ inch at the elevation of the adjacent offsite foundation, and no deflection at all if deflections will damage existing structures. The allowable deflection is dependent on many factors, such as the presence of structures and utilities near the top of the embankment and will be assessed and designed by the project shoring engineer.

7.12 Site Drainage and Moisture Protection

7.12.1 Adequate site drainage is critical to reduce the potential for differential soil movement, erosion and subsurface seepage. Under no circumstances should water be allowed to pond adjacent to footings. The site should be graded and maintained such that surface drainage is directed away from structures in accordance with 2019 CBC 1804.4 or other applicable standards. In addition, surface drainage should be directed away from the top of slopes into swales or other controlled drainage devices. Roof and pavement drainage should be directed into conduits that carry runoff away from the proposed structure.

7.12.2 Underground utilities should be leak free. Utility and irrigation lines should be checked periodically for leaks, and detected leaks should be repaired promptly. Detrimental soil movement could occur if water is allowed to infiltrate the soil for prolonged periods of time.

7.12.3 Landscaping planters adjacent to paved areas are not recommended due to the potential for surface or irrigation water to infiltrate the pavement's subgrade and base course. We recommend that area drains to collect excess irrigation water and transmit it to drainage structures or impervious above-grade planter boxes be used. In addition, where landscaping is planned adjacent to the pavement, we recommend construction of a cutoff wall along the edge of the pavement that extends at least 6 inches below the bottom of the base material.

7.12.4 If not properly constructed, there is a potential for distress to improvements and properties located hydrologically down gradient or adjacent to infiltration devices. Factors such as the amount of water to be detained, its residence time, and soil permeability have an important effect on seepage transmission and the potential adverse impacts that may occur if the storm water management features are not properly designed and constructed. We have not performed a hydrogeology study at the site. Downgradient and adjacent structures may be subjected to seeps, movement of foundations and slabs, or other impacts as a result of water infiltration.

7.13 Plan Review

7.13.1 Geocon should be provided the opportunity to review the structural foundation plans prior to final submittal to verify substantial conformance with the recommendations of this report.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in this investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that expected herein, Geocon West, Inc. should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous materials was not part of the scope of services provided by Geocon West, Inc.

This report is issued with the understanding that it is the responsibility of the owner, or of their representative, to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

The requirements for concrete and rebar presented in this report are preliminary recommendations from a geotechnical perspective. The Structural Engineer should provide the final recommendations for structural design of concrete and reinforcing steel for foundation systems, floor slabs, exterior concrete, or other systems where concrete and reinforcing steel are utilized, in accordance with the latest version of applicable codes.

The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project Geotechnical Engineer of Record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.

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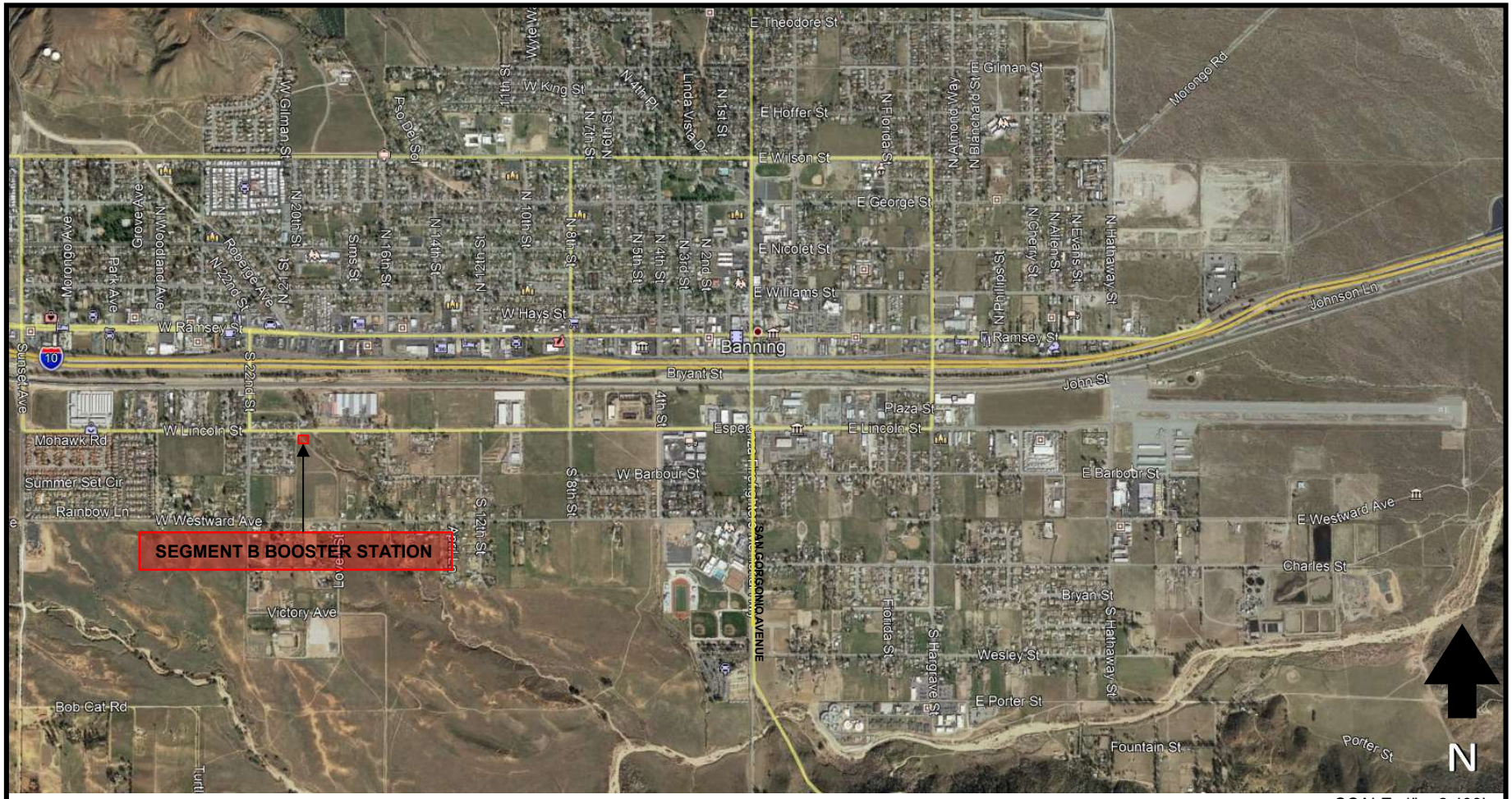

SOURCE: Google Earth Pro, 2018

SCALE: 1" = 2,400'

VICINITY MAP

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41571 CORNING PLACE SUITE 101 MURRIETA, CA 92562-7065
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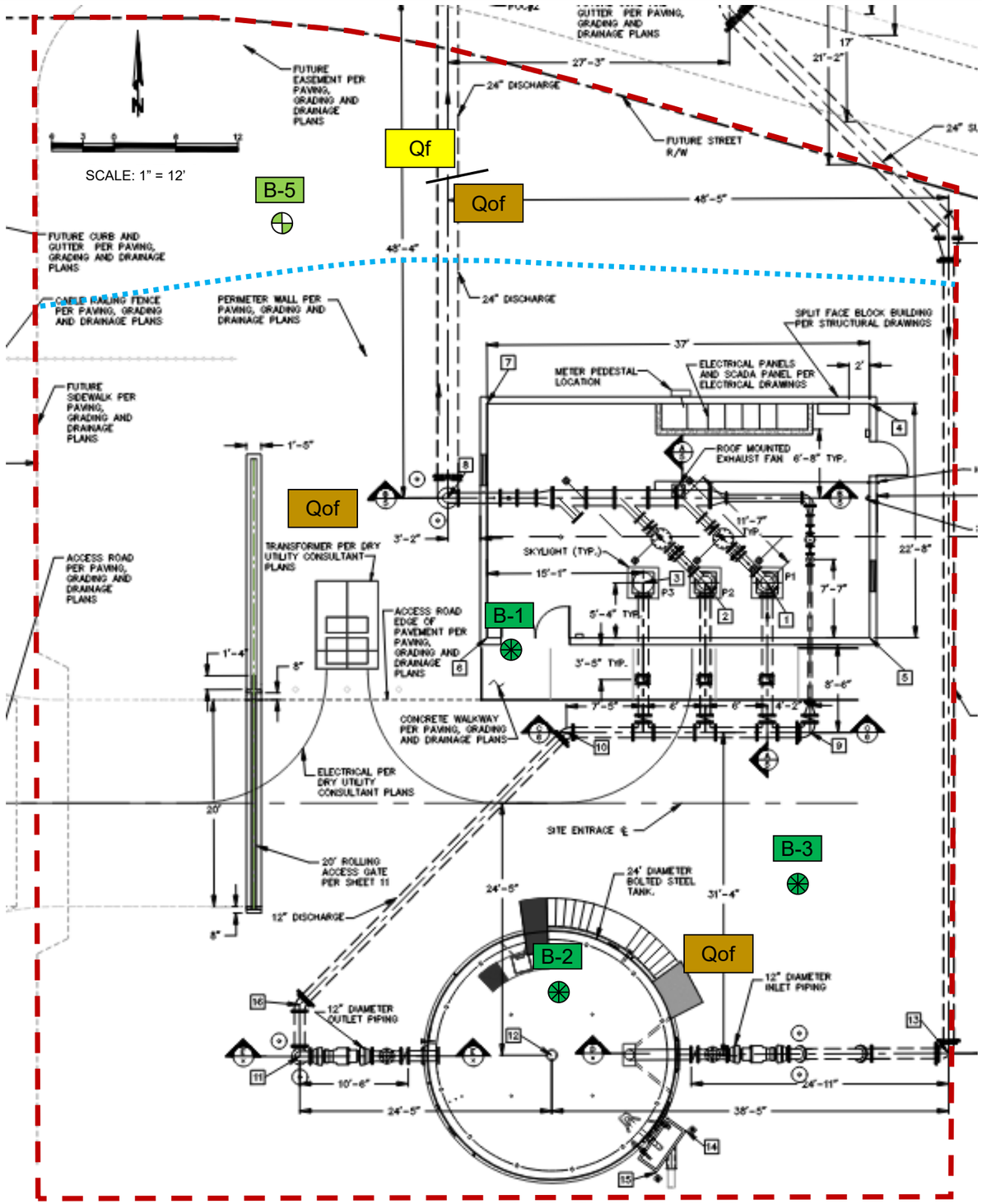
LCW		

BOOSTER PUMP STATION
ATWELL DEVELOPMENT
BANNING, CALIFORNIA

FEBURARY 2023	PROJECT NO. T2305-22-10G	FIG. 1



Source: Steven Andrews Engineering, *Lincoln Street NP Booster and Reservoir Site Plan*, dated March 3, 2022.

GEOCON LEGEND

Locations are approximate

B-3 ..... BORING LOCATION

B-5 ..... BORING LOCATION (GEOCON, 2018)

Qf ..... YOUNG ALLUVIAL FAN DEPOSITS

Qof ..... OLDER ALLUVIAL FAN DEPOSITS

..... PROJECT LIMITS

..... INFERRED GEOLOGIC CONTACT

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GEOTECHNICAL, ENVIRONMENTAL, MATERIALS
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GEOLOGIC MAP

BOOSTER PUMP STATION AND RESERVOIR
ATWELL DEVELOPMENT
BANNING, CALIFORNIA

LCW			FEBRUARY 2023	PROJECT NO. T2305-22-10G	FIG. 2

APPENDIX A

APPENDIX A

FIELD INVESTIGATION

Geocon performed a field investigation in 2018 as part of a larger geotechnical study for the non-potable off-site water improvements, as documented in our referenced *Preliminary Geotechnical Investigation* (dated September 20, 2018). This study included the drilling of one hollow stem auger boring at the booster pump station site and is included as Figure A-4.

The field investigation for this study was conducted on January 4, 2023, and consisted of a site reconnaissance and the drilling of three exploratory borings. The borings were drilled to the maximum depth explored of approximately 50½ feet below the existing ground surface utilizing a truck mounted hollow-stem augur drill rig. We collected bulk samples, and relatively undisturbed samples from the borings by driving a 3-inch O. D. California Modified Sampler into the "undisturbed" soil mass with blows from a 140-pound auto-hammer falling 30 inches. The California Modified Sampler was equipped with 1-inch high by 2$^{3}/_{8}$-inch inside diameter brass sampler rings to facilitate removal and testing. Relatively undisturbed samples and bulk samples of disturbed soils were transported to our laboratory for testing.

The soil conditions encountered in the borings were visually examined, classified and logged in general accordance with the Unified Soil Classification System (USCS). Figures A-1 through A-4 present logs of both the current borings and the boring excavated in 2018. The logs depict the soil and geologic conditions encountered and the depth at which samples were obtained. Figure 2 indicates the approximate locations of the borings.

PROJECT NO. T2305-22-10G

BORING B-1

ELEV. (MSL.) **2405** DATE COMPLETED **1/4/23**

EQUIPMENT **HOLLOW STEM AUGER** BY: **Weidman**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-1@0-5			SM	**TOPSOIL** Silty SAND, loose, wet, dark brown; fine to medium sand; some coarse sand			
2				SM	**OLDER ALLUVIAL FAN DEPOSITS (Qof)** Silty SAND, very dense, slightly moist, reddish brown; fine to medium sand; some coarse sand			
4	B-1@2.5				- Becomes light reddish brown	89-11"	99.9	5.1
6	B-1@5				- Becomes yellowish brown; few gravel	90-9"	98.9	9.4
8	B-1@7.5				- Becomes fine to coarse sand; little gravel; few larger clasts	81-12"	115.1	3.0
10	B-1@10				- Becomes strong reddish brown; little larger clasts	84-10"	124.6	2.4
12					- Becomes yellowish brown			
14	B-1@15				- Some larger clasts	84-12"	117.5	5.3
16								
18				SP	Poorly graded SAND, very dense, slightly moist, reddish to yellowish brown; medium to coarse sand; little fine sand; some gravel; some larger clasts; slightly oxidized			
20	B-1@20					75-11"	117.8	3.7
22								
24				SM	Silty SAND, very dense, slightly moist, reddish brown; fine to coarse sand; some gravel; moderately oxidized			
26	B-1@25					50-6"	121.9	3.7
28					- Completely weathered granitic clasts			
				SP	Poorly graded SAND, very dense, slightly moist, reddish brown; medium			

Figure A-1,
Log of Boring B-1, Page 1 of 2

T2305-22-10G BOOSTER PUMP TANK BORING LOGS.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◪ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

PROJECT NO. T2305-22-10G

BORING B-1

ELEV. (MSL.) **2405** DATE COMPLETED **1/4/23**

EQUIPMENT **HOLLOW STEM AUGER** BY: **Weidman**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
30	B-1@30				to coarse sand;few fine sand; some gravel; few larger clasts; slightly oxidized	89-10"	105.9	4.1
32								
34				SM	Silty SAND, very dense, slightly moist, reddish brown with olive brown; fine to coarse sand; little gravel; little larger clasts; moderately oxidized			
36	B-1@35					50-6"	111.6	3.5
38								
40	B-1@40				- Less silt; some larger clasts; some manganese staining; weathered clasts	82-10"	119.6	10.3
42								
44								
46	B-1@45				- Little manganese stainging; some gravel	50-6"	118.3	3.5
48								
50	B-1@50				- Poor recovery; little cohesion	50-4"	93.7	5.2
					Total Depth 50'-4" Groundwater not encountered Penetration resistance for 140-lb. hammer falling 30" by auto-hammer Backfilled on 01/04/2023			

Figure A-1,
Log of Boring B-1, Page 2 of 2

T2305-22-10G BOOSTER PUMP TANK BORING LOGS.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2305-22-10G

BORING B-2

ELEV. (MSL.) **2405** DATE COMPLETED **1/4/23**

EQUIPMENT **HOLLOW STEM AUGER** BY: **Weidman**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**TOPSOIL** Silty SAND, loose, wet, dark brown; fine to medium sand; few coarse sand			
				SM	**OLDER ALLUVIAL FAN DEPOSITS (Qof)** Silty SAND, very dense, slightly moist, dark reddish brown; fine to medium sand; little coarse sand; moderately oxidized			
2	B-2@2.5					73-12"	108.3	11.9
4								
6	B-2@5 B-2@5-10				- Becomes strong reddish brown; little larger clasts	81-11"	114.4	7.8
8	B-2@7.5				- Becomes yellowish brown; some coarse sand; slightly oxidized	92	130.8	3.9
10	B-2@10				- Becomes medium dense; fine to coarse sand; little gravel; some larger clasts	51	119.3	4.9
12								
14								
16	B-2@15				- Becomes dense; slightly more oxidized	75	120.1	3.4
18								
20	B-2@20				- Becomes dark reddish brown; moderately oxidized; fine to coarse sand; little gravel; many large clasts in various stages of weathering	78-11"	119.3	7.1
22								
24					- Larger quartz clast in shoe			
	B-2@25					84-11"	117.9	4.4
					Total Depth 25'-11" Groundwater not encountered Penetration resistance for 140-lb. hammer falling 30" by auto-hammer Backfilled on 01/04/2023			

Figure A-2,
Log of Boring B-2, Page 1 of 1

T2305-22-10G BOOSTER PUMP TANK BORING LOGS.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◥ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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GEOCON

PROJECT NO. T2305-22-10G

BORING B-3

ELEV. (MSL.) **2404** DATE COMPLETED **1/4/23**

EQUIPMENT **HOLLOW STEM AUGER** BY: **Weidman**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**TOPSOIL** Silty SAND, loose, moist, dark brown; fine to medium sand; little coarse sand			
2	B-3@2-7			SM	**OLDER ALLUVIAL FAN DEPOSITS (Qof)** Silty SAND, very dense, slightly moist, reddish brown; fine to coarse sand			
	B-3@2.5				- Becomes dark reddish brown; few larger clasts; slightly oxidized	82-12"	109.5	7.2
4								
6	B-2@5				- Becomes strong reddish brown; moderately oxidized; poor recovery	50-6"	90.2	7.4
8	B-3@7.5				- Becomes fine to medium sand; some coarse sand; little larger clasts; clusters of olive brown	80-12"	117.9	4.9
10	B-3@10				- Becomes yellowish to reddish brown; less silt; large clasts in various stages of weathering	87-12"	120.9	2.1
12								
14								
16	B-3@15				- Becomes medium dense, light reddish brown; slightly oxidized; fine to medium sand; few coarse sand; trace larger clasts	58	114.2	5.3
18								
20	B-3@20				- Becomes very dense, strong reddish brown; little coarse sand; moderately oxidized	50-6"	113.4	7.0
22								
24								
26	B-3@25				- Becomes yellowish to reddish brown; very little silt; fine to coarse sand; little gravel; few larger clasts	87-12"	119.7	3.3
					Total Depth 26' Groundwater not encountered Penetration resistance for 140-lb. hammer falling 30" by auto-hammer Backfilled on 01/04/2023			

Figure A-3,
Log of Boring B-3, Page 1 of 1

T2305-22-10G BOOSTER PUMP TANK BORING LOGS.GPJ

SAMPLE SYMBOLS

- ☐ ... SAMPLING UNSUCCESSFUL
- ◧ ... STANDARD PENETRATION TEST
- ■ ... DRIVE SAMPLE (UNDISTURBED)
- ⊠ ... DISTURBED OR BAG SAMPLE
- ◥ ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

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PROJECT NO. T2305-22-10G

BORING B-5 (Segment-B/C Booster Station Site)

ELEV. (MSL.) **2398** DATE COMPLETED **8/28/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **A. Shoashekan**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-5@0-5			SP SC	**TOPSOIL** Poorly-graded SAND, loose, dry, yellowish brown; fine to medium sand with occasional coarse sand; trace gravel; trace silt; rootlets			
2					**YOUNG ALLUVIAL FAN DEPOSITS (Qf)** Clayey SAND, loose, dry, dark yellowish brown; fine to medium sand with occasional coarse sand; trace gravel; trace silt			
4								
6	B-5@5 B-5@5-10			SC	**OLDER ALLUVIAL FAN DEPOSITS (Qof)** Clayey SAND, very dense, dry, brown; fine to coarse sand; gravel; trace calcium carbonate	92/11"	119.8	7.8
8								
10	B-5@10			SM	Silty SAND, very dense, dry, strong brown; medium sand with occasional coarse sand; trace mica; granitic clast; gravel	74		
12								
14								
16	B-5@15			SP	Poorly-graded SAND, very dense, dry, strong brown; fine sand; trace mica	50/6"	117.7	6.7
18								
20	B-5@20			CL	Sandy CLAY, hard, dry to damp, reddish brown; pores and pinholes; little coarse sand; trace calcium carbonate	50/6"		
22								
24								
26	B-5@25			SP	Poorly-graded SAND, very dense, dry, strong brown; fine to coarse sand; trace fine gravel	50/6"	120.2	4.9

Total Depth 26'
Groundwater not encountered
Penetration resistance for 140-lb. hammer falling 30" by auto-hammer
Backfilled on 08/28/2018

Figure A-4,
Log of Boring B-5 (Segment-B/C Booster Station Site), Page 1 of 1

T2305-22-10G BORING LOGS.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

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APPENDIX B

APPENDIX B

LABORATORY TESTING

Laboratory tests were performed in general accordance with test methods of ASTM International (ASTM), Caltrans test methods, or other suggested procedures. Selected samples were tested to evaluate maximum dry density and optimum moisture content, expansion index, corrosivity, consolidation characteristics, remolded and in-situ shear strength properties, and in-situ moisture and density content. The results of our laboratory tests are presented on Figures B-1 through B-10. The in-place dry density and moisture content of the samples tested are presented on the boring logs in *Appendix A*.

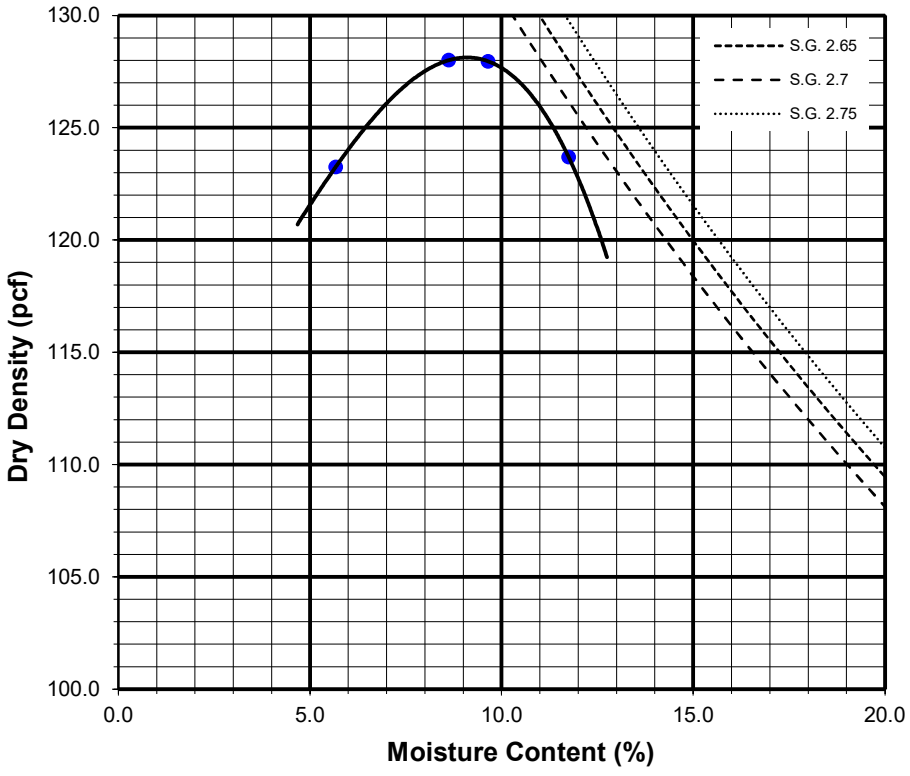
Sample No:

B2@5-10	Silty SAND (SM), reddish brown

TEST NO.		1	2	3	4	5	6
Wt. Compacted Soil + Mold	(g)	6377	6345	6357	6224		
Weight of Mold	(g)	4257	4257	4257	4257		
Net Weight of Soil	(g)	2119	2088	2100	1967		
Wet Weight of Soil + Cont.	(g)	747.9	634.7	743.5	899.9		
Dry Weight of Soil + Cont.	(g)	704.8	595.3	705.0	865.5		
Weight of Container	(g)	258.1	260.0	258.4	258.8		
Moisture Content	(%)	9.6	11.8	8.6	5.7		
Wet Density	(pcf)	140.3	138.2	139.0	130.2		
Dry Density	(pcf)	128.0	123.7	128.0	123.2		

Maximum Dry Density (pcf)	**128.5**

Optimum Moisture Content (%)	**9.0**



Preparation Method: A

GEOCON

COMPACTION CHARACTERISTICS USING MODIFIED EFFORT TEST RESULTS

ASTM D-1557

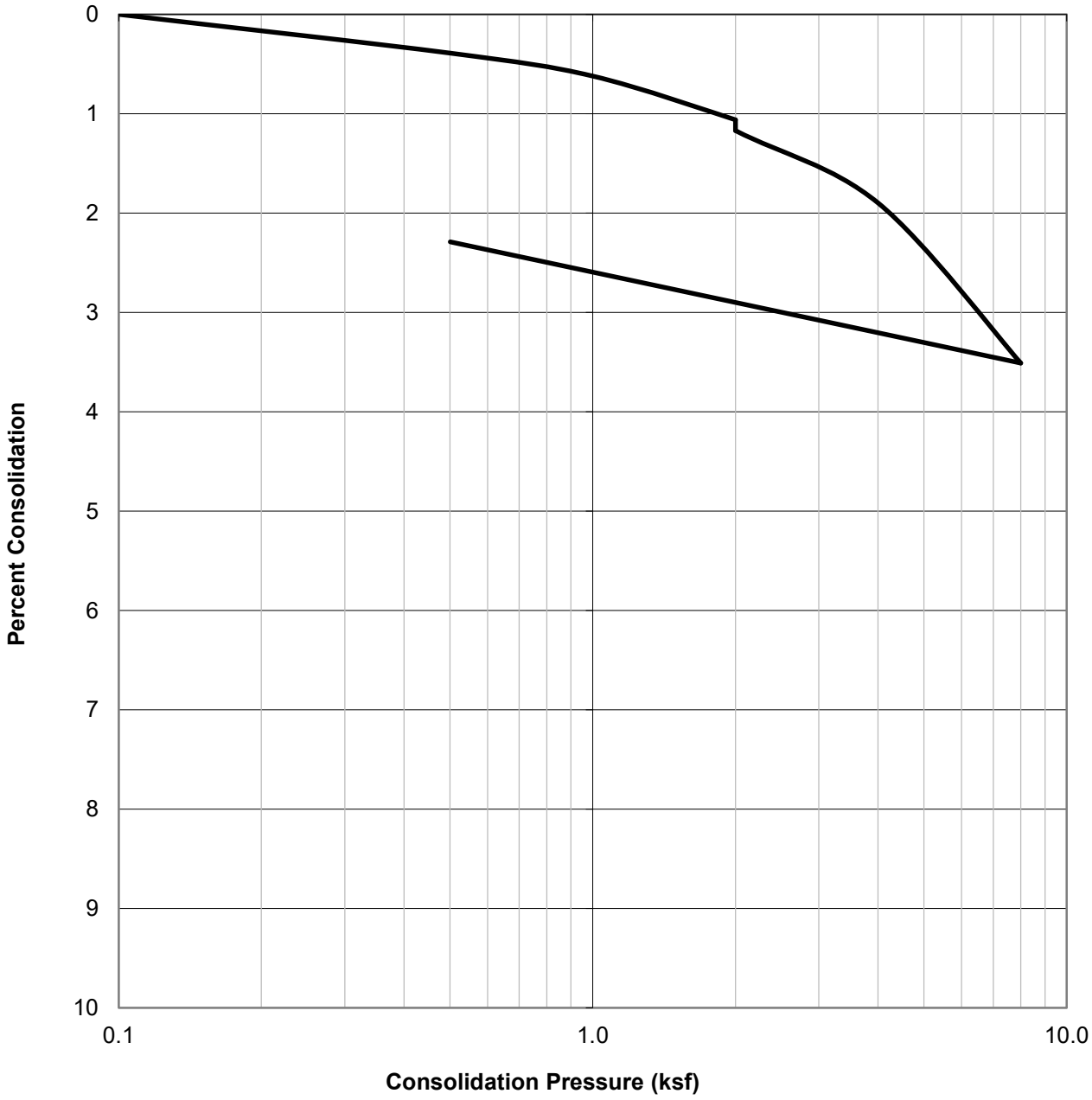
Checked by: ATS

Project No.: T2305-22-10G

Booster Pump Station
Atwell Development
Banning, California

February 2023 Figure B-1

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B2@5-10	Silty SAND (SM), reddish brown	114.1	10.1	16.3

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

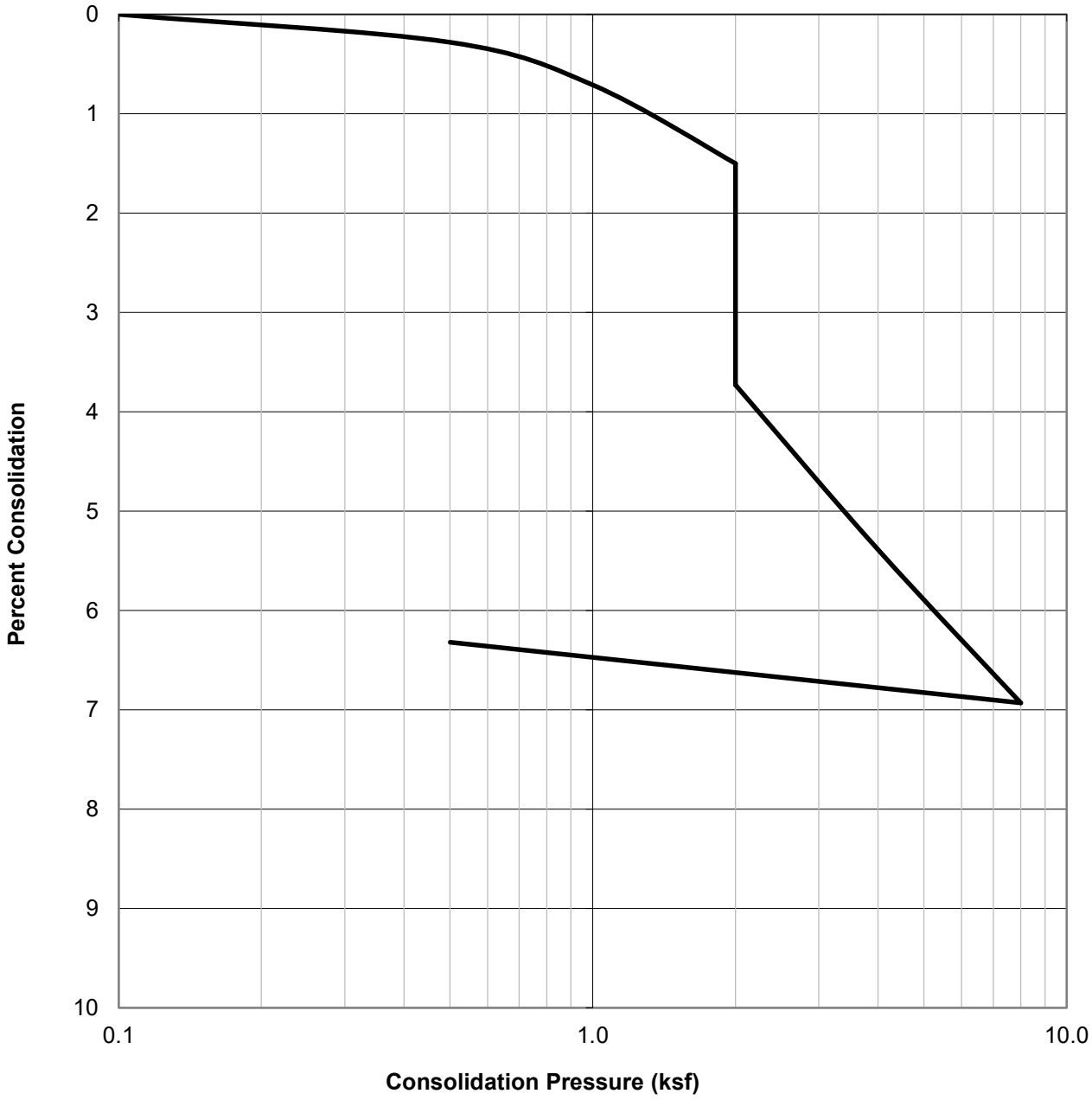
Checked by: ATS

Project No.: T2305-22-10G

Booster Pump Station
Atwell Development
Banning, California

February 2023 Figure B-2

WATER ADDED AT 2.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B2@10	Silty SAND (SM), yellowish brown	106.2	4.9	16.6

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

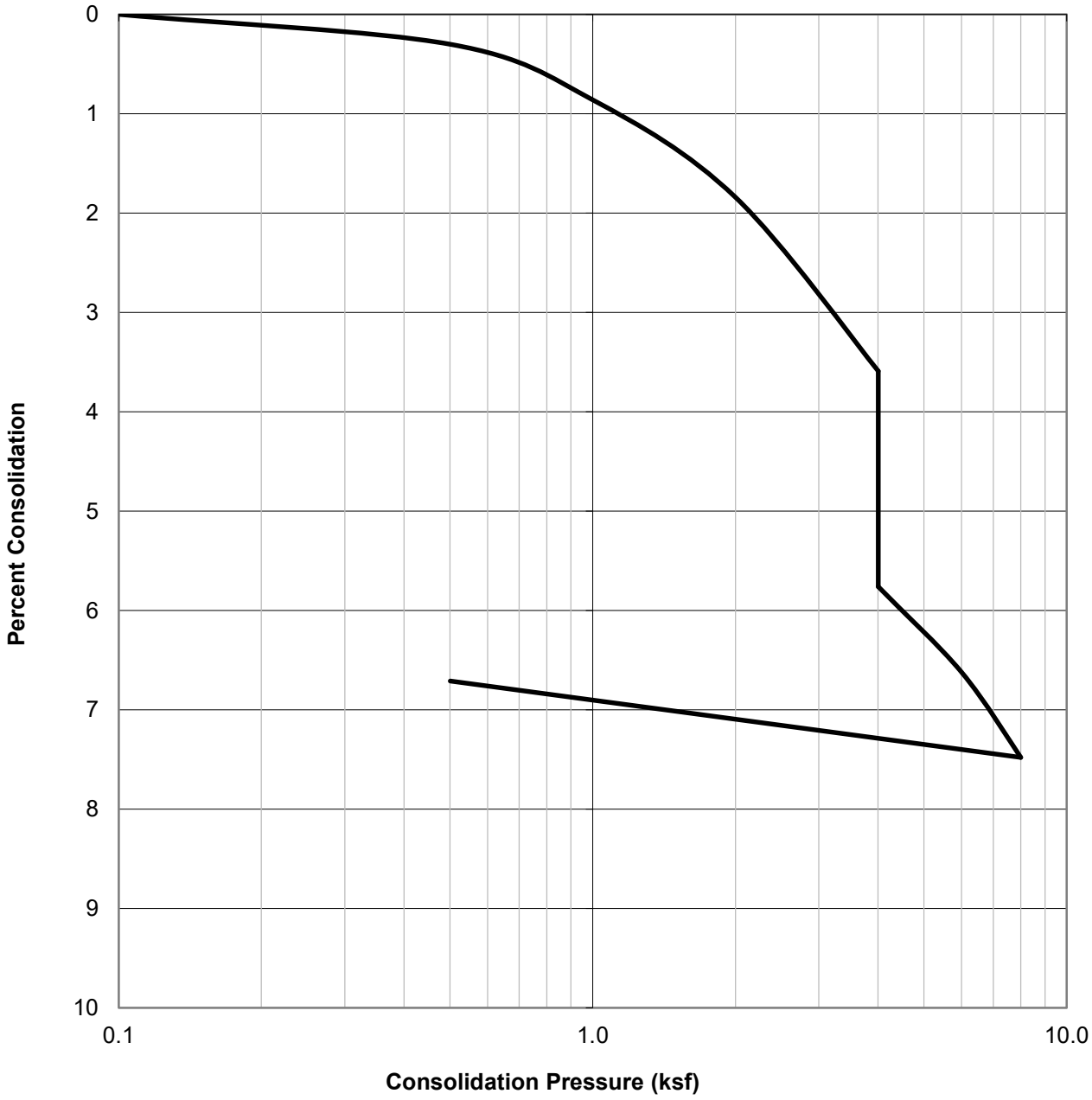
Checked by: ATS

Project No.: T2305-22-10G

Booster Pump Station
Atwell Development
Banning, California

February 2023 Figure B-3

WATER ADDED AT 4.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B3@15	Silty SAND (SM), light reddish brown	103.0	5.3	18.4

GEOCON

CONSOLIDATION TEST RESULTS

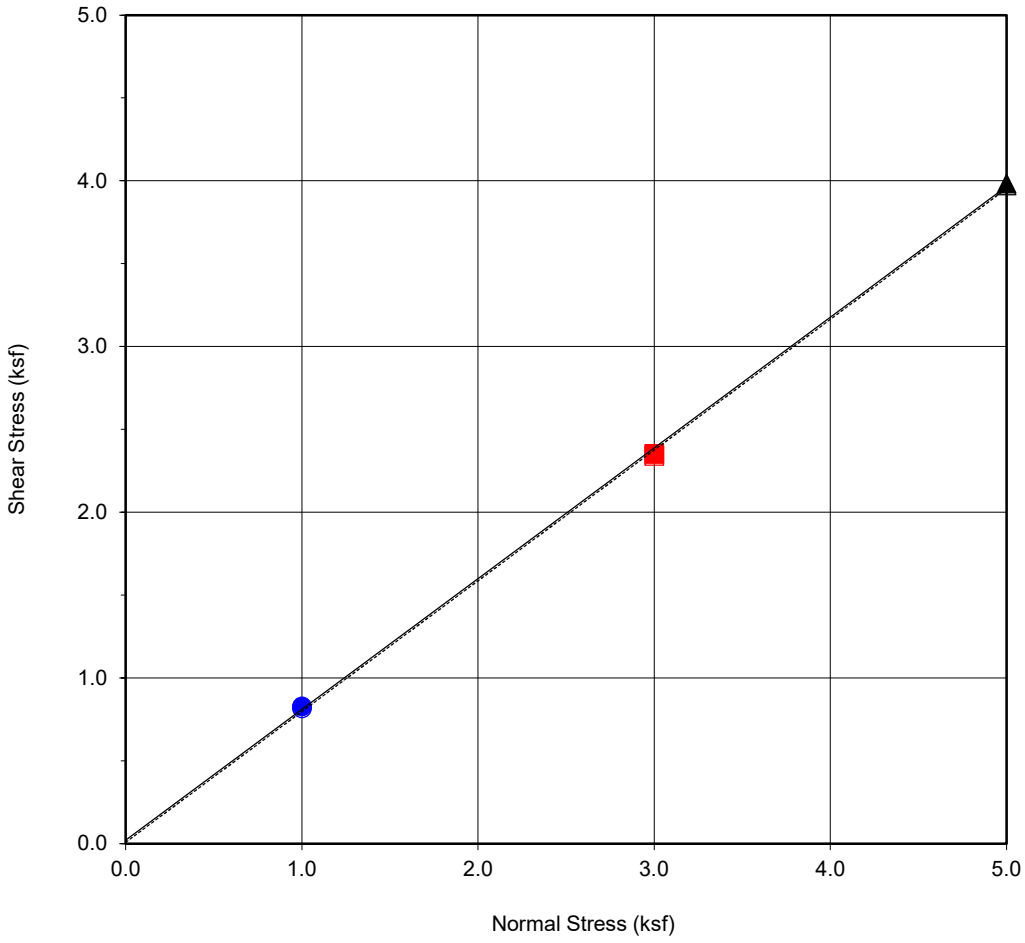
ASTM D-2435

Checked by: ATS

Project No.: T2305-22-10G

Booster Pump Station
Atwell Development
Banning, California

February 2023 Figure B-4



Boring No.	**B1**
Sample No.	**B1@5**
Depth (ft)	**5**
Sample Type:	Ring

Soil Identification:

Silty SAND (SM), yellowish brown

Strength Parameters

	C (psf)	ϕ (^{o})
Peak	21	38
Ultimate	9	38

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.83	■ 2.35	▲ 3.98
Shear Stress @ End of Test (ksf)	○ 0.82	□ 2.34	△ 3.97
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	8.4	9.1	9.4
Initial Dry Density (pcf)	99.5	96.6	100.1
Initial Degree of Saturation (%)	32.6	32.9	37.1
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	20.4	20.7	18.6

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DIRECT SHEAR TEST RESULTS

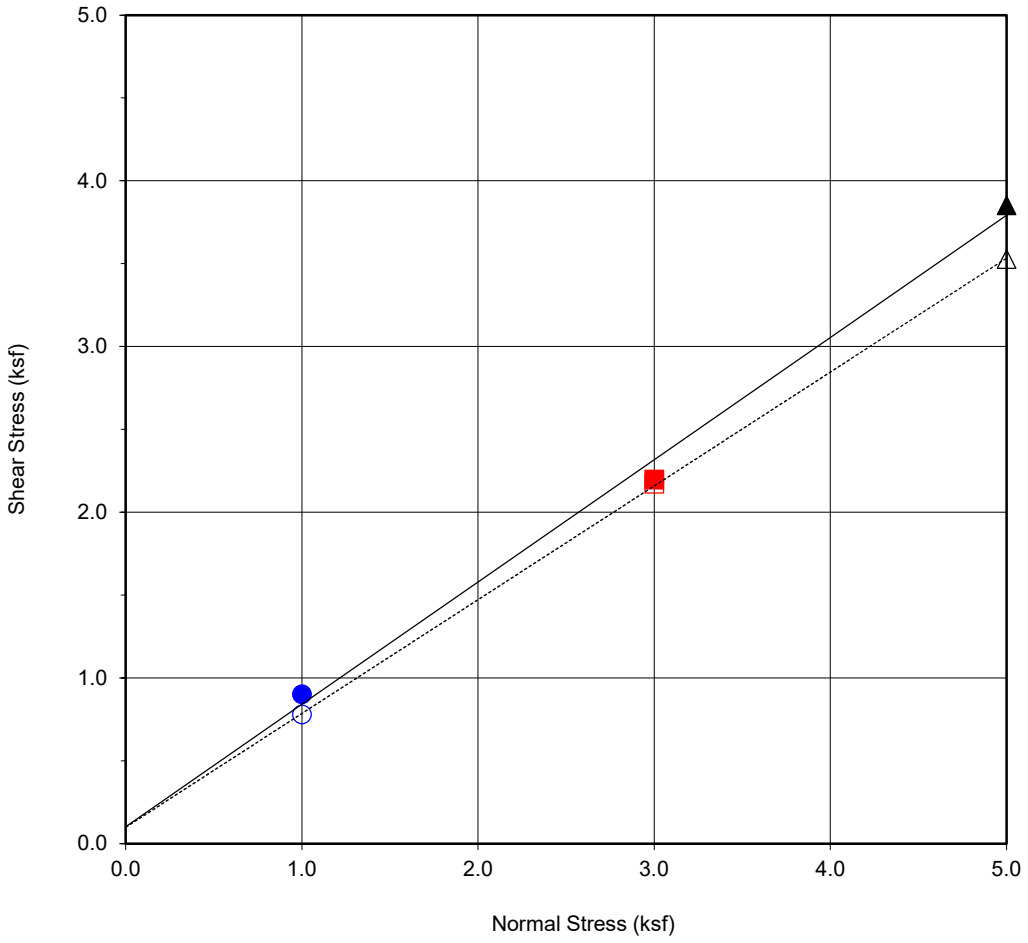
Consolidated Drained ASTM D-3080

Checked by: ATS

Project No.: T2305-22-10G

Booster Pump Station
Atwell Development
Banning, California

February 2023 Figure B-5



Boring No.	**B2**
Sample No.	**B2@2.5**
Depth (ft)	**2.5**
Sample Type:	Ring

Soil Identification:		
Silty SAND (SM), reddish brown		
Strength Parameters		
	C (psf)	ϕ (^{o})
Peak	102	36
Ultimate	99	34

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.90	■ 2.20	▲ 3.85
Shear Stress @ End of Test (ksf)	○ 0.78	□ 2.17	△ 3.53
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	11.9	11.9	11.7
Initial Dry Density (pcf)	116.1	92.8	114.2
Initial Degree of Saturation (%)	71.0	39.4	66.3
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	18.5	13.2	15.7

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DIRECT SHEAR TEST RESULTS

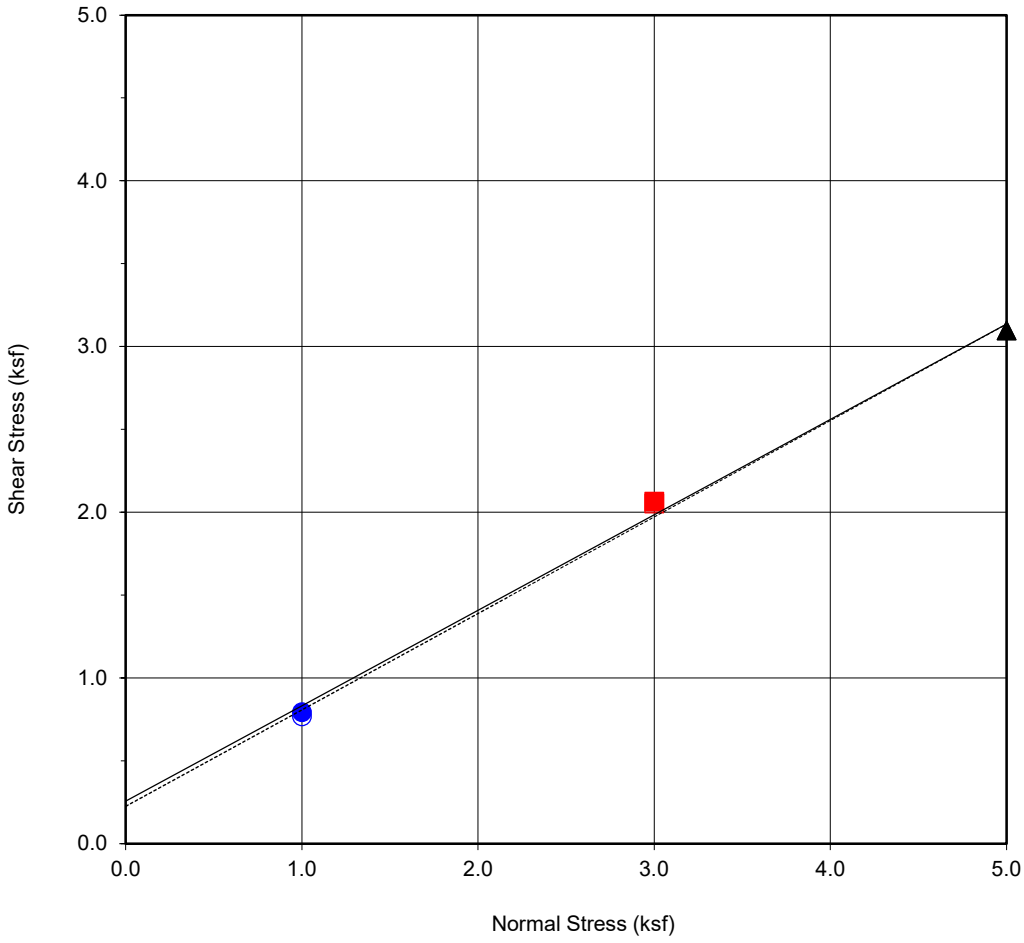
Consolidated Drained ASTM D-3080

Checked by: ATS

Project No.: T2305-22-10G

Booster Pump Station
Atwell Development
Banning, California

February 2023 Figure B-6



Boring No.	**B2**
Sample No.	**B2@5-10**
Depth (ft)	**5-10**
Sample Type:	Bulk

Soil Identification:

Silty SAND (SM), reddish brown

Strength Parameters

	C (psf)	ϕ (^{o})
Peak	256	30
Ultimate	226	30

Normal Strest (kip/ft2)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.79	■ 2.06	▲ 3.10
Shear Stress @ End of Test (ksf)	○ 0.77	□ 2.05	△ 3.10
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	9.0	9.0	8.9
Initial Dry Density (pcf)	116.1	116.0	115.9
Initial Degree of Saturation (%)	53.9	53.5	52.7
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	15.0	14.1	12.5

GEOCON

DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

Checked by: ATS

Project No.: T2305-22-10G

Booster Pump Station
Atwell Development
Banning, California

February 2023 Figure B-7

SUMMARY OF LABORATORY MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT TEST RESULTS ASTM D1557

Sample No.	Description	Maximum Dry Density (pcf)	Optimum Moisture Content (% of dry wt.)
B-5 @ 0-5’	Clayey SAND (SC) trace gravel, Yellowish Brown	131.7	7.1

SUMMARY OF LABORATORY EXPANSION INDEX TEST RESULTS ASTM D4829

Sample No.	Moisture Content		After Test Dry Density (pcf)	Expansion Index
	Before Test (%)	After Test (%)		
B-5 @ 0-5’	9.0	15.3	112.7	11
B-5 @ 5-10’	8.5	15.5	115.5	7

SUMMARY OF CORROSIVITY TEST RESULTS

Sample No.	Chloride Content (ppm)	Sulfate Content (%)	pH	Resistivity (ohm-centimeter)
B-5 @ 0-5’	72	0.001	7.1	3,5000

Chloride content determined by California Test 422.
Water-soluble sulfate determined by California Test 417.
Resistivity and pH determined by Caltrans Test 643.

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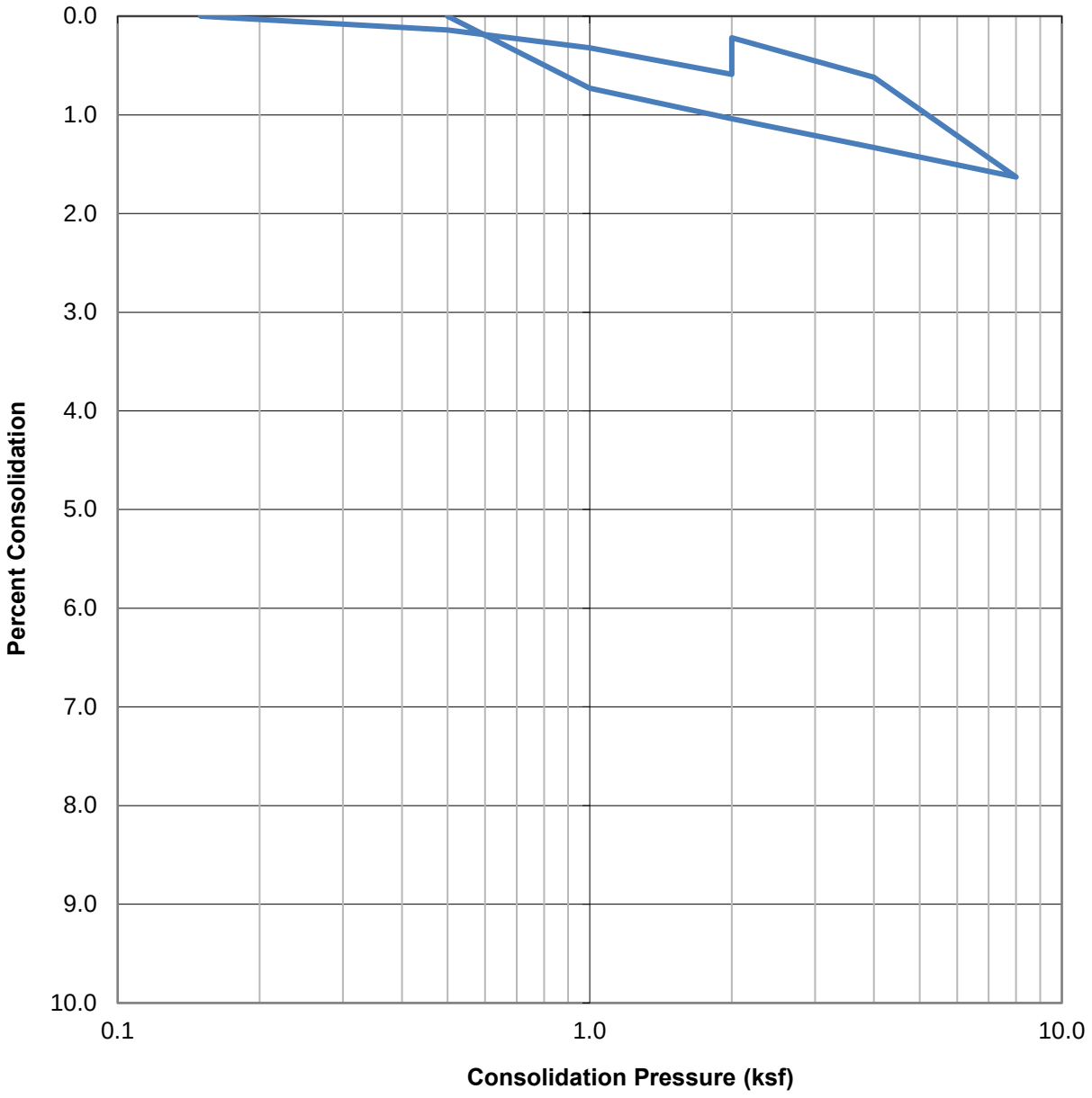
LABORATORY TEST RESULTS
NON-POTABLE OFF-SITE WATER IMPROVEMENTS
ATWELL DEVELOPMENT
BANNING, CALIFORNIA

WATER ADDED AT 2 KSF



SAMPLE ID	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B-5 @ 5'	SM	119.8	7.8	14.5

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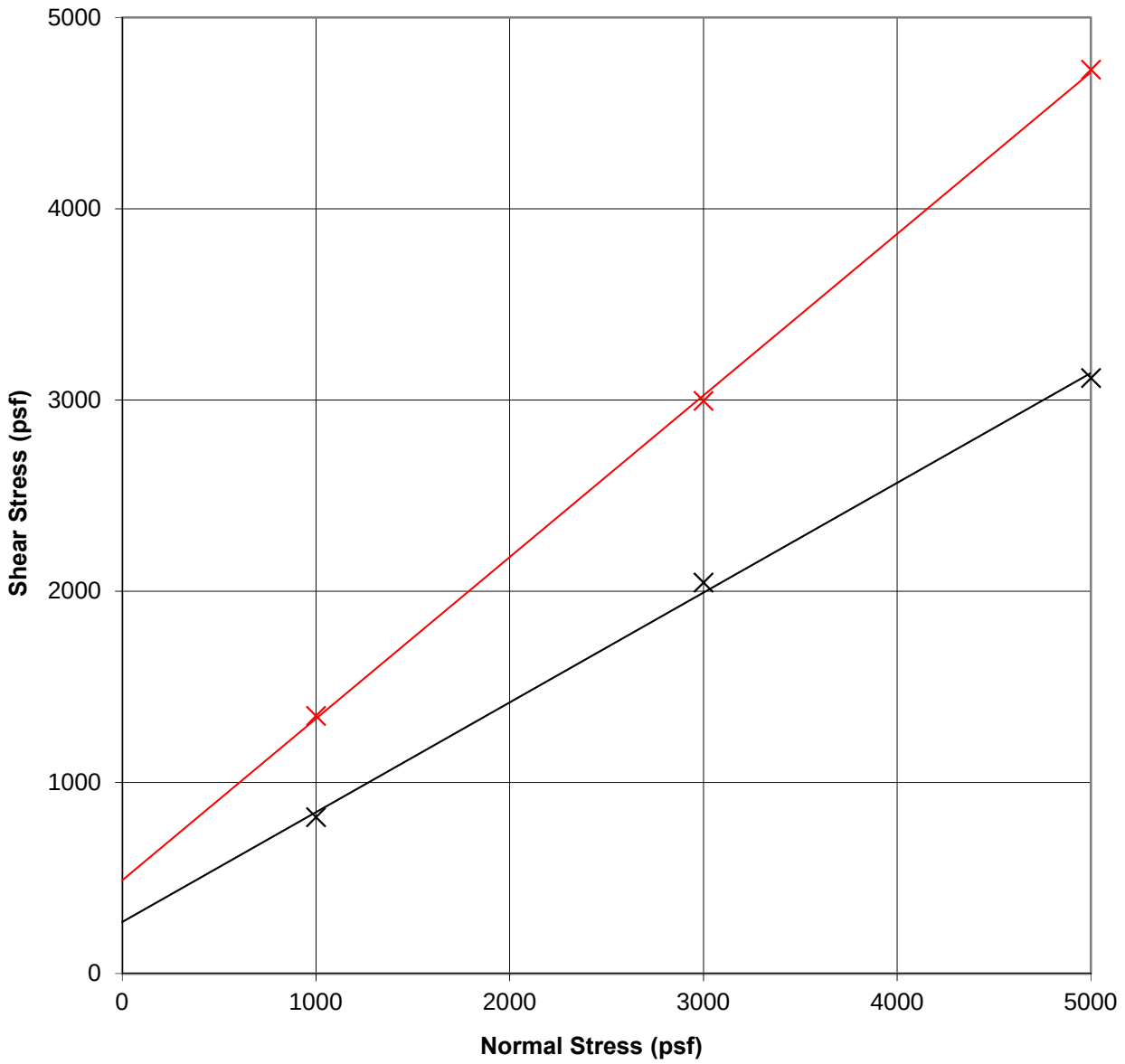
CONSOLIDATION TEST RESULTS

NON-POTABLE OFF-SITE WATER IMPROVEMENTS
ATWELL DEVELOPMENT
BANNING, CALIFORNIA

SEPTEMBER, 2018 | PROJECT NO. T2305-22-10g | FIG B-9



SAMPLE ID	SOIL TYPE	INITIAL DRY DENSITY (pcf)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)	C (psf)	ϕ (deg)
*B-5 @ 0-5'	SC	117.0	7.5	13.1	270	30
B-7 @ 10'	SP-SM	110.9	3.9	16.0	490	40

*Sample remolded to approximately 90% of the test maximum dry density at optimum moisture content.

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DIRECT SHEAR TEST RESULTS

NON-POTABLE OFF-SITE WATER IMPROVEMENTS
ATWELL DEVELOPMENT
BANNING, CALIFORNIA

SEPTEMBER, 2018 | PROJECT NO. T2305-22-10g | FIG B-10

APPENDIX C

APPENDIX C

RECOMMENDED GRADING SPECIFICATIONS

FOR

BOOSTER PUMP STATION
ATWELL DEVELOPMENT
BANNING, CALIFORNIA

PROJECT NO. T2305-22-10G

RECOMMENDED GRADING SPECIFICATIONS

1. GENERAL

1.1 These Recommended Grading Specifications shall be used in conjunction with the Geotechnical Report for the project prepared by Geocon. The recommendations contained in the text of the Geotechnical Report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in the case of conflict.

1.2 Prior to the commencement of grading, a geotechnical consultant (Consultant) shall be employed for the purpose of observing earthwork procedures and testing the fills for substantial conformance with the recommendations of the Geotechnical Report and these specifications. The Consultant should provide adequate testing and observation services so that they may assess whether, in their opinion, the work was performed in substantial conformance with these specifications. It shall be the responsibility of the Contractor to assist the Consultant and keep them apprised of work schedules and changes so that personnel may be scheduled accordingly.

1.3 It shall be the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the Consultant, unsatisfactory conditions such as questionable soil materials, poor moisture condition, inadequate compaction, and/or adverse weather result in a quality of work not in conformance with these specifications, the Consultant will be empowered to reject the work and recommend to the Owner that grading be stopped until the unacceptable conditions are corrected.

2. DEFINITIONS

2.1 **Owner** shall refer to the owner of the property or the entity on whose behalf the grading work is being performed and who has contracted with the Contractor to have grading performed.

2.2 **Contractor** shall refer to the Contractor performing the site grading work.

2.3 **Civil Engineer** or **Engineer of Work** shall refer to the California licensed Civil Engineer or consulting firm responsible for preparation of the grading plans, surveying and verifying as-graded topography.

2.4 **Consultant** shall refer to the soil engineering and engineering geology consulting firm retained to provide geotechnical services for the project.

2.5 **Soil Engineer** shall refer to a California licensed Civil Engineer retained by the Owner, who is experienced in the practice of geotechnical engineering. The Soil Engineer shall be responsible for having qualified representatives on-site to observe and test the Contractor's work for conformance with these specifications.

2.6 **Engineering Geologist** shall refer to a California licensed Engineering Geologist retained by the Owner to provide geologic observations and recommendations during the site grading.

2.7 **Geotechnical Report** shall refer to a soil report (including all addenda) which may include a geologic reconnaissance or geologic investigation that was prepared specifically for the development of the project for which these Recommended Grading Specifications are intended to apply.

3. MATERIALS

3.1 Materials for compacted fill shall consist of any soil excavated from the cut areas or imported to the site that, in the opinion of the Consultant, is suitable for use in construction of fills. In general, fill materials can be classified as *soil* fills, *soil-rock* fills or *rock* fills, as defined below.

3.1.1 **Soil fills** are defined as fills containing no rocks or hard lumps greater than 12 inches in maximum dimension and containing at least 40 percent by weight of material smaller than ¾ inch in size.

3.1.2 **Soil-rock fills** are defined as fills containing no rocks or hard lumps larger than 4 feet in maximum dimension and containing a sufficient matrix of soil fill to allow for proper compaction of soil fill around the rock fragments or hard lumps as specified in Paragraph 6.2. **Oversize rock** is defined as material greater than 12 inches.

3.1.3 **Rock fills** are defined as fills containing no rocks or hard lumps larger than 3 feet in maximum dimension and containing little or no fines. Fines are defined as material smaller than ¾ inch in maximum dimension. The quantity of fines shall be less than approximately 20 percent of the rock fill quantity.

3.2 Material of a perishable, spongy, or otherwise unsuitable nature as determined by the Consultant shall not be used in fills.

3.3 Materials used for fill, either imported or on-site, shall not contain hazardous materials as defined by the California Code of Regulations, Title 22, Division 4, Chapter 30, Articles 9

and 10; 40CFR; and any other applicable local, state or federal laws. The Consultant shall not be responsible for the identification or analysis of the potential presence of hazardous materials. However, if observations, odors or soil discoloration cause Consultant to suspect the presence of hazardous materials, the Consultant may request from the Owner the termination of grading operations within the affected area. Prior to resuming grading operations, the Owner shall provide a written report to the Consultant indicating that the suspected materials are not hazardous as defined by applicable laws and regulations.

3.4 The outer 15 feet of *soil-rock* fill slopes, measured horizontally, should be composed of properly compacted *soil* fill materials approved by the Consultant. *Rock* fill may extend to the slope face, provided that the slope is not steeper than 2:1 (horizontal:vertical) and a soil layer no thicker than 12 inches is track-walked onto the face for landscaping purposes. This procedure may be utilized provided it is acceptable to the governing agency, Owner and Consultant.

3.5 Samples of soil materials to be used for fill should be tested in the laboratory by the Consultant to determine the maximum density, optimum moisture content, and, where appropriate, shear strength, expansion, and gradation characteristics of the soil.

3.6 During grading, soil or groundwater conditions other than those identified in the Geotechnical Report may be encountered by the Contractor. The Consultant shall be notified immediately to evaluate the significance of the unanticipated condition

4. CLEARING AND PREPARING AREAS TO BE FILLED

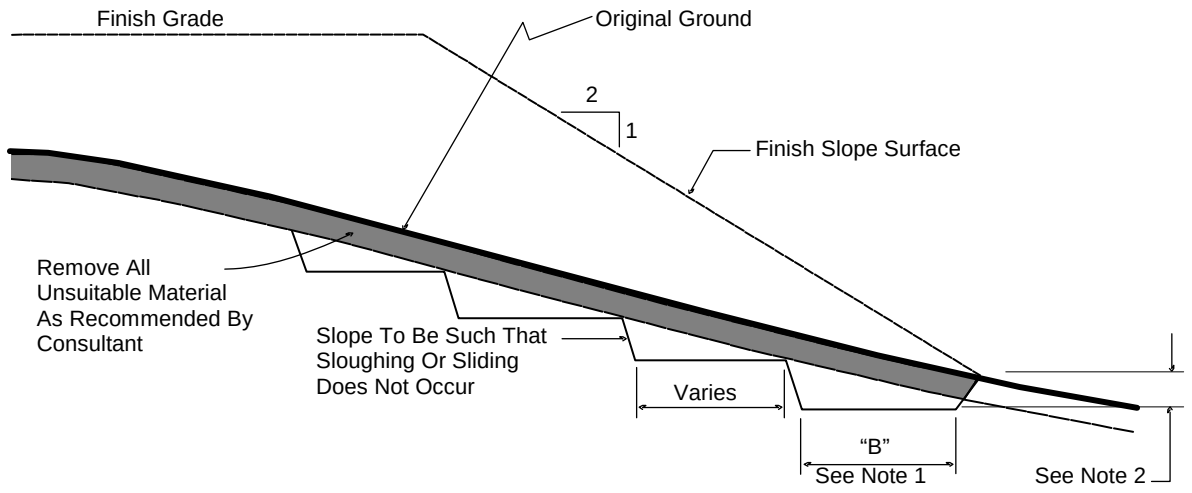
4.1 Areas to be excavated and filled shall be cleared and grubbed. Clearing shall consist of complete removal above the ground surface of trees, stumps, brush, vegetation, man-made structures, and similar debris. Grubbing shall consist of removal of stumps, roots, buried logs and other unsuitable material and shall be performed in areas to be graded. Roots and other projections exceeding 1½ inches in diameter shall be removed to a depth of 3 feet below the surface of the ground. Borrow areas shall be grubbed to the extent necessary to provide suitable fill materials.

4.2 Asphalt pavement material removed during clearing operations should be properly disposed at an approved off-site facility or in an acceptable area of the project evaluated by Geocon and the property owner. Concrete fragments that are free of reinforcing steel may be placed in fills, provided they are placed in accordance with Section 6.2 or 6.3 of this document.

4.3 After clearing and grubbing of organic matter and other unsuitable material, loose or porous soils shall be removed to the depth recommended in the Geotechnical Report. The depth of removal and compaction should be observed and approved by a representative of the Consultant. The exposed surface shall then be plowed or scarified to a minimum depth of 6 inches and until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment to be used.

4.4 Where the slope ratio of the original ground is steeper than 5:1 (horizontal:vertical), or where recommended by the Consultant, the original ground should be benched in accordance with the following illustration.

TYPICAL BENCHING DETAIL



No Scale

DETAIL NOTES: (1) Key width "B" should be a minimum of 10 feet, or sufficiently wide to permit complete coverage with the compaction equipment used. The base of the key should be graded horizontal, or inclined slightly into the natural slope.

(2) The outside of the key should be below the topsoil or unsuitable surficial material and at least 2 feet into dense formational material. Where hard rock is exposed in the bottom of the key, the depth and configuration of the key may be modified as approved by the Consultant.

4.5 After areas to receive fill have been cleared and scarified, the surface should be moisture conditioned to achieve the proper moisture content, and compacted as recommended in Section 6 of these specifications.

5. COMPACTION EQUIPMENT

5.1 Compaction of *soil* or *soil-rock* fill shall be accomplished by sheepsfoot or segmented-steel wheeled rollers, vibratory rollers, multiple-wheel pneumatic-tired rollers, or other types of acceptable compaction equipment. Equipment shall be of such a design that it will be capable of compacting the *soil* or *soil-rock* fill to the specified relative compaction at the specified moisture content.

5.2 Compaction of *rock* fills shall be performed in accordance with Section 6.3.

6. PLACING, SPREADING AND COMPACTION OF FILL MATERIAL

6.1 *Soil* fill, as defined in Paragraph 3.1.1, shall be placed by the Contractor in accordance with the following recommendations:

6.1.1 *Soil* fill shall be placed by the Contractor in layers that, when compacted, should generally not exceed 8 inches. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to obtain uniformity of material and moisture in each layer. The entire fill shall be constructed as a unit in nearly level lifts. Rock materials greater than 12 inches in maximum dimension shall be placed in accordance with Section 6.2 or 6.3 of these specifications.

6.1.2 In general, the *soil* fill shall be compacted at a moisture content at or above the optimum moisture content as determined by ASTM D 1557.

6.1.3 When the moisture content of *soil* fill is below that specified by the Consultant, water shall be added by the Contractor until the moisture content is in the range specified.

6.1.4 When the moisture content of the *soil* fill is above the range specified by the Consultant or too wet to achieve proper compaction, the *soil* fill shall be aerated by the Contractor by blading/mixing, or other satisfactory methods until the moisture content is within the range specified.

6.1.5 After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent. Relative compaction is defined as the ratio (expressed in percent) of the in-place dry density of the compacted fill to the maximum laboratory dry density as determined in accordance with ASTM D 1557. Compaction shall be continuous over the entire area, and compaction equipment shall make sufficient passes so that the specified minimum relative compaction has been achieved throughout the entire fill.

6.1.6 Where practical, soils having an Expansion Index greater than 50 should be placed at least 3 feet below finish pad grade and should be compacted at a moisture content generally 2 to 4 percent greater than the optimum moisture content for the material.

6.1.7 Properly compacted *soil* fill shall extend to the design surface of fill slopes. To achieve proper compaction, it is recommended that fill slopes be over-built by at least 3 feet and then cut to the design grade. This procedure is considered preferable to track-walking of slopes, as described in the following paragraph.

6.1.8 As an alternative to over-building of slopes, slope faces may be back-rolled with a heavy-duty loaded sheepsfoot or vibratory roller at maximum 4-foot fill height intervals. Upon completion, slopes should then be track-walked with a D-8 dozer or similar equipment, such that a dozer track covers all slope surfaces at least twice.

6.2 *Soil-rock* fill, as defined in Paragraph 3.1.2, shall be placed by the Contractor in accordance with the following recommendations:

6.2.1 Rocks larger than 12 inches but less than 4 feet in maximum dimension may be incorporated into the compacted *soil* fill, but shall be limited to the area measured 15 feet minimum horizontally from the slope face and 5 feet below finish grade or 3 feet below the deepest utility, whichever is deeper.

6.2.2 Rocks or rock fragments up to 4 feet in maximum dimension may either be individually placed or placed in windrows. Under certain conditions, rocks or rock fragments up to 10 feet in maximum dimension may be placed using similar methods. The acceptability of placing rock materials greater than 4 feet in maximum dimension shall be evaluated during grading as specific cases arise and shall be approved by the Consultant prior to placement.

6.2.3 For individual placement, sufficient space shall be provided between rocks to allow for passage of compaction equipment.

6.2.4 For windrow placement, the rocks should be placed in trenches excavated in properly compacted *soil* fill. Trenches should be approximately 5 feet wide and 4 feet deep in maximum dimension. The voids around and beneath rocks should be filled with approved granular soil having a Sand Equivalent of 30 or greater and should be compacted by flooding. Windrows may also be placed utilizing an "open-face" method in lieu of the trench procedure, however, this method should first be approved by the Consultant.

6.2.5 Windrows should generally be parallel to each other and may be placed either parallel to or perpendicular to the face of the slope depending on the site geometry. The minimum horizontal spacing for windrows shall be 12 feet center-to-center with a 5-foot stagger or offset from lower courses to next overlying course. The minimum vertical spacing between windrow courses shall be 2 feet from the top of a lower windrow to the bottom of the next higher windrow.

6.2.6 Rock placement, fill placement and flooding of approved granular soil in the windrows should be continuously observed by the Consultant.

6.3 *Rock* fills, as defined in Section 3.1.3, shall be placed by the Contractor in accordance with the following recommendations:

6.3.1 The base of the *rock* fill shall be placed on a sloping surface (minimum slope of 2 percent). The surface shall slope toward suitable subdrainage outlet facilities. The *rock* fills shall be provided with subdrains during construction so that a hydrostatic pressure buildup does not develop. The subdrains shall be permanently connected to controlled drainage facilities to control post-construction infiltration of water.

6.3.2 *Rock* fills shall be placed in lifts not exceeding 3 feet. Placement shall be by rock trucks traversing previously placed lifts and dumping at the edge of the currently placed lift. Spreading of the *rock* fill shall be by dozer to facilitate *seating* of the rock. The *rock* fill shall be watered heavily during placement. Watering shall consist of water trucks traversing in front of the current rock lift face and spraying water continuously during rock placement. Compaction equipment with compactive energy comparable to or greater than that of a 20-ton steel vibratory roller or other compaction equipment providing suitable energy to achieve the required compaction or deflection as recommended in Paragraph 6.3.3 shall be utilized. The number of passes to be made should be determined as described in Paragraph 6.3.3. Once a *rock* fill lift has been covered with *soil* fill, no additional *rock* fill lifts will be permitted over the *soil* fill.

6.3.3 Plate bearing tests, in accordance with ASTM D 1196, may be performed in both the compacted *soil* fill and in the *rock* fill to aid in determining the required minimum number of passes of the compaction equipment. If performed, a minimum of three plate bearing tests should be performed in the properly compacted *soil* fill (minimum relative compaction of 90 percent). Plate bearing tests shall then be performed on areas of *rock* fill having two passes, four passes and six passes of the compaction equipment, respectively. The number of passes required for the *rock* fill shall be determined by comparing the results of the plate bearing tests for the *soil* fill and the *rock* fill and by evaluating the deflection

variation with number of passes. The required number of passes of the compaction equipment will be performed as necessary until the plate bearing deflections are equal to or less than that determined for the properly compacted *soil* fill. In no case will the required number of passes be less than two.

6.3.4 A representative of the Consultant should be present during *rock* fill operations to observe that the minimum number of "passes" have been obtained, that water is being properly applied and that specified procedures are being followed. The actual number of plate bearing tests will be determined by the Consultant during grading.

6.3.5 Test pits shall be excavated by the Contractor so that the Consultant can state that, in their opinion, sufficient water is present and that voids between large rocks are properly filled with smaller rock material. In-place density testing will not be required in the *rock* fills.

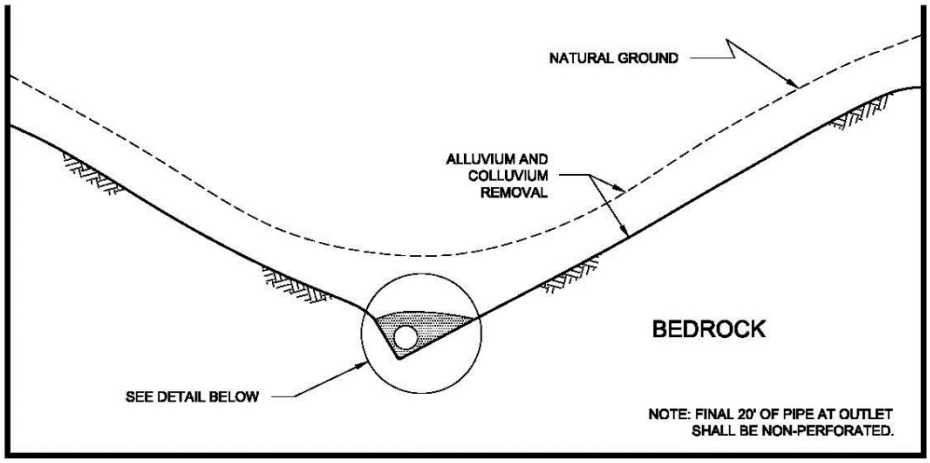
6.3.6 To reduce the potential for "piping" of fines into the *rock* fill from overlying *soil* fill material, a 2-foot layer of graded filter material shall be placed above the uppermost lift of *rock* fill. The need to place graded filter material below the *rock* should be determined by the Consultant prior to commencing grading. The gradation of the graded filter material will be determined at the time the *rock* fill is being excavated. Materials typical of the *rock* fill should be submitted to the Consultant in a timely manner, to allow design of the graded filter prior to the commencement of *rock* fill placement.

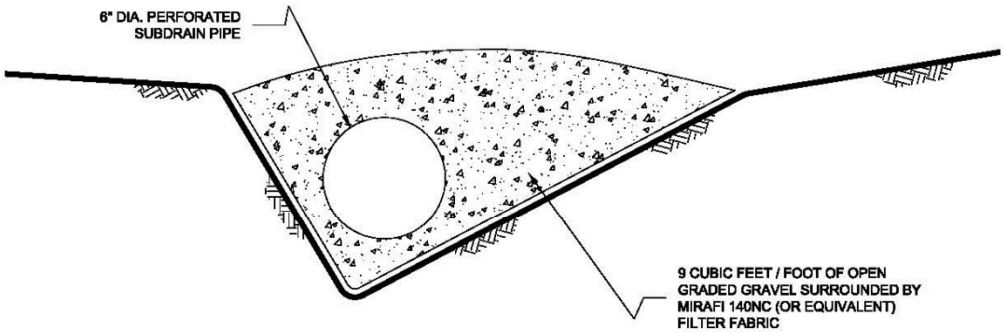
6.3.7 *Rock* fill placement should be continuously observed during placement by the Consultant.

7. SUBDRAINS

7.1 The geologic units on the site may have permeability characteristics and/or fracture systems that could be susceptible under certain conditions to seepage. The use of canyon subdrains may be necessary to mitigate the potential for adverse impacts associated with seepage conditions. Canyon subdrains with lengths in excess of 500 feet or extensions of existing offsite subdrains should use 8-inch-diameter pipes. Canyon subdrains less than 500 feet in length should use 6-inch-diameter pipes.

TYPICAL CANYON DRAIN DETAIL





NOTES:

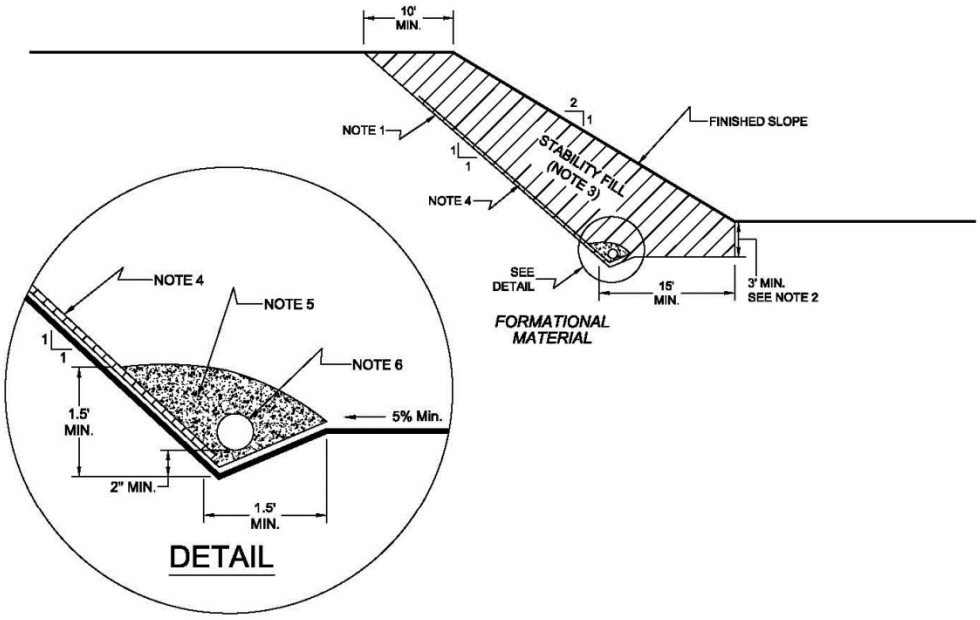
1.....6-INCH DIAMETER, SCHEDULE 80 PVC PERFORATED PIPE FOR FILLS
IN EXCESS OF 100-FEET IN DEPTH OR A PIPE LENGTH OF LONGER THAN 500 FEET.

2.....6-INCH DIAMETER, SCHEDULE 40 PVC PERFORATED PIPE FOR FILLS
LESS THAN 100-FEET IN DEPTH OR A PIPE LENGTH SHORTER THAN 500 FEET.

NO SCALE

7.2 Slope drains within stability fill keyways should use 4-inch-diameter (or lager) pipes.

TYPICAL STABILITY FILL DETAIL



NOTES:

1.....EXCAVATE BACKCUT AT 1:1 INCLINATION (UNLESS OTHERWISE NOTED).

2.....BASE OF STABILITY FILL TO BE 3 FEET INTO FORMATIONAL MATERIAL, SLOPING A MINIMUM 5% INTO SLOPE.

3.....STABILITY FILL TO BE COMPOSED OF PROPERLY COMPACTED GRANULAR SOIL.

4.....CHIMNEY DRAINS TO BE APPROVED PREFABRICATED CHIMNEY DRAIN PANELS (MIRADRAIN G200N OR EQUIVALENT) SPACED APPROXIMATELY 20 FEET CENTER TO CENTER AND 4 FEET WIDE. CLOSER SPACING MAY BE REQUIRED IF SEEPAGE IS ENCOUNTERED.

5.....FILTER MATERIAL TO BE 3/4-INCH, OPEN-GRADED CRUSHED ROCK ENCLOSED IN APPROVED FILTER FABRIC (MIRAFI 140NC).

6.....COLLECTOR PIPE TO BE 4-INCH MINIMUM DIAMETER, PERFORATED, THICK-WALLED PVC SCHEDULE 40 OR EQUIVALENT, AND SLOPED TO DRAIN AT 1 PERCENT MINIMUM TO APPROVED OUTLET.

NO SCALE

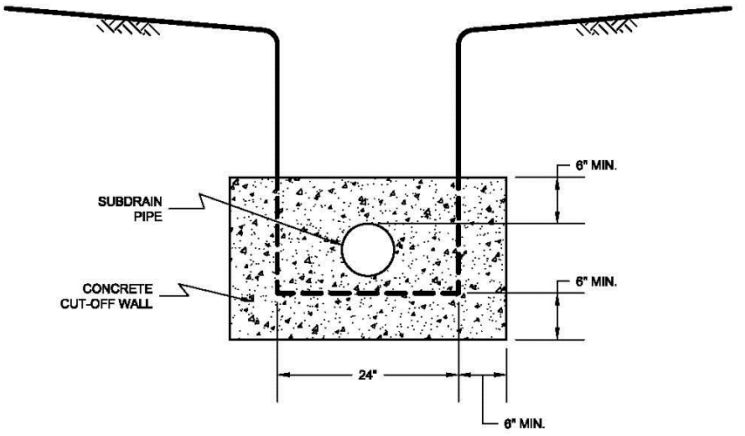
7.3 The actual subdrain locations will be evaluated in the field during the remedial grading operations. Additional drains may be necessary depending on the conditions observed and the requirements of the local regulatory agencies. Appropriate subdrain outlets should be evaluated prior to finalizing 40-scale grading plans.

7.4 *Rock* fill or *soil-rock* fill areas may require subdrains along their down-slope perimeters to mitigate the potential for buildup of water from construction or landscape irrigation. The subdrains should be at least 6-inch-diameter pipes encapsulated in gravel and filter fabric. *Rock* fill drains should be constructed using the same requirements as canyon subdrains.

7.5 Prior to outletting, the final 20-foot segment of a subdrain that will not be extended during future development should consist of non-perforated drainpipe. At the non-perforated/ perforated interface, a seepage cutoff wall should be constructed on the downslope side of the pipe.

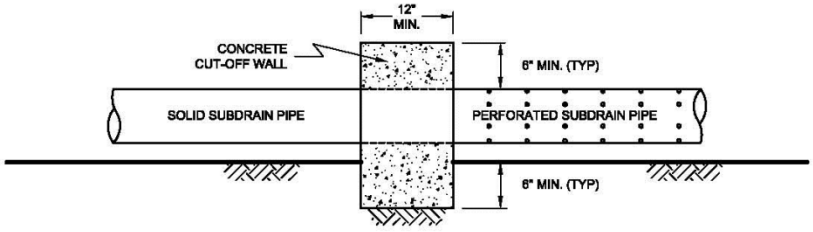
TYPICAL CUT OFF WALL DETAIL

FRONT VIEW



NO SCALE

SIDE VIEW

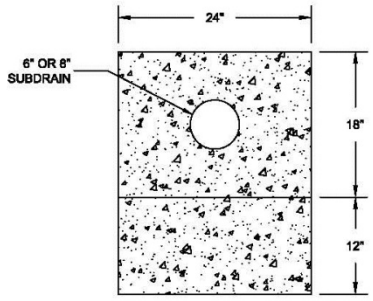


NO SCALE

7.6 Subdrains that discharge into a natural drainage course or open space area should be provided with a permanent headwall structure.

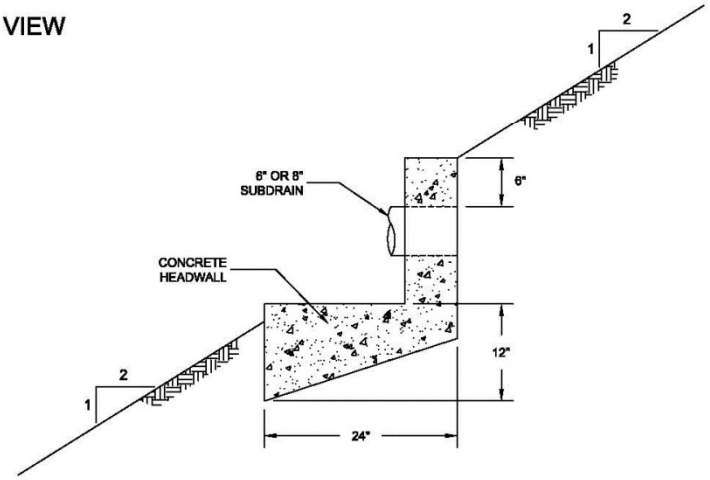
TYPICAL HEADWALL DETAIL

FRONT VIEW



NO SCALE

SIDE VIEW



NOTE: HEADWALL SHOULD OUTLET AT TOE OF FILL SLOPE OR INTO CONTROLLED SURFACE DRAINAGE

NO SCALE

7.7 The final grading plans should show the location of the proposed subdrains. After completion of remedial excavations and subdrain installation, the project civil engineer should survey the drain locations and prepare an "as-built" map showing the drain locations. The final outlet and connection locations should be determined during grading operations. Subdrains that will be extended on adjacent projects after grading can be placed on formational material and a vertical riser should be placed at the end of the subdrain. The grading contractor should consider videoing the subdrains shortly after burial to check proper installation and functionality. The contractor is responsible for the performance of the drains.

8. OBSERVATION AND TESTING

8.1 The Consultant shall be the Owner's representative to observe and perform tests during clearing, grubbing, filling, and compaction operations. In general, no more than 2 feet in vertical elevation of *soil* or *soil-rock* fill should be placed without at least one field density test being performed within that interval. In addition, a minimum of one field density test should be performed for every 2,000 cubic yards of *soil* or *soil-rock* fill placed and compacted.

8.2 The Consultant should perform a sufficient distribution of field density tests of the compacted *soil* or *soil-rock* fill to provide a basis for expressing an opinion whether the fill material is compacted as specified. Density tests shall be performed in the compacted materials below any disturbed surface. When these tests indicate that the density of any layer of fill or portion thereof is below that specified, the particular layer or areas represented by the test shall be reworked until the specified density has been achieved.

8.3 During placement of *rock* fill, the Consultant should observe that the minimum number of passes have been obtained per the criteria discussed in Section 6.3.3. The Consultant should request the excavation of observation pits and may perform plate bearing tests on the placed *rock* fills. The observation pits will be excavated to provide a basis for expressing an opinion as to whether the *rock* fill is properly seated and sufficient moisture has been applied to the material. When observations indicate that a layer of *rock* fill or any portion thereof is below that specified, the affected layer or area shall be reworked until the *rock* fill has been adequately seated and sufficient moisture applied.

8.4 A settlement monitoring program designed by the Consultant may be conducted in areas of *rock* fill placement. The specific design of the monitoring program shall be as recommended in the Conclusions and Recommendations section of the project Geotechnical Report or in the final report of testing and observation services performed during grading.

8.5 We should observe the placement of subdrains, to check that the drainage devices have been placed and constructed in substantial conformance with project specifications.

8.6 Testing procedures shall conform to the following Standards as appropriate:

8.6.1 Soil and Soil-Rock Fills:

8.6.1.1 Field Density Test, ASTM D 1556, *Density of Soil In-Place By the Sand-Cone Method.*

8.6.1.2 Field Density Test, Nuclear Method, ASTM D 6938, *Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth).*

8.6.1.3 Laboratory Compaction Test, ASTM D 1557, *Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Pound Hammer and 18-Inch Drop*.

8.6.1.4. Expansion Index Test, ASTM D 4829, *Expansion Index Test*.

9. PROTECTION OF WORK

9.1 During construction, the Contractor shall properly grade all excavated surfaces to provide positive drainage and prevent ponding of water. Drainage of surface water shall be controlled to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control features have been installed. Areas subjected to erosion or sedimentation shall be properly prepared in accordance with the Specifications prior to placing additional fill or structures.

9.2 After completion of grading as observed and tested by the Consultant, no further excavation or filling shall be conducted except in conjunction with the services of the Consultant.

10. CERTIFICATIONS AND FINAL REPORTS

10.1 Upon completion of the work, Contractor shall furnish Owner a certification by the Civil Engineer stating that the lots and/or building pads are graded to within 0.1 foot vertically of elevations shown on the grading plan and that all tops and toes of slopes are within 0.5 foot horizontally of the positions shown on the grading plans. After installation of a section of subdrain, the project Civil Engineer should survey its location and prepare an *as-built* plan of the subdrain location. The project Civil Engineer should verify the proper outlet for the subdrains and the Contractor should ensure that the drain system is free of obstructions.

10.2 The Owner is responsible for furnishing a final as-graded soil and geologic report satisfactory to the appropriate governing or accepting agencies. The as-graded report should be prepared and signed by a California licensed Civil Engineer experienced in geotechnical engineering and by a California Certified Engineering Geologist, indicating that the geotechnical aspects of the grading were performed in substantial conformance with the Specifications or approved changes to the Specifications.

Appendix E.2

Paleontological Resource Assessment

Paleontological Resource Assessment for the Banning NP-2 Booster Pump Station and Reservoir Project City of Banning, Riverside County, California

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December 2023
draft

MANAGEMENT SUMMARY

At the request of Albert A. Webb Associates, Applied EarthWorks, Inc. (Æ) assessed the potential for impacts to significant paleontological resources for the Banning NP-2 Booster Pump Station and Reservoir Project (Project) in the city of Banning within Riverside County, California. The Project involves the construction of a booster pump facility and reservoir tank on approximately 7.51 acres of land in southwest Banning. Æ prepared this Paleontological Resource Assessment (PRA) in partial satisfaction of the California Environmental Quality Act (CEQA) requirements. The City of Banning is the lead agency for CEQA compliance.

This PRA was completed from a combination of desktop studies and fieldwork. The desktop studies included a review of published and unpublished literature and maps as well as museum records searches. The purpose of these studies was to identify the geologic units in the Project area and to determine whether previously recorded paleontological localities occur either within the Project area or within the same geologic units nearby but outside the Project area. As a result of the desktop studies and fieldwork, Æ has determined that the Project area has High A, High B, and Low Sensitivity based on Riverside County's sensitivity rankings.

Æ recommends preparation of a Paleontological Resource Impact Mitigation Program (PRIMP) by a qualified professional paleontologist (Paleontological Principal Investigator, Project Paleontologist) as defined by mitigation paleontology industry standards and/or the Society of Vertebrate Paleontology. The PRIMP will specify the steps to be taken to mitigate impacts to paleontological resources. For instance, Worker's Environmental Awareness Program training should be prepared prior to the start of Project-related ground disturbance and presented in person to all field personnel to describe the types of paleontological resources that may be found and the procedures to follow if any are encountered. The Project-specific PRIMP also will indicate where construction monitoring will be required and the frequency of required monitoring (i.e., full-time, spot-checks, etc.). to ensure adverse impacts to paleontological resources will be reduced to a less than significant level in accordance with CEQA.

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1
INTRODUCTION

At the request of Albert A. Webb Associates, Applied EarthWorks, Inc. (Æ) assessed the potential for impacts to significant paleontological resources for the Banning NP-2 Booster Pump Station and Reservoir Project (Project) in the city of Banning within Riverside County, California (Figure 1-1). Æ prepared this Paleontological Resource Assessment (PRA) in partial satisfaction of the requirements of the California Environmental Quality Act (CEQA). The City of Banning (City) is the lead agency for CEQA compliance.

1.1 PROJECT DESCRIPTION

The Project will be constructed on approximately 7.51 acres of land on the south side of West Lincoln Street, east of South 22nd Avenue in the southwestern portion of Banning. Specifically, the Project area is mapped in the southeast quarter of Section 8 of Township 3 South, Range 1 East, as shown on the Beaumont, California 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle map (Figure 1-2).

The Project involves construction of a booster pump facility and reservoir tank. The station will consist of a housing facility designed to contain vertical turbine pumps capable of transmitting 2,500 gallons of nonpotable water per minute. The associated reservoir tank is an aboveground structure that will store approximately 60,910 gallons of nonpotable water during operation. All these facilities are water system improvements needed to supply nonpotable water to Lions Park, Banning High School, Dysart Park, and the Sun Lakes development near Highland Home Road. The maximum depth of ground disturbance during Project construction is not expected to exceed 10 feet below ground surface (bgs). Project construction is expected to disturb only approximately 0.5 acres of Assessor's Parcel Number 538-280-001.

1.2 PURPOSE OF INVESTIGATION

This PRA is designed to accomplish several goals: (1) identify the geologic units within the Project area and assess their paleontological resource potential; (2) determine whether the Project has the potential to adversely impact scientifically significant paleontological resources; (3) provide Project-specific management recommendations for paleontological resources, as necessary; and (4) demonstrate compliance with state laws and local regulations. Section 1.4 describes the ways in which this PRA meets the stated goals.

1.3 KEY PERSONNEL

Qualifications for Æ's key paleontology personnel can be found in Appendix A. Æ Paleontology Program Manager Amy Ollendorf served as the Principal Investigator for the paleontological investigation. She oversaw each task required for this PRA, including quality control. Ollendorf qualifies as a principal investigator for paleontology per industry standards (Murphey et al., 2019). She has interdisciplinary doctor of philosophy and master of science degrees involving geology and a bachelor of science degree in geology and anthropology (double major), all of which focused on paleontological subject matter. Ollendorf is the principal investigator for

Figure 1-1 Project vicinity in Riverside County, California.

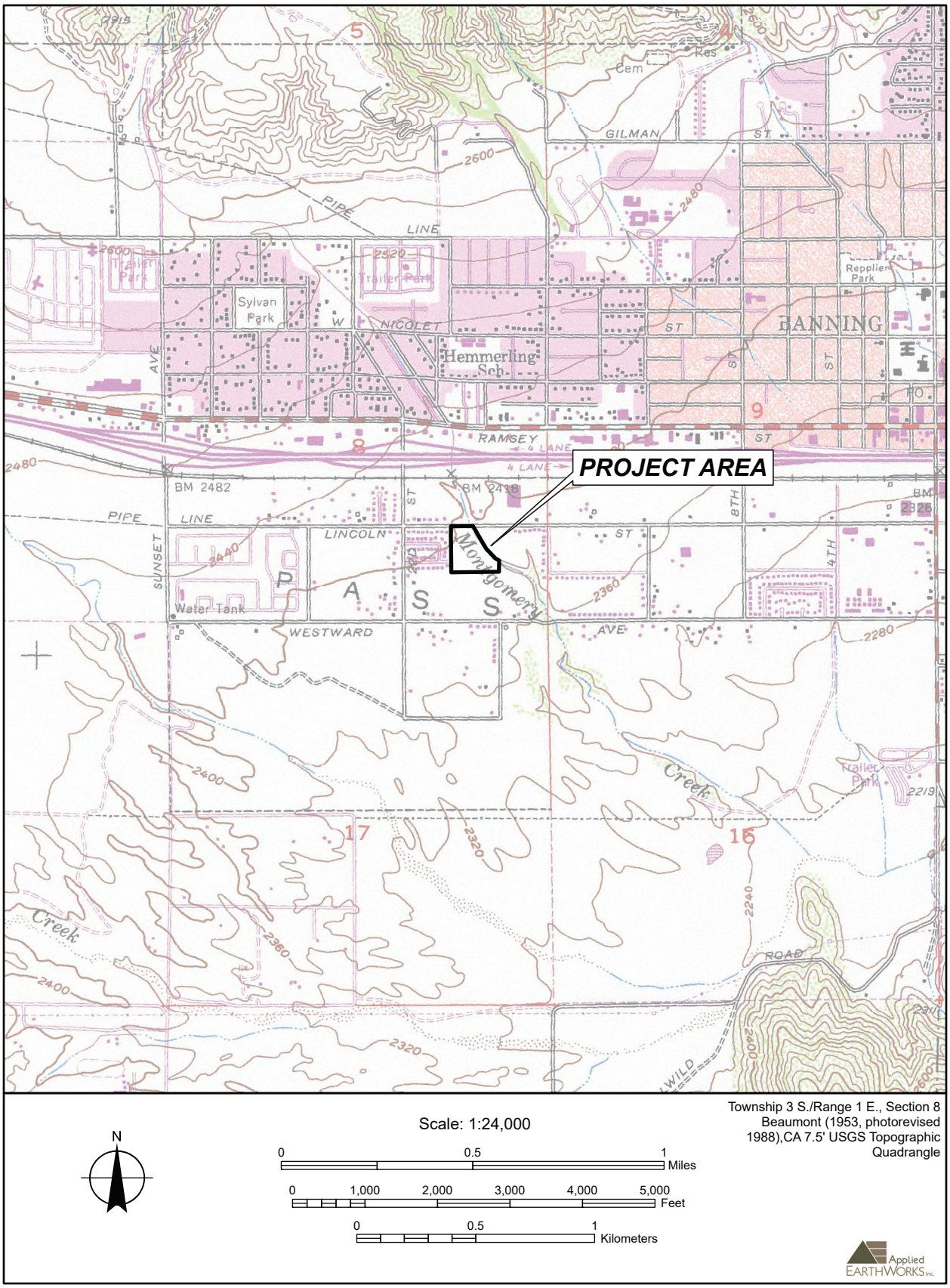

Figure 1-2 Project location on USGS Beaumont 7.5-minute topographic quadrangle.

paleontology on Æ's 2021–2024 California Statewide Paleontological Resource Use Permit (CA-21-06P) from the U.S. Bureau of Land Management (BLM). She also is a Registered Professional Archaeologist (RPA 12588) with over 40 years of experience.

Æ Senior Paleontologist Chris Shi completed the desktop research and wrote the PRA with contributions from Æ Cross-Trained Field Technician Aimee Montenegro. Shi has the necessary qualifications to meet the Society of Vertebrate Paleontology (SVP; 2010) and industry standards (Murphey et al., 2019) for a qualified professional paleontologist and is another principal investigator for paleontology on Æ's BLM permit. He has a master's degree in geology with a focus on paleobotany, and additional graduate studies in invertebrate paleontology. Additionally, he has over 14 years of experience in geology and paleontology, including the past 7 years in paleontological monitoring, recovery, and preparation of fossil remains, laboratory analysis, and report preparation. Montenegro has a bachelor's degree in anthropology as well as 6 years of professional paleontological experience, including management of museum fossil collections and paleontological monitoring.

Æ Geographic Information System (GIS) Analyst Cari Inoway and Æ Senior Paleontologist/GIS Analyst Melissa Macias prepared the figures for the report in coordination with Shi. Æ Paleontological Technician Andrew Vasquez completed the paleontological field survey.

1.4 REPORT ORGANIZATION

Chapter 1 has described the Project, defined the purpose of the investigation, and provided a description of Æ's key personnel for this PRA. Chapter 2 discusses the regulatory framework governing the Project. Chapter 3 presents the paleontological sensitivity criteria and resource guidelines used for this assessment. Chapter 4 provides the methods employed, and Chapter 5 describes the geology and paleontology of the Project area. The results of the desktop studies, and paleontological sensitivity assessment are presented in Chapter 6. Management recommendations can be found in Chapter 7, and references cited are listed in Chapter 8. Appendix A provides qualifications of key personnel.

2
REGULATORY ENVIRONMENT

Paleontological resources (i.e., fossils) are considered nonrenewable because when they are destroyed, they cannot be replaced. As such, paleontological resources are afforded protection under various federal, state, and local laws. This Project is not subject to federal laws. Consequently, all resources are protected under only state and local laws, as described in the following sections.

2.1 STATE

California is among the states that protect significant paleontological resources. CEQA is the legal framework through which this protection is accomplished. Enacted in 1970, CEQA does not directly regulate land uses but instead requires state and local agencies within California to follow a protocol of analysis and public disclosure of unavoidable environmental impacts of proposed projects and adopt all feasible measures to mitigate those impacts.

2.1.1 California Environmental Quality Act

This Project is subject to Section 15002(a)(3) of the Guidelines for Implementation of CEQA (Title 14, California Code of Regulations, Chapter 3), which states one of the basic purposes of CEQA is the intention to "prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible." Therefore, CEQA requires detailed studies that analyze the environmental effects of a proposed project.

If a project is determined to have a potential significant environmental effect, the act requires that alternative plans and mitigation measures be considered. Specifically, Section VII(f) of Appendix G of the CEQA Guidelines, the Environmental Checklist Form, poses the question, "Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" If paleontological resources are identified as being within the proposed project area, the sponsoring agency must take those resources into consideration when evaluating project effects. The level of consideration may vary with the importance of the resource.

2.1.2 CEQA Implementation

Guidelines for implementation of CEQA are codified in the California Code of Regulations, Title 14, Chapter 3, Section 15000 et seq., which requires state and local public agencies to identify the environmental impacts of proposed discretionary activities or projects, determine if the impacts will be significant, and identify alternatives and mitigation measures that will substantially reduce or eliminate significant impacts to the environment. The various agencies within state government all have their own guidance documents to assist with CEQA compliance. The City is the government agency responsible for CEQA compliance for the Project.

2.2 LOCAL

In addition to state-level implementing regulations, policies, and guidance, various counties and municipalities throughout California also have developed environmental goals, policies, and guidance that pertain to paleontological resources. The following sections list all relevant goals, objectives, and policies.

2.2.1 County of Riverside

There are several policies covering paleontological resources within the County of Riverside (County) *General Plan*, *Multipurpose Open Space (OS) Element* (Riverside County Planning Department, 2015:OS-51):

> **OS 19.6:** Whenever existing information indicates that a site proposed for development has high paleontological sensitivity as shown on Figure OS-8, paleontological resource impact mitigation program (PRIMP) shall be filed with the Riverside County Geologist prior to site grading. The PRIMP shall specify the steps to be taken to mitigate impacts to paleontological resources.
>
> **OS 19.7:** Whenever existing information indicates that a site proposed for development has low paleontological sensitivity as shown on Figure OS-8, no direct mitigation is required unless a fossil is encountered during site development. Should a fossil be encountered, the Riverside County Geologist shall be notified and a paleontologist shall be retained by the project proponent. The paleontologist shall document the extent and potential significance of the paleontological resources on the site and establish appropriate mitigation measures for further site development.
>
> **OS 19.8:** Whenever existing information indicates that a site proposed for development has undetermined paleontological sensitivity as shown on Figure OS-8, a report shall be filed with the Riverside County Geologist documenting the extent and potential significance of the paleontological resources on site and identifying mitigation measures for the fossil and for impacts to significant paleontological resources prior to approval of that department.
>
> **OS 19.9:** Whenever paleontological resources are found, the County Geologist shall direct them to a facility within Riverside County for their curation, including the Western Science Center in the City of Hemet.

2.2.2 City of Banning

The City's General Plan does not include any goals or policies pertaining to paleontological resources. As such, this PRA provides recommendations based on the County's guidelines where relevant.

3
PALEONTOLOGICAL RESOURCE ASSESSMENT GUIDELINES

Protection of paleontological resources requires assessment of the potential for geologic units to yield significant paleontological resources that could be directly or indirectly impacted or destroyed during Project development. Successful protection also involves the formulation and implementation of appropriate management measures to mitigate impacts. Mitigation measures are proportional to the potential of individual areas to yield intact and significant paleontological resources.

3.1 DEFINITION OF PALEONTOLOGICAL RESOURCES AND SIGNIFICANCE CRITERIA

The SVP guidelines define paleontological resources as fossils and fossiliferous deposits (SVP, 2010). Fossils are the evidence of once-living organisms as preserved in the rock record. They include both the lithified remains of ancient plants and animals and the traces thereof (trackways, imprints, burrows, etc.). In general, the SVP considers fossils to be greater than 5,000 years old (older than middle Holocene[1]) and to typically be preserved in sedimentary rocks, although certain volcanic rocks and low-grade metamorphic rocks may be fossiliferous if formed under certain conditions.

Well-preserved and identifiable individual fossils are considered significant paleontological resources if they are a type specimen, rare, a complete specimen, or part of an important diverse fossil assemblage. Of particular importance are fossils found in situ, or undisturbed from their primary geologic context. These fossils are important because they are used to examine evolutionary relationships, provide insight on the development of and interaction between biological communities, establish time scales for geologic studies, and for many other scientific purposes, including investigation into paleoenvironments and paleoclimates (Scott and Springer, 2003; SVP, 2010). Among the various types of fossils, intact and in situ vertebrate fossils are usually assigned a greater significance than other types as they are comparatively rare. Consequently, more attention tends to be placed on the recovery of vertebrate fossils than other types.

3.2 PROFESSIONAL STANDARDS AND CLASSIFICATION OF PALEONTOLOGICAL RESOURCE SENSITIVITY

Most professional paleontologists in California adhere to the guidelines set forth by the SVP (2010) and industrywide standards (Murphey et al., 2019) to determine the course of paleontological mitigation for a given project unless specific city, county, state, or federal guidelines are available. The City does not have its own paleontological sensitivity guidelines. However, the County has developed a system that establishes detailed protocols for the assessment of the paleontological sensitivity of a project area and outlines measures to follow in

[1] Middle Holocene: the Holocene Epoch is subdivided into early (11,700 to 8,200 years ago), middle (8,200 to 4,200 years ago), and late (4,200 years ago to present) subepochs, (Cohen et al., 2023). The Quaternary Period also includes the older Pleistocene Epoch, which is also subdivided into early (2.6 million to 1.8 million years ago), middle (1.8 million to 77,400 years ago), and late (77,400 to 11,700 years ago) subepochs (Cohen et al., 2023).

order to mitigate adverse impacts to known or unknown fossil resources during project development (County of Riverside, 2015). Therefore, this PRA utilizes the County's ranking system and mitigation measures.

Following the County's established process, baseline information is used to assign the paleontological sensitivity of a geologic unit(s) (or members thereof) to one of four categories—Low, Undetermined, High A (Ha), and High B (Hb) (County of Riverside, 2015). Table 3-1 below shows the criteria for the categories in comparison with those of the SVP as well as mitigation recommendations for each category.

Table 3-1
Paleontological Sensitivity Classifications

Sensitivity/Potential			
County of Riverside	**SVP**	**Criteria[a]**	**Mitigation Recommendations[b]**
High A High B	High	Rock units from which vertebrate or significant specimens of other fossil types have been recovered are considered to have a high potential. Rock units with high potential also may include rock units that are temporally or lithologically suitable for the preservation of fossils (e.g., Middle Holocene and older, argillaceous and carbonate-rich paleosols, fine-grained marine sandstones, etc.). Rock units with High B Sensitivity are considered to have high potential at depths greater than 4 feet bgs.	Retain a qualified paleontologist and typically complete a field survey, PRIMP, and on-site construction monitoring. Any significant specimens discovered during monitoring will need to be prepared, identified, and curated into a museum. A final report documenting the significance of the finds will also be required.
Undetermined	Undetermined	In some cases, available literature on a particular rock unit will be scarce and a determination of whether or not it is fossiliferous or potentially fossiliferous will be difficult to make. Under these circumstances, further study is needed to determine the unit's paleontological resource potential.	A field survey is required to further assess the unit's paleontological potential. The survey may provide data for development of a PRIMP prior to construction.
Low	Low	Rocks units from which few fossils have been recovered or generally unsuitable for preservation of fossils are considered to have a low potential. These units typically yield fossils only on rare occasions and under unusual circumstances (e.g., basalt flows, recent colluvium, etc.).	Mitigation is not typically required; however, if an unanticipated paleontological resource is encountered, a qualified professional paleontologist (Principal Investigator, Project Paleontologist) may need to evaluate the resource to consider mitigation.
N/A	No Potential	Rock units that have no potential for paleontological resources are those that are formed under or exposed to immense heat and pressure, such as high-grade metamorphic rocks and plutonic igneous rocks.	No mitigation required.

a - Criteria based on County of Riverside (2015) and SVP (2010).
b - Recommendations based on County of Riverside (2015).

4
METHODS

This PRA was completed through desktop studies and a field survey. The twofold purpose of the off- and on-site research was: (1) to identify the geologic units in the Project area and immediate vicinity to determine whether previously recorded paleontological localities occur either within the Project area or within the same geologic units elsewhere nearby and (2) to determine the sensitivity of the geologic units in the Project area for their potential to yield paleontological resources.

4.1 LITERATURE REVIEWS AND MUSEUM RECORDS SEARCHES

In many areas, the near-surface layers of sediments and sedimentary rocks are broken down and converted to soil (pedogenesis) through chemical and physical weathering processes (Boggs, 2012). During pedogenesis, any fossils preserved within the near-surface layers often are destroyed or rendered unrecognizable. Therefore, intact and identifiable fossils are unlikely to be found in soil. Reviews of relevant geologic maps, regional geological publications, and unpublished reports are necessary to ascertain the geology and stratigraphy of a project area to determine the potential for significant subsurface paleontological resources.

To supplement the map and literature reviews, Æ requested searches of records of the invertebrate and vertebrate collections maintained by the Natural History Museum of Los Angeles County (NHMLAC) and the Western Science Center of Hemet (WSC). Æ also completed online searches of two databases readily available to the public—the Paleobiology Database (PBDB) and the database maintained by the University of California Museum of Paleontology (UCMP). All records searches were completed to identify known fossil localities within or near the Project area. In addition to the museum records searches, Æ examined the geotechnical investigation report for the Project (Weidman et al., 2023).

4.2 FIELD SURVEY

Prior to the field survey, Æ examined recent aerial photographs of the entire Project area in Google Earth to determine likely locations of geologic outcrops and potential survey routes. Andrew Vasquez conducted the paleontological field survey for the Project on August 31, 2023, alongside Æ Associate Archaeologist Andrew DeLeon, who conducted the cultural field survey. The purpose of the survey was to confirm presence or absence of exposed fossils on the ground surface and to evaluate geologic exposures for their potential to yield subsurface fossil material.

Vasquez started the survey at the northwest corner of the Project area and walked 15-foot north–south transects proceeding eastward. Vasquez completed the survey with a combination of close visual inspection and spot-checking. Close visual inspection was conducted where the ground surface was visible and intact sediments were exposed, including the West. Lincoln Street right-of-way and the streambed and banks of Montgomery Creek along the east boundary of the Project area. Vasquez spot-checked the remainder of the Project area where the ground surface was obscured by vegetation. He used a cellular Global Positioning System receiver to navigate through the Project area, kept notes on the geology observed, and took photographs to document the survey. Any fossils encountered were to be field-documented and not collected.

5
GEOLOGY AND PALEONTOLOGY

The following sections provide the geological context of the Project area, descriptions of the geologic units mapped as surface exposures within the boundaries of the Project area, and units exposed nearby and thought to be present in the subsurface. The section also includes any paleontological information reported from the units.

5.1 REGIONAL GEOLOGY

The Project area is in the northwest portion of the San Gorgonio Pass, which forms a major geologic divide between the Transverse Ranges and the Peninsular Ranges geomorphic provinces (California Geological Survey, 2002)[2]. North of the San Gorgonio Pass, the Transverse Ranges are an east–west-trending series of mountain ranges and valleys, which extend from the Northern Channel Islands in the west to the San Bernardino Mountains in the east (California Geological Survey, 2002). South of the San Gorgonio Pass, the Peninsular Ranges consist of several northwest-trending mountain ranges separated by valleys, extending from the Southern Channel Islands in the west to the Salton Trough in the east (California Geological Survey, 2002). The San Gorgonio Pass represents the single largest discontinuity along the San Andreas Fault, resulting from a system of irregular and discontinuous right-lateral, reverse, thrust, and oblique-normal faults (Yule, 2009). Together, these faults contribute to uplifting the San Bernardino Mountains and overall movement between the North American plate and the Pacific plate (Spotila et al., 1998).

The Banning Fault lies approximately 4 miles north of the Project area, dividing the basement rocks in the region into the Peninsular Ranges Assemblage south of the fault and the San Gabriel Mountains Assemblage north of the fault (Morton et al., 2006a, 2006b). In the vicinity of the Project area, rocks of the Peninsular Ranges Assemblage date from the Paleozoic to the present, with most of the assemblage represented by the Mesozoic[3] Peninsular Ranges batholith and prebatholithic metasedimentary and metavolcanic rocks (Jahns, 1954; Morton et al., 2006b). Thick sequences of Cenozoic[4] sediments and sedimentary rocks have accumulated above these, including the early Pliocene to early Pleistocene San Timoteo Formation and various Pleistocene

---

[2] A geomorphic province is a region of unique topography and geology that is readily distinguished from other regions based on its landforms and tectonic history (American Geological Institute, 1976).

[3] Mesozoic Era: Approximately 252 to 66 million years ago, subdivided into three periods—Triassic (252–201 million years ago), Jurassic (201–145 million years ago), and Cretaceous (145–66 million years ago) (Cohen et al., 2023).

[4] Cenozoic Era (formerly Tertiary): 66 million years ago to present, subdivided into three periods—Paleogene (66–23 million years ago), Neogene (23–2.6 million years ago), and Quaternary (2.6 million years ago to present). The Paleogene Period is subdivided into the Paleocene, Eocene, and Oligocene epochs; the Paleocene Epoch lasted from approximately 66 to 56 million years ago, the Eocene Epoch lasted from approximately 56 to 34 million years ago, and the Oligocene Epoch lasted from approximately 34 to 23 million years ago. The Neogene Period is subdivided into the Miocene and Pliocene epochs; the Miocene Epoch lasted from approximately 23 to 5.3 million years ago and the Pliocene Epoch lasted from approximately 5.3 to 2.6 million years ago. The Quaternary Period is subdivided into the Pleistocene and Holocene epochs; the Pleistocene Epoch, or last Ice Age, lasted from approximately 2.6 million to 11,700 years ago when the Holocene Epoch began; all dates according to Cohen et al. (2023).

and Holocene sedimentary units (Dibblee and Minch, 2003; Lancaster et al., 2012). The highly fossiliferous San Timoteo Formation is particularly well exposed in the badlands 4–5 miles west-southwest of the Project area.

5.2 GEOLOGY AND PALEONTOLOGY OF THE PROJECT AREA

The Project area is mapped at a scale of 1:24,000 by Dibblee and Minch (2003) and more recently at a scale of 1:100,000 by Lancaster et al. (2012) as part of the Geologic Compilation of Quaternary Surficial Deposits in Southern California (Bedrossian et al., 2012). Figure 5-1 is based on Lancaster et al. (2012) as it is the most recent map, but the following subsections may provide additional information on equivalent units from Dibblee and Minch (2003) where relevant. According to Lancaster et al. (2012), three geologic units are mapped in the Project area and vicinity: middle to late Pleistocene old alluvial fan deposits (Qof), early to middle Holocene young alluvial fan deposits (Qyf), and late Holocene alluvial wash deposits (Qw).

The geotechnical investigation report summarizes the findings from four borings completed at the northwest corner of the Project area, which reached depths of 26–50 feet bgs (Weidman et al., 2023). No geotechnical borings were completed elsewhere within the Project area.

5.2.1 Old Alluvial Fan Deposits (Qof)

According to Lancaster et al. (2012), middle to late Pleistocene old alluvial fan deposits (Qof) are mapped in the west to southwest and central to southeast portions of the Project area. These deposits consist of slightly to moderately consolidated and moderately dissected silts, sands, gravels, cobbles, and boulders issued from a confined valley or canyon. The unit may be temporally and lithologically equivalent to Pleistocene units Qof and Qf by Dibblee and Minch (2003), who note the grains are mostly composed of gneissic and plutonic detritus derived from the San Bernardino Mountains.

All boring logs from the geotechnical report show a 0.5–1.0-foot-thick layer of topsoil consisting of silty sand (Weidman et al., 2023). In three of the borings (B-1, B-2, and B-3), beds of dense brown clayey sand occur just below the topsoil and extend down to the maximum depths. The authors interpreted these to be deposits of Qof from Dibblee and Minch (Weidman et al., 2023). One of the borings near the northernmost edge of the Project area (B-5) also shows loose dark yellowish brown clayey sand below the topsoil from 0.5 to 5.0 feet bgs, which the authors interpreted as Qf from Dibblee and Minch (2023). The dense brown clayey sand beds occur throughout the remaining depth. Based on the boring locations, the dense beds may be equivalent to Qof from Lancaster et al. (2012). However, the loose beds they observed may instead be equivalent to the Holocene unit Qyf from Lancaster et al. (2012) rather than the Pleistocene unit Qf mapped by Dibblee and Minch (2003), which the latter interpret to cover the entire ground surface of the Project area. This is described in further detail under the next subsection.

Unit Qof is potentially fossiliferous because Pleistocene alluvial deposits are well documented to have yielded a wide variety of megafauna as well as numerous invertebrate and plant taxa throughout inland valleys of Riverside and San Bernardino counties (Reynolds and Reynolds, 1991; Scott, 2007; Springer et al., 2009). Additionally, the slightly older San Timoteo Formation, which is lithologically similar to unnamed Pleistocene alluvial deposits, occurs in the badlands to the west-southwest of the Project area (not shown in Figure 5-1). Numerous fossils of megafauna

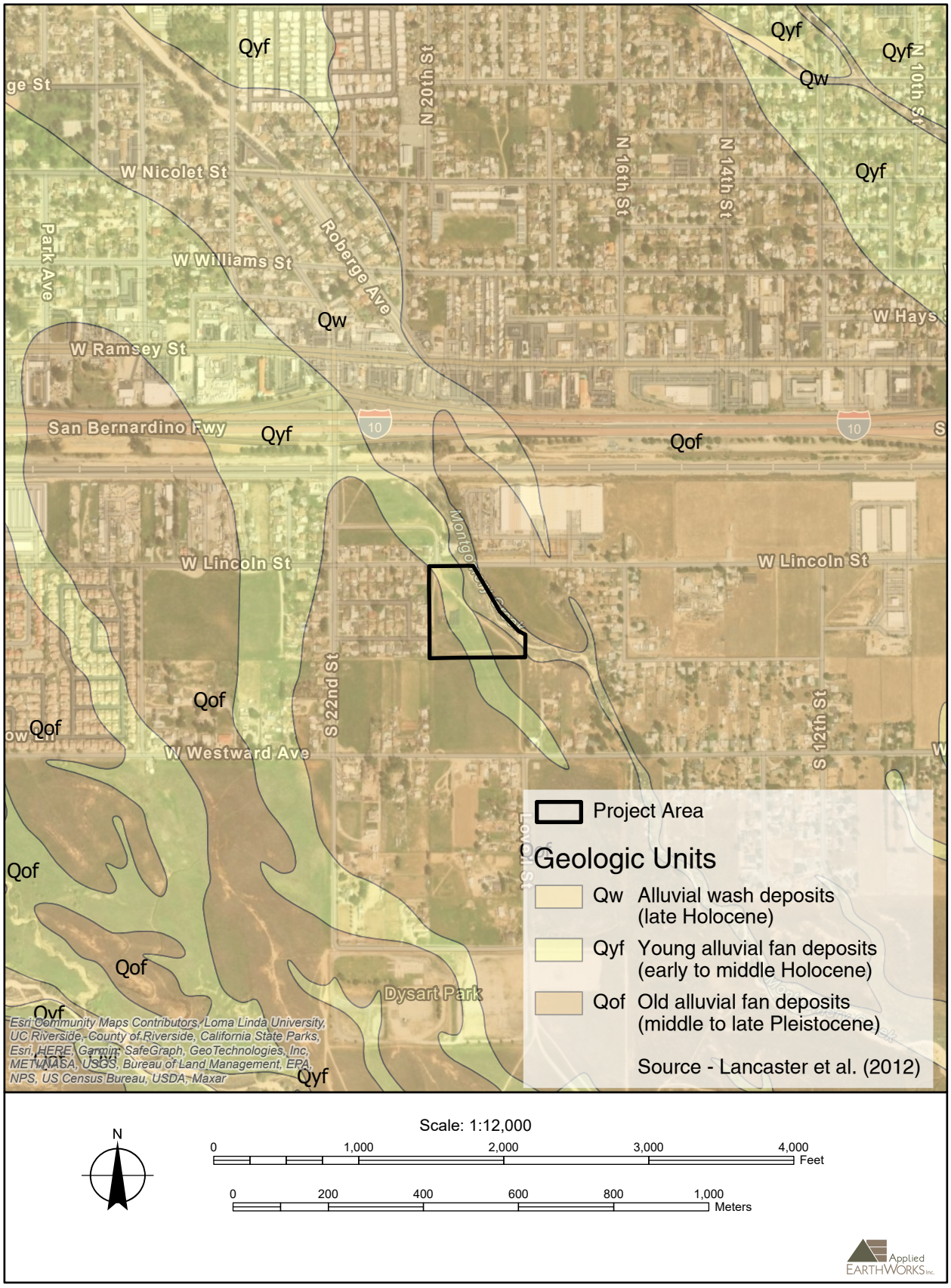

Figure 5-1 Geologic map for the Project area and vicinity.

and microfauna have been reported from this highly fossiliferous unit (Frick, 1921; Reynolds and Reynolds, 1991; Albright, 1999).

5.2.2 Young Alluvial Fan Deposits (Qyf)

Lancaster et al. (2012) show an approximately 250-foot-wide wedge of early to middle Holocene young alluvial fan deposits (Qyf) that bifurcates the Project area from the northwest corner through the south-central portion. They describe the deposits as unconsolidated to slightly consolidated and undissected to slightly dissected silts, sands, gravels, cobbles, and boulders issued from a confined valley or canyon. The unit is temporally and lithologically equivalent to Holocene unit Qa from Dibblee and Minch (2003). However, Dibblee and Minch do not map Qa within the Project area; rather, they mapped this unit 0.75 miles to the southeast.

The loose dark yellowish brown clayey sand seen in Boring B-5 of the geotechnical report more closely matches the descriptions of Qyf from Lancaster et al. (2012) and Qa from Dibblee and Minch (2003) than Qf from the latter, as both units are described as “unconsolidated” and “unindurated,” which contrasts from “weakly indurated” in the case of Qf (Weidman et al., 2023).

The early Holocene beds of Qyf are potentially fossiliferous, but those that are middle Holocene in age are typically too young for fossilization (Scott and Springer, 2003; Society of Vertebrate Paleontology, 2010). These Holocene deposits may overlie Pleistocene deposits at unknown depths with greater likelihood of preserving fossils, as described above for the adjacent unit Qof.

5.2.3 Alluvial Wash Deposits (Qw)

Late Holocene alluvial wash deposits (Qw) are mapped within Montgomery Creek, which occurs along the east boundary of the Project area (Lancaster et al., 2012). This unit consists of unconsolidated silts, sands, and gravels deposited in recently active stream and river channels. The unit is temporally and lithologically equivalent to Holocene unit Qg from Dibblee and Minch (2003), not shown in the Project area but mapped 1.25 miles to the southeast.

Unit Qw or its equivalent is not observed in the geotechnical investigation as the borings were only conducted in the northwest corner of the Project area and not where the unit is mapped along the east border (Weidman et al., 2023). More so than Qyf, the late Holocene Qw is too young for fossilization (Scott and Springer, 2003; Society of Vertebrate Paleontology, 2010) but may overlie deposits with greater likelihood of preserving fossils such as Qyf or Qof.

6
RESULTS AND ANALYSIS

This chapter reports on the results of the desktop studies and fieldwork completed for this Project. Paleontological sensitivity rankings also are assigned to the geologic units mapped at the ground surface as well as those likely present at unknown depths based on the available information.

6.1 GEOTECHNICAL REPORT

The geotechnical investigation for the Project included excavation of four hollow-stem auger borings (B-1, B-2, B-3, and B-5 [completed in 2018]) to depths of 26–50 feet bgs in the northwest corner of the Project area (Weidman et al., 2023). From the boring logs, a layer of topsoil with loose silty sand is present at 0.5–1.0 feet bgs, followed by dense clayey sand that the authors refer to as older alluvial fan deposits (Qof; Dibblee and Minch, 2003), which extend to the maximum depths of the borings. The only exception to this is in Boring B-5, which shows loose clayey sand interpreted as younger alluvial fan deposits (Qf; Dibblee and Minch, 2003) at 0.5–5.0 feet bgs between the topsoil and unit Qof. As discussed in the previous chapters, the Qof and Qf units of Dibblee and Minch (2003) may be equivalent to Qof and Qyf of Lancaster et al. (2012), respectively. No paleontological resources were encountered in the geotechnical borings.

6.2 RECORDS SEARCHES

The UCMP online database does not list any localities within a 10-mile radius of the Project area. The WSC records search does not list any localities within or near the Project area. Records search results from the PBDB and NHMLAC are detailed below in Table 6-1, which shows all listings within a 10-mile radius of the Project area. The PBDB online database does not list any fossil localities from Pleistocene alluvial deposits within the Project area but shows numerous localities from the upper member of the badlands 4–5 miles west-southwest of the Project area. This unit is included in the search as it is lithologically similar to the various unnamed Pleistocene alluvial deposits of Riverside County. The San Timoteo Formation localities are documented in published paleontological literature, including Frick (1921), Reynolds and Reynolds (1991), and Albright (1999), in which numerous fossil vertebrates are described. The NHMLAC records search results do not report any localities within the Project area, although several nearby localities to the south-southwest are listed from geologic units similar to those mapped in or in the vicinity of the Project area.

6.3 FIELD SURVEY RESULTS

Æ's close examinations of the surficial geology in the Project area were limited due to low ground visibility—overall approximately 15 percent (Figure 6-1). The ground surface was mostly obscured by vegetation, although Vasquez observed sediments in occasional patches of barren landscape, such as dirt recreational paths, and within the streambed and banks of Montgomery Creek. Much of the ground surface in the Project area likely has been previously disturbed by plowing. Because of the previous disturbances throughout most of the Project area, much of the geologic information from the survey came from stratigraphic observations within exposures along Montgomery Creek (Figure 6-2).

Table 6-1
Fossil Localities Reported near the Project Area

Locality No.	Geologic Unit (Date)	Taxa	Depth	Approx. Distance from Project Area
San Timoteo Badland Localities[a]	San Timoteo Formation, upper (Pleistocene)	Osteichthyes (bony fish) *Gasterosteus* (stickleback) *Equus* (horse) *Bison antiquus* (ancient bison) *Megalonyx* (ground sloth) *Mammuthus columbi* (Columbian mammoth) *Dipodomys* (kangaroo rat) Numerous other megafauna and microfauna	Unknown	4–5 miles
LACM[b] VP 1782	Unknown formation (Pleistocene)	Camelidae (camel family)	Unknown	5 miles
LACM[b] VP 4540	Unknown formation, gravel pit (Pleistocene)	Equidae (horse family)	Unknown	7 miles
LACM[b] VP 7618–7622, (CIT) 132, 133	San Timoteo Formation (Pliocene to Pleistocene)	Equidae (horse family) Camelidae (camel family)	Surface	7 miles
LACM[b] VP 1653, LACM IP 437	Unknown formation (Pleistocene)	*Squatina* (monkfish) *Gasterosteus* (stickleback) *Sobobapteron kirkbyae* (protoorthopteran insect)	Unknown	8 miles

a - PBDB.
b - NHMLAC collection.

Within the streambed and banks of the creek, Vasquez observed deposits of light gray (10YR 7/2) poorly sorted coarse-grained sand with angular gravel and pebbles at the north end of the Project that gradually shifted to brownish yellow (10YR 6/6) fine-grained sand toward the south end of the Project area (Figure 6-3). The depth of the streambed relative to the surrounding terrain ranged from 5 to 15 feet, deeper toward the south. Vasquez did not observe any vertical changes in lithology within the exposures. He observed refuse throughout the Project area with the heaviest concentrations found near Lincoln Street. Lastly, he encountered modern animal bones near burrows but did not observe any paleontological resources during the field survey.

Figure 6-1 Overview of the Project area from the south, facing northwest.

Figure 6-2 Overview of Montgomery Creek from the southeast corner of the Project area, facing northwest.

Figure 6-3 Detailed view of an approximately 8-foot-thick section of the southwest bank of Montgomery Creek at the east-central border of the Project area showing deposits of Qw.

6.4 DETERMINATION OF PALEONTOLOGICAL RESOURCE POTENTIAL WITHIN THE PROJECT AREA

Using information obtained from the desktop studies and field survey, Æ determined the paleontological resource potential of the Project area. Æ's paleontological sensitivity rankings follow the County of Riverside (2015) classification system. Based on the findings, Æ recommends the assignment of High A Sensitivity to locations mapped as Qof, High B Sensitivity to locations mapped as Qyf, and Low Sensitivity to locations mapped as Qw in the Project area (Figure 6-4).

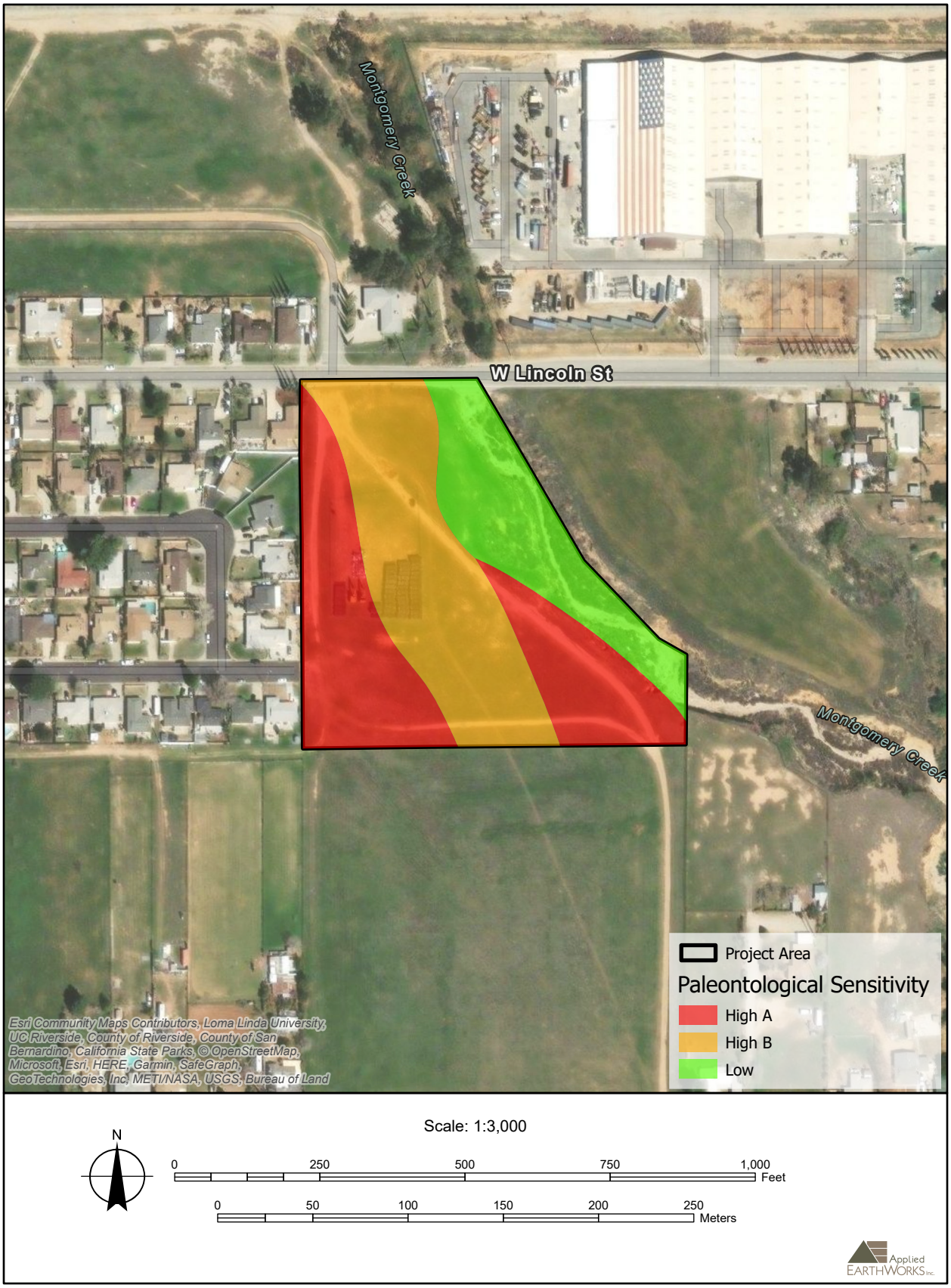

Figure 6-4 Paleontological sensitivity of the Project area.

Æ's desktop studies indicate Qof deposits mapped in the west and southwest portions of the Project area as well as in the center to southeast corner have a high potential of preserving significant paleontological resources. Weidman et al. (2023) described sediments matching the descriptions of Qof at a depth of 0.5–1.0 feet bgs, just below topsoil, in the northwest corner of the Project area. However, apart from a few locations without vegetation such as the previously disturbed dirt roads, Æ did not observe any diagnostic exposures of Qof deposits during the survey. Therefore, our ranking for Qof is based on the desktop studies alone. Similarly, Æ did not observe any diagnostic exposures of Qyf during the survey. Based on the desktop studies, these deposits have a low to moderate potential of preserving significant paleontological resources. The geotechnical boring data from Weidman et al. (2023) shows deposits matching the descriptions of Qyf within the upper 5 feet near the north border of the Project area. These are immediately underlain by deposits of Qof. As such, locations mapped as Qyf may have a high potential for preserving significant paleontological resources at depths greater than 4 feet bgs. Lastly, during the survey, Æ observed deposits of Qw, considered to have low potential for paleontological resources, within the streambed and banks of Montgomery Creek. Based on the thickness of the exposures within the creekbed and the lack of any changes in lithology within the exposures, Project-related ground-disturbing activities as presently proposed within locations mapped as Qw are unlikely to affect any fossiliferous deposits to a maximum depth of 15 feet bgs. Observations from construction monitoring can help to further refine the geology within the Project area.

7
RECOMMENDATIONS

Æ concludes that construction activities may impact significant paleontological resources in various locations throughout the Project area. Æ's desktop studies and field survey indicate the Project area has High A, High B, and Low Sensitivity for paleontological resources.

Prior to the issuance of grading permits and consistent with applicable policies (County of Riverside, 2015), Æ recommends a PRIMP be prepared by a qualified professional paleontologist (Paleontological Principal Investigator, Project Paleontologist) as defined by mitigation paleontology industry standards (Murphey et al., 2019) and/or the SVP (2010). The PRIMP will specify the steps to be taken to mitigate impacts to paleontological resources. For instance, Worker's Environmental Awareness Program training should be prepared prior to the start of Project-related ground disturbance and presented in person to all field personnel to describe the types of paleontological resources that may be found and the procedures to follow if any are encountered.

The Project-specific PRIMP also will indicate where construction monitoring will be required and the frequency of required monitoring (i.e., full-time, spot-checks, etc.). In addition to construction monitoring procedures, a PRIMP also will provide details about fossil collection, analysis, and preparation for permanent curation at an approved repository, such as the NHMLAC or WSC. Lastly, the PRIMP describes the different reporting standards to be used, such as monitoring with negative findings versus monitoring resulting in fossil discoveries.

8
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APPENDIX A

Qualifications of Key Personnel

CHRISTOPHER SHI

Senior Paleontologist/Project Manager

Areas of Expertise

- Paleontological resource technical and project management
- CEQA/NEPA compliance

Years of Experience

- 14

Education

Ph.D., Geology (studies), UCLA, 2012-2016

M.S., Geology, UCLA, 2011

B.S., Biology, University of Minnesota, Minneapolis, 2006

Registrations/Certifications

- Paleontologist Consultants List, Santa Cruz County (2022-present)
- Certified Paleontologist, Orange County (2020-present)
- Qualified Paleontologist, Riverside County (2019-present)

Permits

- Field Director, California BLM Statewide Paleontological Permit CA-21-06P

Classes/Training

- OSHA Excavation Competent Person Seminar, Mar. 11, 2019
- OSHA Hazardous Waste Operations Worker (HAZWOPER) Training, 40-Hour, January 20-23, 2020 and 8-Hour Refreshers, January 21, 2021, June 10, 2022, and June 20, 2023

Professional Experience

2020–	Senior Paleontologist/Project Manager, Applied EarthWorks, Inc., Pasadena, California.
2018–2020	Associate Paleontologist/Project Manager, Applied EarthWorks, Inc., Pasadena, California.
2016–2018	Paleontological Laboratory and Field Technician, Applied EarthWorks, Inc., Pasadena, California.
2017–2018	Lead Paleontology Monitor, Rincon Consultants, Los Angeles, California.

Technical Qualifications

Mr. Shi is a paleontologist and geologist with 14 years of experience in paleontology, evolutionary biology, mineralogy, and sedimentary geology, and meets the Society of Vertebrate Paleontology's (SVP) standards for a qualified professional paleontologist/project paleontologist/principal investigator. He has a background in plant and invertebrate taphonomy, and his master's thesis focused on the characterization of fossilized Eocene ferns using a novel three-dimensional imaging technique. Additionally, Mr. Shi spent several years working toward a Ph.D. in geology with research focused on the link between the trend in changing seawater chemistry and the evolution of the first animals to develop shells from calcium carbonate during the Cambrian explosion. He has completed several professional publications and presentations throughout his career.

Mr. Shi completes various tasks within the Paleontology Program of Applied EarthWorks. He coordinates and schedules paleontological monitors throughout Æ's 5 offices. In the field, Mr. Shi's responsibilities include stratigraphic analyses, geological and paleontological data collection, bulk-sediment sampling, collection paleontological resources, and documentation of fossil localities. In the lab, Mr. Shi picks microvertebrate fossils, identifies, analyzes, and prepares collected fossils for permanent curation, including jacketing of large vertebrate specimens. Mr. Shi also regularly completes paleontological desktop literature and map reviews and coordinates with various paleontology curators for museum records searches; authors paleontology monitoring plans, inventory and evaluation reports, resource impact management plans, and worker environmental awareness training materials. In the past, Mr. Shi served as Æ's lead monitor on construction monitoring projects for utility, transportation, and residential and commercial development projects.

Selected Project Experience

San Jacinto Master Drainage Plan Line E Project, City of San Jacinto, Riverside County, California. Project Paleontologist/Project Manager (2023). Will oversee ground-reconnaissance field survey and complete Paleontological Resource Assessment report (PRA) for CEQA compliance. Paleontologically sensitive geologic units: Pleistocene to Holocene alluvium. Client: Albert A. Webb Associates for City of San Jacinto.

California High-Speed Rail Construction Package 1, Madera and Fresno Counties, California. Project Manager (2023-present). Æ is providing multi-year paleontological monitoring during construction of the 32-mile segment from Avenue 19 in Madera County to East American Avenue in Fresno County with 12 grade separations, two viaducts, one tunnel, and a major crossing over the San Joaquin River. Overseeing paleontological resource monitoring for construction, completing daily quality control of field forms, and preparing biweekly summaries of fieldwork for client. Completing for CEQA compliance (California High-Speed Rail Authority) and NEPA compliance (Federal Railroad Administration). Paleontologically sensitive geologic units: Mehrten, Laguna, Tulare, Turlock Lake, Riverbank, and Modesto Formations; North Merced Gravel; and Pleistocene to Holocene alluvium. Client: formerly Tutor Perini Zachry Parsons, currently Wong+Harris, JV.

South Coast 101 HOV Lanes Segment 4D-4E North Project, Santa Barbara County, California. Project Paleontologist/Project Manager (2023–present). Completed Paleontological Mitigation Plan (PMP) for construction of a 3.2-mile HOV lane on South Coast 101 in Montecito. Will oversee Worker Environmental Awareness Program (WEAP) and paleontological resource monitoring for construction for CEQA compliance. Paleontologically sensitive geologic units: Casitas Formation, Pleistocene marine terrace deposits, Pleistocene to Holocene alluvium, and Holocene beach deposits. Client: ICF Jones & Stokes, Inc. for California Department of Transportation.

State Route 46 Widening Project, Wye Section, San Luis Obispo County, California. Project Paleontologist/Project Manager (2023–present). Completed PMP and oversaw WEAP for improvements along a 3.7-mile segment of State Route 46, including the interchange with State Route 41 north of Cholame. Overseeing paleontological resource monitoring for construction for CEQA compliance. Paleontologically sensitive geologic units: Temblor, Monterey, and Paso Robles Formations, and Pleistocene to Holocene alluvium. Client: ICF Jones & Stokes, Inc. for California Department of Transportation.

Eastern Municipal Water District Good Hope and Mead Valley Water-System Improvements Project, Riverside County, California. Project Paleontologist/Project Manager (2023). Co-authored paleontological technical memorandum for CEQA compliance. Paleontologically sensitive geologic units: Pleistocene to Holocene alluvium. Client: Albert A. Webb Associates for County of Riverside.

Westside Purple Line Extension Section 3 Project, City of Los Angeles, Los Angeles County, California. Project Paleontologist/Project Manager (2022-present). Oversaw and provided paleontological resource monitoring for construction over a 2.56-mile extension of the Purple Line along Wilshire Boulevard, including construction of two underground stations, for CEQA compliance. Paleontologically sensitive geologic units: Pleistocene to Holocene alluvium. Client: Kleinfelder for Los Angeles County Metropolitan Transportation Authority.

East San Fernando Valley Transit Corridor, City of Los Angeles, Los Angeles County, California. Project Paleontologist/Project Manager (2023). Oversaw and provided paleontological resource monitoring for CEQA compliance. Paleontologically sensitive geologic units: Pleistocene to Holocene alluvium. Client: Kleinfelder for Los Angeles County Metropolitan Transportation Authority.

600 Tank Farm Road Project, City of San Luis Obispo, San Luis Obispo County, California. Project Paleontologist/Project Manager (2023-present). Completed (PMP) and will oversee WEAP training and paleontological resource monitoring for construction for CEQA compliance. Paleontologically sensitive geologic units: Pleistocene to Holocene alluvium. Client: CoVelop, Inc.

Fairmead Landfill Expansion, City of Chowchilla, Madera County, California. Principal Paleontologist/Project Manager (2020-2023) and Project Manager (2019-2020). 121-acre fossil-rich landfill. Oversaw Worker Environmental Awareness Program (WEAP) training and paleontological resource monitoring

Selected Project Experience (continued)

for construction. Oversaw and assisted in identification and preparation of approximately 4,000 fossil specimens housed in the County of Madera's temporary repository as well as transfer of all significant specimens to the University of California Museum of Paleontology in Berkeley for accessioning. Completed quarterly paleontological findings reports for 2019 –2022 and annual reports for 2019 –2022 for CEQA compliance. Paleontologically sensitive geologic units: Turlock Lake, Riverbank, and Modesto Formations. Client: County of Madera.

Other Paleontological Research and Experience

Æ Annual Paleontologist/Cross-Trained Monitor Training. Senior Paleontologist (2020-present). Collaborated for the creation and implementation of an annual training program for all paleontological and cross-trained monitors. Topics varied by year: 2020 introduction to geology and paleontology, with an emphasis on fossil identification and field techniques; 2021 sedimentary geology, geologic descriptions, and field monitoring forms; 2022 federal and state laws and regulations regarding paleontology. Monitors completed two hours of training per session plus assessments, such as a quiz, sediment samples, or essay, and received a certificate of completion. Training sessions are ongoing and must be completed each year in order to mobilize for fieldwork. Co-collaborators were Melissa Macias and Amy Ollendorf.

Ph.D. Studies.

Establishing a link between the trend in changing seawater chemistry and the evolution of the first animals that built shells and skeletons from calcium carbonate during the Cambrian explosion. Advisor: Dr. Bruce N. Runnegar

M.S. Thesis.

Demonstrating the application of confocal laser scanning microscopy in the characterization of a fossil fern from the Eocene. Advisor: Dr. J. William Schopf

Relevant Publications

Shi, C. S. 2013. Use of Confocal Laser Scanning Microscopy for Studies in Paleobotany: Documentation of Stem Anatomy of the Eocene Fern *Dennstaedtiopsis aerenchymata* (Dennstaedtiaceae). LAP LAMBERT Academic Publishing: 88 p.

Shi, C. S., J. W. Schopf, A. B. Kudryavtsev. 2013. Characterization of the stem anatomy of the Eocene fern *Dennstaedtiopsis aerenchymata* (Dennstaedtiaceae) by use of confocal laser scanning microscopy. American Journal of Botany, Vol. 100, No. 8: p. 1626-1640.

Zheng, J., W. Zhuang, N. Yian, G. Kou, H. Peng, C. McNally, D. Erichsen, A. Cheloha, S. Herek, C. Shi, and Y. Shi. 2004. Classification of HIV-1 mediated neuronal dendritic and synaptic damage using Multiple Criteria Linear Programming. Neuroinformatics, Vol. 2, No. 3: p. 303-326.

Selected Presentations

Shi, C. S. and A. J. W. Hendy. "Pleistocene fossil assemblages from Ponte Vista, San Pedro, California: Contributions from Mitigation Paleontology. Prepared and delivered a 15-minute-long presentation for the 55th Annual Meeting of the Western Society of Malacologists, June 25, 2022.

Shi, C. S. 2022. "Paleontological Mitigation for the Ponte Vista Project" presentation. Prepared and delivered 30-minute-long presentation for the Southern California Paleontological Society, January 9, 2022.

Applied EarthWorks, Inc. Paleontology Program. 2020. "National Fossil Day" video. Co-created 5-minute-long video by paleontology staff (Aimee Montenegro, Chris Shi, Melissa Macias, and Amy Ollendorf). Posted to Facebook and LinkedIn; available for distribution.

Applied EARTHWORKS Inc.

AMY L. OLLENDORF

Vice President/Managing Principal/Paleontology Program Manager

Areas of Expertise

- Paleontology, mineralogy, and sedimentary geology
- CEQA/NEPA compliance
- Project management

Years of Experience

40

Education

Postdoctoral Research Associate, 2006–2007, World Heritage Studies, University of Minnesota

Ph.D., Ancient Studies, University of Minnesota, 1993

M.S., Ancient Studies, University of Minnesota, 1986

B.S., Anthropology and Geology, Beloit College, 1983

Registrations/Certifications

- Registered Professional Archaeologist 12588
- Licensed Professional Geologist, Minnesota #30084 (6/1998–6/2018, expired)
- Paleontologist Consultants List, Santa Cruz County (2022–present)
- Certified Paleontologist and Archaeologist, Orange County (2020–present)
- Paleontology and Cultural Consultant, Riverside County (2018–present)

Permits/Licenses

Principal Investigator, Nevada BLM Statewide Paleontological Permit N-090758

Principal Investigator, California BLM Statewide Paleontological Permit CA-21-06P

Professional Experience

2018–	Vice President (2022–present) and Managing Principal/ Paleontology Program Manager (2018–present), Applied EarthWorks, Inc.
2015–2018	President and Senior Project Manager, ALO Environmental Associates, LLC
2006–2015	Program Manager, Cultural Heritage Planning and Management, AECOM
2005–2008	President and Senior Project Manager, ALO Environmental Associates, LLC
2003–2005	Director, Cultural Resources Management, Peterson Environmental Consulting, Inc.
2000–2003	Director, Cultural Resources Management, HDR Engineering, Inc.
1996–2000	Director, Cultural Resources Management, Braun Intertec Corporation, Inc.

Technical Qualifications

Dr. Ollendorf has 40 years of experience in paleontology, paleoecology, environmental compliance, and geoarchaeology at the global, national, tribal, state, and local levels. She meets industry standards for principal investigator in paleontology and she is also a principal investigator on Æ's California and Nevada statewide Paleontological Resource Use Permits for paleontology from the U.S. Bureau of Land Management (BLM).

Dr. Ollendorf has supervised and/or participated in paleontological services, tribal negotiations, and agency coordination throughout her career. She also has managed Environmental Impact Statements (EIS) and Environmental Assessments (EA). Her project experience includes work in 35 states, including California and other western states, and abroad on a wide range of client projects across many different industry sectors.

During her career, Dr. Ollendorf has written or overseen hundreds of compliance reports in addition to having published multiple articles in peer-reviewed professional journals and presented to a wide variety of audiences, including professional peers.

Selected Project Experience

California High-Speed Rail Merced-to-Fresno Counties, California. Principal Investigator/Managing Principal, Paleontology and Cultural Resources (2023–present). Æ is providing as-needed multi-year paleontological services and occasional cultural resources services to support all environmental work within the approximately 57-mile-long corridor. Paleontologically sensitive geologic units: early to middle Pliocene-age Mehrten, Pliocene- to Pleistocene-age Laguna, Pliocene- to Holocene-age Tulare, early Pleistocene-age Turlock Lake, middle Pleistocene-age Riverbank, and late Pleistocene-age Modesto Formations; Pliocene- or Pleistocene-age North Merced Gravel; undifferentiated Modesto Formation and post-Modesto Holocene-age sediment; and Pleistocene-age non-marine sediment. Completing for CEQA compliance (California High-Speed Rail Authority) and NEPA compliance (Federal Railroad Administration). Working closely with paleontology staff (Chris Shi and Melissa Macias). Client: T.Y. Lin.

Recurrent Energy 350 MW Crimson Battery Energy Storage System, Riverside County, California. Principal Investigator/Paleontology Program Manager (2018–present). Directed paleontological services for construction of the Battery Energy Storage System (BESS) and generation tie-lines. Paleontologically sensitive geologic units: Pliocene- to Pleistocene-age alluvial deposits of the Mule Mountains and Pleistocene- to Holocene-age alluvial fan deposits. Provided QA/QC and finalized approvals of the Paleontological Resource Mitigation and Monitoring Plan (PRMMP); obtained all BLM fieldwork authorizations; oversaw completion and provided QA/QC of and Worker Environmental Awareness Program (WEAP) training materials; oversaw preconstruction- and construction-phase fossil collection; and oversaw fulltime construction monitoring over approximately 9 months on approximately 80 acres, resulting in 93 paleontological localities and 157 sediment samples. Presently overseeing laboratory analysis and preparation Also will provide QA/QC of all associated reporting. Completing for federal (BLM) and state (California Department of Fish & Wildlife [CDFW]) compliance. Client: AECOM (2021–present) and Recurrent Energy, LLC (2018 and 2020).

California High-Speed Rail Construction Package 1, Madera and Fresno Counties, California. Paleontology Program Manager and Project Manager (2018–present). Æ is providing multi-year paleontological monitoring during construction of the 32-mile segment from Avenue 19 in Madera County to East American Avenue in Fresno County with 12 grade separations, two viaducts, one tunnel, and a major crossing over the San Joaquin River. Overseeing daily construction monitoring and reporting; onsite and offsite screening of sediments and rock matrices; and offsite fossil analyses. Will complete treatment and preparation of significant fossils for permanent curation at UCMP. Paleontologically sensitive geologic units: early to middle Pliocene-age Mehrten, Pliocene- to Pleistocene-age Laguna, Pliocene- to Holocene-age Tulare, early Pleistocene-age Turlock Lake, middle Pleistocene-age Riverbank, and late Pleistocene-age Modesto Formations; Pliocene- or Pleistocene-age North Merced Gravel; undifferentiated Modesto Formation and post-Modesto Holocene-age sediment; and Pleistocene-age non-marine sediment. Completing for CEQA compliance (California High-Speed Rail Authority) and NEPA compliance (Federal Railroad Administration). Working closely with paleontology staff (Melissa Macias, Erik Pino, and Michael George). Client: Tutor Perini Zachry Parsons.

Pacific Gas and Electric Company (PG&E) Groundwater Remediation, Hinkley, San Bernardino County, California. Paleontology Program Manager and Project Manager (2018–present). Over a multi-year period, completing Release-To-Construction (RTC) project-by-project reviews for cultural and paleontological resource management. Tasks include assessing project areas for sensitivity for cultural and paleontological resources in previously surveyed areas and recorded locations of cultural resources. Also overseeing cultural and paleontological construction monitoring on a project-by-project basis. Requires project-specific reporting, annual reporting, regular client communication, and coordination with cultural and paleontological staff. Paleontologically sensitive geologic units: Pleistocene-age alluvium and middle to late Pleistocene-age lacustrine deposits associated with Pluvial Harper Lake. Reports to date include individual cultural and paleontological RTC reports of field findings as a result of preconstruction surveys and construction monitoring, and co-authored 2018-2021 Annual Reports. Completing for CEQA compliance (State of California's Lahontan Regional Water Quality Control Board) and NEPA compliance (U.S. Fish & Wildlife Service). Working closely with paleontology staff (Chris Shi). Client: Arcadis for PG&E.

Fairmead Landfill Expansion, City of Chowchilla, Madera County, California. Paleontology Program Manager (2019–present). Oversaw pre-construction WEAP training and construction monitoring over the 121-acre Project area immediately adjacent to the paleontologically diverse Fairmead Locality (Pleistocene, Irvingtonian). Continuing to oversee additional phases of preconstruction WEAP training and construction monitoring; recovered inventory, condition assessment, treatment, and transfer of over 4,000 fossils for permanent curation at University of California Museum of Paleontology (UCMP); quarterly and annual reports; and post-construction monitoring reports. Completed QA/QC of quarterly paleontological findings reports and annual reports for 2019–2021; completing QA/QC quarterly and annual reports through 2022. Paleontologically sensitive geologic units: early Pleistocene-age Turlock Lake, middle Pleistocene-age Riverbank, and late Pleistocene-age Modesto Formations. Completing for CEQA compliance (County). Working closely with paleontology staff (Chris Shi and Michael George). Client: County of Madera.

Purple Line Extension Section 3, Los Angeles Light-Rail, Los Angeles County, California. Paleontology Program Manager (2022–present). Supervising construction monitors for paleontological resources and will provide QA/QC of final construction monitoring report. Approximately 2.6-mile-long segment will add two new stations, including tunneling, at Wilshire/Westwood. Paleontologically sensitive geologic units: Pliocene- to middle Pleistocene-age Fernando Formation; early to late Pleistocene-age San Pedro Formation; and nonasphaltic Quaternary Period older alluvium. Completing for CEQA compliance (Metropolitan Transportation Authority [LA Metro]). Working closely with paleontology staff (Chris Shi, Melissa Macias). Client: Kleinfelder for LA Metro.

Phase 1A of the Port of Los Angeles (POLA) West Harbor Development Project in the Community of San Pedro, Los Angeles County, California. Paleontology Program Manager (2023–present). Oversaw WEAP training and overseeing construction monitoring for paleontological resources, and will complete QA/QC of final reporting for approximately 20-acre Project area along Harbor Boulevard. Paleontologically sensitive geologic units: Pleistocene-age San Pedro Sand and Quaternary Period Older Alluvium, including Palos Verdes Sand. Completing for CEQA compliance (POLA). Working closely with paleontology staff (Melissa Macias). Client: ICF Jones & Stokes.

State Route 46 (SR 46) Widening Project, Wye Segment, San Luis Obispo County, California. Managing Principal and Paleontology Program Manager (2023–present). Completed QA/QC and editing of Paleontological Monitoring Plan (PMP) for widening the northbound and southbound lanes of State Route (SR) 46 from Post Mile 54.1 to 57.8 and reconstructing the SR 41/SR 46 interchange (Caltrans District 5 Task Order 15 to prime contractor). Overseeing WEAP training and full-time monitoring for paleontological resources; will complete QA/QC and editing of Paleontological Mitigation Report (PMR) at the conclusion of construction. Paleontologically sensitive geologic units: Cretaceous-age Gravelly Flat and Panoche Formations, Miocene-age Temblor Formation and Monterey Shale, and Pleistocene-age Paso Robles Formation and older alluvial deposits. Completing for compliance with federal laws and CEQA. Working closely with paleontology staff (Chris Shi). Client: ICF Jones & Stokes.

Armet Residence and Accessory Dwelling Unit Project near Templeton, San Luis Obispo County, California. Managing Principal and Paleontology Program Manager (2023). Completed QA/QC and editing of Paleontological Resource Assessment (PRA) for new residence with outdoor swimming pool, accessory dwelling unit, and driveway on approximately 2 acres. Paleontologically sensitive geologic units: Miocene-age Monterey Shale, Pleistocene-age Paso Robles Formation, and Pleistocene-age older alluvial sediments. Completed for compliance with federal laws and CEQA. Worked closely with paleontology staff (Chris Shi). Client: Rick Armet.

South Coast U.S. Highway 101 High-Occupancy Vehicle Lanes Segments 4D & 4E, Santa Barbara County, California. Paleontology Program Manager (2023). Completed QA/QC and editing of Paleontological Monitoring Plan (PMP) covering northbound and southbound lanes from Post Mile 9.1 to 12.3 along U.S. Highway 101 (Caltrans District 5 Task Order 16 to prime contractor). Paleontologically sensitive geologic units: Pleistocene-age Older alluvial deposits, marine-terrace deposits, intermediate alluvial deposits-uncertain, and late Pleistocene- to Holocene-age alluvium and colluvium. Completed for compliance with federal laws and CEQA. Worked closely with paleontology staff (Melissa Macias). Client: ICF Jones & Stokes.

Applied EARTHWORKS Inc.

AIMEE MONTENEGRO

Cross-Trained Archaeological/Paleontological Field/Lab Technician

Areas of Expertise

- Mitigation paleontology
- Cultural resource management
- Prehistoric and historic archaeology

Years of Experience

- 6

Education

B.A., Anthropology, Biola University, La Mirada, California, 2017

Professional Affiliations

- Pacific Coast Archaeological Society
- Society for California Archaeology

Registrations/Certifications

- 40-Hour Hazardous Waste Operations Worker (HAZWOPER) and 8-Hour HAZWOPER Refreshers
- OSHA 10-Hour Construction Worker
- PG&E/ISNetWorld Safety
- Æ Annual Training for Paleontology/Cross-Trained Field Technicians, 2020 through 2023

Professional Experience

2019–	Cross-Trained Field/Lab Technician, Applied EarthWorks, Inc., Pasadena, California
2019–	Archaeological Crew Chief, Heritage Resource Consultants, Los Angeles, California
2018–2019	Archaeological Research and Collections Intern, Bowers Museum, Santa Ana, California
2017–2018	Paleontology Collections Intern, Department of Vertebrate Paleontology, Natural History Museum of Los Angeles
2015–2017	Research Assistant, Biola University Anthropology Department, La Mirada, California

Summary of Qualifications

Miss Montenegro is a cross-trained archaeologist/paleontologist with 6 years of professional experience in cultural resource management and mitigation paleontology throughout California. As a Cross-Trained Field/Lab Technician with Applied EarthWorks, Montenegro has served as a lead field technician on various surveys and construction monitoring projects for paleontological and archaeological resources in Los Angeles, Orange, San Bernardino, San Luis Obispo, and Riverside Counties. In the field, her responsibilities include the identification of paleontological and archaeological resources and documentation of stratigraphy. In the lab, her responsibilities include picking microvertebrates and other small fossils from paleontological sediment samples through wet-screen processing.

Montenegro has experience in survey, excavation, monitoring, curation, lab work, and reporting. As an undergraduate student, she participated in the on-campus excavation of a Columbian mammoth from the Rancholabrean North American Land Mammal Age. As a Collections Intern at the Natural History Museum of Los Angeles, she participated in the conservation and curation of vertebrate fossils, assisting in the fossil photography, jacketing of specimens for long term storage, and mapping of associated paleontological localities. Additionally, Montenegro served as an archaeological collections and research intern within Museo Egizio in Turin, Italy, and the Bowers Museum in Santa Ana, California.

Selected Project Experience

East San Fernando Transit Corridor, City of Los Angeles, Los Angeles County, California. Paleontological Field Technician (2023–present). The Los Angeles County Metropolitan Transportation Authority (Metro) is currently constructing a new rail line and 14 new stations between the G Line (Orange) Van Nuys Station and the Sylmar/San Fernando Metrolink Station located in Los Angeles County, California. Paleontologically sensitive geologic units: Pleistocene alluvium. Client: Kleinfelder.

Westside Purple Line Extension Section 3 Project, City of Los Angeles, Los Angeles County, California. Cross-Trained Field Technician (2022–present). The Los Angeles County Metropolitan Transportation Authority (Metro) is currently constructing two underground rail stations within the 2.6-mile Section 3 of the Purple Line Transit System along Wilshire Boulevard in West Los Angeles. Completing paleontological construction monitoring for CEQA compliance. Paleontologically sensitive geologic units: Pleistocene alluvium. Client: Kleinfelder.

California High-Speed Rail Construction Package 1, Madera and Fresno Counties, California. Paleontological Technician (2020–present). Æ is providing multi-year paleontological monitoring during construction of the 32-mile segment from Avenue 19 in Madera County to East American Avenue in Fresno County. Providing support to Senior Paleontologist and assisting in general project management such as organization of daily construction monitoring and reporting and tracking of fossils and fossil localities. Paleontologically sensitive geologic units: early to middle Pliocene-age Mehrten, Pliocene- to Pleistocene-age Laguna, Pliocene- to Holocene-age Tulare, early Pleistocene-age Turlock Lake, middle Pleistocene-age Riverbank, and late Pleistocene-age Modesto Formations; Pliocene- or Pleistocene-age North Merced Gravel; undifferentiated Modesto Formation and post-Modesto Holocene-age sediment; and Pleistocene-age non-marine sediment. Completing for CEQA compliance (California High-Speed Rail Authority) and NEPA compliance (Federal Railroad Administration). Client: Tutor Perini Zachry Parsons.

Hinkley Remediation Project, Community of Hinkley, San Bernardino County, California. Cross-Trained Field Technician (2020–present). Completing archaeological surveys and construction monitoring for paleontological and archaeological resources for various Release to Construction projects for 30,000-acre groundwater remediation area. Completed for CEQA (State) and NEPA (USFWS) compliance. Paleontologically sensitive geologic units: Pleistocene to Holocene alluvium and lacustrine deposits. Client: Arcadis for Pacific Gas and Electric Company.

West Gen-Tie and 500-foot-wide Buffer Adjacent to the Crimson Solar Project, Riverside County, California. Cross-Trained Field Technician (2022). Completed ground-reconnaissance field survey for paleontological resources for federal (BLM) and state (California Department of Fish & Wildlife) compliance. Paleontologically sensitive geologic units: Alluvial deposits of the Mule Mountains and Pleistocene to Holocene alluvium. Client: AECOM.

Crimson Energy Storage Project, Riverside County, California. Cross-Trained Field Technician (2021–2023). Completed pre-construction collection of paleontological resources and paleontological construction monitoring for construction of a battery energy storage system (BESS) and generation tie-lines for 2,500-acre fossil-rich 350 MW solar farm. Also completed onsite wet-screen processing of paleontological sediment samples and sorting/ identifying microvertebrates and other small fossils from the sediment samples in the lab. All tasks completed for federal (BLM) and state (California Department of Fish & Wildlife) compliance. Paleontologically sensitive geologic units: Alluvial deposits of the Mule Mountains and Pleistocene to Holocene alluvium. Client: AECOM.

Crossroads North Storm Drain Facilities Improvement Project, Community of Winchester, Riverside County, California. Cross-Trained Field Technician (2021). Completed paleontological construction monitoring for CEQA compliance. Paleontologically sensitive geologic units: Pleistocene alluvium. Client: Albert A. Webb Associates.