DRAFT ENVIRONMENTAL INITIAL STUDY/ MITIGATED NEGATIVE DECLARATION

Rancho California Water District
Upper Valle De Los Caballos Regional Pump Station
Project No. D1903

Lead Agency:

Rancho Water
WORKING FOR OUR COMMUNITY

Rancho California Water District
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Temecula, California 92589-9017
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Contact: Jacob Wiley, PE
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Prepared by:

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March 2020

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SECTION A. ENVIRONMENTAL CHECKLIST FORM

1. **Project Title:** Upper Valle de los Caballos (UVDC) Regional Pump Station (Project No. D1903)

2. **Lead Agency Name and Address:** Rancho California Water District (RCWD)
42135 Winchester Road
Temecula, California 92590

3. **Contact Person and Phone Number:** Jacob Wiley, P.E.
Phone: 951-296-6980
wileyj@ranchowater.com

4. **Project Location:** The project site is located in southwestern Riverside County, just east of the City of Temecula, within the RCWD's service boundaries. Lands affected by the proposed improvements generally affect portions of De Portola Road and Conquistador Place, with the majority of improvements occurring on lands to the south of De Portola Road, east of Pauba Road, and along/east of Conquistador Place. The affected County Assessor's Parcel Numbers (APNs) include 927-150-038, -018, -037, -039, -048, and -049; and 927-320-045. Refer to Figure 1, Regional Map, and Figure 2, Project Vicinity.

5. **Project Sponsor's Name and Address:** Rancho California Water District
42135 Winchester Road
Temecula, California 92589-9017

6. **General Plan Designation:** County of Riverside: RR - Rural Residential

7. **Zoning:** County of Riverside: RR - Rural Residential

8. **Description of Project:**

The Upper Valle de los Caballos (UVDC) Regional Pump Station Project [Rancho California Water District (RCWD) Project No. D1903] will increase capacity at the UVDC Regional Pump Station and provide operational benefits to the RCWD. New facilities will augment capacity in the 1305 and 1380 Pressure Zones (PZ) and will include the following components. Project construction is anticipated to take approximately 2-3 years. Refer also to Figure 3A, Project Depiction, and Figure 3B, Civil Site Overview Plan (Conceptual).

- Pump station building;
- Imported fill material to raise the site pad above existing ground elevation by approximately 6 feet;

- A chlorine contact tank for disinfection of groundwater;
- An on-site sodium hypochlorite generation and feed system, the primary disinfectant;
- Extension of the existing ammonia feed facility;
- Three 1305 PZ vertical turbine pumps with provisions to add a fourth in the future and three 1380 PZ pumps;
- A wet well and a wet well transition pipeline to direct flow from the chlorine contact tank to the pump station;
- A diesel fuel-driven engine/generator set to provide emergency power to new facilities;
- Discharge piping outside of the public right-of-way to route 1305 and 1380 PZ potable water flow to De Portola Road, route raw water from existing wells along Pauba Road to the new facilities, and route raw water from the existing UVDC wells to the new facilities;
- Two new wells and piping from those wells.

9. Surrounding Land Uses and Setting:

Surrounding Land Uses

Existing land uses and features surrounding the project site include the following:

- <u>North</u>: De Portola Road; several vineyards and wineries
- <u>Northeast/East</u>: Los Caballos Stable; single-family residence; RCWD water percolation ponds U-5 and U-2
- <u>South</u>: Undeveloped lands under RCWD ownership
- <u>Northwest/West</u>: Undeveloped lands; Rancho Pacifica Equestrian Center

Environmental Setting

Historically, the pump station site was used for agriculture and equestrian uses. Abandoned structures, corrals and equestrian pens, and aboveground tanks and wells remain present on the site. On-site elevations range between approximately 1,248 feet and 1,264 feet above mean sea level (amsl), dominated by low-sloping topography that drains in a southeasterly direction.

Based on the US Department of Agriculture, Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2017), on-site soils primarily consist of Cajalco rocky fine sandy loam (15-50% slopes); Gorgonio loamy sand (channeled, 2-15% slopes); Hanford loamy fine sand (0-8% slopes); fine sandy loam (0-8% slopes); Hanford coarse sandy loam

(0-8% slopes); Honcut sandy loam (2-8% slopes); Tujunga loamy sand (channeled, 0-8% slopes); and riverwash; refer to Figure 4, USDA Soils.

The majority of the site is highly disturbed and/or developed. The undeveloped portions of the site appear to have been actively maintained in the recent past, evidenced by disked areas covered with varying densities of ruderal vegetation (i.e., disturbed non-native plants) and limited ornamental trees are present along some of the fence lines and perimeters. Adjacent to several of the proposed pipeline alignments and/or improvements are limited areas of disturbed habitat, non-native grassland, flat-topped buckwheat scrub, Encilia scrub, orchard/vineyard, and ornamental habitat; refer to Figure 5, Vegetation Communities.

The project site is located in the Santa Margarita watershed and the coastal plain of the Peninsular Ranges of Southern California, a geologic/geomorphic province extending from Imperial Valley on the east to the Pacific Ocean on the west and from the Transverse Ranges on the north into Baja California on the south.

10. Other Public Agencies Whose Approval is Required:

The following permits or approvals are anticipated to be required for the proposed project:

Agreements, Permits and Approvals	Granting Agencies
Initial Study/Mitigated Negative Declaration Approval	Rancho California Water District
Right-of-Way Encroachment Permit	County of Riverside (Dept. of Public Works)
National Pollutant Discharge Elimination System (NPDES) Permit	Regional Water Quality Control Board
Air Quality Permit to Construct	South Coast Air Quality Management District
Permit Amendment	State Water Resources Control Board (Department of Drinking Water)

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?[1]

Assembly Bill (AB) 52 (Chapter 532, Statutes of 2014) establishes a formal consultation process for California Native American tribes as part of the California Environmental Quality Act (CEQA) and equates significant impacts on tribal cultural resources with significant environmental impacts (California Public Resources Code Section 21084.2). Refer to Section XVIII, Tribal Cultural Resources, of this Initial Study for additional discussion.

[1] NOTE: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code Section

The RCWD initiated consultation per AB 52 requirements, sending written notification to the Pechanga Band of Luiseño Mission Indians on August 28, 2019 via U.S. mail to notify the Tribe of the proposed project and intended improvements. Subsequently, on September 23, 2019, the District sent notification to several additional tribes to allow the tribes the opportunity to request consultation on the proposed project pursuant to Public Resources Code Section 21080.3.1. These tribes included the Agua Caliente Band of Cahuilla Indians, Morongo Band of Mission Indians, and Rincon Band of Luiseño Indians. In accordance with AB 52, these four tribes had previously requested that the RCWD provide notification of all qualifying projects under California Public Resources Code 21080.3.1. Refer to Appendix C, AB 52 Consultation Documentation, of Appendix C of this IS/MND for such correspondence.

The Pechanga Tribe responded in a letter dated September 20, 2019 formally requesting consultation with RCWD on the project. The Pechanga Tribe asserted that the project area is culturally sensitive and is part of the Tribe's aboriginal territory as evidenced by the existence of cultural resources, named places, and an extensive artifact record in the project vicinity. On October 17, 2019, RCWD consulted with representatives from the Tribe via conference call. The Tribe made several requests for additional information as well as for the incorporation of specific measures aimed at the long-term protection of undiscovered resources. Subsequently, on November 14, 2019, RCWD sent to the Tribe via email a list of possible mitigation measures intended to reduce potential project impacts to (undiscovered) sensitive tribal cultural resources; refer to Section V, Cultural Resources, and Section XVIII, Tribal Cultural Resources, for more information. Additionally, per the Tribe's request, RCWD also forwarded engineering details as well as the Cultural Resources Report to the Tribe for consideration. At the time of commencement of public review of this Initial Study, consultation with the Pechanga Tribe remains ongoing.

Additionally, in response to AB 52 notification from RCWD, the Rincon Band of Luiseño Indians replied on October 15, 2019, requesting formal consultation with the District on the project. Representatives from RCWD corresponded with members of the Rincon Tribe via telephone on November 5, 2019. The Rincon Band noted that, while no known tribal resources exist on or adjacent to the project site, the area is culturally sensitive in general as it was historically utilized for gatherings, travel routes, and other day-to-day activities. As such, the Rincon Band recommends that mitigation measures for inadvertent discoveries such as archaeological and Luiseño Tribal monitoring (as well as measures addressing protocols and treatment of cultural resources discoveries and human remains) be incorporated into the CEQA document to ensure long-term protection of unknown resources.

The RCWD concurs with the Rincon Band that the absence of known resources does not necessarily preclude the incidental discovery of tribal cultural resources, including human

21080.3.2). Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

remains, once earthwork is initiated. To that end, the RCWD has included mitigation measures in the CEQA document to ensure proper monitoring and reporting of any incidental discoveries; refer to Section V, Cultural Resources, and Section XVIII, Tribal Cultural Resources. The RCWD provided the Rincon Band and Pechanga Tribe with a draft of the proposed CEQA text and mitigation measures for review and comment prior to release of the CEQA document for public review. In response, the Rincon Band of Luiseño Indians provided a letter dated February 20, 2020 indicating that the tribe is in agreement with the measures identified in the Initial Study/Mitigated Negative Declaration (IS/MND). The Tribe indicated that it has no further concerns pertaining to cultural resources and that consultation was therefore concluded. The RCWD again contacted the Pechanga Tribe via email on February 27, 2020 but has yet to receive a reply. This IS/MND has been sent directly to the Pechanga Tribe for their review and comment and the AB 52 consultation process remains open.

As stated, mitigation measures have been incorporated into this Initial Study in response to consultation with the affected Tribes. The AB 52 consultation process will remain open and ongoing while the RCWD and Pechanga Tribe work towards a mutually agreeable description of mitigation measures in the CEQA document.

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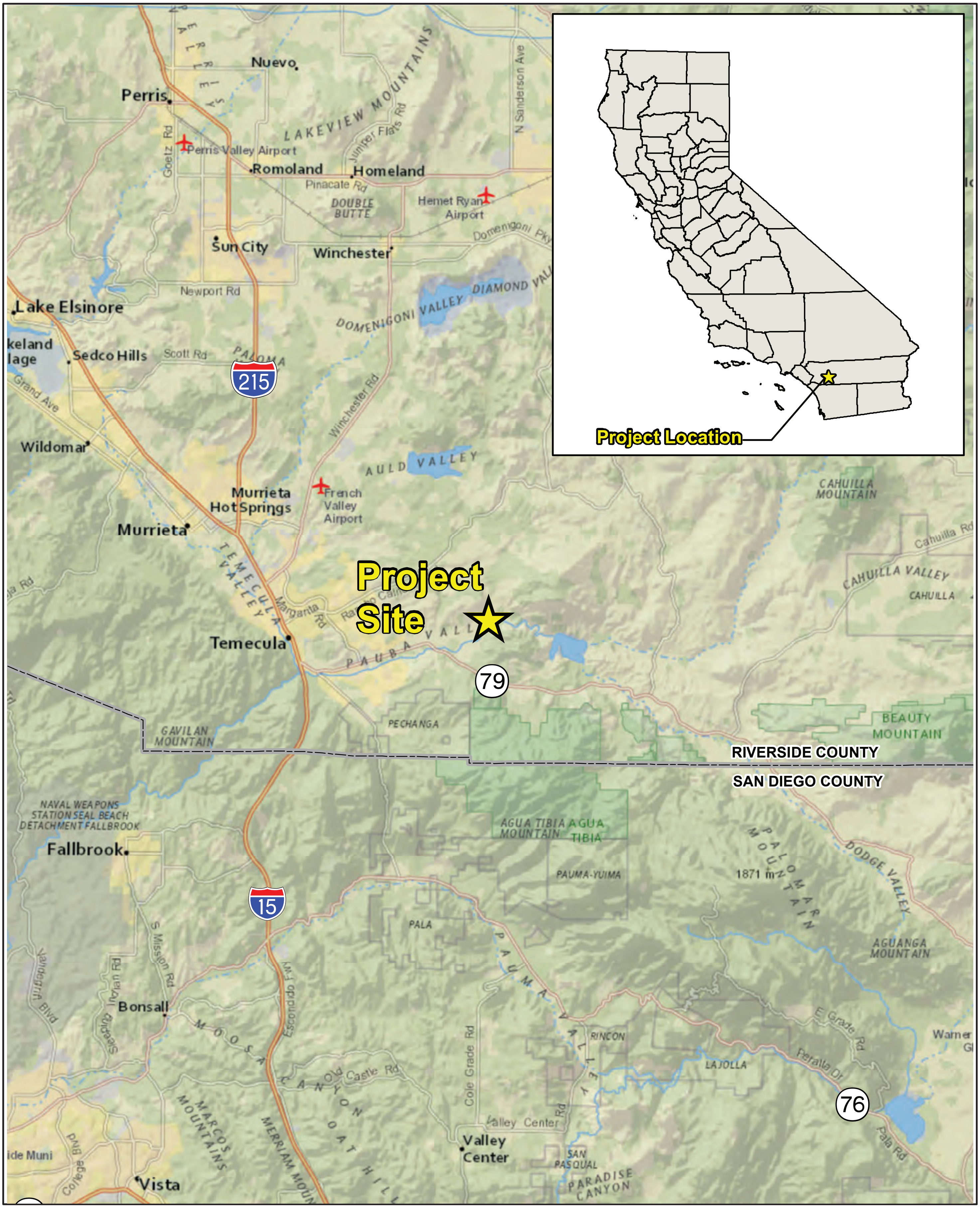

UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION PROJECT

Michael Baker INTERNATIONAL

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0 2.5 5 Miles

Source: ArcGIS Online, 2018

Regional Map

Figure 1

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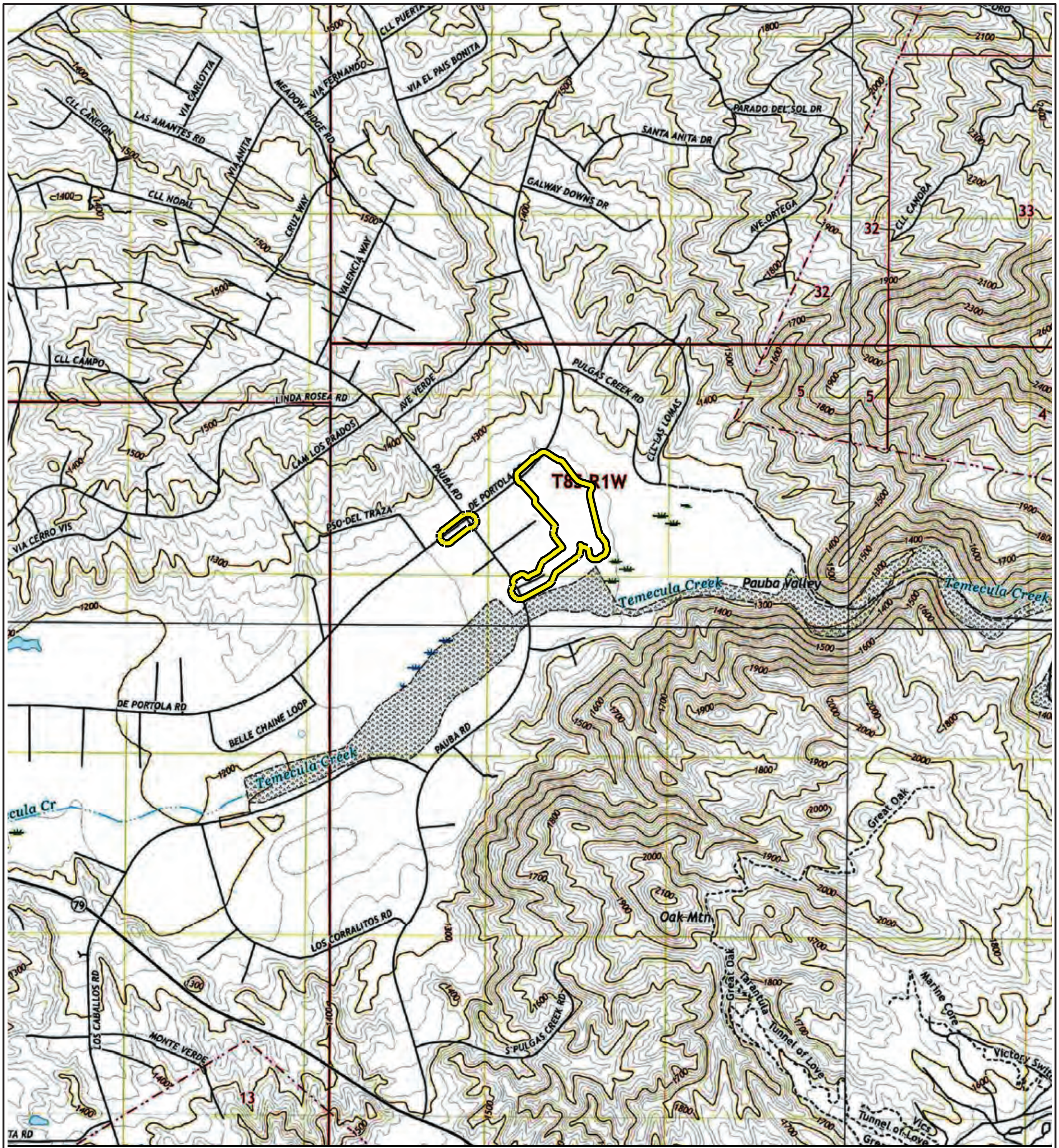

Legend

Survey Area

UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION PROJECT

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0 0.25 0.5 Miles

Source: USGS 7.5-Minute topographic quadrangle maps: Bachelor Mountain, Sage, Pechanga, Vail Lake, California (2018)

Project Vicinity

Figure 2

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UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION PROJECT

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Source: ArcGIS Online, 2018

Project Depiction

Figure 3A

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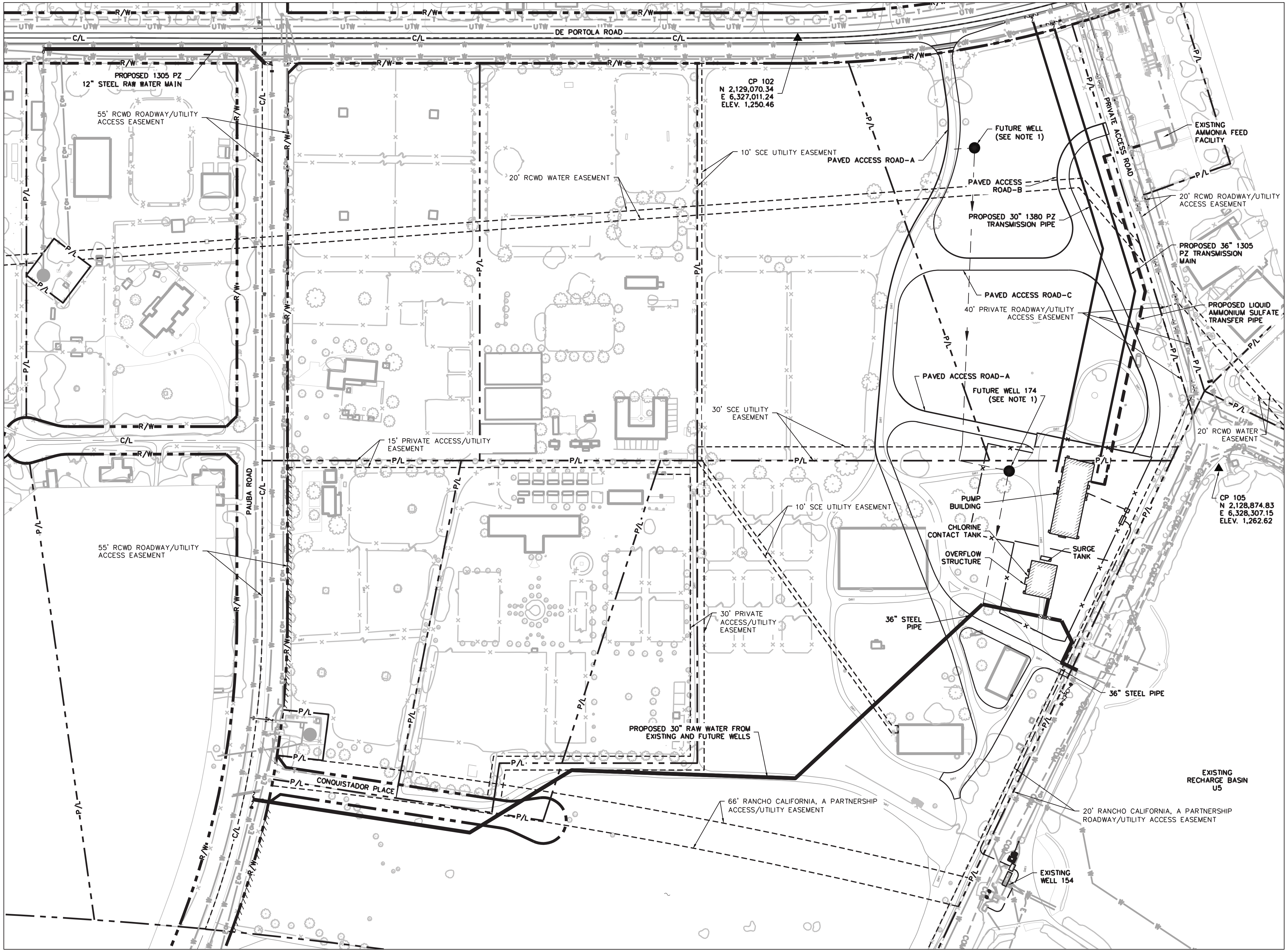


BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, NAD 83 (CCS83) [EPOCH 2011.00], ZONE 6, AS DETERMINED LOCALLY BY A LINE BETWEEN CONTINUOUS OPERATING REFERENCE STATIONS (CORS) BILL AND P479 BEING N69°49'45"W AS DERIVED FROM GEODETIC VALUES PUBLISHED BY THE CALIFORNIA SPATIAL REFERENCE CENTER (CSRC).

BENCHMARK

DESCRIPTION: THE BASIS OF ELEVATIONS FOR THIS SURVEY IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) PER THE NATIONAL GEODETIC SURVEY. BEING A 2.5" BRASS DISK IN A CONCRETE CYLINDER STAMPED T-5-81. IT IS LOCATED 5.7 MILES SOUTHEAST ON HWY 79 FROM THE INTERSECTION OF MAIN AND FRONT STREETS IN TEMECULA, 41' N. OF CENTERLINE OF HWY 79, 2.4' S. OF 6' CHAIN LINK FENCE AROUND WELL SITE, 12' E. OF FENCE CORNER AND P.P. # 1894599E. ELEVATION: 1149.93

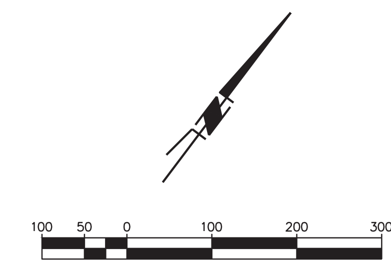
NOTE

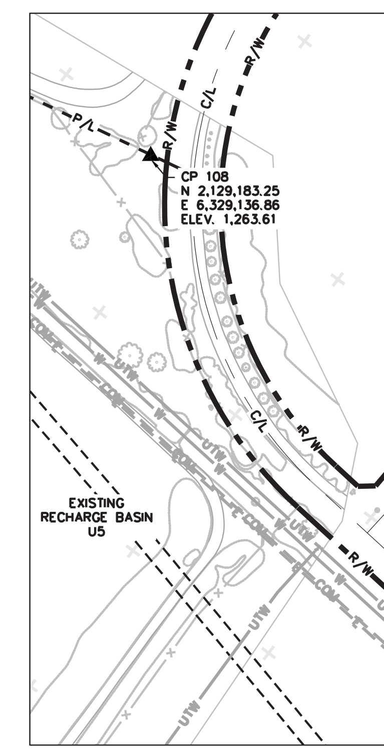
1. FUTURE WELLS ARE CURRENTLY UNDER DESIGN. FINAL LOCATIONS ARE TO BE DETERMINED.

LEGEND

▲ SURVEY CONTROL POINT

● POSSIBLE FUTURE WELL LOCATION





UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION PROJECT

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Source: Michael Baker, March 2020, Sheet C-1

Civil Site Overview Plan (Conceptual)

Figure 3B

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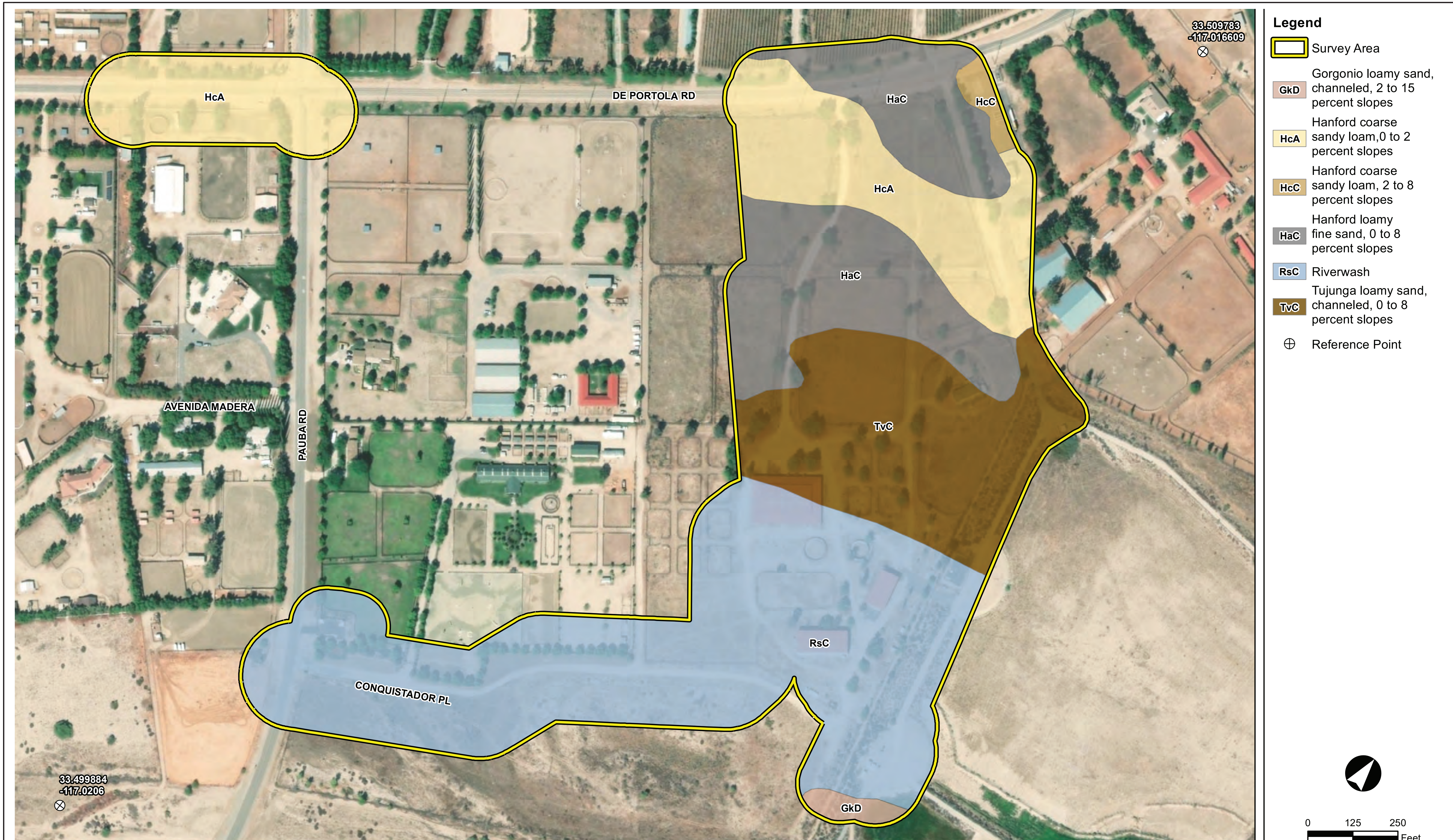

UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION PROJECT

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Source: ArcGIS Online, 2015

USDA Soils

Figure 4

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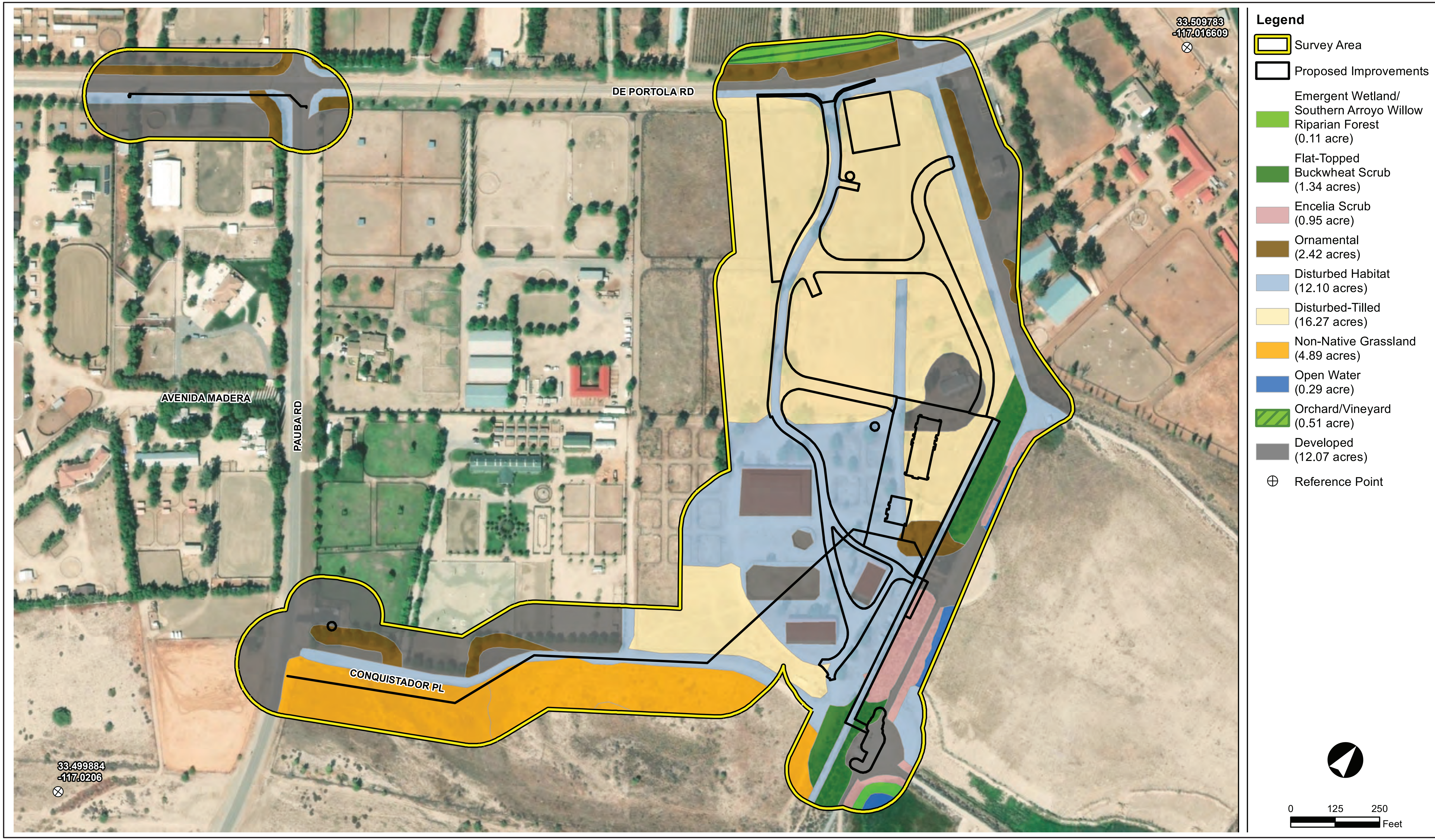

UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION PROJECT

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Source: ArcGIS Online, 2015

Vegetation Communities

Figure 5

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SECTION B. 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/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

For the evaluation of potential impacts, the questions in the Initial Study Checklist are stated and an answer is provided according to the analysis undertaken as part of the Initial Study. The analysis considers the long-term, direct, indirect, and cumulative impacts of the project. To each question, there are four possible responses:

- **No Impact**. The project would not have any measurable environmental impact on the environment.
- **Less Than Significant Impact**. The project would have the potential for impacting the environment, although this impact would be below established thresholds that are considered to be significant.
- **Less Than Significant Impact with Measures Incorporated**. The project would have the potential to generate impacts which may be considered a significant effect on the environment, although measures or changes to the development's physical or operational characteristics can reduce these impacts to levels that are less than significant.
- **Potentially Significant Impact**. The project would have impacts which are considered significant, and additional analysis is required to identify measures that could reduce these impacts to less than significant levels.

SECTION C. DETERMINATION

(To be completed by the Lead Agency)

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.

____________________	March 31, 2020
Signature	Date

SECTION D. EVALUATION OF ENVIRONMENTAL IMPACTS

The following evaluation provides responses to the questions in the CEQA Environmental Checklist. A brief explanation for each question in the CEQA Environmental Checklist is provided to support each impact determination. All responses consider the whole of the action involved including construction and operational impacts, as well as direct and indirect impacts. Environmental factors potentially affected by the proposed project are presented below and organized according to the format of the Checklist.

I. Aesthetics

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

Discussion

a) Except as provided in Public Resources Code Section 21099, would the project have a substantial adverse effect on a scenic vista?

A scenic vista is generally defined as a view of undisturbed natural lands exhibiting a unique or unusual feature that comprises an important or dominant portion of the viewshed. Scenic vistas may also be represented by a particular distant view that provides visual relief from less attractive views of nearby features. Other designated federal and state lands, as well as local open space or recreational areas, may also offer scenic vistas if they represent a valued aesthetic view within the surrounding landscape of nearby features.

Riverside County's natural setting offers a variety of scenic vistas and viewsheds. According to the County of Riverside General Plan Multipurpose Open Space Element, the Santa Rosa National Monument includes mountains and other natural features with high scenic value (County 2015a). Views to the Santa Rosa hillsides are afforded at multiple locations within the county, including along State Route 74, a State-designated scenic highway, located approximately 19 miles northeast of the project site at its closest point as it traverses the mountain range. Implementation of the project is not anticipated to impact views of the hillsides of the Santa Rosa National Monument due to distance and intervening topography. Vail Lake is located approximately 2.6 miles southeast of the project site; however, views of the lake would not be affected by project implementation due to distance from the site, intervening topography, and design characteristics of the pump station facilities.

During construction of the project, construction vehicles would be visible from local streets and neighboring properties. However, the construction duration would be short term and impacts would be temporary. Project construction would include trenching in the road right-of-way and dedicated pipeline areas, installation of the pipelines and wells, and construction of the pump station and associated improvements (i.e., gates, fencing, access drive). As the installed pipelines would be subterranean, and the pump station would be of limited height and scale within the landscape, project implementation is not anticipated to have a long-term impact on any scenic vistas. Impacts would be **less than significant**.

b) Except as provided in Public Resources Code Section 21099, would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

The project site is largely disturbed/developed. Portions of the site support remnant buildings and facilities associated with former equestrian operations on-site. However, such uses have ceased. Limited existing infrastructure facilities owned and operated by the RCWD are also present on-site. No scenic resources such as rock outcroppings or historic buildings are present on-site. A limited number of mature trees area occur sporadically on the pump station site and along the affected roadway alignments.

Additionally, according to the California Scenic Highways Program Database, no officially designated scenic highways are present within the project vicinity. State Route 74, a State-designated scenic highway, is located approximately 19 miles northeast of the project site. The nearest State Eligible Scenic Highway is State Route 79 located approximately 2 miles south/southwest of the pump station site. Due to the absence of scenic highways in the vicinity of the subject site, combined with the nature of the proposed infrastructure improvements, **no impact** on scenic resources would occur.

c) Except as provided in Public Resources Code Section 21099, would the project 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?

The project site is not located within an urbanized area and would not conflict with existing zoning and other regulations governing scenic quality. Existing land uses on-site or in the project vicinity include rural residential uses, agricultural lands, equestrian uses, commercial wineries, undeveloped lands, and existing RCWD facilities and infrastructure.

Short-term visual impacts may occur during project construction activities, such as the presence of construction vehicles and equipment. However, such impacts would be temporary and limited to the construction phase of the project. Once constructed, all pipelines would be subsurface and would not impact the visual character of the existing setting. The pump station facilities would be low-lying within the visual landscape. Therefore, the pump station and associated facilities are not anticipated to substantially degrade the existing visual character or quality of public views of the site and its surroundings. The project would result in a **less than significant** impact to the site's existing visual character, quality, and surroundings.

d) Except as provided in Public Resources Code Section 21099, would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

The project does not propose nighttime construction activities that would require construction lighting. Temporary glare from construction activities (i.e., presence of construction equipment, building materials, and/or other related materials) is possible, but due to the small-sized construction crew and relatively short-term duration, no new substantial sources of light or glare would result from project construction.

All nighttime lighting associated with the project would be designed and installed in conformance with County of Riverside (as applicable) and RCWD nighttime lighting standards. Limited exterior lighting would be installed at the pump station facilities for purposes of security and emergency maintenance. Therefore, project operation would not involve lighting that would result in adverse nighttime lighting effects. Additionally, the exterior of the pump station enclosure would be split-faced block which would not result in potential glare effects. The majority of pipeline improvements would be undergrounded and would therefore not have the potential to produce glare. Portions of the pipeline improvements that are installed aboveground would be limited and would not result in any adverse glare effects.

The project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. Impacts would be **less than significant**.

II. Agriculture and Forestry Resources

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
AGRICULTURE AND FORESTRY RESOURCES: *In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. 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?	☐	☐	☐	☒

Discussion

a) Would the project 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?

According to available maps published by the California Department of Conservation (CDC) as part of the Farmland Mapping and Monitoring Program, the pump station site does not support Prime Farmland, Unique Farmland, or Farmland of Statewide Importance; however, the pump station site and various other lands affected by the pipeline and well improvements do support some limited areas of Farmland of Local Importance, as well as Other Land (CDC 2015). Farmland of Local Importance is land important to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee; Other Land is land not included in any other mapping category (i.e., low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing). Additionally, vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land (CDC 2019). The proposed pipeline improvements would be located within existing roadway rights-of-way or on land owned by the District and not on designated farmland intended for agricultural purposes. Therefore, the project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. Impacts would be **less than significant**.

b) Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?

The County General Plan land use designation for the pump station site is Rural Residential (RR); the pump station site is zoned Rural Residential (RR) (County 2019). Therefore, lands affected by the proposed pump station improvements are not intended for agricultural use. No change to the existing land use or zoning is proposed or required with the project. Roadway rights-of-way (i.e., where the pipeline improvements are proposed) are not assigned a land use designation or zoning.

The pump station site is not subject to a Williamson Act contract or agricultural preserve. Although the pump station site was formerly used for equestrian-related purposes, no active agricultural uses are present on or immediately adjacent to the property. Therefore, the project would not create a conflict with existing agricultural zoning for agricultural use or a Williamson Act contract. Additionally, project excavation for the proposed pipeline alignments would occur within existing roadway rights-of-way or on land owned by the District, and such activities would not conflict with existing zoning for agricultural use or a Williamson Act contract. **No impact** would occur in this regard.

c) Would the project 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))?

According to the County of Riverside General Plan and the County of Riverside Zoning Ordinance, the proposed project is not located in an area designated or zoned as forestland or timberland (County 2019). Therefore, the project would not conflict with existing zoning for or cause the rezoning of forestland, timberland, or timberland production. **No impact** would occur.

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

Refer to Response c), above. There is no designated forestland or timberland on or adjacent to the project site, and therefore, the project would not convert any such lands to non-forest uses. **No impact** would occur with regard to this issue.

e) Would the project 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?

Refer to Responses a) to d), above. As stated, lands affected by the project are not located within an agricultural use area and do not support designated Farmland or forestland. Thus, project implementation would not result in changes in the environment that would result in the conversion of farmland to non-agricultural use or forestland to non-forest use. **No impact** would occur.

III. Air Quality

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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)?	☐	☐	☒	☐

The analysis below includes an assessment of potential air quality impacts resulting with project implementation. Technical modeling results supporting this discussion are included in Appendix A of this Initial Study.

Discussion

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

The County of Riverside is located within the South Coast Air Basin (Basin), which is governed by the South Coast Air Quality Management District (SCAQMD). On March 3, 2017, the SCAQMD Governing Board adopted the *2016 Air Quality Management Plan for the South Coast Air Basin* (2016 AQMP), which incorporates the latest scientific and technical information and planning assumptions, including the latest applicable growth assumptions, the Southern California Association of Governments' (SCAG) *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS), and updated emission inventory methodologies for various source categories. A project is considered consistent with the 2016 AQMP if it is consistent with the goals, objectives, and assumptions set forth in the 2016 AQMP that are designed to achieve federal and state air quality standards. According to the SCAQMD's *1993 CEQA Air Quality Handbook*, two main criteria must be addressed.

Criterion 1

With respect to the first criterion, SCAQMD methodologies require that an air quality analysis for a project include forecasts of project emissions in relation to contributing to air quality violations and delay of attainment.

1) *Would the project result in an increase in the frequency or severity of existing air quality violations?*

As the consistency criteria identified under the first criterion pertains to pollutant concentrations, rather than to total regional emissions, an analysis of the project's pollutant emissions relative to localized pollutant concentrations is used as the basis for evaluating project consistency. Localized concentrations of carbon monoxide (CO), nitrogen oxides (NO_X), particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) would be less than significant during project construction and operations; further analysis supporting this conclusion is provided in the following discussions and under Response IIIb), below. Therefore, the project would not result in an increase in the frequency or severity of existing air quality violations.

2) *Would the project cause or contribute to new air quality violations?*

As discussed in Response a)1), project-generated emissions would not exceed SCAQMD thresholds. Therefore, the project would not have the potential to cause or contribute to new air quality violations. Refer to the analysis provided below and under Response IIIb).

3) *Would the project delay timely attainment of air quality standards or the interim emissions reductions specified in the AQMP?*

The project would result in less than significant impacts with regard to localized concentrations during project construction and operations; refer to the analysis provided below and under Response IIIb). As such, the project would not delay the timely attainment of air quality standards or 2016 AQMP emissions reductions.

Criterion 2

With respect to the second criterion for determining consistency with SCAQMD and SCAG air quality policies, it is important to recognize that air quality planning within the Basin focuses on attainment of ambient air quality standards at the earliest feasible date. Projections for achieving air quality goals are based on assumptions regarding population, housing, and growth trends. Thus, the SCAQMD's second criterion for determining project consistency focuses on whether or not the proposed project exceeds the assumptions utilized in preparing the forecasts presented in the 2016 AQMP. Determining whether or not a project exceeds the assumptions reflected in the 2016 AQMP involves the evaluation of the three criteria outlined below. The following discussion analyzes each criterion.

1) *Would the project be consistent with the population, housing, and employment growth projections utilized in the preparation of the AQMP?*

Relative to the 2016 AQMP, three sources of data form the basis for the projections of air pollutant emissions: the *County of Riverside General Plan* (General Plan), SCAG's *Regional Comprehensive Plan* Growth Management Chapter, and the RTP/SCS. The RTP/SCS also provides socioeconomic forecast projections of regional population growth.

The project does not propose new land uses or structures that would increase the county's population beyond that considered in the General Plan. Therefore, the project would not affect countywide plans for population growth. The project is also consistent with the types, intensity, and patterns of land use envisioned for the site vicinity in the *Regional Comprehensive Plan*, as the proposed use would not increase the county's population growth. The population, housing, and employment forecasts, which are adopted by SCAG's Regional Council, are based on the local plans and policies applicable to the county; these are used by SCAG in all phases of implementation and review. Additionally, as the SCAQMD has incorporated these same projections into the 2016 AQMP, it can be concluded that the project would be consistent with the projections.

2) *Would the project implement all feasible air quality mitigation measures?*

The proposed project would result in less than significant air quality impacts. Compliance with all feasible emission reduction measures as identified by the SCAQMD would be required; refer to the analysis provided below and under Response IIIb). Additionally, the project would require approval of a permit to construct from the SCAQMD for installation of the backup generator which will require project conformance with associated permit measures to reduce potential adverse air quality effects. As such, the proposed project would meet this 2016 AQMP consistency criterion.

3) *Would the project be consistent with the land use planning strategies set forth in the AQMP?*

The project would increase Metropolitan Water District (MWD) raw water application to the existing UVDC recharge basins, add centralized disinfection and pumping facilities, and reroute existing wells to the new facilities. Construction activities would consist of grading, building construction, paving, and architectural coating. The project would not introduce new land uses or structures that would conflict with the 2016 AQMP land use planning strategies.

In conclusion, the project would not conflict with or obstruct implementation of the 2016 AQMP. The determination of 2016 AQMP consistency is primarily concerned with the long-term influence of a project on air quality in the Basin. As stated, the project would not result in long-term impacts on the region's ability to meet state or federal air quality standards. The project's long-term influence would be consistent with the goals and policies of the 2016 AQMP and the project is therefore considered consistent with the 2016 AQMP.

Criteria Pollutants

Carbon Monoxide (CO). CO is an odorless, colorless, toxic gas that is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. CO replaces oxygen in the body's red blood cells. Individuals with a deficient blood supply to the heart, patients with diseases involving heart and blood vessels, fetuses (unborn babies), and patients with chronic hypoxemia (oxygen deficiency) as seen in high altitudes are most susceptible to the adverse effects of CO exposure. People with heart disease are also more susceptible to developing chest pains when exposed to low levels of carbon monoxide.

Ozone (O_3). O_3 occurs in two layers of the atmosphere. The layer surrounding the Earth's surface is the troposphere. The troposphere extends approximately 10 miles above ground level, where it meets the second layer, the stratosphere. The stratospheric (the "good" O_3 layer) extends upward from approximately 10 to 30 miles and protects life on Earth from the sun's harmful ultraviolet rays. "Bad" O_3 is a photochemical pollutant, and needs volatile organic compounds (VOCs), NO_X, and sunlight to form; therefore, VOCs and NO_X are O_3 precursors. To reduce O_3 concentrations, it is necessary to control the emissions of these O_3 precursors. Significant O_3 formation generally requires an adequate amount of precursors in the atmosphere and a period of several hours in a stable atmosphere with strong sunlight. High O_3 concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

While O_3 in the upper atmosphere (stratosphere) protects the earth from harmful ultraviolet radiation, high concentrations of ground-level O_3 (in the troposphere) can adversely affect the human respiratory system and other tissues. O_3 is a strong irritant that can constrict the airways, forcing the respiratory system to work hard to deliver oxygen. Individuals exercising outdoors, children, and people with preexisting lung disease such as asthma and chronic pulmonary lung disease are considered to be the most susceptible to the health effects of O_3. Short-term exposure (lasting for a few hours) to O_3 at elevated levels can result in aggravated respiratory diseases such as emphysema, bronchitis and asthma, shortness of breath, increased susceptibility to infections, inflammation of the lung tissue, and increased fatigue, as well as chest pain, dry throat, headache, and nausea.

Nitrogen Dioxide (NO_2). NO_X are a family of highly reactive gases that are a primary precursor to the formation of ground-level O_3 and react in the atmosphere to form acid rain. NO_2 (often used interchangeably with NO_X) is a reddish-brown gas that can cause breathing difficulties at elevated levels. Peak readings of NO_2 occur in areas that have a high concentration of combustion sources (e.g., motor vehicle engines, power plants, refineries, and other industrial operations). NO_2 can irritate and damage the lungs and lower resistance to respiratory infections such as influenza. The health effects of short-term exposure are still unclear. However, continued or frequent exposure to NO_2 concentrations that are typically much higher than those normally found in the ambient air may increase acute respiratory illnesses in children and increase the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may aggravate eyes and mucus membranes and cause pulmonary dysfunction.

Coarse Particulate Matter (PM_{10}). PM_{10} refers to suspended particulate matter, which is smaller than 10 microns or ten one-millionths of a meter. PM_{10} arises from sources such as road dust, diesel soot, combustion products, construction operations, and dust storms. PM_{10} scatters light and significantly reduces visibility. In addition, these particulates penetrate into lungs and can potentially damage the respiratory tract. On June 19, 2003, the California Air Resources Board (CARB) adopted amendments to the statewide 24-hour particulate matter standards based upon requirements set forth in the Children's Environmental Health Protection Act (Senate Bill 25).

Fine Particulate Matter ($PM_{2.5}$). Due to concerns over health impacts related to fine particulate matter (particulate matter 2.5 microns in diameter or less), both state and federal $PM_{2.5}$ standards have been created. Particulate matter impacts primarily infants, children, the elderly, and those with preexisting cardiopulmonary disease. In 1997, the U.S. Environmental Protection Agency (EPA) announced new $PM_{2.5}$ standards. Industry groups challenged the new standard in court and the implementation of the standard was blocked. However, upon appeal by the EPA, the United States Supreme Court reversed this decision and upheld the EPA's new standards. On January 5, 2005, the EPA published a Final Rule in the Federal Register that designates the Basin as a nonattainment area for federal $PM_{2.5}$ standards. On June 20, 2002, CARB adopted amendments for statewide annual ambient particulate matter air quality standards. These standards were revised/established due to increasing concerns by CARB that previous standards were inadequate, as almost everyone in California is exposed to levels at or above the current state standards during some parts of the year, and the statewide potential for significant health impacts associated with particulate matter exposure was determined to be large and wide-ranging.

Sulfur Dioxide (SO_2). SO_2 is a colorless, irritating gas with a rotten egg smell; it is formed primarily by the combustion of sulfur-containing fossil fuels. Sulfur dioxide is often used interchangeably with SO_X. Exposure of a few minutes to low levels of SO_2 can result in airway constriction in some asthmatics.

Volatile Organic Compounds (VOC). VOCs are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form O_3 to the same extent when exposed to photochemical processes. VOCs often have an odor; some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a criteria pollutant since they are a precursor to O_3, which is a criteria pollutant. The SCAQMD uses the terms VOC and ROG (see below) interchangeably.

Construction Impacts

Project construction activities would involve grading and construction of a new pump station and associated facilities, pipelines, and wells. Construction activities would require the import of approximately 44,950 cubic yards of soil. Construction is anticipated to take approximately 2-3 years.

Table III-1, Construction Air Emissions, provides construction emissions associated with the project. Emitted pollutants would include ROG, CO, NO_X, SO_2, PM_{10}, and $PM_{2.5}$. The greatest amount of ROG, CO, and NO_X emissions would occur during the building phase. The majority of PM_{10} and $PM_{2.5}$ emissions would be generated by fugitive dust and construction equipment exhaust from grading and construction activities. Exhaust emissions include those associated with the transport of machinery and supplies to and from the project site, emissions produced on-site as the equipment is used, and emissions from vehicles transporting materials and people to and from the site.

Table III-1
Construction Air Emissions

Emissions Source	Pollutant (pounds/day)[1]					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Year 1 Construction Emissions[2]	5.81	65.15	24.79	0.14	6.63	3.33
Year 2 Construction Emissions[2]	3.90	30.90	32.35	0.06	2.66	1.74
Year 3 Construction Emissions[2]	2.06	18.05	18.99	0.04	1.71	1.00
SCAQMD Thresholds	75	100	550	150	150	55
Is Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***

ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide; SO_2 = sulfur dioxide;
PM_{10} = particulate matter up to 10 microns; $PM_{2.5}$ = particulate matter up to 2.5 microns

Notes:
1. Emissions were calculated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2, as recommended by the SCAQMD.
2. The reduction/credits for construction emissions are based on "mitigation" included in CalEEMod version 2016.3.2 and as required by SCAQMD Rule 403. The "mitigation" applied in CalEEMod includes the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stockpiles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour. The emissions results in this table represent the "mitigated" emissions shown in Appendix A, Air Quality/Greenhouse Gas/Energy Data.

Source: Refer to Appendix A for detailed model input/output data.

As depicted in Table III-1, construction-related emissions would not exceed the established SCAQMD thresholds for criteria pollutants. During construction activities, the project would also be required to comply with standard SCAQMD regulations, such as Rule 403 (Dust Control). A **less than significant** impact would occur in this regard.

Naturally Occurring Asbestos

Asbestos is a term used for several types of naturally occurring fibrous minerals that are a human health hazard when airborne. The most common type of asbestos is chrysotile, but other types such as tremolite and actinolite are also found in California. Asbestos is classified as a known human carcinogen by state, federal, and international agencies and was identified as a toxic air contaminant by CARB in 1986.

Asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects, and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations. All of these activities may have the effect of releasing potentially harmful asbestos into the air. Natural weathering and erosion processes can act on asbestos-bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed. According to the CDC Division of Mines and Geology, *A General Location Guide for Ultramafic Rocks in California - Areas More Likely to Contain Naturally Occurring Asbestos Report* (CDC 2000), serpentinite and ultramafic rocks are not known to occur within the project area. Thus, there would be **no impact** in this regard.

Operational Impacts

Long-term air quality impacts would occur from mobile source emissions generated from project-related trips and from stationary source emissions generated by operation of the pump station facilities.

The proposed project would involve the construction and operation of a pump station and associated pipeline and well improvements Mobile emissions would be generated by motor vehicles traveling to and from the project site. However, project operations would require only periodic maintenance and inspections, and thus, would generate a limited number of vehicle trips that would not result in substantial long-term air quality impacts.

Stationary source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. As the project involves a pump station and associated pipeline and well facilities, heating and consumer products would not be used. All pumps and generators associated with the project would be electrically powered and would not directly generate air emissions. However, the proposed project would include the use of a 2,000 kilowatt (kw) emergency diesel generator, paired with a fuel tank, for backup power in case of emergencies. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution and to attain and maintain the national and state ambient air quality standards in the Basin. Therefore, the RCWD would be required to obtain applicable permits from the SCAQMD for operation of the backup generator and fuel tank and would be required to comply with all SCAQMD permit conditions, including for regulating any potential emissions resulting from operation of project components to ensure that established thresholds are not exceeded. Thus, operational air quality impacts would be **less than significant**.

Air Quality Health Impacts

Adverse health effects induced by criteria pollutant emissions are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, and the number and character of exposed individual [e.g., age, gender]). In particular, O_3 precursors, VOCs, and NO_x affect air quality on a regional scale. Health effects related to O_3 are therefore the product of emissions generated by numerous sources throughout a region. Existing models have limited sensitivity to small changes in criteria pollutant concentrations, and, as such, translating project-generated criteria pollutants to specific health effects or additional days of nonattainment would produce meaningless results. In other words, the project's less than significant increases in regional air pollution from criteria air pollutants would have nominal or negligible impacts on human health.

Further, as noted in the *Brief of Amicus Curiae* by the SCAQMD (April 6, 2015), the SCAQMD acknowledged it would be difficult, if not impossible, to quantify health impacts of criteria pollutants for various reasons including modeling limitations as well as where in the atmosphere air pollutants interact and form. Furthermore, as noted in the *Brief of Amicus Curiae* by the San Joaquin Valley Air Pollution Control District (April 13, 2015), available modeling tools are not equipped to provide a meaningful analysis of the correlation between an individual development project's air emissions and specific human health impacts.

The SCAQMD acknowledges that health effects quantification from O_3, as an example, is correlated with the increases in O_3 ambient levels in the air (concentration) that an individual person breathes. SCAQMD's *Brief of Amicus Curiae* states that it would take a large amount of additional emissions to cause a modeled increase in ambient O_3 levels over the entire region. The SCAQMD states that based on the modeling in SCAQMD's *2012 Air Quality Management Plan*, a reduction of 432 tons (864,000 pounds) per day of NO_x and a reduction of 187 tons (374,000 pounds) per day of VOCs would reduce O_3 levels at the highest monitored sites by only 9 parts per billion. As such, the SCAQMD concludes that it is not currently possible to accurately quantify O_3-related health impacts caused by NO_x or VOC emissions from relatively small projects (defined as projects with regional scope) due to photochemistry and regional model limitations. Thus, as the project would not exceed SCAQMD thresholds for construction or operational air emissions, the project would have a **less than significant impact** regarding air quality health effects.

b) Would the project 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?

Cumulative Construction Impacts

With respect to the project's construction-period air quality emissions and cumulative Basin-wide conditions, the SCAQMD has developed strategies to reduce criteria pollutant emissions outlined in the 2016 AQMP pursuant to federal Clean Air Act mandates. As such, the proposed project would comply with SCAQMD Rule 403 requirements and implement all feasible SCAQMD rules to reduce construction air emissions to the extent feasible. SCAQMD Rule 403 requires that fugitive dust be controlled with the best available control measures in order to reduce dust so that it does not remain visible in the atmosphere beyond the property line of a project site. In addition, the project would comply with adopted 2016 AQMP emissions control measures. Pursuant to SCAQMD rules and mandates, as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements (i.e., SCAQMD Rule 403 compliance, implementation of all feasible mitigation measures, and compliance with adopted AQMP emissions control measures) would also be imposed on construction projects throughout the Basin, which would include related projects.

As discussed above, the project's short-term construction emissions would not exceed the SCAQMD thresholds and would result in a less than significant impact. Thus, it can be reasonably inferred that the project's construction emissions would not contribute to a cumulatively considerable air quality impact for nonattainment criteria pollutants in the Basin. Impacts would be **less than significant** in this regard.

Cumulative Long-Term Impacts

The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment. The backup generator would require permitting by the SCAQMD prior to installation and would only be used in emergency situations, routine testing, and maintenance purposes and would not contribute a substantial amount of emissions capable of exceeding SCAQMD thresholds. As project operations would not exceed SCAQMD thresholds, the project would not violate an air quality standard or contribute to an existing violation. Therefore, project operations would not result in a cumulatively considerable net increase of any criteria pollutant. Impacts would be **less than significant**.

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

Sensitive receptors are defined as facilities or land uses that include members of the population, such as children, the elderly, and people with illnesses, who may be particularly sensitive to the effects of air pollutants. Examples of sensitive receptors include residential uses, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis.

The closest sensitive receptors to the pump station site are existing residential uses located approximately 70 feet west of the site. To identify impacts to sensitive receptors, the SCAQMD recommends addressing localized significance thresholds (LSTs) for construction and operational impacts for area sources only.

Localized Significance Thresholds

LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the *Final Localized Significance Threshold Methodology* (dated June 2003 [revised 2008]) for guidance. The LST methodology assists lead agencies in analyzing localized air quality impacts. The SCAQMD provides the LST screening lookup tables for 1-, 2-, and 5-acre projects emitting CO, NO_X, $PM_{2.5}$, or PM_{10}. The LST methodology and associated mass rates are not designed to evaluate localized impacts from mobile sources traveling over the roadways. The SCAQMD recommends that any project that disturbs 5 acres or more per day should perform air quality dispersion modeling to assess impacts to nearby sensitive receptors. The project site is located in Source Receptor Area (SRA) 26, Temecula Valley.

Construction Impacts

Based on the project's California Emissions Estimator Model (CalEEMod) version 2016.3.2 modeling, the project is anticipated to disturb up to 20 acres during the grading phase. The grading phase would take approximately 40 days to complete. As such, the project would actively disturb approximately 0.5 acre per day. Therefore, LST thresholds for 1 acre was conservatively utilized for the construction LST analysis.

As stated, the closest sensitive receptors are residences located approximately 70 feet west of the pump station site. These sensitive land uses may potentially be affected by air pollutant emissions generated during on-site construction activities. LST thresholds are provided for distances to sensitive receptors of 25, 50, 100, 200, and 500 meters. As the nearest sensitive uses are located approximately 70 feet west of the pump station site, the LST values for 25 meters (82 feet) were utilized.

Table III-2, Localized Significance of Construction Emissions, shows the localized construction-related emissions for NO_X, CO, PM_{10}, and $PM_{2.5}$ compared to the LSTs for SRA 26. It is noted that the localized emissions presented in Table III-2 are less than those in Table III-1 because localized emissions include only on-site emissions (i.e., from construction equipment and fugitive dust), and do not include off-site emissions (i.e., from hauling activities). As shown in Table III-2, with adherence to SCAQMD rules and requirements, the project's localized construction emissions would not exceed the LSTs for SRA 26. Therefore, localized significance impacts from project construction activities would be **less than significant**.

Table III-2
Localized Significance of Construction Emissions

Source[1]	Emissions (pounds/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Year 1 Construction Emissions	33.20	21.75	3.88	2.50
Year 2 Construction Emissions	17.43	16.57	0.96	0.90
Year 3 Construction Emissions	15.61	16.36	0.81	0.76
Maximum Daily Emissions	**33.20**	**21.75**	**3.88**	**2.50**
SCAQMD Localized Significance Threshold[2]	*162*	*661*	*4*	*3*
Thresholds Exceeded?	***No***	***No***	***No***	***No***

Notes: NOx = nitrogen oxides; CO = carbon monoxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter

1. Modeling assumptions include compliance with SCAQMD Rule 403 which requires properly maintaining mobile and other construction equipment; replacing ground cover in disturbed areas quickly; watering exposed surfaces three times daily; covering stockpiles with tarps; watering all haul roads twice daily; and limiting speeds on unpaved roads to 15 miles per hour.
2. The LST was determined using Appendix C of the SCAQMD's *Final Localized Significant Threshold Methodology* guidance document for NO_X, CO, PM_{10}, and $PM_{2.5}$. The LST was based on the anticipated daily acreage disturbance for construction (the thresholds for 1 acre was utilized), the distance to sensitive receptors (25 meters), and Source Receptor Area 26.

Source: Refer to Appendix A for detailed model input/output data.

Operational Impacts

According to SCAQMD's LST methodology, LSTs would apply to the operational phase of a proposed project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). The proposed project does not include such uses. Thus, due to the lack of such emissions, no long-term localized significance threshold analysis is needed. Operational LST impacts would be **less than significant** in this regard.

Localized Air Quality Health Impacts

As evaluated above, the project's air emissions would not exceed the SCAQMD LSTs. Therefore, the project would not exceed the most stringent applicable federal or state ambient air quality standards for emissions of CO, NO_X, PM_{10}, or $PM_{2.5}$. It should be noted that the ambient air quality standards are developed and represent levels at which the most susceptible persons (e.g., children and the elderly) are protected. In other words, the ambient air quality standards are purposefully set in a stringent manner to protect children, elderly, and those with existing respiratory problems. Thus, air quality health impacts would be **less than significant** in this regard.

Carbon Monoxide Hotspots

CO emissions are a function of vehicle idling time, meteorological conditions, and traffic flow. Under certain extreme meteorological conditions, CO concentrations near a congested roadway or intersection may reach unhealthful levels (i.e., adversely affecting residents, school children, hospital patients, the elderly, etc.).

The Basin is designated as an attainment/maintenance area for federal CO standards and an attainment area for state standards. There has been a decline in CO emissions even though vehicle miles traveled (VMT) on urban and rural roads have increased. Nationwide estimated anthropogenic CO emissions have decreased 68 percent between 1990 and 2014. In 2014, mobile sources accounted for 82 percent of the nation's total anthropogenic CO emissions (EPA 2019). Three major control programs have contributed to the reduced per vehicle CO emissions, including exhaust standards, cleaner burning fuels, and motor vehicle inspection/maintenance programs.

According to the SCAQMD *CEQA Air Quality Handbook*, a potential CO hotspot may occur at any location where the background CO concentration already exceeds 9.0 parts per million (ppm), which is the eight-hour state ambient air quality standard. The project involves construction of a pump station and associated infrastructure (pipeline and well facilities). The proposed land use would generate nominal operational trips for routine maintenance and inspection and would include operation of a SCAQMD-permitted backup generator. The project would result in negligible CO emissions from the nominal number of operational trips and use of the backup generator. As such, it can be reasonably inferred that a CO hotspot would not occur. Impacts would be **less than significant**.

d) Would the project result in other emissions (such as those leading to odors adversely affecting a substantial number of people)?

Construction Impacts

Construction activities associated with the project may generate detectable odors from heavy-duty equipment exhaust and architectural coatings. However, construction-related odors would be short term in nature and cease upon project completion. In addition, the project would be required to comply with the California Code of Regulations, Title 13, Sections 2449(d)(3) and 2485, which minimizes the idling time of construction equipment either by shutting it off when not in use or by reducing the time of idling to no more than five minutes. This would reduce detectable odors from heavy-duty equipment exhaust. The project would also be required to comply with SCAQMD Rule 1113 (Architectural Coating), which would minimize odor impacts from ROG emissions during architectural coating. Any odor impacts to existing adjacent land uses would be short term and not substantial. As such, the project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. Impacts would be **less than significant** in this regard.

Operational Impacts

According to the SCAQMD's *CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. Uses in the project vicinity include several rural residential estates with horse stables, which have the potential to produce unpleasant odors in the site vicinity due to manure. The proposed pump station and associated infrastructure improvements are not known to produce substantial odors that would adversely affect neighboring sensitive receptors. The new facility would include on-site storage of sodium hypochlorite, brine (a solid salt), and a tank filled with liquid ammonium sulfate. None of the chemicals are known to produce extensive odors and each would be properly stored to prevent any spillage or venting to the atmosphere. The on-site storage of the chemicals would be routinely maintained and monitored by RCWD maintenance staff to confirm that leaks or spillage do not occur. Furthermore, the project would be required to comply with SCAQMD Rule 402 which would reduce any odor nuisances. Therefore, project operations would not create objectionable odors affecting a substantial number of people and any long-term odor impacts would be **less than significant**.

IV. Biological Resources

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 US 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?	☐	☒	☐	☐

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

Michael Baker prepared a Biological Resources Assessment (December 2019) for the project to identify sensitive biological resources on-site and in the surrounding area and to evaluate potential project effects on such resources. The assessment is included in Appendix B of this Initial Study.

Discussion

a) Would the project 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?

The majority of the undeveloped portions of the pump station site appear to have supported limited agricultural activities in the recent past, evidenced by disked areas covered with varying densities of ruderal vegetation (i.e., disturbed non-native plants), and sporadic ornamental trees along some of the fence lines and perimeters. Both undisturbed and disturbed natural vegetation occur primarily in the southern portion of the site. Existing land uses and features surrounding the survey area consist of the Keyways Vineyard north of De Portola Road, the Los Caballos Stables, the Rancho Pacifica Equestrian Center, multiple single-family residences, the RCWD water percolation Ponds U-5 and U-2, undeveloped lands, and naturally vegetated lands.

Multiple surveys were conducted to identify and document biological resources and existing conditions on-site and in the surrounding area. Refer to Appendix B which provides a detailed discussion of the dates and findings of each survey, including the initial reconnaissance to document habitats observed and subsequent protocol surveys for sensitive plant and animal species.

The survey area consists of previously modified and uneven terrain comprised of both native and non-native vegetation communities as well as disturbed and developed areas; refer to Figure 5, Vegetation Communities. Additionally, the pump station site supports previously disturbed/developed lands (including abandoned structures, corrals and equestrian pens, and above-ground tanks and wells) associated with prior agriculture and equestrian uses. Refer to Appendix B, Biological Resources Assessment.

Four natural vegetation communities were observed and mapped within the survey area: emergent wetland/southern arroyo willow riparian forest, encelia scrub, flat-topped buckwheat scrub, and non-native grassland. In addition, the survey area contains six land cover types that would be classified as disturbed, disturbed-tilled, ornamental, orchards/vineyards, developed, and open water; refer to Figure 5, Vegetation Communities. No potential jurisdictional resources were identified during the field surveys. Table IV-1 provides the acreage of each documented vegetation community/land cover type. Refer to Appendix B for a detailed discussion of the characteristics of each.

Table IV-1
Vegetation and Land Cover Types

Vegetation Community/Land Cover*	Existing in Survey Area (in Acres)
Emergent Wetland/Southern Arroyo Willow Riparian Forest (52440/61320)	0.11
Encelia Scrub (33500)	0.90
Flat-Topped Buckwheat Scrub (32800)	1.34
Non-Native Grassland (42210)	4.89
Disturbed (11300)	11.85
Disturbed-Tilled (11300)	16.27
Ornamental (12000)	2.42
Orchards/Vineyards (18100)	0.51
Developed (12000)	11.44
Open Water (64140)	0.28
TOTAL	**50.01**

* Parenthetical term denotes Holland-Oberbauer vegetation classification.

No special-status wildlife species were observed within the survey area during the 2017-2019 field surveys (Michael Baker 2019a). Based on the results of the literature review and the field surveys, Michael Baker determined that orange-throated whiptail, coastal whiptail, and Jacumba pocket mouse have a moderate or high potential to occur within the survey area. However, the proposed project would generally be limited to developed areas and heavily disturbed lands that provide a limited amount of suitable habitat and thereby reduce the potential of encountering these species during construction. Therefore, potential impacts to these species are expected to be less than significant and no additional measures to avoid, minimize, or mitigate potential project effects are recommended. All other special-status wildlife species either have a low potential to occur or are not expected within the survey area based on existing site conditions and a review of specific habitat requirements, occurrence records, and known distributions; refer to Appendix B.

One special-status plant species was observed within the survey area during the 2018-2019 rare plant surveys: chaparral sand verbena (Michael Baker 2019a). Based on the project footprint, no individuals of chaparral sand verbena would be impacted by the project design as proposed. In addition, Michael Baker determined that all other special-status plant species either have a low potential to occur or are not expected within the survey area based on existing site conditions and a review of specific habitat requirements, occurrence records, and known distributions. Therefore, no direct, indirect, or cumulative impacts to rare plants and rare plant communities are anticipated to occur as a result of the proposed project. No additional measures to avoid, minimize, or mitigate impacts to rare plants and rare plant communities are recommended.

Therefore, the project would not 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 (CDFW) or U.S. Fish and Wildlife Service (USFWS).

The vegetation communities, including ornamental trees and unvegetated, open ground within and surrounding the survey area provide suitable nesting opportunities for a variety of year-round and seasonal bird species that may be present during the breeding season. Implementation of mitigation measures **BIO-1** and **BIO-2** would reduce such potential indirect impacts to nesting birds to below significance. Impacts would be reduced to **less than significant with mitigation incorporated**.

Mitigation Measures:

BIO-1: A pre-construction clearance survey shall be conducted to confirm the absence of burrowing owl (*Athene cunicularia*) and ensure that project-related activities do not result in impacts to any occupied burrows that may be located within or adjacent to the project site. The pre-construction burrowing owl clearance survey shall be conducted by a qualified District-approved biologist no more than 30 days prior to any ground disturbance or vegetation removal activities in accordance with the Staff Report on Burrowing Owl Mitigation (Department of Fish and Game, 2012). Upon completion of the survey and any follow-up measures that may be required, a report shall be prepared and submitted to the RCWD for mitigation monitoring compliance record keeping. If ground disturbing activities are not completed within 30 days of a negative survey, the clearance survey shall be repeated to confirm the absence of burrowing owls.

BIO-2: If grading or construction activities are scheduled to occur during the nesting season for breeding birds (typically January 15th through September 30th), a pre-disturbance nesting bird survey shall be conducted by a qualified District-approved biologist no more than 3 days prior to any ground disturbing activities, to determine the presence of nests or nesting birds. If active nests are identified, the biologist shall establish non-disturbance buffers around them (500 feet for raptors and sensitive species; 200 feet for non-raptors/non-sensitive species). The biologist shall monitor these buffers weekly to ensure no work occurs within them until the nesting effort is finished (i.e., the juveniles have successfully fledged and are surviving independent from the nest). Work can resume within the buffers when no other active nests are found. Alternatively, a qualified biologist may determine that construction can be permitted within the non-disturbance buffer areas with implementation of a monitoring and mitigation plan to prevent any impacts while the nest continues to be active (eggs, chicks, etc.). Upon completion of the survey and any follow-up measures that may be required, a report shall be prepared and submitted to RCWD for mitigation monitoring compliance record keeping. If vegetation clearing is not completed within 3 days of a negative survey, the nesting survey shall be repeated to confirm the absence of nesting birds.

Monitoring/Enforcement: Rancho California Water District

Timing/Implementation: Prior to grading or construction activities

b) Would the project 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 US Fish and Wildlife Service?

Sensitive vegetation communities are natural communities and habitats that are unique, of relatively limited distribution in the region, or of particularly high wildlife value. The California Department of Fish and Wildlife (CDFW) ranks sensitive communities as threatened or very threatened and keeps records of their occurrences in the California Natural Diversity Database (CNDDB). The CDFW also identifies sensitive vegetation communities on its List of California Natural Communities Recognized by the CNDDB.

Table IV-1 above provides the acreage of each vegetation community/land cover type in the survey area, with each discussed in detail in Appendix B. No potential jurisdictional resources were identified during the field surveys.

Four special-status vegetation communities have been reported within the USGS Bachelor Mountain, Sage, Pechanga, and Vail Lake, California 7.5-minute quadrangles by the CNDDB, in which the project site is located; refer to Attachment E of Appendix B. These include Riversidian alluvial fan sage scrub, southern coast live oak riparian forest, southern cottonwood willow riparian forest, and southern willow scrub. Based on the result of field surveys, none of these special-status vegetation communities were observed within the survey area.

Therefore, the proposed improvements would not result in a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS. Impacts would be **less than significant**.

c) Would the project 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?

Emergent wetland/southern arroyo willow riparian forest occurs along the edge of the RCWD percolation pond within the survey area located southeast of the oval-shaped dirt pad/maintenance access road for the existing Southern California Edison (SCE) Feeder Station and Well No. 154; refer to Figure 5, Vegetation Communities. This habitat is dominated by southern broad-leaf cattail along the water's edge and arroyo willow on the bank.

The proposed project improvements would not require disturbance or removal of any emergent wetland/southern arroyo willow riparian forest habitat. Additionally, no potential jurisdictional resources were identified during the field surveys conducted; refer to Appendix B.

Therefore, the proposed project would not have a substantial adverse effect on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means. Impacts would be **less than significant**.

d) Would the project 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?

Habitat linkages provide links between larger habitat areas that are separated by development. Wildlife corridors are similar to linkages but provide specific opportunities for animals to disperse or migrate between areas. A corridor can be defined as a linear landscape feature of sufficient width to allow animal movement between two comparatively undisturbed habitat fragments. Adequate cover is essential for a corridor to function as a wildlife movement area. It is possible for a habitat corridor to be adequate for one species yet, inadequate for others. Wildlife corridors are key features for dispersal, seasonal migration, breeding, and foraging. Additionally, open space can provide a buffer against both human disturbance and natural fluctuations in resources.

Wildlife movement within and adjacent to the project survey area may potentially occur throughout the undeveloped, vegetated areas associated with Temecula Creek to the south of the survey area. In addition, the percolation ponds located immediately east/southeast of the project site could potentially support wildlife movement. However, the proposed improvements would not disturb Temecula Creek or the percolation ponds. The survey area and open space provide movement opportunities for coyote and bobcat as well as provide suitable nesting/foraging habitat for a variety of seasonal bird species that migrate through the region (Michael Baker 2019a).

It should be noted that the pump station site is currently developed/disturbed and the proposed improvements would therefore not result in the conversion of undeveloped natural open space lands to a developed condition. Although the pump station site would be fenced, the project is not anticipated to substantially interfere with wildlife movement as adjoining and surrounding lands would continue to allow for such movement through the area. Further, under existing conditions, the subject site is currently fenced. The proposed pipeline improvements would be undergrounded and therefore, would not interfere with wildlife movement.

As stated previously, the vegetation communities, including ornamental trees and unvegetated open ground within and surrounding the survey area provide suitable nesting opportunities for a variety of year-round and seasonal bird species that may be present during the breeding season. Mitigation measures **BIO-1** and **BIO-2** would be implemented to reduce potential indirect impacts to avian species that may migrate through the area. Impacts would be **less than significant with mitigation incorporated**.

Mitigation Measures:

Implement mitigation measures **BIO-1** and **BIO-2.**

Monitoring/Enforcement: Rancho California Water District

Timing/Implementation: Prior to grading or construction activities

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

According to the County of Riverside General Plan, native vegetation resources must be managed to maintain the County's ecological diversity, including oak trees. The pump station site and affected roadway rights-of-way/lands owned by the District for the pipeline improvements do not support protected tree species and are largely disturbed/developed. A limited number of ornamental tree species are present on-site and/or along affected pipeline alignments; refer to Figure 5, Vegetation Communities. However, no mature or protected trees that are restricted or protected by local policies or ordinances would be disturbed with the proposed improvements. Thus, project implementation would result in a **less than significant impact** with regard to conflict with any tree preservation ordinances.

f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The project site is located within the boundaries of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP); however, RCWD is not a permittee under the MSHCP. As such, RCWD projects are not subject to the MSHCP requirements. **No impact** would occur in this regard.

Stephen's Kangaroo Rat Habitat Conservation Plan

The Stephens' kangaroo rat (SKR) is one of 19 species of kangaroo rat and is found at elevations ranging from approximately 180 to 4,100 feet amsl in open grasslands or sparse shrublands with <50 percent cover. SKR tend to utilize flatter slopes (<30 percent slope) for burrowing. SKR has a patchy distribution in western Riverside County ranging from Corona/Norco Hills just west of Highway 91 to the Anza Valley in the eastern portion of the county, and ranging from the southern Temecula area to Potrero Valley and the Badlands in the north.

Separate from the MSHCP, USFWS and CDFW issued the Riverside County Habitat Conservation Agency a Section 10 (a) Permit and CFGC Section 2081 Management Authorization in 1996 establishing the Long-Term Stephens' Kangaroo Rat Habitat Conservation Plan (SKR HCP). Based on a review of the SKR HCP, the project site is not located within a SKR Reserve Area but is located within the boundaries of the Mitigation Fee Area for the SKR HCP. Therefore, with payment of the Local Development Mitigation Fee, no additional measures would be required.

As such, the project would not conflict with any applicable habitat or natural community conservation plan. Impacts would be **less than significant.**

V. Cultural Resources

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

Michael Baker prepared a Cultural Resources Report (December 2017) for the project to identify sensitive cultural resources on-site and in the surrounding area and to evaluate potential project effects on such resources. The assessment is included in Appendix C-1 of this Initial Study.

Discussion

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

Historic resources generally consist of buildings, structures, improvements, and remnants associated with a significant historic event or person(s) and/or have a historically significant style, design, or achievement. Damage to or demolition of such resources is typically considered to be a significant impact. Impacts to historic resources can occur through direct impacts, such as destruction or removal, and through indirect impacts, such as a change in the setting of a historic resource.

A Cultural Resources Report was prepared for the project by Michael Baker International (Michael Baker 2017); refer to Appendix C-1. The Cultural Resources Report included a records search; a site visit was conducted on November 6, 2017. The records search and literature review revealed no cultural or historic resources on the pump station site or within a quarter-mile search radius. As such, development of the project site would have **no impact** on a historical resource.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Archaeological sites are locations that contain resources associated with former human activities and may contain such resources such as human skeletal remains, waste from tool manufacture, tool concentrations, and/or discoloration or accumulation of soil or food remains. Refer to Response V(a), above. The record search and site survey conducted for the project did not identify any cultural resources on-site, and no further work to evaluate the potential presence of cultural resources is required (Michael Baker 2017).

The records search and field survey identified no archaeological resources within the project area; however, the literature review identified geoarchaeological sensitivity; refer to Appendix C-1.

Although no known cultural resources are present on-site, project-related ground disturbing and construction activities would have the potential to adversely affect unknown archaeological resources. Therefore, mitigation measures **CR-1** to **CR-5** would be implemented to require the presence of an archaeological monitor during periodic and site-specific project-related ground disturbance activities and conformance with adopted standards in the event of resource discovery or discovery of human remains. Impacts would be **less than significant with mitigation incorporated**.

Mitigation Measures:

CR-1: To address the possibility that historical, archaeological, and/or tribal cultural resources (collectively referred to as "cultural resources" in these mitigation measures) may be encountered during grading or construction, a qualified professional District-approved archaeologist shall monitor all construction activities that could potentially impact cultural resources (e.g., grading, excavation, and/or trenching). The Pechanga and Rincon Bands of Luiseno Indians may assign individuals to monitor all grading, excavation and groundbreaking activities as well, and the Tribal monitors shall be allowed on site during any construction activities that could potentially impact cultural resources. However, monitoring may be discontinued as soon the qualified professional and the appropriate Tribe(s) are satisfied that construction will not disturb cultural resources.

CR-2: At least 30 days prior to the issuance of any grading permit, the District shall enter into a Tribal Cultural Resources Treatment and Monitoring Agreement with each Tribe. The agreements shall include, but not be limited to, outlining provisions and requirements for addressing the handling of tribal cultural resources; project grading and development scheduling; terms of compensation for the Tribal monitors; treatment and final disposition of any tribal cultural resources, including but not limited to sacred sites, burial goods and human remains, discovered on the site; and establishing on-site monitoring provisions and/or requirements for professional Tribal monitors during all ground-disturbing activities. The terms of the agreements shall not conflict with any of these mitigation measures.

CR-3: If during grading or construction activities, cultural resources are discovered on the project site, work shall be halted immediately within 50 feet of the discovery and the resources shall be evaluated by the archaeologist and the Tribal monitor(s). Any cultural resources that are discovered shall be evaluated and a report prepared by the archaeologist. The report shall include: a list of the resources discovered; documentation of each site/locality; interpretation of the resources identified; a determination of whether the resources are historical resources, unique or non-unique archeological resources and/or tribal cultural resources; and the method of preservation and/or recovery for the identified resources.

If the archaeologist, in consultation with the Tribes, determines the cultural resources to be either historic resources or unique archaeological resources, avoidance and/or mitigation will be required pursuant to and consistent with CEQA Guidelines Section 15064.5(c) and Public Resources Code §21083.2. Further ground disturbance shall not resume within the area of the discovery until the District, project archaeologist, and consulting tribe(s) reach an agreement regarding the appropriate treatment of the cultural resources, which may include avoidance or appropriate mitigation. Pursuant to Calif. Pub. Res. Code §21083.2(b) avoidance is the preferred method of preservation for archaeological and cultural resources. Work may continue outside of the buffer area and will be monitored by additional Tribal monitors, if needed as determined by the project archaeologist and the consulting tribe(s).

CR-4: In the event that cultural resources are discovered during the course of grading (inadvertent discoveries), the following shall be carried out for final disposition of the discoveries:

a) The District shall relinquish ownership of all recovered Tribal Cultural Resources to the Consulting Tribe(s), including sacred items and all artifacts as part of the required treatment for impacts to cultural resources.

b) One or more of the following treatments, in order of preference below, with (i) being the preferred treatment and (ii) being the secondary preferred treatment, shall be employed with the agreement of all Parties.

   i. Preservation-In-Place of the cultural resources, if feasible. Preservation in place means avoiding the resources; leaving them in place they were found with no development affecting the integrity of the resources.

   ii. On-site relocation to a preservation area shall be accomplished as requested by the Consulting Tribe(s). The preservation area location shall be governed by measures and provisions to protect the preservation area from any future impacts in perpetuity. Relocation shall not occur until all legally required cataloging and basic recordation have been completed. No recordation of sacred items is permitted without the written consent of the Consulting Tribe(s).

   iii. Only if i. and ii. above cannot be employed, curation shall be arranged with an appropriate qualified repository that meets federal standards per 36 CFR Part 79. The cultural resources would be professionally curated and made available to other archeologists/researchers/Tribal governments for further research and culturally appropriate use. The collections and associated records shall be transferred to a curation facility meeting the above federal standards to be accompanied by a curation agreement, and payment of any fees necessary for permanent curation.

CR-5: If human remains are encountered, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the county coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b), remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission shall be contacted within twenty-four (24) hours. Subsequently, the Native American Heritage Commission shall identify the Most Likely Descendant and notify them of discovery. The Most Likely Descendant shall then make recommendations and engage in consultations concerning the treatment of the remains as provided in Public Resources Code Section 5097.98.

Monitoring/Enforcement: Rancho California Water District

Timing/Implementation: Prior to and during all excavation, grading or construction activities

c) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

Refer to Response V.b), above. Although not anticipated, undiscovered human remains or informal cemetery areas may be present on-site. Project-related ground-disturbing activities may therefore have the potential to disturb undiscovered human remains. If human remains are found, such remains would require proper treatment, in accordance with applicable laws. The Native American Graves Protection and Repatriation Act (NAGPRA) includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American cultural items on federal and tribal lands, and penalties for noncompliance and illegal trafficking. State of California Public Resources Health and Safety Code Sections 7050.5 through 7055 describe the general provisions regarding human remains, including the requirements if any human remains are accidentally discovered during excavation of a site.

As required by state law, the requirements and procedures set forth in Section 5097.98 of the California Public Resources Code would be implemented, including notification of the county coroner, notification of the Native American Heritage Commission, and consultation with the individual identified by the Native American Heritage Commission to be the "most likely descendant."

If human remains are found during excavation, mitigation measure **CR-5** would require that construction activities be halted in the vicinity of the find and any area that is reasonably suspected to overlie adjacent remains until the county coroner has been called to the location of the discovery, the remains have been investigated, and appropriate recommendations have been made for the treatment and removal of the remains. Compliance with federal and state regulations, which detail the appropriate actions necessary in the event human remains are encountered, in addition to implementation of mitigation measure **CR-5**, would ensure that potential impacts to human remains are **less than significant with mitigation incorporated**.

Mitigation Measures:

Implement mitigation measure **CR-5.**

Monitoring/Enforcement: Rancho California Water District

Timing/Implementation: Prior to and during all excavation, grading or construction activities

VI. Energy

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

The analysis below includes an assessment of potential impacts related to energy. Technical modeling results supporting this discussion are included in Appendix A of this Initial Study.

Discussion

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

The following analysis focuses on three sources of energy that are relevant to the proposed project: electricity, natural gas, and transportation fuel for vehicle trips associated with project construction and operations. The analysis of operational electricity and natural gas usage is based upon the CalEEMod modeling results for the project. Estimated electricity use for the proposed project is primarily based upon CalEEMod's default settings for Riverside County and consumption factors provided by Southern California Edison (SCE) which is the electricity provider for the county. The results of the CalEEMod modeling are included in Appendix A. The estimated construction fuel consumption is based upon the project's anticipated construction equipment, timing/phasing, and hours of use for each type of construction equipment.

The project would result in a nominal increase of vehicular trips to and from the project site for routine maintenance and inspection and would generate minimal operational air emissions from the proposed backup generator. The project would include four 250 horsepower pumps and three 200 horsepower pumps assumed to run 24 hours a day, 7 days a week. As such, the project's primary source of energy consumption would result from the short-term use of construction equipment on-site and mobile trips to and from the project site by construction workers, vendors, and soil hauling trucks during construction, and the long-term energy use from the on-site pumps (1,600 horsepower in total). The project's estimated energy consumption is summarized in Table VI-1, Energy Consumption. As shown in Table VI-1, the project's construction fuel consumption would increase the county's consumption by 0.029 percent and the project's operational electricity consumption would increase the county's consumption by 0.043 percent. This estimate is conservative and actual project energy consumption is expected to be lower as the need to pump to the 1305 PZ and 1380 PZ from the UVDC Regional Pump Station would be offset by a reduction in the energy currently consumed by the wells pumping to the same pressure zones.

Table VI-1
Energy Consumption

Energy Type	Project Annual Energy Consumption[1]	Riverside County Annual Energy Consumption[2]	Percentage Increase Countywide[2]
Electricity Consumption	6,932 MWh	15,980,727 MWh	0.043%
Fuel Consumption			
• Construction (Heavy-Duty Diesel Vehicle) Fuel Consumption[3]	66,565 gallons	224,233,610 gallons	0.029%

Notes: MWh = Megawatt-hours
1. As modeled in CalEEMod version 2016.3.2.
2. The project increases in electricity and natural gas consumption are compared to the total consumption in Riverside County in 2018. The project increases in fuel consumption are compared with the countywide fuel consumption in 2018. Riverside County Electricity Consumption Source: California Energy Commission, *Electricity Consumption by County*, http://www.ecdms. energy.ca.gov/elecbycounty.aspx, accessed November 6, 2019.
3. Project fuel consumption is calculated based on CalEEMod results. Countywide fuel consumption is provided by the California Air Resources Board Emission Factor (EMFAC) 2017 model.

Sources: Refer to Appendix A for assumptions used in this analysis.

Construction Energy Consumption

Project construction would consume energy in two general forms: (1) the fuel energy consumed by construction vehicles and equipment; and (2) bound energy in construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials such as lumber and glass.

Fossil fuels used for construction vehicles and other energy-consuming equipment would be used during site clearing, grading, and construction. Fuel energy consumed during construction would be temporary and would not represent a significant demand on energy resources. In addition, some incidental energy conservation would occur during construction through compliance with state standards that require construction equipment not in use for more than five minutes to be turned off. Project construction would also be required to comply with the latest U.S. Environmental Protection Agency (EPA) and California Air Resources Board (CARB) engine emission standards. These emission standards require highly efficient combustion systems that maximize fuel efficiency and reduce unnecessary fuel consumption. Due to increasing transportation costs and fuel prices, contractors and owners have a strong financial incentive to avoid wasteful, inefficient, and unnecessary consumption of energy during construction.

Substantial reductions in energy inputs for construction materials can be achieved by selecting building materials composed of recycled materials that require substantially less energy to produce than non-recycled materials. The project-related incremental increase in the use of energy bound in construction materials such as asphalt, steel, concrete, pipes and manufactured or processed materials (e.g., lumber and gas) would not substantially increase demand for energy compared to overall local and regional demand for construction materials. It is reasonable to assume that production of building materials such as concrete, steel, etc., would employ all reasonable energy conservation practices to minimize the cost of doing business. As indicated in Table VI-1, the project's fuel consumption from construction would be approximately 66,565 gallons, which would increase fuel use in the county by 0.029 percent. As such, project construction would have a nominal effect on the local and regional energy supplies. It is noted that construction fuel use is temporary and would cease upon completion of construction activities. There are no unusual project characteristics that would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in the region or state.

Operational Energy Consumption

The project's net electrical energy demand is approximately 6,932 MWh per year; refer to Table VI-1. SCE is subject to California's Renewables Portfolio Standard (RPS). Per Senate Bill 100 and the RPS, SCE is required to procure 33 percent renewable energy by December 31, 2020; 40 percent by December 31, 2024; 45 percent by December 31, 2027; 50 percent by December 31, 2030; and 100 percent by December 31, 2045. Renewable energy is generally defined as energy that comes from resources that are naturally replenished within a human timescale, such as sunlight, wind, tides, waves, and geothermal heat. The increase in reliance of such energy resources further ensures projects would not result in the waste of finite energy resources.

As indicated in Table VI-1, the project's operational energy consumption would represent an approximate 0.043 percent increase in countywide electricity consumption. The project would not require natural gas and the proposed pump station equipment would incorporate the most energy-efficient technology available as feasible. The project would not result in the inefficient, wasteful, or unnecessary consumption of building energy. Additionally, the project would not result in a substantial increase in demand or transmission service, resulting in the need for new or expanded sources of energy supply or new or expanded energy delivery systems or infrastructure.

Conclusion

The project would be subject to compliance with all federal, state, and local requirements for energy efficiency. As shown in Table VI-1, the net increase in electricity and fuel consumption beyond existing conditions is minimal. The project would not result in a substantial increase in demand or transmission service, resulting in the need for new or expanded sources of energy supply or new or expanded energy delivery systems or infrastructure. The project would not result in the inefficient, wasteful, or unnecessary consumption of building energy. Impacts would be **less than significant**.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Riverside County has not adopted a plan for renewable energy or energy efficiency. The project includes a pump station and associated water infrastructure facilities and does not include any significant growth-inducing land uses that would increase energy consumption in the county. The project would be in compliance with the most current version of the California Building Energy Efficiency Standards (Title 24) and California Green Building Standards (CALGreen [Title 24, Part 11]) which would ensure the project incorporates energy-efficient insulation, lighting, and ventilation systems, among others, as appropriate for the facilities proposed. Adherence to the Title 24 energy requirements would ensure conformance with the state's goal of promoting energy and lighting efficiency. The project would also receive its energy from SCE, which, under the RPS and Senate Bill 100, is required to procure 33 percent renewable energy by December

31, 2020; 40 percent by December 31, 2024; 45 percent by December 31, 2027; 50 percent by December 31, 2030; and 100 percent by December 31, 2045. Furthermore, as described under Section VIII, Greenhouse Gas Emissions, the project would comply with measures in the County of Riverside *Climate Action Plan* designed to further reduce energy consumption. Thus, the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Impacts would be **less than significant**.

VII. Geology and Soils

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

The following discussion is based upon the findings of the Geotechnical Investigation prepared by Geocon West, Inc. (December 2018). The report is included in Appendix E of this Initial Study.

Discussion

a)i. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving 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.

The project site is located within a seismically active region as a result of being located near the active margin between the North American and Pacific tectonic plates. The site is not located within an established State of California or Riverside County Earthquake Fault Zone for surface fault rupture hazards. The closest active fault to the site is the Wildomar branch of the Elsinore fault zone located approximately 5.3 miles to the southwest. Riverside County does have a fault zone mapped in the vicinity of Vail Lake dam located approximately 2.4 miles to the southeast; however, the faults within this zone appear to be bedrock faults affecting the granitic and metamorphic bedrock and Temecula Arkose (Geocon 2018).

The project does not include habitable structures and is limited to the construction of subsurface pipelines, an unmanned pump station, and other supporting infrastructure improvements. Furthermore, no active or potentially active faults with the potential for surface fault rupture are known to pass directly beneath any lands affected by the proposed improvements. Therefore, the project is not anticipated to cause potential adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault. Impacts would be **less than significant**.

a)ii. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

As discussed in Response VIIa)i., above, the project site is located in proximity to the seismically active Wildomar branch of the Elsinore fault zone which has the potential to create strong seismic ground shaking. However, the project does not involve construction of habitable structures that would increase any safety risks for the public, although the risk of loss does exist. Therefore, the project is not anticipated to directly or indirectly result in potential substantial adverse effects, including the risk of loss, injury, or death. Impacts in this regard would be **less than significant**.

a)iii. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

Liquefaction is a process whereby strong seismic ground shaking causes sediment layers that are saturated with groundwater to lose solidity and behave as a liquid. Factors influencing a site's potential for liquefaction include area seismicity, on-site soil type and consistency, and groundwater level. Liquefaction is typified by a loss of shear strength in the liquefied layers due to rapid increases in pore water pressure generated by earthquake accelerations. Seismically induced settlement may occur whether the potential for liquefaction exists or not. The site is mapped within a zone having a "Very High" potential for liquefaction in accordance with the County of Riverside parcel reports (Geocon 2018).

Liquefaction analysis of the soils underlying the site was performed by Geocon utilizing limited subsurface information from borings and other modeling inputs based upon known seismic and groundwater conditions (Geocon 2018). Based on the lack of shallow groundwater at the site, liquefaction is not anticipated to be a design consideration. Further, based on the medium dense to dense consistency of the alluvium and the results of the analyses, a negligible potential for seismic settlement is estimated.

As a result, the project is not anticipated to directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. Impacts would be **less than significant**.

a)iv. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

According to the County of Riverside's Southwest Area Plan, Figure 13, *Steep Slope* (County of Riverside 2015b), the project site is not located within an area that is prone to landslides because the slope angle is less than 15 percent. As stated previously, the pump station site is generally flat and dominated by low-sloping topography with on-site elevations ranging between approximately 1,248 feet and 1,264 feet amsl. No steep slopes are present on-site or on adjoining lands. Additionally, the alignments in which the proposed pipeline improvements would occur are also generally flat. Therefore, the project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. **No impact** would occur.

b) Would the project result in substantial soil erosion or the loss of topsoil?

The project would involve the construction of a new pump station, installation of subsurface pipes, and other associated improvements. It is not expected that construction of the proposed project would result in soil erosion or topsoil loss. Although the impact of the construction activities would be short term, the contractor would be required to comply with standard engineering practices for erosion control, including those measures (i.e., best management practices) identified in the Stormwater Pollution Prevention Plan prepared for the project, as well as recommendations of the geotechnical analysis. In addition, grading, land clearing, loading, stockpiling, landscaping, and/or haul route operations during the construction phase would be required to occur in conformance with SCAQMD Rule 403 (Fugitive Dust Emissions). Refer also to Response IIIa), above. Impacts related to soil erosion and the loss of topsoil would be **less than significant**.

c) Would the project 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?

Refer to Response VIIa)iii, above. Landslides are not anticipated to occur on-site due to topographical conditions. Lands affected by the proposed improvements and adjacent lands are generally flat and have a low potential for landslides to occur. Therefore, the project is not located on lands that may become unstable and potentially result in on- or off-site landslides due to existing geologic conditions.

Lateral spreading is a phenomenon in which large blocks of intact, non-liquefied soil move down slope on a liquefied soil layer. Lateral spreading is often a regional event. For lateral spreading to occur, the liquefiable soil zone must be laterally continuous, unconstrained laterally, and free to move along sloping ground. Project implementation is not anticipated to induce lateral spreading because the project would be designed and constructed in conformance with California Building Code (CBC) seismic engineering standards and RCWD design requirements. Further, backfill material around the proposed pipeline alignments would be placed to meet standard engineering design requirements and local grading practices. Therefore, lateral spreading is not anticipated.

Subsidence occurs when land is displaced vertically, usually due to the withdrawal of groundwater, oil, or natural gas. Soil types that are particularly subject to subsidence include those with high silt or clay content. Land subsidence has been documented within the Murrieta and Temecula areas north and west of the site due to groundwater withdrawal and the presence of significant layers of clay soil. The site is mapped as "Susceptible" to subsidence according to County of Riverside GIS parcel data (Geocon 2018). Planned water recharge is not expected to lead to subsidence. If fluctuations in groundwater elevations occur, times of groundwater withdraw may result in subsidence; however, it is anticipated that any resulting subsidence would occur on a regional scale throughout the valley. Subsidence typically occurs over a relatively large geographic area and is not expected to cause differential settlement over a relatively short horizontal distance such as the various sites affected by the proposed project (Geocon 2018). Due to the nature of the proposed improvements (i.e., infrastructure improvements, no habitable structures), the project is not anticipated to result in substantial impacts with respect to subsidence. Additionally, project conformance with RCWD and CBC engineering design requirements and recommendations of the geotechnical analysis would further ensure that the potential for subsidence remains less than significant.

Refer to Response VIIa)iv, above, pertaining to liquefaction. The site is mapped within a zone having a "Very High" potential for liquefaction in accordance with the County of Riverside parcel reports (Geocon 2018). However, based on underlying soils and lack of shallow groundwater at the site, liquefaction is not anticipated to be a design consideration. Further, negligible potential for seismic settlement is estimated.

Collapse occurs when unsaturated soil becomes wetted to the point that the overall settlement of the affected soil and overlying foundations or improvements cannot be supported. Potentially compressible soils underlying the site would typically be 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 does exist. Test results of alluvial soil samples obtained during site investigations for the project were determined as having a "slight" (0.1 to 2.0 percent) degree of collapse in accordance with American Society for Testing and Materials standards (Geocon 2018). Therefore, the potential for collapse is considered to be low.

As discussed above, lands affected by the proposed improvements have varying potential to become unstable and result in on- or off-site landslides, lateral spreading, subsidence, liquefaction, or collapse. However, project conformance with CBC requirements and recommendations of the geotechnical analysis would ensure that impacts would remain less than significant.

d) Would the project 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?

Expansive soils are those that undergo volume changes as moisture content fluctuates, swelling substantially when wet or shrinking when dry. Soil expansion can damage structures by cracking foundations, causing settlement, and distorting structural elements.

Based on the geotechnical analysis (Geocon 2018), the soils encountered within the site primarily consist of sands with varying amounts of silt, clay, and gravel. The materials are anticipated to exhibit a "low" expansion potential (expansion index of less than 50).

All project construction would be implemented based on the recommendations of a geotechnical engineer as part of the final design process. Project conformance to standard CBC and RCWD engineering design practices and recommendations given in the geotechnical analysis would ensure that project impacts relative to expansive soils remain **less than significant**.

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

The project does not propose the installation of septic tanks or alternative wastewater disposal systems. **No impact** would occur in this regard.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Paleontological resources are the preserved fossilized remains of plants and animals. Fossils and traces of fossils are preserved in sedimentary rock units, particularly fine- to medium-grained marine, lake, and stream deposits, such as limestone, siltstone, sandstone, or shale, and in ancient soils (paleosols). They are also found in coarse-grained sediments, such as conglomerates or coarse alluvium sediments. Fossils are rarely preserved in igneous or metamorphic rock units. Fossils may occur throughout a sedimentary unit and are more likely to be preserved subsurface where they have not been damaged or destroyed by previous ground disturbance, amateur collecting, or natural causes such as erosion. In contrast, archaeological and historic resources are often recognized by surface evidence of their presence.

According to the County of Riverside General Plan EIR, Figure 4.9.3, *Paleontological Sensitivity* (County of Riverside 2015c), the pump station site is located in an area designated as "High A (Ha)" which indicates an area that has a high potential to contain paleontological resources. Construction activities associated with project implementation may result in adverse effects on currently unknown paleontological resources. Implementation of mitigation measure **GEO-1** will require that all earth-disturbing activities be monitored and that such activities cease upon discovery of any potential resources until the find has been evaluated and appropriately mitigated by a qualified paleontologist. With implementation of mitigation measure **GEO-1**, impacts to paleontological resources would be **less than significant with mitigation incorporated**.

Mitigation Measures:

GEO-1: Construction personnel involved in excavation and grading activities shall be informed of the possibility of discovering fossils at any location and the protocol to be followed if fossils are found. A professional meeting the Society of Vertebrate Paleontology standards shall provide preconstruction training. The District shall ensure the project grading plan notes include specific reference to the potential discovery of fossils. If potentially unique paleontological resources (fossils) are inadvertently discovered during project construction, work shall be halted immediately within 50 feet of the discovery, the District shall be notified, and a professional paleontologist shall be retained to determine the significance of the discovery. The paleontologist shall establish procedures for paleontological resource surveillance throughout project construction and shall establish, in cooperation with the city as the project applicant, procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of fossils. Excavated finds shall be offered to a state-designated repository such as the Museum of Paleontology at the University of California, Berkeley, or the California Academy of Sciences in accordance with applicable regulations.

Monitoring/Enforcement: Rancho California Water District

Timing/Implementation: Prior to and during all excavation and grading activities

VIII. Greenhouse Gas Emissions

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

The analysis below includes an assessment of potential impacts related to greenhouse gas emissions resulting with project implementation. Technical modeling results supporting this discussion are included in Appendix A of this Initial Study.

Discussion

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

Greenhouse Gas Emissions Thresholds

Lead agencies may elect to rely on thresholds of significance recommended or adopted by state or regional agencies with expertise in the field of global climate change (CEQA Guidelines Section 15064.7(c)). CEQA leaves the determination of significance to the reasonable discretion of the lead agency and encourages lead agencies to develop and publish thresholds of significance to use in determining the significance of environmental effects. However, the County of Riverside has not established specific quantitative significance thresholds for GHG emissions for development projects.

The SCAQMD is proposing to adopt a tiered approach for evaluating GHG emissions for development projects where SCAQMD is not the lead agency. With the tiered approach, the project is compared with the requirements of each tier sequentially and would not result in a significant impact if it complies with any tier. Tier 1 excludes projects that are specifically exempt under Senate Bill 97 from resulting in a significant impact. Tier 2 excludes projects that are consistent with a GHG reduction plan that has a certified final CEQA document and complies with Assembly Bill 32 GHG reduction goals. Tier 3 excludes projects with annual emissions lower than a screening threshold. For all nonindustrial projects, the SCAQMD is proposing a screening threshold of 3,000 metric tons CO_2 equivalent ($MTCO_2eq$) per year. The SCAQMD concluded that projects with emissions less than the screening threshold would not result in a significant cumulative impact.

The 3,000 $MTCO_2eq$ per year screening threshold has been selected as the significance threshold for the proposed project. The 3,000 $MTCO_2eq$ per year threshold is used in addition to the qualitative thresholds of significance set forth below from Appendix G of the CEQA Guidelines.

Project Greenhouse Gas Emissions

Project-related GHG emissions typically include emissions from construction and operational activities. Construction of the project would result in direct emissions of CO_2, N_2O, and methane (CH_4) from construction equipment operations. Transport of materials and construction workers to and from the project site would also result in GHG emissions. However, construction activities would be limited in duration and would cease upon project completion. Project operations would generate a nominal number of trips with negligible GHG emissions. As such, direct project-related GHG emissions would be generated by construction activities, while indirect emissions would be generated by electricity consumption for the four 250-horsepower pumps and three 200-horsepower pumps (1600 horsepower in total). Operational GHG estimations are based on energy emissions from electricity.

Construction Emissions**.** As shown in Table VIII-1, Projected Annual Greenhouse Gas Emissions, project construction would generate approximately 483.42 $MTCO_2eq$, or 16.11 $MTCO_2eq$ per year amortized over 30 years. CalEEMod was used to calculate off-road construction emissions. CalEEMod relies upon construction phasing and project-specific land use data to calculate emissions; refer to Appendix A. Construction-related GHG emissions are typically summed and amortized over the lifetime of the project (assumed to be 30 years), then added to the operational emissions.[2]

Energy Consumption. Energy consumption would occur during operation of the project's four 250-horsepower pumps and three 200-horsepower pumps. Using SCE emissions factors from the *SCE 2018 Sustainability Report* and CalEEMod defaults, the proposed project would indirectly result in approximately 1,621 $MTCO_2eq$ per year due to energy consumption.

Table VIII-1
Projected Annual Greenhouse Gas Emissions

Source	CO_2	CH_4		N_2O		Total Metric Tons of CO_2eq[2,3]
	Metric Tons/yr[1]	Metric Tons/yr[1]	Metric Tons of CO_2eq[1]	Metric Tons/yr[1]	Metric Tons of CO_2eq[1]	
Direct Emissions						
Construction	481.29	0.09	2.13	0.00	0.00	483.42
Construction (amortized over 30 years)	16.04	0.00	0.07	0.00	0.00	16.11
Total Direct Emissions[2]	**16.04**	**0.00**	**0.07**	**0.00**	**0.00**	**16.11**
Indirect Emissions						
Energy[4]	1,613.06	0.09	1.91	0.02	6.01	1,620.99
Total Indirect Emissions[2]	**1,613.06**	**0.09**	**1.91**	**0.02**	**6.01**	**1,620.99**
Total Project-Related Emissions[2]	***1,637 $MTCO_2eq$/yr***					
Threshold of Significance	***3,000 $MTCO_2eq$/yr***					
Project Exceed Threshold?	***No***					

Notes: CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; $MTCO_2eq$ = metric tons of carbon dioxide equivalent
1. Emissions were calculated using CalEEMod version 2016.3.2, as recommended by the SCAQMD.
2. Totals may be slightly off due to rounding.
3. Carbon dioxide equivalent values calculated using the U.S. Environmental Protection Agency Website, *Greenhouse Gas Equivalencies Calculator*, http://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator, accessed November 4, 2019.
4. Energy emissions from pumps were calculated separately. Emissions were based on energy consumption from operation of four 250-horsepower pumps and three 200-horsepower pumps and SCE emissions factors from the *SCE 2018 Sustainability Report* (May 2019).

Source: Refer to Appendix A for assumptions used in this analysis.

As shown in Table VIII-1, the project would generate approximately 1,637 $MTCO_2eq$ per year, which is below the 3,000 $MTCO_2eq$/year screening threshold. Therefore, pursuant to the most recent guidance from the SCAQMD Working Group, the project would result in a **less than significant** impact with regard to GHG emissions.

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

The County of Riverside's *Climate Action Plan* (CAP), originally adopted in 2015 and revised on July 17, 2018, contains further guidance on the County's Greenhouse Gas Inventory reduction goals, thresholds, policies, guidelines, and implementation programs. In particular, the CAP elaborates on the County of Riverside General Plan goals and policies relative to GHG emissions and provides a specific implementation tool to guide future decisions of the county in order to

2 The project lifetime is based on the SCAQMD's standard 30-year assumption (South Coast Air Quality Management District, *Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13,* August 26, 2009).

meet the GHG reduction goals of Assembly Bill 32. The following GHG emissions reductions programs and regulations from the CAP would be applicable toward the project:

- R2-E5: Commercial Energy Efficiency Program:
  - This R2 measure would implement County General Plan Policies AQ 5.2, AQ 5.4, LU 4.1e, OS 16.1 and OS 16.9 and involves the adoption of a Riverside County Program that facilitates energy efficient design for new commercial buildings so that new commercial buildings are 5% to 20% more efficient than the current California Building Energy Efficiency Standards (Title 24). The high end of this voluntary energy efficiency program is 10% greater than the minimum requirements of the Leadership in Energy and Environmental Design (LEED) and ENERGY STAR programs.
- R1-W1: Renewable Portfolio Standard Related to Water Supply and Conveyance
  - This measure would increase electricity production from eligible renewable power sources to 33% by 2020. A reduction in GHG emissions results from replacing natural gas-fired electricity production with zero GHG-emitting renewable sources of power. By 2020, this requirement will reduce emissions from electricity used for water supply and conveyance in California by approximately 21.3 MMT CO_2e, representing 15.2% of emissions from electricity generation (in-state and imports).

As shown in Table VIII-1, the project would not exceed the SCAQMD applicable GHG emissions thresholds. The main source of project generated GHG emissions would be from energy usage. The energy supplier for the project site is SCE. Per Senate Bill 100, SCE is required to procure 33 percent renewable energy by December 31, 2020; 40 percent by December 31, 2024; 45 percent by December 31, 2027; 50 percent by December 31, 2030; and 100 percent by December 31, 2045. Therefore, SCE's increase in renewable energy production would further reduce the project's GHG emissions, with the potential for the project to have net zero GHG emissions by December 31, 2045. Additionally, the pump station and associated facilities would comply with CAP measures R2-E5 and R1-W1 described above and the most current version of the state's Title 24 and California Green Building Standards (CALGreen) requirements, which would ensure the project incorporates energy-efficient insulation, lighting, and ventilation systems, among others. As such, the project would not conflict with the county's CAP and would comply with state measures to further reduce GHG emissions. Impacts would be **less than significant** in this regard.

IX. Hazards and Hazardous Materials

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

Discussion

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

The routine transport, use, and/or disposal of hazardous materials can result in hazards to the public from the potential for accidental release. Such hazards are typically associated with certain types of land uses, such as chemical manufacturing facilities, industrial processes, waste disposal, and storage and distribution facilities.

Construction of the proposed pump station and associated infrastructure may result in temporary hazards related to the transport and use of hazardous materials, including those used for construction vehicle and equipment use and maintenance (e.g., diesel fuel, motor oil). Due to the relatively limited scale of the proposed improvements, minimal quantities of hazardous materials would be utilized during construction operations. The limited quantity of hazardous waste present during project construction would be consistent with those present during typical construction operations and any handling, use, or disposal of such materials or substances would occur in conformance with applicable standard federal, state, and local requirements. As such, the risk of significant hazard to the public or the environment is considered to be low.

Pump station operation would include centralizing disinfection facilities through a new sodium hypochlorite (NaOCl) generation and feed system for onsite production of a 0.8% NaOCl solution that would be diffused into a new chlorine contact tank (CCT) for disinfectant purposes. Sodium hypochlorite and ammonia sulfate would be injected into the raw water for disinfection: sodium hypochlorite to the CCT and ammonia sulfate to the 1305 and 1380 Pressure Zone transmission mains. It should be noted that routine deliveries to the site during normal operation would be table salt to generate the NaOCI on-site and liquid ammonium sulfate. Both substances are currently delivered to the site under existing conditions; however, the number of deliveries to the site may increase slightly with project implementation due to varying flow rates and the ability to store more salt on the property.

The NaOCl generator units, rectifiers, control panels, filters, and softeners would be located in a ventilated room (SHC Generator Room). Brine and NaOCl storage tanks would be located outdoors adjacent to the room under a fabricated steel roof shade structure. Additionally, the chemical feed room would house three SHC feed pumps, the ammonium sulfate feed pumps, and an air compressor package for the surge tanks. The room would be configured with chemical feed pumps mounted above a grated sump intended to contain any leakage from the pumps. A partition wall in the sump would separate the SHC from the ammonium sulfate and sumps would be installed in each collection area to isolate and treat any potential spills. A containment area has been designed that would contain inadvertent spills of all proposed on-site storage tanks.

Additionally, a diesel fuel driven engine/generator is proposed to provide emergency power to the new facilities. Operation of the generator would comply with applicable regulations, along with standard RCWD operating and maintenance procedures, to ensure that the risk for any release of fuels or other substances is avoided or minimized to the extent feasible. The on-site storage of chemicals would be routinely maintained and monitored by RCWD maintenance staff to confirm that leaks or spillage do not occur.

The ongoing use of any potentially hazardous chemicals in project construction, operation, and maintenance would occur in conformance with federal, state, and local requirements and RCWD operating standards and procedures pertaining to the transport, handling, and disposal of such substances. As such, the risk of significant hazard to the public or the environment is considered to be low. Impacts would be **less than significant**.

b) Would the project 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?

The routine transport, use, and disposal of hazardous materials can result in hazards to the public through the potential for accidental release. Such hazards are typically associated with certain types of land uses, such as chemical manufacturing facilities, industrial processes, waste disposal, and storage and distribution facilities.

Refer to Response IX(a), above. Project construction and/or operational activities involving the use of any hazardous materials or substances would occur in accordance with applicable local, state and federal regulations pertaining to the proper handling, storage, and disposal of such substances to ensure that risk to the public and/or environment is avoided or minimized to the maximum extent feasible. The project is therefore not anticipated to 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. Impacts would be **less than significant**.

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

There are no existing or planned schools located within one-quarter mile of the pump station site or affected roadway alignments. Therefore, the project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. **No impact** would occur.

d) Would the project 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?

According to the Department of Toxic Substances Control EnviroStor database, there are no listed hazardous sites identified within or immediately adjacent to lands affected by the proposed improvements. The nearest site recorded on the EnviroStor Database is the Temecula Bomb Target #107 which is located approximately 1.6 miles northwest of the project site (DTSC 2019). Therefore, **no impact** would occur.

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?

The project site is not located within 2 miles of a public airport, public use airport, or private airstrip. The nearest airport to the project site is the French Valley Airport, located approximately 7.8 miles to the west. Therefore, the project would not result in a safety hazard or excessive noise for people residing or working in the project area. **No impact** would occur in this regard.

f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

While the project would minimally impact traffic flows along local roadways during the temporary construction period, it would not conflict with or interfere with emergency evacuation of the project area. Construction of the pump station would occur on the affected parcel and would not interfere with traffic along local roads, with exception of occasional construction-related trips. Although construction of the pipeline improvements would occur within roadway rights-of-way, measures would be taken to ensure that such construction does not substantially interfere with area traffic flows or the ability for evacuation to occur in an emergency situation. Further, a traffic control plan would be prepared and implemented to ensure that public safety is maintained during project construction. Impacts would be **less than significant**.

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

The pump station would be constructed on a disturbed parcel that currently supports remnants of former equestrian uses and/or is otherwise highly disturbed. The proposed pipeline improvements would be constructed within existing roadway rights-of-way or land owned by the District. However, the project site is adjacent to vacant land on more than one side and is therefore potentially susceptible to wildland or grassland fires. According to the California Department of Fire and Forestry Fire and Resource Assessment Program Map, the pump station site is designated as a very high wildfire severity zone (CalFire 2007); refer also to Section XX, Wildfire, for additional discussion. However, the project would not include the development of any residential uses or other such structures that would be inhabited, and therefore, the project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires. Impacts would be **less than significant**.

X. Hydrology and Water Quality

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
HYDROLOGY AND WATER QUALITY: *Would the project:*				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater 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?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Discussion

a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Surface water quality is subject to federal, state, and local water quality requirements administered and enforced by the U.S. Environmental Protection Agency (USEPA), the California State Water Resources Control Board (SWRCB), and the California Regional Water Quality Control Board (RWQCB) with cooperation from each county. The principal law governing pollution of the nation's surface waters is the Federal Water Pollution Control Act or Clean Water Act. Under the Clean Water Act, regulatory requirements for industrial and municipal dischargers were established, as well as requirements for states to adopt water quality standards.

To achieve its objectives, the Clean Water Act is based on the concept that all discharges into the nation's water are unlawful, unless specifically authorized by a permit. The National Pollutant Discharge Elimination System (NPDES) is the permitting program for discharge of pollutants into waters of the United States under Section 402 of the Clean Water Act. Thus, dischargers must obtain permits from the appropriate RWQCB.

It is anticipated that construction staging would occur on the pump station site and adjacent to the pipeline alignments. Any residual oil, grease, and other fuel products from equipment or vehicles would be maintained on-site and would not adversely affect surface waters or groundwater. Equipment would be inspected and maintained on a regular basis in order to ensure that leaks of hazardous materials do not occur. Therefore, leaks of oil, grease, and other fuel products from equipment are expected to be negligible. Project operation of the project would not violate any water quality standards or waste discharge requirements because of the requirements and regulations discussed above that the project would be required to comply with during operation.

Construction of the pump station and pipeline trenching and installation would observe RCWD standard practices and applicable local, state and federal water quality regulations, including compliance with NPDES permit conditions and the submittal of a Notice of Intent/Stormwater Pollution and Prevention Plan in order to receive issuance of a Waste Discharger Identification (WDID).

As the project is subject to the requirements and regulations stated above, impacts related to a violation of water quality standards or waste discharge requirements would be **less than significant**.

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

The RCWD supplies potable water to all customers within its service area through the purchase of treated and untreated water from the Metropolitan Water District (MWD) and extraction of native groundwater. The proposed project involves construction of a new pump station, wet wells, pipelines, and supporting facilities. The project is intended to increase capacity at the UVDC Regional Pump Station and provide financial and operational benefits to RCWD. The new facilities would augment capacity in the RCWD's 1305 and 1380 Pressure Zones and would maximize use of untreated water from MWD for groundwater recharge and extraction, thereby lowering RCWD supply water compared to treated water import costs. The proposed improvements would allow the RCWD to offer more reliable and cost-effective potable water to its customers while centralizing critical facilities to maximize operational efficiencies.

Previous analysis has estimated that the current recharge capacity of the UVDC basins is approximately 19,000 acre-ft/yr (Michael Baker 2019b). The project would increase groundwater recharge rates from 39 to 60 cubic feet per second (thereby enhancing RCWD's available groundwater supplies) and total well production from 28 cfs to 42 cfs. Construction of the pump station would benefit two RCWD Pressure Zones. The 1305 and 1380 Pressure Zones, with high demand potential, would receive the increased potable water production. As a result, the proposed improvements would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin; rather, groundwater recharge would be enhanced.

Therefore, given the intent of the proposed improvements, the project would not result in a significant impact on groundwater supplies. Impacts would be **less than significant**.

c)i) Would the project 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 result in substantial erosion or siltation on- or off-site?

Pipeline improvements would be undergrounded along local roadway rights-of-way and/or on land owned by the District, and therefore, would have a minimal impact on drainage patterns. Grading for the pump station site would raise the building pad approximately 6 feet above the existing on-site ground elevation (via imported fill material).

Temporary construction-related activities may result in the potential for on- or off-site erosion or siltation to occur; however, such conditions would be minimized through implementation of standard best management practices (BMPs) identified in the Stormwater Management Pollution and Protection Plan (SWPPP) to be prepared prior to project construction, in combination with any applicable RCWD standard construction practices. Operational impacts related to siltation or erosion would be minimized to less than significant by development and use of standard stormwater drainage features.

Therefore, the project would not substantially alter the existing drainage pattern of the site and would not result in substantial erosion of siltation on-site or off-site. Impacts would be **less than significant.**

c)ii) Would the project 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 substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Refer to Response X(c)i), above.

The project would not substantially alter the existing drainage pattern of the site or area, in a manner that would substantially increase the rate or amount of surface runoff that would result in flooding on- or off-site. Impacts would be **less than significant**.

c)iii) Would the project 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 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?

Refer also to Responses X(a) and X(c)i), above.

The project would not substantially alter the existing drainage pattern of the site or area in a manner that would 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. Impacts would be **less than significant**.

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

Refer to Responses X(c)ii and X(d), above, pertaining to the risk of flood hazard. The pump station site is located in Zone A of the floodplain for Temecula Creek per Federal Emergency Management Agency (FEMA) Panel 06065C2745G with no base flood elevation determined. According to Riverside County planning documents, Vail Lake, located to the southeast of the site, is considered a “high” hazard potential due to failure based on its storage capacity (greater than 1,000 acre-feet of water), the height of its dam (higher than 150 feet), and the potential for downstream property damage or evacuation (Geocon 2018). The project site is located within a direct flow path of the reservoir. Therefore, the site could experience flooding if an earthquake caused significant damage to the reservoir or dam.

The project proposes to raise the building pad for the pump station above 100-year floodplain level. Potential flows were modeled for the pump station site which determined a recommended finished pavement elevation to minimize the potential for risks or damage due to flooding. The site has therefore been designed in conformance with recommendations of the modeling results to avoid the potential risk of or damage from flooding. As such, the risk of the release of pollutants due to inundation in the event of a flood are considered to be low.

The project site is located approximately 30 miles east of the Pacific Ocean with the coastal mountain range between the site and the ocean. Therefore, the risk of a tsunami to affect the project site is considered negligible and is not a design consideration. Therefore, no impact from the risk of hazard from a tsunami and subsequent release of pollutants is anticipated.

Seiches are standing wave oscillations of an enclosed water body after the original driving force has dissipated. Driving forces are typically caused by fault- or landslide-induced ground displacement. The nearest standing body of water is Vail Lake located approximately 2.3 miles to the southeast; however, Riverside County planning documents indicate that the shape and depth of Vail Lake make it an unlikely candidate for seiche development (Geocon 2018) and that there is no documented significant potential for seiche to occur in any of the waterbodies in Riverside County (County 2015c).

Overall, the risk of release of pollutants due to project inundation due to flood hazard, tsunami, or seiche is considered to be low. Impacts would be **less than significant.**

e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Refer to Responses X(a) and X(b), above. The project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Impacts would be **less than significant**.

XI. Land Use and Planning

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

Discussion

a) Would the project physically divide an established community?

The proposed improvements would include a pump station, disinfection facilities, and pipelines and well improvements (undergrounded). Project construction would be limited to lands currently under ownership of the RCWD where some existing RWCD facilities are present and to roadway rights-of-way within the vicinity of the proposed pump station site. No existing housing is present on any of the lands that would be affected by the proposed improvements and no new roadways or other potential obstructions or barriers are proposed. The proposed project would have no impact on the physical arrangement of an established community. Therefore, **no impact** would occur in this regard.

b) Would the project 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?

The project would not cause a conflict with land use or zoning plans, policies, or regulations. No change to the existing county land use designations or zoning classifications is required or proposed with the project. Additionally, lands affected by the proposed improvements include lands under the ownership of the RCWD and local roadway rights-of-way. The project site is not located in a local coastal plan or specific plan area. As such, the proposed project would have **no impact** in this regard.

XII. Mineral Resources

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

Discussion

a) Would the project 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?

The State Mining and Geology Board (SMGB) has established Mineral Resources Zones (MRZs) to designate lands that contain mineral deposits. The classifications used by the state to define MRZs are as follows:

- MRZ-1: Areas where the available geologic information indicates no significant likelihood of significant mineral deposits.
- MRZ-2a: Areas where the available geologic information indicates that there are significant mineral deposits.
- MRZ-2b: Areas where the available geologic information indicates that there is a likelihood of significant mineral deposits.
- MRZ-3a: Areas where the available geologic information indicates that mineral deposits exist; however, the significance of the deposit is undetermined.
- MRZ-3b: Areas where the available geologic information indicates that mineral deposits are likely to exist; however, the significance of the deposit is undetermined.
- MRZ-4: Areas where there is not enough information available to determine the presence of a known mineral deposit.

According to the County of Riverside General Plan EIR, Figure 4.14.1, Mineral Resource Zones, the pump station site and surrounding lands are classified as MRZ-3, an area where mineral resources are likely to exist but the significance of the deposit is unknown (County of Riverside 2015c). The project proposes construction of a new pump station and pipeline and well improvements that would require ground excavation for clearing, but the majority of earthwork will consist of imported fill material. However, ground disturbance is anticipated to be minimal and will be limited to the project footprint. Furthermore, the project would be constructed on RCWD property that is currently developed and along existing roadway rights-of-way or on land owned by the District which would preclude mining operations from occurring. Therefore, the project is not anticipated to 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. Impacts would be **less than significant**.

b) Would the project 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?

Refer to Response XII(a). No known mineral resources of local or state importance are located lands associated with the proposed project. In addition, the project would affect lands that are generally disturbed/developed or that are located within existing roadway rights-of way (i.e., disturbed). Impacts would be **less than significant.**

XIII. Noise

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

The analysis below includes an assessment of potential noise impacts resulting with project implementation. Technical modeling results supporting this discussion are included in Appendix D of this Initial Study.

Discussion

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air and is characterized by both its amplitude and frequency (or pitch). The human ear does not hear all frequencies equally. In particular, the ear de-emphasizes low and very high frequencies. To better approximate the sensitivity of human hearing, the A-weighted decibel scale (dBA) has been developed. On this scale, the human range of hearing extends from approximately 3 dBA to around 140 dBA.

Noise is generally defined as unwanted or excessive sound, which can vary in intensity by over one million times within the range of human hearing; therefore, a logarithmic scale, known as the decibel scale (dB), is used to quantify sound intensity. Noise can be generated by a number of sources, including mobile sources such as automobiles, trucks, and airplanes, and stationary sources such as construction sites, machinery, and industrial operations. Noise generated by mobile sources typically attenuates (is reduced) at a rate between 3 dBA and 4.5 dBA per doubling of distance. The rate depends on the ground surface and the number or type of objects between the noise source and the receiver. Hard and flat surfaces, such as concrete or asphalt, have an attenuation rate of 3 dBA per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, have an attenuation rate of approximately 4.5 dBA per doubling of distance. Noise generated by stationary sources typically attenuates at a rate between 6 and 7.5 dBA per doubling of distance.

There are a number of metrics used to characterize community noise exposure, which fluctuate constantly over time. One such metric, the equivalent sound level (L_{eq}), represents a constant sound that, over the specified period, has the same sound energy as the time-varying sound. Noise exposure over a longer period of time is often evaluated based on the day-night sound level (L_{dn}). This is a measure of 24-hour noise levels that incorporates a 10 dBA penalty for sounds occurring between 10:00 p.m. and 7:00 a.m. The penalty is intended to reflect the increased human sensitivity to noises occurring during nighttime hours, particularly at times when people are sleeping and there are lower ambient noise conditions. Typical L_{dn} noise levels for light- and medium-density residential areas range from 55 to 65 dBA.

Regulatory Framework

State

The Governor's Office of Planning and Research's *Noise Element Guidelines* include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The *Noise Element Guidelines* contain a land use compatibility table that describes the compatibility of various land uses with a range of environmental noise levels in terms of the community noise equivalent level (CNEL).

Local

Riverside County General Plan

The California Government Code requires that a noise element be included in the general plan of each county and city in the state. The Riverside County General Plan Noise Element evaluates the existing noise environment and future noise environment projections as well as identifies noise-sensitive land uses and major noise sources in the county. The Noise Element provides goals, policies, and implementation programs designed to minimize noise conflicts and protect public health. The Noise Element includes the following applicable policies:

N 1.1 Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise-producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or block walls shall be used.

N 1.2 Guide noise-tolerant land uses into areas irrevocably committed to land uses that are noise-producing, such as transportation corridors or within the projected noise contours of any adjacent airports.

N 1.4 Determine if existing land uses will present noise compatibility issues with proposed projects by undertaking site surveys.

N 1.5 Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County.

N 1.6 Minimize noise spillover or encroachment from commercial and industrial land uses into adjoining residential neighborhoods or noise-sensitive uses.

N 13.1 Minimize the impacts of construction noise on adjacent uses within acceptable practices.

N 13.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse noise impacts on surrounding areas.

N 13.4 Require that all construction equipment utilizes noise reduction features (e.g. mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.

In addition, the Noise Element provides the county's noise standards and land use compatibility standards for normally acceptable conditions, based on State recommendations and county land use designations. The county uses the noise/land use compatibility guidelines presented in Table XII-1, Land Use Compatibility for Community Noise Exposure, and Table XIII-2, Stationary Source Land Use Standards. These standards, which use the CNEL noise descriptor, are intended to be applicable for land use designations exposed to noise levels generated by transportation-related sources.

Table XIII-1
Land Use Compatibility for Community Noise Exposure

Land Use	Community Noise Exposure (L_{dn} or CNEL)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential[1]	50 - 60	60 - 70	70 - 75	75 - 85
Transient Lodging - Motel, Hotels	50 - 60	60 - 70	70 - 80	80 - 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 60	60 - 70	70 - 80	80 - 85
Auditoriums, Concert Halls, Amphitheaters[2]	NA	50 - 70	NA	70 - 85
Sports Arenas, Outdoor Spectator Sports[2]	NA	50 - 75	NA	75 - 85
Playgrounds, Neighborhood Parks	50 - 70	NA	67.5 - 75	72.5 - 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 70	NA	70 - 80	80 - 85
Office Buildings, Business Commercial and Professional	50 - 65	65 - 75	75 - 85	NA
Industrial, Manufacturing, Utilities, Agriculture	50 - 70	70 - 80	80 - 85	NA

Notes: NA: Not Applicable, L_{dn} = Day-Night Sound Level, CNEL = Community Noise Equivalent Level
1. Regarding aircraft-related noise, the maximum acceptable exposure for new residential development is 60dB CNEL.
2. No normally acceptable condition is defined for these uses. Noise studies are required prior to approval.

Normally Acceptable – Specified land use is satisfactory, based upon the assumption that any buildings involved meet conventional Title 24 construction standards. No special noise insulation requirements.
Conditionally Acceptable – New construction or development shall be undertaken only after a detailed noise analysis is made and noise reduction measures are identified and included in the project design.
Normally Unacceptable – New construction or development is discouraged. If new construction is proposed, a detailed analysis is required, noise reduction measures must be identified, and noise insulation features included in the design.
Clearly Unacceptable – New construction or development clearly should not be undertaken.
Source: County of Riverside, 2015a.

Table XIII-2
Stationary Source Land Use Noise Standards

Land Use	Interior Standards	Exterior Standards
Residential		
10:00 p.m. to 7:00 a.m.	40 L_{eq} (10 minute)	45 L_{eq} (10 minute)
7:00 a.m. to 10:00 p.m.	55 L_{eq} (10 minute)	65 L_{eq} (10 minute)

Notes: L_{eq} = Equivalent Sound Level
1. These are only preferred standards; final decision will be made by the Riverside County Planning Department and Office of Public Health.

Source: County of Riverside, 2015a.

Existing Conditions

<u>Stationary Sources</u>

The project area is located within a developed suburban area. The primary sources of stationary noise in the project vicinity are suburban-type activities (i.e., use of mechanical and landscaping equipment, parking areas, and people talking). Noise associated with these sources may represent a single-event noise occurrence, short-term, or long-term/continuous noise.

<u>Mobile Sources</u>

The existing noise environment within the project vicinity is influenced by vehicular traffic traveling along De Portola Road and Pauba Road. During peak travel hours, heavier traffic on these roadways causes higher noise levels compared to noise levels during non-peak hours.

Noise Measurements

In order to quantify existing ambient noise levels in the project area, noise measurements were conducted at three locations in the vicinity of the project site on September 24, 2019; refer to Table XIII-3, Noise Measurements. The ten-minute noise measurements were taken adjacent to the project site and represent typical existing noise exposure within and immediately adjacent to the project site. Measurements were taken during off-peak traffic hours to characterize baseline noise levels without exposure to heavy traffic or substantial noise-generating activities. The measured ambient noise levels range between 37.7 dBA L_{eq} and 64.0 dBA L_{eq}. The results of the field measurements are included in Appendix D, Noise Measurement Data.

Table XIII-3
Noise Measurements

Site No.	Location	L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)	Time
1	Stop sign at the corner of Pauba Road and De Portola Road	64.0	39.9	87.6	10:14 a.m.
2	Near De Portola Upper Ponds, adjacent to horse stables on dirt road	37.7	32.9	55.8	10:32 a.m.
3	Off a dirt road near Pauba Road, adjacent to a horse stable and estate	40.1	29.9	59.8	10:51 a.m.
Notes: dBA = A-weighted decibel; L_{eq} = equivalent sound level; L_{max} = maximum sound level; L_{min} = minimum sound level.					
Source: Michael Baker International, Inc., September 24, 2019.					

a) Would the project result in 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?

It is difficult to specify noise levels that are generally acceptable to everyone; noise that is considered a nuisance to one person may be unnoticed by another. Standards may be based on documented complaints in response to documented noise levels or based on studies of the ability of people to sleep, talk, or work under various noise conditions.

Construction Impacts

Construction activities generally are temporary and have a short duration, resulting in periodic increases in the ambient noise environment. Construction of the proposed project would include site preparation, grading activities, and architectural coating. Groundborne noise and other types of construction-related noise impacts typically occur during the demolition and grading construction phases. These phases of construction have the potential to create the highest levels of noise. Typical noise levels generated by construction equipment that could be used for the project are shown in Table XIII-4, Maximum Noise Levels Generated by Construction Equipment. Operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be due to random incidents (lasting less than one minute) such as dropping large pieces of equipment or the hydraulic movement of machinery lifts.

Table XIII-4
Maximum Noise Levels Generated by Construction Equipment

Type of Equipment	Acoustical Use Factor[1]	L_{max} at 70 Feet (dBA)
Concrete Mixer Truck	40	76
Backhoe	40	75
Dozer	40	79
Excavator	40	78
Forklift	40	75
Paver	50	74
Roller	20	77
Tractor	40	81
Water Truck	40	77
Grader	40	82
General Industrial Equipment	50	82

Note: dBA = A-weighted decibel; L_{max} = maximum sound level
1. Acoustical Use Factor (percent): Estimates the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

Source: Federal Highway Administration, 2006.

Construction noise impacts have the potential to result when construction activities occur in areas immediately adjoining noise sensitive land uses, during noise sensitive times of the day, and/or when construction activities occur at the same precise location over an extended period of time (e.g., pile driving in one location for eight to ten hours in a day or over a duration of several successive days). The closest sensitive receptor to is a residential property located approximately 70 feet west of the pump station site. Graders represent the loudest piece of construction equipment that may be used during the construction phase. Graders would be used at a minimum distance of 70 feet from the residential uses to the west. At this distance, graders would generate a maximum noise level of 82 dBA L_{max}; refer to Table XIII-4.

Construction would occur within various areas of the proposed pump station site (i.e., access drive, extension of pipelines, pump station, etc.). Therefore, construction noise would be acoustically dispersed over the site and not concentrated in one area near sensitive uses for an extended period of time. Further, construction activities would be temporary and intermittent and would cease when the improvements have been completed.

Construction noise in the county is regulated by Municipal Code Chapter 9.52, *Noise Regulation*, which identifies noise standards and specific noise restrictions, exemptions, and variances for noise sources in the county. Municipal Code Chapter 9.52, *Noise Regulation,* establishes additional standards for various noise sources. Specifically, Municipal Code Section 9.52.020, *Exemptions*, restricts construction activities such that no person may engage in or conduct construction activity, when the construction site is within one-quarter mile of an occupied residence between the hours of 6:00 p.m. and 6:00 a.m. during the months of June through September and between the hours of 6:00 p.m. and 7:00 a.m. during the months of October through May. The proposed project would be required to comply with construction time limitations identified in Municipal Code Section 9.52.020.

Additionally, due to the temporary nature of construction, coupled with the fact that construction-related noise is a generally accepted reality in urban/suburban environments, the county does not promulgate standards for construction-generated noise. Adherence to the permitted hours of construction are required in recognition that construction activities undertaken during daytime hours are a typical part of living in an urban/suburban environment and do not cause a significant disruption. Thus, a **less than significant impact** would result from project-related construction activities.

Operational Impacts

Mobile Noise

The project would generate a nominal number of vehicle trips for routine operation, maintenance, and inspection. Thus, the project would not substantially increase traffic in the site vicinity in a manner that would result in a significant off-site traffic noise impact. A **less than significant impact** would occur in this regard.

Stationary Noise

Upon project completion, noise in the project area would not significantly increase. The project involves construction of a pump station and associated water infrastructure facilities. Primary noise sources associated with these facilities and improvements are the mechanical pumps. The proposed pumps would produce a noise level of approximately 73 dBA at three feet.[3] The nearest sensitive receptor is located approximately 70 feet west of the site. At this distance, the noise levels from the pumps would attenuate to approximately 46 dBA. Furthermore, the pumps would be located within the pump station building, which would further attenuate the noise levels by at least 20 dBA.[4] Thus, stationary noise from the proposed pumps would be approximately 26 dBA at the nearest sensitive receptor, which is below the county's exterior (45 dBA) and interior (40 dBA) noise standards outlined in the Noise Element and as detailed in Table XIII-2. As such, a **less than significant impact** would occur in this regard.

b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction activities can generate varying degrees of groundborne vibration, depending on the construction method and equipment used. Operation of construction equipment can generate vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. However, groundborne vibrations from construction activities rarely reach levels that damage structures.

The Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations. In general, the FTA architectural damage criterion for continuous vibrations (i.e., 0.20 inch per second) appears to be conservative. As the nearest structures to the project site are residences, the FTA threshold is considered appropriate. Construction vibration impacts can include human annoyance and building damage. Human

3 Per email communication with Martin Trim of Barrett Pump on October 8, 2019.

4 A 20 dBA noise attenuation rate was utilized based on the U.S. Department of Housing and Urban Development, The Noise Guidebook, March 2009, page 14.

annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural.

The highest degree of groundborne vibration would be generated during the paving construction phase (I.e., access drive for pump station) due to the operation of a vibratory roller. Based on FTA data, vibration velocities from vibratory roller operations would be approximately 0.07 inch per second peak particle velocity (PPV) at 50 feet from the source of activity.[5] As such, structures located more than 50 feet from vibratory roller operations would not experience groundborne vibration above the FTA significance threshold (i.e. 0.2 inch-per-second PPV). As stated above, the closest residential structure to the site is approximately 70 feet to the west, and thus, would not be adversely impacted by the project's vibratory roller construction activities. Thus, impacts would be less than significant.

The project would be comprised of centralized disinfection and pumping facilities with on-site pumps along with supporting pipeline infrastructure and wells. The pumps would generate a nominal amount of vibration and would not be a significant stationary source of vibration. Furthermore, the nominal amount of vibration would be attenuated by the pump station building and the distance to the closest structure. Thus, operational vibration impacts would be **less than significant**.

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?

The pump station site is not located within two miles of a public airport, public use airport, or private airstrip. The nearest airport to the project site is the French Valley Airport located approximately 7.8 miles to the west. Therefore, the project would not expose people residing or working in the project area to excessive noise levels. **No impact** would occur in this regard.

XIV. Population and Housing

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

5 Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, September 2018.

Discussion

a) Would the project 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)?

The project does not propose new land uses or development that would increase the county's population beyond that considered in the General Plan. Therefore, the project would not affect countywide plans for population growth. The project does not propose to change the existing County General Plan land use designation or zoning of lands affected by the project and, as indicated in Response III(a) above, is considered to be consistent with the Southern California Association of Governments' (SCAG) *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS) for planning assumptions, including the latest applicable projections for regional population growth.

The project involves construction of a new pump station, wet wells, new and improved pipelines, and supporting infrastructure. The new facilities would augment capacity in RCWD's 1305 and 1380 Pressure Zones and allow RCWD to offer more reliable and cost-effective potable water to its customers while centralizing critical facilities to maximize operational efficiencies. The project would provide several benefits to RCWD, including maximizing the use of untreated water from MWD for groundwater recharge and extraction, thereby lowering RCWD supply water compared to treated water import costs.

However, the proposed improvements are not anticipated to induce substantial unplanned population growth within RCWD's existing service area either directly (i.e., by proposing construction of new homes or businesses) or indirectly (i.e., through extension of roads or other infrastructure). No new residential uses are proposed and no new off-site roadways that would allow for access to previously inaccessible lands or expansion of the current RCWD service boundary are proposed that could contribute to new unplanned growth. Therefore, impacts in this regard are considered to be **less than significant**.

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

No housing units would be displaced as a result of project construction. The project is limited to the proposed site for the pump station, which supports structural remnants of former equestrian use of the property and is otherwise highly disturbed. Pipeline improvements would occur within existing roadway rights-of-way or on land owned by the District and would not affect any existing people or housing; refer to Figure 3A, Project Depiction. Therefore, **no impact** would occur.

XV. Public Services

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

Discussion

a)i) 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 fire protection?

Fire protection services for the project area are provided by the Riverside County Fire Department. The nearest fire station to the project site (Station No. 84) is located approximately 7 miles to the west at 30650 Pauba Road in the City of Temecula.

The project would be designed and operated in compliance with applicable federal, state, and local worker safety and fire protection codes and regulations to minimize the potential for occurrence of fire. The project would not result in development that would generate new population substantially increasing demand for fire protection, as no residential uses are proposed. Project construction activities would be short term and, due to the nature of the proposed improvements, would not substantially increase the risk of fire to occur or the need for fire protection services.

Over the long term, project operation and maintenance would involve the use of maintenance vehicles and gas- or electric-powered machinery used for facility maintenance, as well as fuels used for operation of the pumps and/or emergency generators and storage or use of hazardous chemicals (i.e., sodium hypochlorite, ammonium sulfate) in routine operations; however, similar operations and use of such materials presently occur at the existing facilities located on the subject property. The project would be designed and constructed in conformance with applicable building construction standards intended to reduce the potential for fire risk and/or spread and is not anticipated to increase demand for or substantially affect the provision of fire services in the project area.

Due to the nature of the proposed improvements, the project would not 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, to maintain acceptable service ratios, response times, or other performance objectives for fire protection services. Impacts would be **less than significant**.

a)ii) 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 police protection?

Due to the nature of the proposed pump station and pipeline improvements, the project would not induce substantial population growth in the area or region. The pump station would be unmanned and remotely monitored with workers visiting the site for ongoing maintenance and operations over the life of the project. Additionally, the perimeter of the pump station site would be fenced and gated for security purposes. The project would not result in the need for additional new or altered police protection services and would not alter acceptable service ratios or response times. Project implementation would also not create the need for the development of additional police facilities. Therefore, **no impact** relative to police protection services would occur with project implementation.

a)iii) 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 schools?

The proposed project would not result in the construction of new housing or other land uses that would induce substantial population growth in the area or region. Therefore, the project would not generate additional student population at local schools. **No impact** would occur in this regard.

a)iv) 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 parks?

The proposed project would not result in construction of new housing or other land uses that would induce substantial population growth in the area or region. The project would therefore not result in the need for new or expanded parks or park facilities in the project area. **No impact** would occur with project implementation.

a)v) 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 other public facilities?

Due to the nature of the proposed land use, the project would not generate new residents or substantial population growth in the area or region. Therefore, the project would not result in a significant impact relative to other public facilities (i.e., libraries). **No impact** would occur in this regard.

XVI. Recreation

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

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?

As stated previously in Response XV(a)(iv), above, the project would not induce substantial population growth in the area or region. No new housing or other land uses that would generate new population would occur with project implementation. Therefore, the proposed improvements would not result in the need for new or expanded parks or park facilities. The project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of such facilities would occur or be accelerated. **No impact** would occur in this regard.

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?

Refer to Response XV(a)(iv), above. Project implementation does not include new recreational facilities nor would it require the construction or expansion of recreational facilities, due to the nature of the proposed infrastructure improvements. **No impact** would occur in this regard.

XVII. Transportation

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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) 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?	☐	☒	☐	☐

Discussion

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

Project construction may result in limited temporary congestion on local roadway segments due to construction traffic (e.g., truck deliveries, worker commute). Typical heavy equipment for construction may include a bore/drill rig, backhoe, front loader, dump truck, trencher, roller, crane, and/or other equipment. However, all staging of construction equipment would occur on the pump station site or in other off-site designated areas, and therefore, construction activities and staging would not block circulation on surrounding local roadways or impede circulation patterns for area residents or emergency access vehicles. Some temporary restrictions may occur along De Portola Road during pipeline improvements; however, such conditions would be temporary and would cease once construction is completed.

During the construction phase, the contractor would be required to implement any traffic control measures necessary to access the site and to maintain unobstructed traffic flow, as well as obtain any required encroachment permits for transporting heavy equipment and the staging of any materials/equipment as needed. Other construction traffic would consist of delivery trucks and worker transportation. Delivery and parking of vehicles would be coordinated to minimize impacts to local traffic. It is expected that this temporary traffic would not conflict with applicable plans, ordinances, or policies related to performance of the circulation system and impacts are considered to be less than significant.

The implementation of mitigation warning motorists, bicycle traffic, or pedestrians of potential dangers would reduce impacts to a less than significant level. A Traffic Management Plan would be prepared by a registered civil engineer and subject to the approval by the permitting agency (county) prior to any trenching in public streets. Additionally, county approval of a right-of-way encroachment permit would be required. With implementation of mitigation measure **TR-1**, impacts would be **less than significant with mitigation incorporated**.

The project does not propose new land uses that would substantially increase existing area traffic. Limited vehicle trips would occur as the result of delivery of materials to the pump station site and for periodic inspection and maintenance of the proposed improvements. Therefore, the project would not result in operational impacts relative to the local and/or regional circulation system over the long-term.

Mitigation Measures:

TR-1: Temporary transportation impacts to local roadways resulting from project construction shall be reduced through preparation of a Traffic Management Plan (TMP) to be approved by the County of Riverside Department of Public Works prior to any trenching in public roadway rights-of-way. The TMP shall consist of prior notices, adequate sign posting, detours (if needed), phased construction, and/or temporary driveways where necessary. The TMP shall specify implementation timing of each plan element (prior notices, sign posting, detours, etc.). Adequate access to and from adjacent residential areas shall be provided at all times. Proper detours and warning signs shall be established to ensure public safety. The TMP shall also be devised so that construction does not adversely interfere with or temporarily obstruct at any time emergency access or the implementation of relevant emergency response or evacuation plans.

Monitoring/Enforcement: Rancho California Water District

Timing/Implementation: Prior to and during all construction activities

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Section 15064.3 subdivision (b) of the CEQA Guidelines provides four criteria for analyzing transportation impacts which include: 1) land use projects; 2) transportation projects; 3) qualitative analysis; and 4) methodology. Project construction would generate temporary construction-related traffic, with limited operational traffic trips over the lifetime of the pump station and associated infrastructure improvements. These would be categorized under Section 15064.3(b)(3), qualitative analysis, as vehicle miles traveled (VMT) cannot be quantitatively estimated for certain types of development projects. Therefore, a qualitative analysis of construction traffic may be used.

The effects of any increase in vehicle-trip generation (for workers and construction vehicles) as a result of project construction is evaluated in Response XVII(a), above. Although these vehicle trips would generate VMT, such traffic would cease once construction of the proposed improvements is completed. It is therefore anticipated that VMT would return to existing pre-construction conditions once project construction ceases. VMT generated by project-related construction traffic would therefore be temporary and short term. Additionally, the pump station would be unmanned and long term maintenance and operation of the proposed facilities would generate a limited number of VMT over the life of the project. Therefore, it is not anticipated that the project would result in conflict with on be inconsistent with Section 15064.3 subdivision (b). Impacts would be **less than significant** in this regard.

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

The project does not involve any changes in roadway design or new land uses that would be incompatible with surrounding land uses in the long term. The project consists of the construction of new pump station facilities on the existing RCWD site and associated pipeline improvements along area roadway rights-of-way or on land owned by the District. The project does not propose any roadway improvements that would substantially increase hazards due to a geometric design feature or in compatible uses. **No impact** would occur in this regard.

d) Would the project result in inadequate emergency access?

Refer to Response XVII(a), above. The project would be required to prepare a Traffic Management Plan to the satisfaction of the County Department of Public Works as described in mitigation measure **TR-1** and obtain county approval of a right-of-way encroachment permit. Conformance with such requirements would ensure that the project does not interfere with or result in inadequate emergency access. Impacts would be **less than significant with mitigation incorporated**.

Mitigation Measures:

Implement mitigation measure **TR-1**.

Monitoring/Enforcement: Rancho California Water District

Timing/Implementation: Prior to and during all construction activities

XVIII. Tribal Cultural Resources

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
TRIBAL CULTURAL RESOURCES:				
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Discussion

a)i) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k); or,

a)ii) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is 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?

Assembly Bill (AB) 52 (Chapter 532, Statutes of 2014) establishes a formal consultation process for California Native American tribes as part of CEQA and equates significant impacts on tribal cultural resources with significant environmental impacts (California Public Resources Code Section 21084.2). California Public Resources Code Section 21074 defines tribal cultural resources as follows:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
  - Included or determined to be eligible for inclusion in the California Register of Historical Resources.
  - Included in a local register of historical resources.
- 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 California Public Resources Code Section 5024.1.

Sacred places can include Native American sanctified cemeteries, places of worship, religious or ceremonial sites, and sacred shrines. In addition, both unique and non-unique archaeological resources, as defined in California Public Resources Code Section 21083.2, can be tribal cultural resources if they meet the criteria detailed above. The lead agency relies upon substantial evidence to make the determination that a resource qualifies as a tribal cultural resource when it is not already listed in the California Register of Historical Resources or a local register.

AB 52 defines a “California Native American Tribe” as a Native American tribe located in California that is on the contact list maintained by the Native American Heritage Commission (California Public Resources Code Section 21073). Under AB 52, formal consultation with tribes is required prior to determining the level of environmental document if a Tribe has requested to be informed by the lead agency of proposed projects and if the Tribe, upon receiving notice of the project, accepts the opportunity to consult within 30 days of receipt of the notice. AB 52 also requires that consultation, if initiated, address project alternatives and mitigation measures for significant effects, if specifically requested by the Tribe.

AB 52 states that consultation is considered concluded when the parties either agree to measures to mitigate or avoid a significant effect on tribal cultural resources, or when either the Tribe or the agency concludes that mutual agreement cannot be reached after making a reasonable, good-faith effort. Under AB 52, any mitigation measures recommended by the agency or agreed upon with the Tribe may be included in the final environmental document and in the adopted mitigation monitoring program if they were determined to avoid or lessen a significant impact on a tribal cultural resource. If the recommended measures are not included in the final environmental document, then the lead agency must consider the four mitigation methods described in California Public Resources Code Section 21084.3I. Any information submitted by a Tribe during the consultation process is considered confidential and is not subject to public review or disclosure. It will be published in a confidential appendix to the environmental document unless the Tribe consents to disclosure of all or some of the information to the public.

Assembly Bill (AB) 52 (Chapter 532, Statutes of 2014) establishes a formal consultation process for California Native American tribes as part of the California Environmental Quality Act (CEQA) and equates significant impacts on tribal cultural resources with significant environmental impacts (California Public Resources Code Section 21084.2).

The RCWD initiated consultation per AB 52 requirements, sending written notification to the Pechanga Band of Luiseño Mission Indians on August 28, 2019 via U.S. mail to notify the Tribe of the proposed project and intended improvements. Subsequently, on September 23, 2019, the District sent notification to several additional tribes to allow the tribes the opportunity to request consultation on the proposed project pursuant to Public Resources Code Section 21080.3.1. These tribes included the Agua Caliente Band of Cahuilla Indians, Morongo Band of Mission Indians, and Rincon Band of Luiseño Indians. In accordance with AB 52, these four tribes had previously requested that the RCWD provide notification of all qualifying projects under California Public Resources Code 21080.3.1. Refer to Appendix C-2, AB 52 Consultation Documentation, of this IS/MND for such correspondence.

The Pechanga Tribe responded in a letter dated September 20, 2019 formally requesting consultation with RCWD on the project. The Pechanga Tribe asserted that the project area is culturally sensitive and is part of the Tribe's aboriginal territory as evidenced by the existence of cultural resources, named places, and an extensive artifact record in the project vicinity. The Tribe indicated that there may be a possibility of human remains to be discovered as the Temecula Massacre historically occurred in this area of the County. The Tribe also indicated that the culturally sensitive area is affiliated with the Pechanga Band of Luiseño Indians because of the Tribe’s cultural ties to the area.

Tribal members also mentioned the additional sensitivity of the area due to the Temecula Massacre event which occurred in the area in 1847. The massacre was thought to be a retaliation of the Pauma Massacre in which a number of Mexican soldiers were killed at Warner Hot Springs for stealing horses from the Pauma People. During the Temecula Massacre in early January 1847, number of Temecula Indians were trapped in a local canyon by a group of Mexican soldiers and Native people who then killed more than 100 of the Temecula Indians in the massacre. The Mormon Battalion reached Temecula in late January 1847 and discovered that many of the dead remained unburied. Some of the Battalion members assisted in the burial of the Tribal members before continuing on to San Diego. Victims of the Temecula Massacre now rest at the Old Temecula Village Cemetery (Pechanga 2020a). The Mexican-American War ended in February 1848 with the signing of the Treaty of Guadalupe Hildalgo.

Additionally, the Pechanga have a long history of basketry, or tóonavish, in southern California. Most traditional gathering sites (where pruning, digging, sowing, burning and selective harvesting of material used in basket weaving have been lost to private property owners, development, agriculture, and other activities (Pechanga 2020b). Consultation with Tribe members indicated that materials (red willow) traditionally used by the Pechanga Tribe in basket weaving have been documented in the Temecula region, and therefore, may further support the potential for undiscovered tribal cultural resources to be present in the project vicinity.

On October 17, 2019, RCWD consulted with representatives from the Tribe via conference call. The Tribe made a request for additional information as well as for the incorporation of specific measures aimed at the long-term protection of undiscovered resources. Subsequently, on November 14, 2019, RCWD sent to the Tribe via email a list of possible mitigation measures intended to reduce potential project impacts to (undiscovered) sensitive tribal cultural resources; refer to Section V, Cultural Resources, for additional discussion. Additionally, per the Tribe's request, RCWD also forwarded engineering design details for the project as well as the Cultural Resources Report to the Tribe for consideration. At the time of commencement of public review of this Initial Study, consultation with the Pechanga Tribe remains ongoing.

Additionally, in response to AB 52 notification from RCWD, the Rincon Band of Luiseño Indians replied on October 15, 2019, requesting formal consultation with the District on the project. Representatives from RCWD corresponded with members of the Rincon Tribe via telephone on November 5, 2019. The Rincon Band noted that, while no known tribal resources exist on or adjacent to the project site, the area is culturally sensitive in general as it was historically utilized for gatherings, travel routes, and other day-to-day activities. As such, the Rincon Band recommends that mitigation measures for inadvertent discoveries such as archaeological and Luiseño Tribal monitoring (as well as measures addressing protocols and treatment of cultural resources discoveries and human remains) be incorporated into the CEQA document to ensure long-term protection of unknown resources.

The RCWD concurs with the Rincon Band that the absence of known resources does not necessarily preclude the incidental discovery of tribal cultural resources, including human remains, once earthwork is initiated. To that end, the RCWD has included mitigation measures in the CEQA document to ensure proper monitoring and reporting of any incidental discoveries; refer to Section V, Cultural Resources, and Section XVIII, Tribal Cultural Resources. The RCWD provided the Rincon Band and Pechanga Tribe with a draft of the proposed CEQA text and mitigation measures for review and comment prior to release of the CEQA document for public review. In response, the Rincon Band of Luiseño Indians provided a letter dated February 20, 2020 indicating that the tribe is in agreement with the measures identified in the Initial Study/Mitigated Negative Declaration (IS/MND). The Tribe indicated that it has no further concerns pertaining to cultural resources and that consultation was therefore concluded. The RCWD again contacted the Pechanga Tribe via email on February 27, 2020 and as of publication of this IS/MND has not received a reply. The Pechanga Tribe has been provided this IS/MND for review and comment and consultation with this Tribe remains open.

As stated, mitigation measures have been incorporated into this Initial Study in response to consultation with the affected Tribes. The AB 52 consultation process will remain open and ongoing while the Pechanga Tribe and RCWD work towards a mutually agreeable description of mitigation measures in the CEQA document.

Refer also to Section V, Cultural Resources, for additional discussion. Implementation of mitigation measures **CR-1** to **CR-5** would reduce potential impacts to cultural and tribal cultural resources to less than significant. Refer also to Appendix C-2 for documentation of correspondence in conformance with state requirements. Impacts would be **less than significant with mitigation incorporated**.

Mitigation Measures:

Implement mitigation measures **CR-1** to **CR-5**.

Monitoring/Enforcement: Rancho California Water District

Timing/Implementation: Prior to and during all excavation, grading or construction activities

XIX. Utilities and Service Systems

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider 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?	☐	☐	☒	☐

Discussion

a) Would the project 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?

The proposed project involves the construction of a new pump station, wet wells, pipelines, and supporting facilities. The project is intended to increase capacity at the UVDC Regional Pump Station and provide financial and operational benefits to RCWD. The new facilities would augment capacity in the RCWD's 1305 and 1380 Pressure Zones. The proposed improvements would allow the RCWD to offer more reliable and cost-effective potable water to its customers while centralizing critical facilities to maximize operational efficiencies. The RCWD supplies potable water to all customers within its service area through the purchase of treated and untreated water from the Metropolitan Water District (MWD) and extraction of native groundwater. The project would provide several benefits to RCWD, including maximizing the use of untreated water from MWD for groundwater recharge and extraction, thereby lowering RCWD supply water compared to treated water import costs.

The pump station would be unmanned and the project would not result in construction of new land uses that would increase demand for water or wastewater treatment services. Additionally, construction of the proposed facilities has been fully evaluated herein in this Initial Study and all potential environmental effects identified can be reduced to less than significant with implementation of the proposed mitigation measures.

Improvements associated with the project would be limited in scale and would not impact any natural or man-made water body. The project would be required to apply for a national pollutant discharge elimination system (NPDES) permit through the Regional Water Quality Control Board (RWQCB). Adherence to the mandatory NPDES permit conditions would ensure that project construction would have a less than significant impact with respect to water quality standards and waste discharge requirements. Additionally, due to the nature and scope of the proposed project, project implementation would not require or result in the expansion of existing stormwater drainage facilities. Proposed drainage improvements on the pump station site would ensure that stormwater runoff rates and/or quantities do not increase with project implementation. The construction or expansion of off-site stormwater control infrastructure is therefore not anticipated. Any physical improvements related to water, wastewater, or stormwater proposed with the project have been evaluated herein in this Initial Study for potential environmental effects and proper mitigation measures have been identified, as appropriate, to reduce any such impacts to less than significant.

Electrical power is presently available at the pump station site. Due to the nature of the proposed improvements and operating characteristics, the project would not substantially increase demand for to the extent that new or expanded electrical power or natural gas facilities would be required. The pump station and associated facilities would be monitored remotely via connection to the RCWD's existing supervisory control and data acquisition system. Therefore, the need for the construction of new or expanded public telecommunications facilities is not anticipated.

Therefore, the project would not require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. Impacts would be **less than significant**.

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

Refer to Response XIX(a), above. The project does not propose development of residential, commercial, or other land uses that would create additional demand for water supply. The pump station would be unmanned and would not generate substantial new demand for potable water service.

The new facilities would augment capacity in RCWD's 1305 and 1380 Pressure Zones and allow RCWD to offer more reliable potable water to its customers while centralizing critical facilities to maximize operational efficiencies. The project would provide several benefits to RCWD, including maximizing the use of untreated water from MWD for groundwater recharge and extraction, thereby lowering RCWD supply water compared to treated water import costs. Additionally, the RCWD 2010 *Urban Water Management Plan* notes adequate water supplies for the RCWD to accommodate its current and future customers. A **less than significant impact** would occur in this regard.

c) Would the project 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?

Refer to Response XIX(a) above. Project implementation would have a less than significant impact with respect to wastewater treatment capacity. The proposed project would not add new development that would increase wastewater treatment demand. The pump station would be unmanned and no improvements for wastewater treatment are proposed or required due to the nature of the use. **No impact** would occur in this regard.

d) Would the project 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?

The proposed pump station and supporting infrastructure would not create substantial new demand for solid waste disposal services. Solid waste would largely be generated by short-term construction activities associated with the proposed project. Project construction would result in minor quantities of construction debris such as concrete, wiring, metal, packaging, and other materials. Any solid waste generated by the project would be disposed of at a licensed off-site landfill or at a recycling facility, as appropriate.

Due to the nature of the proposed land use, project operation would also generate minimal quantities of solid waste, generally from workers on-site performing routine operation and maintenance. All solid waste would be collected by workers on a daily basis, or as otherwise needed, and ultimately transported to a licensed off-site landfill or recycling facility for disposal as appropriate.

The project area is currently served by 3 landfills: Badlands Landfill, Lamb Canyon, and El Sobrante Landfill. Badlands accepts up to 4,800 tons per day of solid waste and is anticipated to close in 2022 (CalRecycle 2019a). Lamb Canyon accepts up to 5,000 tons per day of solid waste and is anticipated to close in 2029 (CalRecycle 2019b). El Sobrante accepts 16,054 tons per day of in-county solid waste and is anticipated to close in 2051 (CalRecycle 2019c). Solid waste collection services for unincorporated Riverside County area is provided by CR&R Services which provides sustainable waste and recycling services. CR&R also has an extensive network of processing facilities that would manage the project site waste stream and includes solid waste, recyclables, green waste, food waste, construction and demolition waste, electronic waste and a number of other materials. Thus, project implementation would not impair the attainment of solid waste reduction goals.

Construction and operation activities for the project are not anticipated to result in impacts related to landfill capacity. With project conformance to applicable federal, state, and local solid waste reduction and recycling measures, the project is not anticipated to result in a significant impact on solid waste disposal capacity. Impacts would be **less than significant**.

e) Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Refer to Impact XIX(d), above. The project would generate solid waste during construction and operation activities, thus requiring consideration of waste reduction and recycling measures. The 1989 California Integrated Waste Management Act (AB 939) requires that specific waste diversion goals be achieved for all California cities and counties, including an overall reduction in solid waste produced by 50 percent by the year 2000. In addition, the California Solid Waste Reuse and Recycling Access Act of 1991, as amended, requires expanded or new development projects to incorporate storage areas for recycling bins into the proposed design. Additionally, AB 341 (2011) established a state goal to reduce, recycle, or compost no less than 75 percent of waste generated by the year 2020.

Generation of solid waste would generally be limited to the construction phase (e.g., minor quantities of construction debris). Solid waste produced during construction would be properly disposed of in accordance with applicable statutes and regulations. Additionally, minimal amounts of solid waste may also be generated from periodic operation and maintenance activities. All solid waste would be collected following on-site maintenance activities, or as otherwise appropriate, and ultimately transported to a licensed off-site landfill or recycling facility for disposal.

Construction and operational activities for the proposed project would occur in compliance with applicable federal, state, and local statutes and regulations related to solid waste. Impacts would be **less than significant**.

XX. Wildfire

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐

Discussion

a) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

The County of Riverside's Multi-Jurisdictional Hazard Mitigation Plan includes measures to reduce future hazards and better respond during emergency evacuations. The plan utilizes Fire Hazard Severity Zone maps to determine which areas of the county are most at risk of wildfires so the county can allocate additional resources to those areas and implement protective measures to new buildings or remodeled older structures to reduce potential fire risk.

The project site is located in a State Responsibility Area (SRA) and is identified as being in a very high fire hazard severity zone according to the Fire Hazard Severity Zones in SRA Map produced by the California Department of Forestry and Fire Protection (Cal Fire 2007). As such, the project site and lands in the vicinity are subject to the risk of wildfire.

Activities associated with the project would not impede the free movement of emergency response vehicles. Construction vehicles would utilize De Portola Road, Pauba Road, and/or Conquistador Road for access to the areas where project improvements are proposed. During construction, materials would be placed on-site within the project boundaries (i.e., pump station site) or adjacent to the current phase of construction (i.e., pipeline improvements) in order to avoid access conflicts in case of emergency evacuations and would not substantially interfere with area circulation.

The project does not include habitable structures and would not increase the local population that may potentially be at risk in the event of an emergency or evacuation. For the reasons stated above, the project would not interfere with the ability of the County of Riverside Sheriff's Department, which serves the project vicinity, to safely evacuate the area in the event of an emergency. Therefore, impacts due to wildfires are considered **less than significant**.

b) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, 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?

Refer to Response XX(a) above. The project site is located on lands classified as being in a very high fire hazard severity zone. The pump station site and pipeline improvement areas are generally flat and no steep slopes are located on or adjacent to the affected lands that would exacerbate wildfire risk (i.e., from upslope winds). No other natural features are present on-site that would exacerbate wildfire risks.

During construction, the project would introduce potential ignition sources that do not currently exist on the site, such as generators, vehicles, and gas- or electric-powered small hand tools. During operations and maintenance, potential ignition sources such as vehicles and gas- or electric-powered small hand tools and maintenance equipment may be used. The project does not include habitable structures; therefore, the project is not anticipated to expose any project occupants to pollutant concentrations from a wildfire.

Comprehensive safety measures in compliance with federal, state, and local worker safety and fire protection codes and regulations would be implemented for the proposed project. These measures would minimize the occurrence or spread of wildfire during construction and for the life of the proposed project.

The project would not, 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. Impacts would be **less than significant**.

c) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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?

Refer to Response XX(a) above. The pump station site and pipeline improvement areas are generally flat and no steep slopes are located on or adjacent to the affected lands. The project does not include the requirement to provide any new roads, fuel breaks, power lines or other utilities.

Adequate access drive and emergency vehicle turnaround requirements would be provided at the pump station site in conformance with applicable local fire service and RCWD design standards. The project is not anticipated to substantially increase the need for fire protection services or the potential risk of fire that would require new or expanded facilities or staff to serve the proposed use. The pump station enclosure would be constructed in conformance with applicable state and local building code requirements to ensure that the potential for fire risk or spread is reduced to the maximum extent feasible. Installation of a fire hydrant is also proposed with the project to further reduce potential damage or spread in the event of a fire.

Additionally, comprehensive safety measures in compliance with federal, state, and local worker safety and fire protection codes and regulations would be implemented for the proposed project. These measures would further minimize the potential risk for fire to occur during construction or operation of the proposed facilities.

The project would not 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. Impacts would be **less than significant** in this regard.

d) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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?

Refer to Response X, Hydrology and Water Quality, and Response XX(a) above. The project site and surrounding lands are relatively flat. Therefore, the risk of downslope or downstream flooding or landslide hazards is considered to be low to non-existent. Although the site is identified as being in a very high fire hazard severity zone according, the project would not expose people or structures to significant risks as a result of runoff, post-fire slope instability, or drainage changes. Impacts would be **less than significant**.

XXI. Mandatory Findings of Significance

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
MANDATORY FINDINGS OF SIGNIFICANCE:				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

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

The project would not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major proceeds of California history or prehistory. Potential impacts to biological and cultural/tribal cultural resources would be reduced through adherence to standard RCWD practices and the implementation of mitigation measures identified herein. Refer to Section IV, Biological Resources; Section V, Cultural Resources; and Section XVIII, Tribal Cultural Resources. Project impacts would be **less than significant with mitigation incorporated**.

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)?

The proposed project would not 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). Given the relatively small scale of the project, the disturbed nature of lands affected by the proposed improvements, the temporary nature of construction activities, and the negligible long-term operational impacts, project-related cumulative impacts are not considered to be significant. Therefore, impacts would be **less than significant**.

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

Construction-related impacts related to biological resources, cultural/tribal cultural resources, and transportation are anticipated to result in minor temporary impacts. However, potential such impacts would be reduced to less than significant through implementation of required mitigation measures, as described above in previous discussions. The project would not have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly. Therefore, impacts would be **less than significant**.

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TECHNICAL APPENDICES

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Appendix A
Air Quality/Greenhouse Gas Emissions
Modeling Data

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UVDC Pump Station

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	8.50	1000sqft	0.20	8,500.00	0
Other Asphalt Surfaces	145.50	1000sqft	3.34	145,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	513	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - SCE 2018 Sustainability Report (pg 10)

Land Use - 8,500 sqft of building, 76,000 square feet of site pavement, and 69,500 square feet of roadway pavement.

Construction Phase - Anticipated Construction Schedule

Demolition -

Grading -

Vehicle Trips - Pump station with no daily trips (less than 10 per month).

Energy Use - Operational energy usage from pumps calculated outside caleemod - see appendix.

Solid Waste - Pump Station - no solid waste

Construction Off-road Equipment Mitigation -

Area Mitigation -

Energy Mitigation - 2019 Title 24

Water Mitigation -

Operational Off-Road Equipment -

Stationary Sources - Emergency Generators and Fire Pumps - On-site 2,000 KW Emergency Generator, assumed to run for 50 hours of testing & maintenance

Water And Wastewater - pump station - no water use

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	18.00	40.00
tblConstructionPhase	NumDays	230.00	440.00
tblConstructionPhase	NumDays	8.00	40.00
tblConstructionPhase	NumDays	18.00	20.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24NG	15.36	0.00
tblGrading	MaterialImported	0.00	44,940.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	513
tblSolidWaste	SolidWasteGenerationRate	10.54	0.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	2,682.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.14
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	IndoorWaterUseRate	1,965,625.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

Year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
2020	0.2207	2.0911	1.2051	4.2300e-003	0.2172	0.0683	0.2855	0.0905	0.0638	0.1543	0.0000	394.4275	394.4275	0.0529	0.0000	395.7504
2021	0.3089	2.7257	2.6665	5.4400e-003	0.1158	0.1322	0.2481	0.0312	0.1242	0.1555	0.0000	481.2853	481.2853	0.0853	0.0000	483.4186
2022	0.1135	1.0131	1.0652	2.2300e-003	0.0488	0.0458	0.0946	0.0132	0.0431	0.0563	0.0000	197.1846	197.1846	0.0340	0.0000	198.0348
Maximum	**0.3089**	**2.7257**	**2.6665**	**5.4400e-003**	**0.2172**	**0.1322**	**0.2855**	**0.0905**	**0.1242**	**0.1555**	**0.0000**	**481.2853**	**481.2853**	**0.0853**	**0.0000**	**483.4186**

Mitigated Construction

Year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
2020	0.2207	2.0911	1.2051	4.2300e-003	0.1357	0.0683	0.2040	0.0492	0.0638	0.1130	0.0000	394.4274	394.4274	0.0529	0.0000	395.7503
2021	0.3089	2.7257	2.6665	5.4400e-003	0.1158	0.1322	0.2481	0.0312	0.1242	0.1555	0.0000	481.2849	481.2849	0.0853	0.0000	483.4182
2022	0.1135	1.0131	1.0652	2.2300e-003	0.0488	0.0458	0.0946	0.0132	0.0431	0.0563	0.0000	197.1844	197.1844	0.0340	0.0000	198.0347
Maximum	**0.3089**	**2.7257**	**2.6665**	**5.4400e-003**	**0.1357**	**0.1322**	**0.2481**	**0.0492**	**0.1242**	**0.1555**	**0.0000**	**481.2849**	**481.2849**	**0.0853**	**0.0000**	**483.4182**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**

Percent Reduction	0.00	0.00	0.00	0.00	21.34	0.00	12.97	30.64	0.00	11.29	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	8-1-2020	10-31-2020	1.6449	1.6449
2	11-1-2020	1-31-2021	0.8800	0.8800
3	2-1-2021	4-30-2021	0.8240	0.8240
4	5-1-2021	7-31-2021	0.7307	0.7307
5	8-1-2021	10-31-2021	0.7311	0.7311
6	11-1-2021	1-31-2022	0.7079	0.7079
7	2-1-2022	4-30-2022	0.6386	0.6386
8	5-1-2022	7-31-2022	0.2724	0.2724
		Highest	1.6449	1.6449

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0463	2.0000e-005	1.9700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.8200e-003	3.8200e-003	1.0000e-005	0.0000	4.0800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0463**	**2.0000e-005**	**1.9700e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.8200e-003**	**3.8200e-003**	**1.0000e-005**	**0.0000**	**4.0800e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0463	2.0000e-005	1.9700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.8200e-003	3.8200e-003	1.0000e-005	0.0000	4.0800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0463**	**2.0000e-005**	**1.9700e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.8200e-003**	**3.8200e-003**	**1.0000e-005**	**0.0000**	**4.0800e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	8/5/2020	9/29/2020	5	40	
2	Building Construction	Building Construction	9/30/2020	6/7/2022	5	440	
3	Architectural Coating	Architectural Coating	11/1/2020	12/25/2020	5	40	
4	Paving	Paving	3/1/2021	3/26/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 20

Acres of Paving: 3.34

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 12,750; Non-Residential Outdoor: 4,250; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	6	15.00	0.00	5,618.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	65.00	25.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1336	0.0000	0.1336	0.0677	0.0000	0.0677	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0486	0.5277	0.3211	5.9000e-004		0.0255	0.0255		0.0234	0.0234	0.0000	52.1175	52.1175	0.0169	0.0000	52.5389
Total	**0.0486**	**0.5277**	**0.3211**	**5.9000e-004**	**0.1336**	**0.0255**	**0.1591**	**0.0677**	**0.0234**	**0.0912**	**0.0000**	**52.1175**	**52.1175**	**0.0169**	**0.0000**	**52.5389**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0216	0.7882	0.1572	2.1600e-003	0.0483	2.4800e-003	0.0508	0.0133	2.3700e-003	0.0156	0.0000	211.9784	211.9784	0.0146	0.0000	212.3435
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3400e-003	1.0300e-003	0.0114	3.0000e-005	3.2900e-003	3.0000e-005	3.3200e-003	8.7000e-004	2.0000e-005	9.0000e-004	0.0000	2.9630	2.9630	9.0000e-005	0.0000	2.9651
Total	**0.0229**	**0.7893**	**0.1686**	**2.1900e-003**	**0.0516**	**2.5100e-003**	**0.0541**	**0.0141**	**2.3900e-003**	**0.0165**	**0.0000**	**214.9414**	**214.9414**	**0.0147**	**0.0000**	**215.3087**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Fugitive Dust					0.0521	0.0000	0.0521	0.0264	0.0000	0.0264	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0486	0.5277	0.3211	5.9000e-004		0.0255	0.0255		0.0234	0.0234	0.0000	52.1174	52.1174	0.0169	0.0000	52.5388
Total	**0.0486**	**0.5277**	**0.3211**	**5.9000e-004**	**0.0521**	**0.0255**	**0.0776**	**0.0264**	**0.0234**	**0.0499**	**0.0000**	**52.1174**	**52.1174**	**0.0169**	**0.0000**	**52.5388**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	0.0216	0.7882	0.1572	2.1600e-003	0.0483	2.4800e-003	0.0508	0.0133	2.3700e-003	0.0156	0.0000	211.9784	211.9784	0.0146	0.0000	212.3435
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3400e-003	1.0300e-003	0.0114	3.0000e-005	3.2900e-003	3.0000e-005	3.3200e-003	8.7000e-004	2.0000e-005	9.0000e-004	0.0000	2.9630	2.9630	9.0000e-005	0.0000	2.9651
Total	**0.0229**	**0.7893**	**0.1686**	**2.1900e-003**	**0.0516**	**2.5100e-003**	**0.0541**	**0.0141**	**2.3900e-003**	**0.0165**	**0.0000**	**214.9414**	**214.9414**	**0.0147**	**0.0000**	**215.3087**

3.3 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Off-Road	0.0710	0.6427	0.5644	9.0000e-004		0.0374	0.0374		0.0352	0.0352	0.0000	77.5893	77.5893	0.0189	0.0000	78.0626
Total	**0.0710**	**0.6427**	**0.5644**	**9.0000e-004**		**0.0374**	**0.0374**		**0.0352**	**0.0352**	**0.0000**	**77.5893**	**77.5893**	**0.0189**	**0.0000**	**78.0626**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8100e-003	0.0894	0.0221	2.1000e-004	5.2800e-003	4.4000e-004	5.7200e-003	1.5200e-003	4.2000e-004	1.9400e-003	0.0000	20.5985	20.5985	1.3500e-003	0.0000	20.6323
Worker	9.7200e-003	7.4500e-003	0.0825	2.4000e-004	0.0239	1.8000e-004	0.0241	6.3400e-003	1.7000e-004	6.5100e-003	0.0000	21.5064	21.5064	6.2000e-004	0.0000	21.5219
Total	**0.0125**	**0.0968**	**0.1046**	**4.5000e-004**	**0.0292**	**6.2000e-004**	**0.0298**	**7.8600e-003**	**5.9000e-004**	**8.4500e-003**	**0.0000**	**42.1049**	**42.1049**	**1.9700e-003**	**0.0000**	**42.1541**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0710	0.6427	0.5644	9.0000e-004		0.0374	0.0374		0.0352	0.0352	0.0000	77.5893	77.5893	0.0189	0.0000	78.0625
Total	**0.0710**	**0.6427**	**0.5644**	**9.0000e-004**		**0.0374**	**0.0374**		**0.0352**	**0.0352**	**0.0000**	**77.5893**	**77.5893**	**0.0189**	**0.0000**	**78.0625**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8100e-003	0.0894	0.0221	2.1000e-004	5.2800e-003	4.4000e-004	5.7200e-003	1.5200e-003	4.2000e-004	1.9400e-003	0.0000	20.5985	20.5985	1.3500e-003	0.0000	20.6323
Worker	9.7200e-003	7.4500e-003	0.0825	2.4000e-004	0.0239	1.8000e-004	0.0241	6.3400e-003	1.7000e-004	6.5100e-003	0.0000	21.5064	21.5064	6.2000e-004	0.0000	21.5219
Total	**0.0125**	**0.0968**	**0.1046**	**4.5000e-004**	**0.0292**	**6.2000e-004**	**0.0298**	**7.8600e-003**	**5.9000e-004**	**8.4500e-003**	**0.0000**	**42.1049**	**42.1049**	**1.9700e-003**	**0.0000**	**42.1541**

3.3 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2481	2.2749	2.1631	3.5100e-003		0.1251	0.1251		0.1176	0.1176	0.0000	302.2867	302.2867	0.0729	0.0000	304.1099
Total	**0.2481**	**2.2749**	**2.1631**	**3.5100e-003**		**0.1251**	**0.1251**		**0.1176**	**0.1176**	**0.0000**	**302.2867**	**302.2867**	**0.0729**	**0.0000**	**304.1099**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.2800e-003	0.3157	0.0783	8.2000e-004	0.0206	6.4000e-004	0.0212	5.9300e-003	6.1000e-004	6.5400e-003	0.0000	79.6528	79.6528	5.0400e-003	0.0000	79.7787
Worker	0.0354	0.0261	0.2956	9.0000e-004	0.0931	7.0000e-004	0.0938	0.0247	6.4000e-004	0.0254	0.0000	81.0639	81.0639	2.1700e-003	0.0000	81.1182
Total	**0.0446**	**0.3418**	**0.3739**	**1.7200e-003**	**0.1136**	**1.3400e-003**	**0.1150**	**0.0307**	**1.2500e-003**	**0.0319**	**0.0000**	**160.7167**	**160.7167**	**7.2100e-003**	**0.0000**	**160.8969**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2481	2.2749	2.1631	3.5100e-003		0.1251	0.1251		0.1176	0.1176	0.0000	302.2863	302.2863	0.0729	0.0000	304.1095
Total	**0.2481**	**2.2749**	**2.1631**	**3.5100e-003**		**0.1251**	**0.1251**		**0.1176**	**0.1176**	**0.0000**	**302.2863**	**302.2863**	**0.0729**	**0.0000**	**304.1095**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.2800e-003	0.3157	0.0783	8.2000e-004	0.0206	6.4000e-004	0.0212	5.9300e-003	6.1000e-004	6.5400e-003	0.0000	79.6528	79.6528	5.0400e-003	0.0000	79.7787
Worker	0.0354	0.0261	0.2956	9.0000e-004	0.0931	7.0000e-004	0.0938	0.0247	6.4000e-004	0.0254	0.0000	81.0639	81.0639	2.1700e-003	0.0000	81.1182
Total	**0.0446**	**0.3418**	**0.3739**	**1.7200e-003**	**0.1136**	**1.3400e-003**	**0.1150**	**0.0307**	**1.2500e-003**	**0.0319**	**0.0000**	**160.7167**	**160.7167**	**7.2100e-003**	**0.0000**	**160.8969**

3.3 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0956	0.8745	0.9164	1.5100e-003		0.0453	0.0453		0.0426	0.0426	0.0000	129.7661	129.7661	0.0311	0.0000	130.5433
Total	**0.0956**	**0.8745**	**0.9164**	**1.5100e-003**		**0.0453**	**0.0453**		**0.0426**	**0.0426**	**0.0000**	**129.7661**	**129.7661**	**0.0311**	**0.0000**	**130.5433**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.7400e-003	0.1285	0.0317	3.5000e-004	8.8200e-003	2.4000e-004	9.0600e-003	2.5500e-003	2.3000e-004	2.7700e-003	0.0000	33.8796	33.8796	2.0800e-003	0.0000	33.9316
Worker	0.0143	0.0101	0.1171	3.7000e-004	0.0399	2.9000e-004	0.0402	0.0106	2.7000e-004	0.0109	0.0000	33.5389	33.5389	8.4000e-004	0.0000	33.5599
Total	**0.0180**	**0.1386**	**0.1489**	**7.2000e-004**	**0.0488**	**5.3000e-004**	**0.0493**	**0.0132**	**5.0000e-004**	**0.0136**	**0.0000**	**67.4184**	**67.4184**	**2.9200e-003**	**0.0000**	**67.4915**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Off-Road	0.0956	0.8745	0.9164	1.5100e-003		0.0453	0.0453		0.0426	0.0426	0.0000	129.7660	129.7660	0.0311	0.0000	130.5432
Total	**0.0956**	**0.8745**	**0.9164**	**1.5100e-003**		**0.0453**	**0.0453**		**0.0426**	**0.0426**	**0.0000**	**129.7660**	**129.7660**	**0.0311**	**0.0000**	**130.5432**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.7400e-003	0.1285	0.0317	3.5000e-004	8.8200e-003	2.4000e-004	9.0600e-003	2.5500e-003	2.3000e-004	2.7700e-003	0.0000	33.8796	33.8796	2.0800e-003	0.0000	33.9316
Worker	0.0143	0.0101	0.1171	3.7000e-004	0.0399	2.9000e-004	0.0402	0.0106	2.7000e-004	0.0109	0.0000	33.5389	33.5389	8.4000e-004	0.0000	33.5599
Total	**0.0180**	**0.1386**	**0.1489**	**7.2000e-004**	**0.0488**	**5.3000e-004**	**0.0493**	**0.0132**	**5.0000e-004**	**0.0136**	**0.0000**	**67.4184**	**67.4184**	**2.9200e-003**	**0.0000**	**67.4915**

3.4 Architectural Coating - 2020

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Archit. Coating	0.0596					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8400e-003	0.0337	0.0366	6.0000e-005		2.2200e-003	2.2200e-003		2.2200e-003	2.2200e-003	0.0000	5.1065	5.1065	4.0000e-004	0.0000	5.1164
Total	**0.0645**	**0.0337**	**0.0366**	**6.0000e-005**		**2.2200e-003**	**2.2200e-003**		**2.2200e-003**	**2.2200e-003**	**0.0000**	**5.1065**	**5.1065**	**4.0000e-004**	**0.0000**	**5.1164**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1600e-003	8.9000e-004	9.8500e-003	3.0000e-005	2.8500e-003	2.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.8000e-004	0.0000	2.5679	2.5679	7.0000e-005	0.0000	2.5698
Total	**1.1600e-003**	**8.9000e-004**	**9.8500e-003**	**3.0000e-005**	**2.8500e-003**	**2.0000e-005**	**2.8700e-003**	**7.6000e-004**	**2.0000e-005**	**7.8000e-004**	**0.0000**	**2.5679**	**2.5679**	**7.0000e-005**	**0.0000**	**2.5698**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Archit. Coating	0.0596					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	4.8400e-003	0.0337	0.0366	6.0000e-005		2.2200e-003	2.2200e-003		2.2200e-003	2.2200e-003	0.0000	5.1065	5.1065	4.0000e-004	0.0000	5.1164
Total	**0.0645**	**0.0337**	**0.0366**	**6.0000e-005**		**2.2200e-003**	**2.2200e-003**		**2.2200e-003**	**2.2200e-003**	**0.0000**	**5.1065**	**5.1065**	**4.0000e-004**	**0.0000**	**5.1164**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1600e-003	8.9000e-004	9.8500e-003	3.0000e-005	2.8500e-003	2.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.8000e-004	0.0000	2.5679	2.5679	7.0000e-005	0.0000	2.5698
Total	**1.1600e-003**	**8.9000e-004**	**9.8500e-003**	**3.0000e-005**	**2.8500e-003**	**2.0000e-005**	**2.8700e-003**	**7.6000e-004**	**2.0000e-005**	**7.8000e-004**	**0.0000**	**2.5679**	**2.5679**	**7.0000e-005**	**0.0000**	**2.5698**

3.5 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0109	0.1084	0.1226	1.9000e-004		5.7900e-003	5.7900e-003		5.3400e-003	5.3400e-003	0.0000	16.3706	16.3706	5.1400e-003	0.0000	16.4992
Paving	4.3800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0153**	**0.1084**	**0.1226**	**1.9000e-004**		**5.7900e-003**	**5.7900e-003**		**5.3400e-003**	**5.3400e-003**	**0.0000**	**16.3706**	**16.3706**	**5.1400e-003**	**0.0000**	**16.4992**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	6.2000e-004	6.9700e-003	2.0000e-005	2.1900e-003	2.0000e-005	2.2100e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	1.9113	1.9113	5.0000e-005	0.0000	1.9126
Total	**8.3000e-004**	**6.2000e-004**	**6.9700e-003**	**2.0000e-005**	**2.1900e-003**	**2.0000e-005**	**2.2100e-003**	**5.8000e-004**	**2.0000e-005**	**6.0000e-004**	**0.0000**	**1.9113**	**1.9113**	**5.0000e-005**	**0.0000**	**1.9126**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0109	0.1084	0.1226	1.9000e-004		5.7900e-003	5.7900e-003		5.3400e-003	5.3400e-003	0.0000	16.3706	16.3706	5.1400e-003	0.0000	16.4992
Paving	4.3800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0153**	**0.1084**	**0.1226**	**1.9000e-004**		**5.7900e-003**	**5.7900e-003**		**5.3400e-003**	**5.3400e-003**	**0.0000**	**16.3706**	**16.3706**	**5.1400e-003**	**0.0000**	**16.4992**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-004	6.2000e-004	6.9700e-003	2.0000e-005	2.1900e-003	2.0000e-005	2.2100e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	1.9113	1.9113	5.0000e-005	0.0000	1.9126
Total	**8.3000e-004**	**6.2000e-004**	**6.9700e-003**	**2.0000e-005**	**2.1900e-003**	**2.0000e-005**	**2.2100e-003**	**5.8000e-004**	**2.0000e-005**	**6.0000e-004**	**0.0000**	**1.9113**	**1.9113**	**5.0000e-005**	**0.0000**	**1.9126**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles	Trip %	Trip Purpose %

Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.548858	0.043235	0.200706	0.120309	0.016131	0.005851	0.021034	0.033479	0.002070	0.001877	0.004817	0.000707	0.000925
Other Asphalt Surfaces	0.548858	0.043235	0.200706	0.120309	0.016131	0.005851	0.021034	0.033479	0.002070	0.001877	0.004817	0.000707	0.000925

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000

Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0463	2.0000e-005	1.9700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.8200e-003	3.8200e-003	1.0000e-005	0.0000	4.0800e-003
Unmitigated	0.0463	2.0000e-005	1.9700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.8200e-003	3.8200e-003	1.0000e-005	0.0000	4.0800e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.9600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0401					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.8000e-004	2.0000e-005	1.9700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.8200e-003	3.8200e-003	1.0000e-005	0.0000	4.0800e-003
Total	**0.0463**	**2.0000e-005**	**1.9700e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.8200e-003**	**3.8200e-003**	**1.0000e-005**	**0.0000**	**4.0800e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.9600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0401					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.8000e-004	2.0000e-005	1.9700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.8200e-003	3.8200e-003	1.0000e-005	0.0000	4.0800e-003
Total	**0.0463**	**2.0000e-005**	**1.9700e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.8200e-003**	**3.8200e-003**	**1.0000e-005**	**0.0000**	**4.0800e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			

General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000

Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0.14	0	2682	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (750 - 9999 HP)	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

11.0 Vegetation

UVDC Pump Station

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	8.50	1000sqft	0.20	8,500.00	0
Other Asphalt Surfaces	145.50	1000sqft	3.34	145,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	513	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - SCE 2018 Sustainability Report (pg 10)

Land Use - 8,500 sqft of building, 76,000 square feet of site pavement, and 69,500 square feet of roadway pavement.

Construction Phase - Anticipated Construction Schedule

Demolition -

Grading -

Vehicle Trips - Pump station with no daily trips (less than 10 per month).

Energy Use - Operational energy usage from pumps calculated outside caleemod - see appendix.

Solid Waste - Pump Station - no solid waste

Construction Off-road Equipment Mitigation -

Area Mitigation -

Energy Mitigation - 2019 Title 24

Water Mitigation -

Operational Off-Road Equipment -

Stationary Sources - Emergency Generators and Fire Pumps - On-site 2,000 KW Emergency Generator, assumed to run for 50 hours of testing &

Water And Wastewater - pump station - no water use

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	18.00	40.00
tblConstructionPhase	NumDays	230.00	440.00
tblConstructionPhase	NumDays	8.00	40.00
tblConstructionPhase	NumDays	18.00	20.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24NG	15.36	0.00
tblGrading	MaterialImported	0.00	44,940.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	513
tblSolidWaste	SolidWasteGenerationRate	10.54	0.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	2,682.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.14
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	IndoorWaterUseRate	1,965,625.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	5.8144	65.1489	24.7922	0.1382	9.3013	1.3998	10.7011	4.1038	1.2924	5.3962	0.0000	14,590.6428	14,590.6428	1.7580	0.0000	14,634.5939
2021	3.8977	30.9035	32.3463	0.0609	1.1101	1.5494	2.6595	0.2980	1.4467	1.7447	0.0000	5,899.6094	5,899.6094	1.2508	0.0000	5,930.8805
2022	2.0569	18.0458	18.9932	0.0396	0.8866	0.8185	1.7051	0.2387	0.7701	1.0088	0.0000	3,858.8679	3,858.8679	0.6708	0.0000	3,875.6381
Maximum	**5.8144**	**65.1489**	**32.3463**	**0.1382**	**9.3013**	**1.5494**	**10.7011**	**4.1038**	**1.4467**	**5.3962**	**0.0000**	**14,590.6428**	**14,590.6428**	**1.7580**	**0.0000**	**14,634.5939**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	5.8144	65.1489	24.7922	0.1382	5.2269	1.3998	6.6267	2.0379	1.2924	3.3303	0.0000	14,590.6428	14,590.6428	1.7580	0.0000	14,634.5939
2021	3.8977	30.9035	32.3463	0.0609	1.1101	1.5494	2.6595	0.2980	1.4467	1.7447	0.0000	5,899.6094	5,899.6094	1.2508	0.0000	5,930.8805
2022	2.0569	18.0458	18.9932	0.0396	0.8866	0.8185	1.7051	0.2387	0.7701	1.0088	0.0000	3,858.8679	3,858.8679	0.6708	0.0000	3,875.6381
Maximum	**5.8144**	**65.1489**	**32.3463**	**0.1382**	**5.2269**	**1.5494**	**6.6267**	**2.0379**	**1.4467**	**3.3303**	**0.0000**	**14,590.6428**	**14,590.6428**	**1.7580**	**0.0000**	**14,634.5939**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**

Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**36.06**	**0.00**	**27.04**	**44.52**	**0.00**	**25.35**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2540	1.4000e-004	0.0158	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0337	0.0337	9.0000e-005		0.0359
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Stationary	0.6162	2.7556	1.5712	2.9600e-003		0.0906	0.0906		0.0906	0.0906		315.2208	315.2208	0.0442		316.3256
Total	**0.8702**	**2.7557**	**1.5869**	**2.9600e-003**	**0.0000**	**0.0907**	**0.0907**	**0.0000**	**0.0907**	**0.0907**		**315.2545**	**315.2545**	**0.0443**	**0.0000**	**316.3616**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2540	1.4000e-004	0.0158	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0337	0.0337	9.0000e-005		0.0359
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Stationary	0.6162	2.7556	1.5712	2.9600e-003		0.0906	0.0906		0.0906	0.0906		315.2208	315.2208	0.0442		316.3256

Total	0.8702	2.7557	1.5869	2.9600e-003	0.0000	0.0907	0.0907	0.0000	0.0907	0.0907		315.2545	315.2545	0.0443	0.0000	316.3616

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	8/5/2020	9/29/2020	5	40	
2	Building Construction	Building Construction	9/30/2020	6/7/2022	5	440	
3	Architectural Coating	Architectural Coating	11/1/2020	12/25/2020	5	40	
4	Paving	Paving	3/1/2021	3/26/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 20

Acres of Paving: 3.34

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 12,750; Non-Residential Outdoor: 4,250; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37

Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	6	15.00	0.00	5,618.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	65.00	25.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6794	0.0000	6.6794	3.3867	0.0000	3.3867			0.0000			0.0000

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Off-Road	2.4288	26.3859	16.0530	0.0297		1.2734	1.2734		1.1716	1.1716		2,872.4851	2,872.4851	0.9290		2,895.7106
Total	**2.4288**	**26.3859**	**16.0530**	**0.0297**	**6.6794**	**1.2734**	**7.9528**	**3.3867**	**1.1716**	**4.5583**		**2,872.4851**	**2,872.4851**	**0.9290**		**2,895.7106**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.0974	38.7131	8.1871	0.1069	2.4542	0.1251	2.5794	0.6726	0.1197	0.7923		11,557.6030	11,557.6030	0.8244		11,578.2135
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0740	0.0500	0.5521	1.6100e-003	0.1677	1.2700e-003	0.1689	0.0445	1.1700e-003	0.0456		160.5547	160.5547	4.6000e-003		160.6699
Total	**1.1714**	**38.7630**	**8.7392**	**0.1085**	**2.6219**	**0.1264**	**2.7483**	**0.7171**	**0.1209**	**0.8379**		**11,718.1577**	**11,718.1577**	**0.8290**		**11,738.8833**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.6050	0.0000	2.6050	1.3208	0.0000	1.3208			0.0000			0.0000
Off-Road	2.4288	26.3859	16.0530	0.0297		1.2734	1.2734		1.1716	1.1716	0.0000	2,872.4851	2,872.4851	0.9290		2,895.7106
Total	**2.4288**	**26.3859**	**16.0530**	**0.0297**	**2.6050**	**1.2734**	**3.8784**	**1.3208**	**1.1716**	**2.4924**	**0.0000**	**2,872.4851**	**2,872.4851**	**0.9290**		**2,895.7106**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.0974	38.7131	8.1871	0.1069	2.4542	0.1251	2.5794	0.6726	0.1197	0.7923		11,557.6030	11,557.6030	0.8244		11,578.2135
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0740	0.0500	0.5521	1.6100e-003	0.1677	1.2700e-003	0.1689	0.0445	1.1700e-003	0.0456		160.5547	160.5547	4.6000e-003		160.6699
Total	**1.1714**	**38.7630**	**8.7392**	**0.1085**	**2.6219**	**0.1264**	**2.7483**	**0.7171**	**0.1209**	**0.8379**		**11,718.1577**	**11,718.1577**	**0.8290**		**11,738.8833**

3.3 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0860	2.6207	0.6965	6.2500e-003	0.1600	0.0132	0.1732	0.0461	0.0126	0.0587		666.2820	666.2820	0.0463		667.4387
Worker	0.3208	0.2165	2.3926	6.9800e-003	0.7266	5.5100e-003	0.7321	0.1927	5.0800e-003	0.1978		695.7372	695.7372	0.0200		696.2360
Total	**0.4068**	**2.8371**	**3.0890**	**0.0132**	**0.8866**	**0.0187**	**0.9053**	**0.2387**	**0.0177**	**0.2564**		**1,362.0192**	**1,362.0192**	**0.0662**		**1,363.6747**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0860	2.6207	0.6965	6.2500e-003	0.1600	0.0132	0.1732	0.0461	0.0126	0.0587		666.2820	666.2820	0.0463		667.4387
Worker	0.3208	0.2165	2.3926	6.9800e-003	0.7266	5.5100e-003	0.7321	0.1927	5.0800e-003	0.1978		695.7372	695.7372	0.0200		696.2360
Total	**0.4068**	**2.8371**	**3.0890**	**0.0132**	**0.8866**	**0.0187**	**0.9053**	**0.2387**	**0.0177**	**0.2564**		**1,362.0192**	**1,362.0192**	**0.0662**		**1,363.6747**

3.3 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0732	2.3768	0.6332	6.2000e-003	0.1600	4.9600e-003	0.1650	0.0461	4.7400e-003	0.0508		661.3755	661.3755	0.0443		662.4818
Worker	0.2998	0.1948	2.2005	6.7500e-003	0.7266	5.3500e-003	0.7319	0.1927	4.9300e-003	0.1976		673.1841	673.1841	0.0180		673.6352
Total	**0.3730**	**2.5716**	**2.8337**	**0.0130**	**0.8866**	**0.0103**	**0.8969**	**0.2387**	**9.6700e-003**	**0.2484**		**1,334.5596**	**1,334.5596**	**0.0623**		**1,336.1169**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0732	2.3768	0.6332	6.2000e-003	0.1600	4.9600e-003	0.1650	0.0461	4.7400e-003	0.0508		661.3755	661.3755	0.0443		662.4818
Worker	0.2998	0.1948	2.2005	6.7500e-003	0.7266	5.3500e-003	0.7319	0.1927	4.9300e-003	0.1976		673.1841	673.1841	0.0180		673.6352
Total	**0.3730**	**2.5716**	**2.8337**	**0.0130**	**0.8866**	**0.0103**	**0.8969**	**0.2387**	**9.6700e-003**	**0.2484**		**1,334.5596**	**1,334.5596**	**0.0623**		**1,336.1169**

3.3 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322

Total	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0687	2.2543	0.5987	6.1400e-003	0.1600	4.3000e-003	0.1643	0.0461	4.1100e-003	0.0502		655.4856	655.4856	0.0426		656.5498
Worker	0.2819	0.1759	2.0311	6.5100e-003	0.7266	5.2000e-003	0.7317	0.1927	4.7800e-003	0.1975		649.0487	649.0487	0.0163		649.4561
Total	**0.3506**	**2.4302**	**2.6298**	**0.0127**	**0.8866**	**9.5000e-003**	**0.8960**	**0.2387**	**8.8900e-003**	**0.2476**		**1,304.5343**	**1,304.5343**	**0.0589**		**1,306.0059**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0687	2.2543	0.5987	6.1400e-003	0.1600	4.3000e-003	0.1643	0.0461	4.1100e-003	0.0502		655.4856	655.4856	0.0426		656.5498
Worker	0.2819	0.1759	2.0311	6.5100e-003	0.7266	5.2000e-003	0.7317	0.1927	4.7800e-003	0.1975		649.0487	649.0487	0.0163		649.4561
Total	**0.3506**	**2.4302**	**2.6298**	**0.0127**	**0.8866**	**9.5000e-003**	**0.8960**	**0.2387**	**8.8900e-003**	**0.2476**		**1,304.5343**	**1,304.5343**	**0.0589**		**1,306.0059**

3.4 Architectural Coating - 2020

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Archit. Coating	2.9815					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**3.2236**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0642	0.0433	0.4785	1.4000e-003	0.1453	1.1000e-003	0.1464	0.0385	1.0200e-003	0.0396		139.1474	139.1474	3.9900e-003		139.2472
Total	**0.0642**	**0.0433**	**0.4785**	**1.4000e-003**	**0.1453**	**1.1000e-003**	**0.1464**	**0.0385**	**1.0200e-003**	**0.0396**		**139.1474**	**139.1474**	**3.9900e-003**		**139.2472**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.9815					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**3.2236**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0642	0.0433	0.4785	1.4000e-003	0.1453	1.1000e-003	0.1464	0.0385	1.0200e-003	0.0396		139.1474	139.1474	3.9900e-003		139.2472
Total	**0.0642**	**0.0433**	**0.4785**	**1.4000e-003**	**0.1453**	**1.1000e-003**	**0.1464**	**0.0385**	**1.0200e-003**	**0.0396**		**139.1474**	**139.1474**	**3.9900e-003**		**139.2472**

3.5 Paving - 2021

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Off-Road	1.0940	10.8399	12.2603	0.0189		0.5788	0.5788		0.5342	0.5342		1,804.5523	1,804.5523	0.5670		1,818.7270
Paving	0.4375					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5315**	**10.8399**	**12.2603**	**0.0189**		**0.5788**	**0.5788**		**0.5342**	**0.5342**		**1,804.5523**	**1,804.5523**	**0.5670**		**1,818.7270**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0922	0.0599	0.6771	2.0800e-003	0.2236	1.6500e-003	0.2252	0.0593	1.5200e-003	0.0608		207.1336	207.1336	5.5500e-003		207.2724
Total	**0.0922**	**0.0599**	**0.6771**	**2.0800e-003**	**0.2236**	**1.6500e-003**	**0.2252**	**0.0593**	**1.5200e-003**	**0.0608**		**207.1336**	**207.1336**	**5.5500e-003**		**207.2724**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0940	10.8399	12.2603	0.0189		0.5788	0.5788		0.5342	0.5342	0.0000	1,804.5523	1,804.5523	0.5670		1,818.7270
Paving	0.4375					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5315**	**10.8399**	**12.2603**	**0.0189**		**0.5788**	**0.5788**		**0.5342**	**0.5342**	**0.0000**	**1,804.5523**	**1,804.5523**	**0.5670**		**1,818.7270**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0922	0.0599	0.6771	2.0800e-003	0.2236	1.6500e-003	0.2252	0.0593	1.5200e-003	0.0608		207.1336	207.1336	5.5500e-003		207.2724
Total	**0.0922**	**0.0599**	**0.6771**	**2.0800e-003**	**0.2236**	**1.6500e-003**	**0.2252**	**0.0593**	**1.5200e-003**	**0.0608**		**207.1336**	**207.1336**	**5.5500e-003**		**207.2724**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.548858	0.043235	0.200706	0.120309	0.016131	0.005851	0.021034	0.033479	0.002070	0.001877	0.004817	0.000707	0.000925
Other Asphalt Surfaces	0.548858	0.043235	0.200706	0.120309	0.016131	0.005851	0.021034	0.033479	0.002070	0.001877	0.004817	0.000707	0.000925

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2540	1.4000e-004	0.0158	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0337	0.0337	9.0000e-005		0.0359
Unmitigated	0.2540	1.4000e-004	0.0158	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0337	0.0337	9.0000e-005		0.0359

6.2 Area by SubCategory

<u>Unmitigated</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0327					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2198					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4700e-003	1.4000e-004	0.0158	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0337	0.0337	9.0000e-005		0.0359

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Total	**0.2540**	**1.4000e-004**	**0.0158**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**		**0.0337**	**0.0337**	**9.0000e-005**		**0.0359**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0327					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2198					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4700e-003	1.4000e-004	0.0158	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0337	0.0337	9.0000e-005		0.0359
Total	**0.2540**	**1.4000e-004**	**0.0158**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**		**0.0337**	**0.0337**	**9.0000e-005**		**0.0359**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Emergency Generator	1	0.14	0	2682	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Emergency Generator - Diesel (750 - 9999 HP)	0.6162	2.7556	1.5712	2.9600e-003		0.0906	0.0906		0.0906	0.0906		315.2208	315.2208	0.0442		316.3256
Total	**0.6162**	**2.7556**	**1.5712**	**2.9600e-003**		**0.0906**	**0.0906**		**0.0906**	**0.0906**		**315.2208**	**315.2208**	**0.0442**		**316.3256**

11.0 Vegetation

UVDC Pump Station

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	8.50	1000sqft	0.20	8,500.00	0
Other Asphalt Surfaces	145.50	1000sqft	3.34	145,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	513	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - SCE 2018 Sustainability Report (pg 10)

Land Use - 8,500 sqft of building, 76,000 square feet of site pavement, and 69,500 square feet of roadway pavement.

Construction Phase - Anticipated Construction Schedule

Demolition -

Grading -

Vehicle Trips - Pump station with no daily trips (less than 10 per month).

Energy Use - Operational energy usage from pumps calculated outside caleemod - see appendix.

Solid Waste - Pump Station - no solid waste

Construction Off-road Equipment Mitigation -

Area Mitigation -

Energy Mitigation - 2019 Title 24

Water Mitigation -

Operational Off-Road Equipment -

Stationary Sources - Emergency Generators and Fire Pumps - On-site 2,000 KW Emergency Generator, assumed to run for 50 hours of testing & maintenance

Water And Wastewater - pump station - no water use

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	18.00	40.00
tblConstructionPhase	NumDays	230.00	440.00
tblConstructionPhase	NumDays	8.00	40.00
tblConstructionPhase	NumDays	18.00	20.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24NG	15.36	0.00
tblGrading	MaterialImported	0.00	44,940.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	513
tblSolidWaste	SolidWasteGenerationRate	10.54	0.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	2,682.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	0.14
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	IndoorWaterUseRate	1,965,625.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	5.7785	64.6539	24.2715	0.1403	9.3013	1.3979	10.6992	4.1038	1.2906	5.3944	0.0000	14,818.4815	14,818.4815	1.7241	0.0000	14,861.5831
2021	3.8608	30.8891	32.6035	0.0617	1.1101	1.5492	2.6594	0.2980	1.4466	1.7446	0.0000	5,980.3052	5,980.3052	1.2495	0.0000	6,011.5431
2022	2.0289	18.0397	19.1624	0.0402	0.8866	0.8184	1.7049	0.2387	0.7699	1.0087	0.0000	3,923.5020	3,923.5020	0.6691	0.0000	3,940.2295
Maximum	**5.7785**	**64.6539**	**32.6035**	**0.1403**	**9.3013**	**1.5492**	**10.6992**	**4.1038**	**1.4466**	**5.3944**	**0.0000**	**14,818.4815**	**14,818.4815**	**1.7241**	**0.0000**	**14,861.5831**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	5.7785	64.6539	24.2715	0.1403	5.2269	1.3979	6.6248	2.0379	1.2906	3.3285	0.0000	14,818.4815	14,818.4815	1.7241	0.0000	14,861.5831
2021	3.8608	30.8891	32.6035	0.0617	1.1101	1.5492	2.6594	0.2980	1.4466	1.7446	0.0000	5,980.3052	5,980.3052	1.2495	0.0000	6,011.5431
2022	2.0289	18.0397	19.1624	0.0402	0.8866	0.8184	1.7049	0.2387	0.7699	1.0087	0.0000	3,923.5020	3,923.5020	0.6691	0.0000	3,940.2295
Maximum	**5.7785**	**64.6539**	**32.6035**	**0.1403**	**5.2269**	**1.5492**	**6.6248**	**2.0379**	**1.4466**	**3.3285**	**0.0000**	**14,818.4815**	**14,818.4815**	**1.7241**	**0.0000**	**14,861.5831**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**

Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**36.06**	**0.00**	**27.05**	**44.52**	**0.00**	**25.36**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2540	1.4000e-004	0.0158	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0337	0.0337	9.0000e-005		0.0359
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Stationary	0.6162	2.7556	1.5712	2.9600e-003		0.0906	0.0906		0.0906	0.0906		315.2208	315.2208	0.0442		316.3256
Total	**0.8702**	**2.7557**	**1.5869**	**2.9600e-003**	**0.0000**	**0.0907**	**0.0907**	**0.0000**	**0.0907**	**0.0907**		**315.2545**	**315.2545**	**0.0443**	**0.0000**	**316.3616**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2540	1.4000e-004	0.0158	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0337	0.0337	9.0000e-005		0.0359
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Stationary	0.6162	2.7556	1.5712	2.9600e-003		0.0906	0.0906		0.0906	0.0906		315.2208	315.2208	0.0442		316.3256

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Total	0.8702	2.7557	1.5869	2.9600e-003	0.0000	0.0907	0.0907	0.0000	0.0907	0.0907		315.2545	315.2545	0.0443	0.0000	316.3616

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	8/5/2020	9/29/2020	5	40	
2	Building Construction	Building Construction	9/30/2020	6/7/2022	5	440	
3	Architectural Coating	Architectural Coating	11/1/2020	12/25/2020	5	40	
4	Paving	Paving	3/1/2021	3/26/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 20

Acres of Paving: 3.34

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 12,750; Non-Residential Outdoor: 4,250; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37

Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	6	15.00	0.00	5,618.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	65.00	25.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6794	0.0000	6.6794	3.3867	0.0000	3.3867			0.0000			0.0000

Off-Road	2.4288	26.3859	16.0530	0.0297		1.2734	1.2734		1.1716	1.1716		2,872.4851	2,872.4851	0.9290		2,895.7106
Total	**2.4288**	**26.3859**	**16.0530**	**0.0297**	**6.6794**	**1.2734**	**7.9528**	**3.3867**	**1.1716**	**4.5583**		**2,872.4851**	**2,872.4851**	**0.9290**		**2,895.7106**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.0667	38.2224	7.6053	0.1089	2.4542	0.1232	2.5775	0.6726	0.1179	0.7905		11,774.3337	11,774.3337	0.7901		11,794.0865
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0679	0.0456	0.6132	1.7200e-003	0.1677	1.2700e-003	0.1689	0.0445	1.1700e-003	0.0456		171.6626	171.6626	4.9400e-003		171.7860
Total	**1.1346**	**38.2680**	**8.2185**	**0.1106**	**2.6219**	**0.1245**	**2.7464**	**0.7171**	**0.1191**	**0.8361**		**11,945.9964**	**11,945.9964**	**0.7951**		**11,965.8725**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.6050	0.0000	2.6050	1.3208	0.0000	1.3208			0.0000			0.0000
Off-Road	2.4288	26.3859	16.0530	0.0297		1.2734	1.2734		1.1716	1.1716	0.0000	2,872.4851	2,872.4851	0.9290		2,895.7106
Total	**2.4288**	**26.3859**	**16.0530**	**0.0297**	**2.6050**	**1.2734**	**3.8784**	**1.3208**	**1.1716**	**2.4924**	**0.0000**	**2,872.4851**	**2,872.4851**	**0.9290**		**2,895.7106**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.0667	38.2224	7.6053	0.1089	2.4542	0.1232	2.5775	0.6726	0.1179	0.7905		11,774.3337	11,774.3337	0.7901		11,794.0865
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0679	0.0456	0.6132	1.7200e-003	0.1677	1.2700e-003	0.1689	0.0445	1.1700e-003	0.0456		171.6626	171.6626	4.9400e-003		171.7860
Total	**1.1346**	**38.2680**	**8.2185**	**0.1106**	**2.6219**	**0.1245**	**2.7464**	**0.7171**	**0.1191**	**0.8361**		**11,945.9964**	**11,945.9964**	**0.7951**		**11,965.8725**

3.3 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0821	2.6234	0.6247	6.4300e-003	0.1600	0.0130	0.1730	0.0461	0.0124	0.0585		686.1211	686.1211	0.0431		687.1981
Worker	0.2941	0.1977	2.6573	7.4700e-003	0.7266	5.5100e-003	0.7321	0.1927	5.0800e-003	0.1978		743.8714	743.8714	0.0214		744.4060
Total	**0.3762**	**2.8211**	**3.2820**	**0.0139**	**0.8866**	**0.0185**	**0.9051**	**0.2387**	**0.0175**	**0.2563**		**1,429.9925**	**1,429.9925**	**0.0645**		**1,431.6041**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0821	2.6234	0.6247	6.4300e-003	0.1600	0.0130	0.1730	0.0461	0.0124	0.0585		686.1211	686.1211	0.0431		687.1981
Worker	0.2941	0.1977	2.6573	7.4700e-003	0.7266	5.5100e-003	0.7321	0.1927	5.0800e-003	0.1978		743.8714	743.8714	0.0214		744.4060
Total	**0.3762**	**2.8211**	**3.2820**	**0.0139**	**0.8866**	**0.0185**	**0.9051**	**0.2387**	**0.0175**	**0.2563**		**1,429.9925**	**1,429.9925**	**0.0645**		**1,431.6041**

3.3 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0696	2.3844	0.5658	6.3800e-003	0.1600	4.8000e-003	0.1648	0.0461	4.5900e-003	0.0507		681.0962	681.0962	0.0412		682.1262
Worker	0.2744	0.1780	2.4487	7.2200e-003	0.7266	5.3500e-003	0.7319	0.1927	4.9300e-003	0.1976		719.8122	719.8122	0.0194		720.2961
Total	**0.3439**	**2.5623**	**3.0145**	**0.0136**	**0.8866**	**0.0102**	**0.8967**	**0.2387**	**9.5200e-003**	**0.2483**		**1,400.9083**	**1,400.9083**	**0.0606**		**1,402.4222**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0696	2.3844	0.5658	6.3800e-003	0.1600	4.8000e-003	0.1648	0.0461	4.5900e-003	0.0507		681.0962	681.0962	0.0412		682.1262
Worker	0.2744	0.1780	2.4487	7.2200e-003	0.7266	5.3500e-003	0.7319	0.1927	4.9300e-003	0.1976		719.8122	719.8122	0.0194		720.2961
Total	**0.3439**	**2.5623**	**3.0145**	**0.0136**	**0.8866**	**0.0102**	**0.8967**	**0.2387**	**9.5200e-003**	**0.2483**		**1,400.9083**	**1,400.9083**	**0.0606**		**1,402.4222**

3.3 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322

Total	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0652	2.2633	0.5347	6.3200e-003	0.1600	4.1600e-003	0.1642	0.0461	3.9800e-003	0.0500		675.1478	675.1478	0.0397		676.1394
Worker	0.2574	0.1607	2.2643	6.9600e-003	0.7266	5.2000e-003	0.7317	0.1927	4.7800e-003	0.1975		694.0206	694.0206	0.0175		694.4579
Total	**0.3226**	**2.4241**	**2.7990**	**0.0133**	**0.8866**	**9.3600e-003**	**0.8959**	**0.2387**	**8.7600e-003**	**0.2475**		**1,369.1684**	**1,369.1684**	**0.0572**		**1,370.5973**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0652	2.2633	0.5347	6.3200e-003	0.1600	4.1600e-003	0.1642	0.0461	3.9800e-003	0.0500		675.1478	675.1478	0.0397		676.1394
Worker	0.2574	0.1607	2.2643	6.9600e-003	0.7266	5.2000e-003	0.7317	0.1927	4.7800e-003	0.1975		694.0206	694.0206	0.0175		694.4579
Total	**0.3226**	**2.4241**	**2.7990**	**0.0133**	**0.8866**	**9.3600e-003**	**0.8959**	**0.2387**	**8.7600e-003**	**0.2475**		**1,369.1684**	**1,369.1684**	**0.0572**		**1,370.5973**

3.4 Architectural Coating - 2020

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Archit. Coating	2.9815					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**3.2236**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0588	0.0395	0.5315	1.4900e-003	0.1453	1.1000e-003	0.1464	0.0385	1.0200e-003	0.0396		148.7743	148.7743	4.2800e-003		148.8812
Total	**0.0588**	**0.0395**	**0.5315**	**1.4900e-003**	**0.1453**	**1.1000e-003**	**0.1464**	**0.0385**	**1.0200e-003**	**0.0396**		**148.7743**	**148.7743**	**4.2800e-003**		**148.8812**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	2.9815					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**3.2236**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0588	0.0395	0.5315	1.4900e-003	0.1453	1.1000e-003	0.1464	0.0385	1.0200e-003	0.0396		148.7743	148.7743	4.2800e-003		148.8812
Total	**0.0588**	**0.0395**	**0.5315**	**1.4900e-003**	**0.1453**	**1.1000e-003**	**0.1464**	**0.0385**	**1.0200e-003**	**0.0396**		**148.7743**	**148.7743**	**4.2800e-003**		**148.8812**

3.5 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0940	10.8399	12.2603	0.0189		0.5788	0.5788		0.5342	0.5342		1,804.5523	1,804.5523	0.5670		1,818.7270
Paving	0.4375					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5315**	**10.8399**	**12.2603**	**0.0189**		**0.5788**	**0.5788**		**0.5342**	**0.5342**		**1,804.5523**	**1,804.5523**	**0.5670**		**1,818.7270**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0844	0.0548	0.7535	2.2200e-003	0.2236	1.6500e-003	0.2252	0.0593	1.5200e-003	0.0608		221.4807	221.4807	5.9600e-003		221.6296
Total	**0.0844**	**0.0548**	**0.7535**	**2.2200e-003**	**0.2236**	**1.6500e-003**	**0.2252**	**0.0593**	**1.5200e-003**	**0.0608**		**221.4807**	**221.4807**	**5.9600e-003**		**221.6296**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0940	10.8399	12.2603	0.0189		0.5788	0.5788		0.5342	0.5342	0.0000	1,804.5523	1,804.5523	0.5670		1,818.7270
Paving	0.4375					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5315**	**10.8399**	**12.2603**	**0.0189**		**0.5788**	**0.5788**		**0.5342**	**0.5342**	**0.0000**	**1,804.5523**	**1,804.5523**	**0.5670**		**1,818.7270**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0844	0.0548	0.7535	2.2200e-003	0.2236	1.6500e-003	0.2252	0.0593	1.5200e-003	0.0608		221.4807	221.4807	5.9600e-003		221.6296
Total	**0.0844**	**0.0548**	**0.7535**	**2.2200e-003**	**0.2236**	**1.6500e-003**	**0.2252**	**0.0593**	**1.5200e-003**	**0.0608**		**221.4807**	**221.4807**	**5.9600e-003**		**221.6296**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.548858	0.043235	0.200706	0.120309	0.016131	0.005851	0.021034	0.033479	0.002070	0.001877	0.004817	0.000707	0.000925
Other Asphalt Surfaces	0.548858	0.043235	0.200706	0.120309	0.016131	0.005851	0.021034	0.033479	0.002070	0.001877	0.004817	0.000707	0.000925

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2540	1.4000e-004	0.0158	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0337	0.0337	9.0000e-005		0.0359
Unmitigated	0.2540	1.4000e-004	0.0158	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0337	0.0337	9.0000e-005		0.0359

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0327					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2198					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4700e-003	1.4000e-004	0.0158	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0337	0.0337	9.0000e-005		0.0359

Total	0.2540	1.4000e-004	0.0158	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0337	0.0337	9.0000e-005		0.0359

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0327					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2198					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4700e-003	1.4000e-004	0.0158	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0337	0.0337	9.0000e-005		0.0359
Total	**0.2540**	**1.4000e-004**	**0.0158**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**		**0.0337**	**0.0337**	**9.0000e-005**		**0.0359**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Emergency Generator	1	0.14	0	2682	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Emergency Generator - Diesel (750 - 9999 HP)	0.6162	2.7556	1.5712	2.9600e-003		0.0906	0.0906		0.0906	0.0906		315.2208	315.2208	0.0442		316.3256
Total	**0.6162**	**2.7556**	**1.5712**	**2.9600e-003**		**0.0906**	**0.0906**		**0.0906**	**0.0906**		**315.2208**	**315.2208**	**0.0442**		**316.3256**

11.0 Vegetation

Energy Calculations - UVDC Pump Station

Pump Energy Usage

1600	HP[1]			
1 HP =	0.75	kw		
10,451,730	kwh/yr[1]	=	10,452	MWh/yr[1]

Solar Power Generation

3,519,598	kwh/yr[2]	=	3,520	MWh/yr

Total Potential Project Energy Usage	=	6,932	MWh/yr
Riverside County Energy Usage	=	15,980,727.00	MWH/yr
Project Energy Increase	=	0.0434%	%

Emissions Factors		**Emissions**		
	lb/MWh[2]	**lbs/yr**	**MT/yr**	**$MTCO_2eq$/yr**
CO_2	513	3,556,183.61	1,613.06	1,613.06
CH_4	0.029	201.03	0.09	1.91
N_2O	0.00617	42.77	0.02	6.01
				1,620.99

Notes:
1. The project would include four 1305 PZ Pumps (250 hp each) and three 1380 PZ Pump (200 hp each).
2. Michael Baker International, *UVDC Regional Pump Station Prelimiary Design Report, Table 4.5 : Solar Power Summary,* April 2019
2. Assumes continuous pump operation 24 hours per day 365 days per year.
3. Southern California Edison, 2018 Sustainability Report, Page 10, May 2019.

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Fuel Consumption Rate (gallons per hour)	Duration (total hours/day)	# days	Total Fuel Consumption (gallons)
Grading	Excavators	1	8.00	158	0.38	2.4016	8	40	768.512
Grading	Graders	1	8.00	187	0.41	3.0668	8	40	981.376
Grading	Rubber Tired Dozers	1	8.00	247	0.40	3.952	8	40	1264.64
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37	1.4356	24	40	1378.176
Building Construction	Cranes	1	7.00	231	0.29	2.6796	7	440	8253.168
Building Construction	Forklifts	3	8.00	89	0.20	0.712	24	440	7518.72
Building Construction	Generator Sets	1	8.00	84	0.74	2.4864	8	440	8752.128
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37	1.4356	21	440	13264.944
Building Construction	Welders	1	8.00	46	0.45	0.828	8	440	2914.56
Architectural Coating	Air Compressors	1	6.00	78	0.48	1.4976	6	40	359.424
Paving	Cement and Mortar Mixers	2	6.00	9	0.56	0.2016	12	20	48.384
Paving	Pavers	1	8.00	130	0.42	2.184	8	20	349.44
Paving	Paving Equipment	2	6.00	132	0.36	1.9008	12	20	456.192
Paving	Rollers	2	6.00	80	0.38	1.216	12	20	291.84
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37	1.4356	8	20	229.696
								Total:	**66,565**

Notes:

Fuel Consumption Rate = Horsepower x Load Factor x Fuel Consumption Factor

Where:

Fuel Consumption Factor for a diesel engine is 0.04 gallons per horsepower per hour (gal/hp/hr) and a gasoline engine is 0.06 gal/hp/hr.

Source: Refer to Appendix B for CalEEMod assumptions used in this analysis.

Worker Trips						
Phase	**Phase Length (# days)**	**# Worker Trips**	**Worker Trip Length**	**Total VMT**	**Fuel Consumption Factor (Miles/Gallon/Day)**	**Total Fuel Consumption**
Grading	40	15	14.7	220.5	**24.90284233**	8.854410959
Building Construction	440	65	14.7	955.5		38.36911416
Architectural Coating	40	13	14.7	191.1		7.673822831
Paving	20	20	14.7	294		11.80588128
						66.70322923

VENDOR TRIPS						
Phase	**Phase Length (# days)**	**# Vendor Trips**	**Vendor Trip Length**	**Total VMT**	**Fuel Consumption Factor (Miles/Gallon/Day)**	**Total Fuel Consumption**
Grading	40	0	6.9	0		0
Building Construction	440	25	6.9	172.5	**8.343886151**	20.67381995
Architectural Coating	40	0	6.9	0		0
Paving	20	0	6.9	0		0
						20.67381995

HAULING TRIPS						
Phase	**Phase Length (# days)**	**# Hauling Trips**	**Hauling Trip Length**	**Total VMT**	**Fuel Consumption Factor (Miles/Gallon/Day)**	**Total Fuel Consumption**
Grading	40	5618	20	112360		19645.99511
Building Construction	440	0	0.5	0	**5.719231801**	0
Architectural Coating	40	0	20	0		0
Paving	20	0	20	0		0
						19645.99511
TOTAL OFF-SITE MOBILE GALLONS CONSUMED DURING CONSTRUCTION						**19,733.37**

Appendix B
Biological Resources Assessment

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December 12, 2019

Phillip Dauben, PE
Rancho California Water District
42135 Winchester Road
Temecula, CA 92589-9017

Subject: **Biological Resources Assessment for the Upper Valle De Los Caballos Regional Pump Station Project –Riverside County, California**

Dear Mr. Dauben:

Michael Baker International (Michael Baker) has prepared this biological resources assessment for the Upper Valle De Los Caballos (UVDC) Regional Pump Station Project (project or survey area) in accordance with Riverside County's *Biological Policies and Procedures* (County of Riverside 2009) and applicable Federal, State, and local laws and regulations. This report describes existing biological conditions based on the 2017, 2018, and 2019 surveys performed by Michael Baker biologists.

Project Location

The survey area is located in southwestern Riverside County, California (Figure 1, *Regional Vicinity*), just east of the community of Temecula within the Rancho California Water District's (RCWD) service boundaries. The survey area is depicted in Township 8 South, Range 1 West, on the United States Geological Survey's (USGS) *Bachelor Mountain, California* 7.5-minute topographic quadrangle map (Figure 2, *Project Vicinity*). The site is comprised of 5 parcels owned by the RCWD: Assessor's Parcel Number's (APN) 927-150-038, -018, -037, -039, -048, and -049; and 927-320-045. Specifically, the survey area includes De Portola Road, Conquistador Place, and property to the south of De Portola Road, east of Pauba Road and north of Winners Circle (Figure 3, *Survey Area*). Direct access to the site is from both De Portola and Pauba Roads, north of State Route 79 (SR-79).

Project Description

The UVDC Regional Pump Station Project (RCWD Project No. D1903) will construct additional potable water transmission facilities and provide financial and operational benefits to RCWD. New facilities will augment capacity in the 1305 and 1380 Pressure Zones and will include:

- Pump station building

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- Imported fill material to raise the site pad above existing ground elevation by approximately six feet at the pump station site and 3 feet on the access roads to the pump station.
- A chlorine contact tank for disinfection of groundwater.
- An on-site sodium hypochlorite generation and feed system, the primary disinfectant.
- Extension of the existing ammonia feed facility at the Los Caballos Pump Station and add liquid ammonium sulfate facilities at the new pump station.
- Three 1305 PZ vertical turbine pumps with provisions to add a fourth in the future and three 1380 PZ pumps.
- A wet well and a wet well transition pipeline to direct flow from the chlorine contact tank to the pump station.
- A diesel fuel driven engine/generator set to provide emergency power to new facilities.
- Discharge piping outside of the public right-of-way to route 1305 and 1380 PZ potable water flow to De Portola Road, route raw water from existing wells along Pauba Road to the new facilities, and route raw water from the existing UVDC wells to the new facilities.
- Two new wells and piping from those wells.

Environmental Setting

The survey area is located within the Santa Margarita Watershed and the coastal plain of the Peninsular Ranges of Southern California; a geologic/ geomorphic province extending from Imperial Valley on the east to the Pacific Ocean on the west and from the Transverse Ranges on the north into Baja California on the south and is underlain with primarily alluvium and granitic bedrock. Alluvium generally consists of medium dense, sand, silty sand, clayey sand, and firm sandy clay with gravel and occasional cobbles. The site soils map is based on the United States Department of Agriculture, Natural Resources Conservation Service (USDA) Web Soil Survey (USDA 2019) (Figure 5, *USDA Soils*). Based on the *Custom Soil Resource Report for Western Riverside Area, California* (USDA 2019), included in Attachment C, soils on-site consist of:

- Gorgonio loamy sand (channeled, 2-15% slopes) in the east-central portion
- Hanford loamy fine sand (0-8% slopes) in the north portion and fine sandy loam (0-8% slopes) in the southwest portion
- Hanford coarse sandy loam (0-2% slopes) in the north and west portions
- Hanford coarse sandy loam (2-8% slopes) in the north portion
- Tujunga loamy sand (channeled, 0-8% slopes) in the north and southwest portions
- Riverwash in the central and south portions

Elevations within the survey area range from approximately 1,248 feet to 1,264 feet above mean sea level. The affected lands support generally low-sloping topography that drains in a southwesterly direction. Historically, the site was used for agriculture and equestrian uses. Abandoned structures, corrals and equestrian pens, and aboveground tanks and wells occur in the north half of the site. Surrounding land uses include Keyways Vineyard north of De Portola Road to the northwest; Los Caballos Stables and single-family residential use to the northeast; RCWD water percolation Ponds U-5 and U-2 to the east; naturally-vegetated, undeveloped lands to the south; and the Rancho Pacifica Equestrian Center to the northwest.

The majority of the undeveloped portions of the site appear to have been actively maintained as agricultural activities in the recent past, evidenced by disked areas covered with varying densities of ruderal vegetation (e.g., disturbed non-native plants), and sporadic ornamental trees along some of the fence lines and perimeters. Both undisturbed and disturbed natural vegetation occurs primarily in the southern portion of the site. Existing land uses and features surrounding the survey area consist of the Keyways Vineyard north of De Portola Road, the Los Caballos Stable, the Rancho Pacifica Equestrian Center, multiple single-family residences, the RCWD water percolation Ponds U-5 and U-2, undeveloped lands, and naturally-vegetated lands.

Survey Methods

Prior to conducting the field surveys, literature reviews and records searches were conducted for special-status biological resources potentially occurring on or within the vicinity of the survey area. Previous special-status plant and wildlife species occurrence records within the USGS *Bachelor Mountain, Sage, Pechanga,* and *Vail Lake, California* 7.5-minute quadrangles were determined through a query of the California Natural Diversity Database (CNDDB), the California Native Plant Society (CNPS) Online Inventory, the Calflora Database, species listings provided by the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS), and those species covered under the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) and associated technical documents.

In addition to the databases referenced above, Michael Baker reviewed all available reports, survey results, and literature detailing the biological resources previously observed on or within the vicinity of the survey area to understand existing site conditions, previous species observations, and extent of any disturbances that have occurred in the survey area that would otherwise limit the distribution of special-status biological resources. Standard field guides and texts were reviewed for specific habitat requirements of special-status and non-special-status biological resources. On-site and adjoining soils were researched prior to conducting the habitat assessment using the *Custom Soil Resources Report for Western Riverside Area, California* (USDA 2019). In addition, a review of the local geological conditions and historical aerial photographs was conducted to assess the ecological changes and disturbances that may have occurred within the survey area.

On November 14-15, 2017, between the hours of 8:00 a.m. and 3:00 p.m., Michael Baker biologist Mike Gonzales conducted a biological resources site reconnaissance survey. Weather conditions collected using a Kestrel handheld air temperature and wind speed recording device included: 100 percent visibility (sunny with high clouds); temperature ranging between 77-87 degrees Fahrenheit; and westerly winds up to approximately 5 miles per hour (mph). In addition, on May 9, 2018, between the hours of 8:00 a.m. and 5:00 p.m., Michael Baker biologists Daniel Rosie and Mike Gonzales conducted the first of two rare plant surveys, within the south portion of the site. Weather conditions included: 100 percent visibility (sunny with high clouds); temperature range between 57-95 degrees Fahrenheit; and westerly winds ranging 3.5-

12.7 mph. The second rare plant survey was conducted on July 25, 2019 by Michael Baker biologists Daniel Rosie and Stephen Anderson. Vegetation communities preliminarily identified on aerial photographs during the literature review were verified in the field by walking meandering transects through the vegetation communities and along boundaries between vegetation communities.

During the habitat assessment, Michael Baker extensively surveyed all special-status habitats and/or natural areas, where accessible, which have a higher potential to support special-status plant and wildlife species. All plant and wildlife species observed during the habitat assessment, as well as dominant plant species within each vegetation community, were recorded in a field notebook. Plant species observed during the habitat assessment were identified by visual characteristics and morphology in the field while unusual and less familiar plant species were photographed and later identified in the laboratory using taxonomical guides. Wildlife detections were made through aural and visual detection, as well as observation of sign including scat, trails, tracks, burrows, and nests. In addition, site characteristics such as soil condition, topography, hydrology, anthropogenic disturbances, indicator species, and the overall condition of on-site vegetation communities were recorded.

Vegetation communities occurring within the survey area were delineated on an aerial photograph during the habitat assessment and later digitized using the GIS ArcView software to quantify the area of each vegetation community in acres. Vegetation communities occurring within the survey area were classified in accordance with vegetation descriptions provided in the *Manual of California Vegetation* (Sawyer *et al.*, 2009) and cross referenced with the vegetation descriptions described in the MSHCP via the Western Riverside County Resource Conservation Agency's (RCA) online MSHCP Information Application.

Plant species observed during the habitat assessment were identified by visual characteristics and morphology in the field and recorded in a field notebook. Unfamiliar plants were photographed in the field and later identified in the laboratory using taxonomic guides. Plant nomenclature used in this report follows the Jepson Flora Project (2019). In this report, scientific names are provided immediately following common names of plant species (first reference only).

Wildlife species detected during the habitat assessment by sight, calls, tracks, scat, or other types of sign were recorded in a field notebook. Field guides used to assist with identification of species during the habitat assessment included *The Sibley Guide to Birds* (Sibley, 2014) for birds, *A Field Guide to Western Reptiles and Amphibians* (Stebbins, 2003) for herpetofauna, and *A Field Guide to Mammals of North America* (Reid, 2006). Although common names of wildlife species are well standardized, scientific names are provided immediately following common names of wildlife species in this report (first reference only).

Survey Results

The survey area consists of previously modified and uneven terrain comprised of both native and non-native vegetation communities as well as disturbed and developed areas (i.e., abandoned structures, corrals and equestrian pens, and above-ground tanks and wells) associated with prior agriculture and equestrian uses onsite. No potential jurisdictional resources were identified during the field surveys.

Vegetation Communities and Land Cover Types

Four (4) natural vegetation communities were observed and mapped within the boundaries of the survey area: emergent wetland/southern arroyo willow riparian forest, encelia scrub, flat-topped buckwheat scrub, and non-native grassland. In addition, the survey area contains six (6) land cover types that would be classified as disturbed, disturbed-tilled, ornamental, orchards/vineyards, developed, and open water (refer to Figure 6, *Vegetation Communities and Land Uses*). Table 1 provides the acreages of each vegetation community/land cover type on-site, with each discussed in detail below.

Table 1. Vegetation and Land Cover Types

Vegetation Community/Land Use*	**Existing in Survey Area (Acres)**
Emergent Wetland/Southern Arroyo Willow Riparian Forest (52440/61320)	0.11
Encelia Scrub (33500)	0.90
Flat-Topped Buckwheat Scrub (32800)	1.34
Non-Native Grassland (42210)	4.89
Disturbed (11300)	11.85
Disturbed-Tilled (11300)	16.27
Ornamental (12000)	2.42
Orchards/Vineyards (18100)	0.51
Developed (12000)	11.44
Open Water (64140)	0.28
TOTAL	**50.01**

* Parenthetical term denotes Holland-Oberbauer vegetation classification.

Emergent Wetland/ Southern Arroyo Willow Riparian Forest

This vegetation community occurs along the edge of the RCWD percolation pond within the survey area located southeast of the oval-shaped dirt pad/maintenance access road for the existing SCE Feeder Station and Well No. 154. This habitat is dominated by southern broad-leaf cattail (*Typha domingensis*) along the water's edge and arroyo willow (*Salix lasiolepis*) on the bank. Other emergent wetland species include: yerba mansa (*Anemopsis californica*), round-leaf boykinia (*Boykinia rotundifolia*), clustered field sedge (*Carex praegracilis*), umbrella sedge (*Cyperus eragrostis*), crab grass (*Digitaria sanguinalis*), spike-sedge (*Eleocharis macrostachya*), coast jepsonia (*Jepsonia parryi*), spiny rush (*Juncus acutus* ssp. *leopoldii*), granny's hairnet (*Pterostegia drymarioides*), three-square tule (*Schoenoplectus pungens* var. *longispicatus*), small-fruit bulrush (*Scirpus microcarpus*), and Douglas nightshade (*Solanum americanum*); while other southern arroyo willow riparian forest species include mulefat (*Baccharis salicifolia*), fleabane (*Erigeron bonariensis*), horseweed (*Erigeron canadensis*), telegraph weed (*Heterotheca grandiflora*), Coulter horseweed (*Laennecia coulteri*), tree tobacco (*Nicotiana glauca*), sandbar willow (*Salix exigua*), shiny willow (*Salix lasiandra* var. *lasiandra*), common sow thistle (*Sonchus oleraceus*), tamarisk (*Tamarix ramosissima*), and vinegar weed (*Trichostema lanceolatum*).

Encelia Scrub

This vegetation community occurs along the upper banks immediately adjacent to the easterly edges of the oval-shaped dirt pad/maintenance access road for the SCE Feeder Station and Well No. 154. This habitat is dominated by brittlebush and California croton (*Croton californicus*) as co-dominant. Other species include: deerweed (*Acmispon glaber*), western ragweed (*Ambrosia psilostachya*), California sagebrush (*Artemisia californica*), black mustard (*Brassica nigra*), dove weed (*Croton setiger*), jimson weed (*Datura wrightii*), horseweed, California buckwheat (*Eriogonum fasiculatum* var. *foliosum*), spotted spurge (*Euphorbia maculata*), telegraph weed, California juniper (*Juniperus californica*), scale-broom (*Lepidospartum squamatum*), white sweetclover (*Melilotus alba*), Russian thistle (*Salsola tragus*), white sage (*Salvia apiana*), and desert stillingia (*Stillingia linearifolia*).

Flat-Topped Buckwheat Scrub

This vegetation community occurs along the westerly bank adjacent to the dirt maintenance access road and the dirt pads next to the SCE Feeder Station/Well No. 154 and Well No. 153 to the south. This habitat is dominated by California buckwheat. Other species include: deerweed, western ragweed, California sagebrush, big sagebrush (*Artemisia tridentata* ssp. *tridentata*), desert saltbush (*Atriplex polycarpa*), black mustard, California croton, dove weed, brittlebush, spotted spurge, telegraph weed, everlasting, and Brazilian peppertree (*Schinus molle*).

Non-Native Grassland

This vegetation community occurs within the southern portion of the site and comprises checker fiddleneck (*Amsinckia menziesii*), wild oat (*Avena fatua*), common ripgut grass (*Bromus diandrus*), black mustard, cheat grass (*Bromus tectorum*), foxtail brome (*Bromus madritensis*), yellow star-thistle (*Centaurea solstitialis*), crab grass, Bermuda grass (*Cynodon dactylon*), storksbill/red-stem filaree/white stem filaree (*Erodium botrys, E. cicutarium, E. moschatum*), rat-tail fescue (*Festuca myuros*), short-podded mustard (*Hirschfeldia incana*), smooth barley (*Hordeum murinum* sspp. *glaucum*), false dandelion (*Hypochaeris glabra*), cheeseweed (*Malva parviflora*), Indian sweetclover (*Melilotus indicus*), rabbitfoot (*Polypogon monspeliensis*), Russian thistle, tumble mustard (*Sisymbrium altissimum*), London rocket (*Sisymbrium irio*), and common sow thistle.

Disturbed/Disturbed-Tilled

This land cover type consists of scattered areas that have been physically disturbed by previous human activity and are no longer recognizable as a native or naturalized vegetation association but continue to retain a soil substrate. These areas include dirt roads; inside the abandoned corrals and equestrian pens in the north half of the site; around the abandoned homes, buildings, structures and above-ground tanks and wells; and other areas throughout the site that have been tilled in the recent past. These areas are either dominated by Russian thistle or are exclusively composed of a variety of non-native forbs, ornamentals, and ruderal exotic species including: wild oat, common ripgut grass, black mustard, cheat grass, foxtail brome, iceplant (*Carpobrotus* spp.), yellow star-thistle, jimson weed, horseweed, filarees, fescues, telegraph weed, short-podded mustard, smooth barley, cheeseweed, Indian sweetclover, tree tobacco, blue elderberry (*Sambucus nigra* ssp. *caerulea*), tumble mustard, London rocket, and common sow thistle.

Ornamental

This land cover type consists of onsite planted areas primarily surrounding the existing structures, lining the dirt roads and along interior fencing, and offsite planted areas along the perimeters of the site associated with the surrounding urban properties and paved roads. In addition to lawns and grasses, typical tree species include ornamental pecans (*Carya* spp.), loquat (*Eriobotrya japonica*), red gum (*Eucalyptus globulus*), ornamental ash (*Fraxinus* spp.), Southern California walnut (*Juglans californica*), ornamental privets (*Ligustrum* spp.), olive (*Olea europaea*), California sycamore (*Platanus racemosa*), western cottonwood, ornamental cherries (*Prunus* spp.), and blue elderberry.

Orchards/Vineyards

This land cover type includes a small portion of a large vineyard on the north side of De Portola Road within the northern survey buffer.

Open Water

This land cover type includes a small portion of the percolation basins located at the southeast end of the survey area.

<u>Wildlife</u>

Bird species that were observed within the survey area included red-winged blackbird (*Agelaius phoeniceus*), mallard (*Anas platyrhynchos*), Pacific-slope flycatcher (*Empidonax difficilis*), American coot (*Fulica americana*), common yellowthroat (*Geothlypis trichas*), song sparrow (*Melospiza melodia*), lesser goldfinch (*Spinus psaltria*), Anna's hummingbird (*Calypte anna*), bushtit (*Psaltriparus minimus*), white-crowned sparrow (*Zonotrichia leucophrys*), California towhee (*Pipilo crissalis*), black phoebe (*Sayornis nigricans*), Say's phoebe (*Sayornis saya*), western meadowlark (*Sturnella neglecta*), house wren (*Troglodytes aedon*), Cassin's kingbird (*Tyrannus vociferans*), mourning dove (*Zenaida macroura*), California scrub jay (*Aphelocoma californica*), Bell's sage sparrow (*Artemisiospiza belli*), red-tailed hawk (*Buteo jamaicensis*), Costa’s hummingbird (*Calypte costae*), house finch (*Carpodacus mexicanus*), turkey vulture (*Cathartes aura*), killdeer (*Charadrius vociferus*), lark sparrow (*Chondestes grammacus*), Nuttall's woodpecker (*Dryobates nuttallii*), Bullock’s oriole (*Icterus bullockii*), house sparrow (*Passer domesticus*), rock pigeon (*Columba livia*), American crow (*Corvus brachyrhynchos*), and common raven (*Corvus corax*). None of the observed birds were in or near nests or displaying nest-building or nesting behaviors.

Additional wildlife species observed within the survey area included Gabb's checkerspot (*Chlosyne gabbii*), tiny checkerspot butterfly (*Dymasia dymas*), variable checkerspot (*Euphydryas chalcedona*), common buckeye butterfly (*Junonia coenia*), small white butterfly (*Pieris rapae*), common side-blotched lizard (*Uta stansburiana*), and desert cottontail (*Sylvilagus audubonii*) were also observed, along with coyote (*Canis latrans*) scat; and mule deer (*Odocoileus hemionus*) tracks were detected along the dirt roads onsite. Amphibians and other reptiles and mammals are also expected to occur but were not observed.

Wildlife Corridors/Movements

Habitat linkages provide links between larger habitat areas that are separated by development. Wildlife corridors are similar to linkages but provide specific opportunities for animals to disperse or migrate between areas. A corridor can be defined as a linear landscape feature of sufficient width to allow animal movement between two comparatively undisturbed habitat fragments. Adequate cover is essential for a corridor to function as a wildlife movement area. It is possible for a habitat corridor to be adequate for one species yet, inadequate for others. Wildlife corridors are key features for dispersal, seasonal migration, breeding, and foraging. Additionally, open space can provide a buffer against both human disturbance and natural fluctuations in resources.

Wildlife movement within and adjacent to the survey area potentially occurs throughout the undeveloped, vegetated areas associated with Temecula Creek to the south of the survey area. In addition, the percolation ponds located immediately east of the project site could potentially support wildlife movement. The survey area and open space provide movement opportunities for coyote and bobcat as well as provide suitable nesting/foraging habitat for a variety of seasonal bird species that migrate through the region.

Special-Status Biological Resources

The CNDDB and CNPS Online Inventory were queried for reported locations of special-status plant and wildlife species as well as special-status natural vegetation communities in the USGS *Bachelor Mountain, Sage, Pechanga,* and *Vail Lake, California* 7.5-minute quadrangles. The habitat assessment was conducted to assess and evaluate the existing condition of the habitat(s) within the boundaries of the survey area to determine if the existing vegetation communities, at the time of the field surveys, have the potential to provide suitable habitat(s) for special-status plant and wildlife species.

The literature search identified sixty (60) special-status plant species, forty-six (46) special-status wildlife species, and four (4) special-status vegetation communities as having the potential to occur in the USGS *Bachelor Mountain, Sage, Pechanga,* and *Vail Lake, California* 7.5-minute quadrangles. Special-status plant and wildlife species were evaluated for their potential to occur within the survey area based on habitat requirements, availability and quality of suitable habitat, and known distributions. Special-status biological resources identified during the literature review as having the potential to occur within the vicinity of the survey area are presented in *Table E – 1: Potentially Occurring Special-Status Biological Resources*, provided in Attachment E. Refer to the following sections and Attachment E for a detailed analysis regarding the potential occurrence of special-status biological resources.

Special-Status Plant Species

Sixty (60) special-status plant species have been recorded in the USGS *Bachelor Mountain, Sage, Pechanga,* and *Vail Lake, California* 7.5-minute quadrangles (refer to Attachment E). One (1) special-status plant species was observed within the survey area during the 2018-2019 rare plant surveys, chaparral sand verbena (*Abronia villosa* var. *aurita;* CRPR 1B.1). Michael Baker determined that all other special-status plant species either have a low potential to occur or are not expected within the survey area based on existing site conditions and a review of specific habitat requirements, occurrence records, and known distributions.

As previously mentioned, chaparral sand verbena was the only special-status plant species identified during the 2018-2019 rare plant surveys (refer to Figure 7, *Rare Plant Survey Results*). Eleven (11) individuals of chaparral sand verbena were identified within the non-native grassland located within the southern portion of the project site. Based on the project footprint, no individuals of chaparral sand verbena will be impacted by the proposed project. Therefore, no direct, indirect, or cumulative impacts to rare plants and rare plant communities are anticipated to occur as a result of the proposed project and no additional measures to avoid, minimize, or mitigate impacts to rare plants and rare plant communities are recommended.

Special-Status Wildlife Species

Forty-six (46) special-status wildlife species have been recorded in the USGS *Bachelor Mountain, Sage, Pechanga,* and *Vail Lake, California* 7.5-minute quadrangles (refer to Attachment E). No special-status wildlife species were observed within the survey area during the field surveys. Based on the results of the literature review and the field surveys, Michael Baker determined that orange-throated whiptail (*Aspidoscelis hyperythra*; WL), coastal whiptail (*Aspidoscelis tigris stejnegeri*; SSC), California horned lark (*Eremophila alpestris actia*; WL), and Jacumba pocket mouse (*Perognathus longimembris internationalis*; SSC) have a moderate or high potential to occur within the survey area. All other special-status wildlife species either have a low potential to occur or are not expected within the survey area based on existing site conditions and a review of specific habitat requirements, occurrence records, and known distributions.

Special-Status Vegetation Communities

Four (4) special-status vegetation communities have been reported within the USGS *Bachelor Mountain, Sage, Pechanga,* and *Vail Lake, California* 7.5-minute quadrangles by the CNDDB (refer to Attachment E). Based on the result of field surveys, none of these special-status vegetation communities were observed within the survey area.

<u>Critical Habitat</u>

Under the Federal Endangered Species Act (FESA), "Critical Habitat" is designated at the time of listing of a species or within of year of listing. Critical Habitat refers to specific areas within the geographical range of a species at the time it is listed that include the physical or biological features that are essential to the survival and eventual recovery of that species. Maintenance of these physical and biological features requires special management considerations or protection, regardless of whether individuals or the species are present or not. If a project may result in take or adverse modification to a species' designated Critical Habitat, a project proponent may be required to engage in suitable mitigation. However, consultation for impacts to Critical Habitat is only required when a project has a Federal nexus. This may include projects that occur on Federal lands, require Federal permits (e.g., CWA Section 404 permit), or receive any Federal oversight or funding. If there is a Federal nexus, then the Federal agency that is responsible for providing funds or permits would be required to consult with the USFWS under the FESA.

According to a database search of the USFWS Critical Habitat portal, the site is not mapped within USFWS-designated Critical Habitat. The nearest such habitats include coastal California gnatcatcher (*Polioptila californica californica*; FT/SSC) located approximately 0.7 mile to the northeast, Quino checkerspot butterfly (*Euphydryas editha quino*; FE) located approximately 0.8 mile to the northeast, and arroyo toad (*Anaxyrus californicus*) located approximately 2 miles to the southeast at the downstream reach of Vail Lake dam. Further downstream is Critical Habitat for the Vail Lake ceanothus (*Ceanothus ophiochilus*) (refer to Figure 8, *Critical Habitat*).

<u>Western Riverside County Multiple Species Habitat Conservation Plan</u>

The proposed Project is located within the MSHCP; however RCWD is not a permittee under the MSHCP. As such, RCWD projects are not subject to the MSHCP requirements and no additional analysis is warranted.

<u>Stephens' Kangaroo Rat Habitat Conservation Plan</u>

The Stephens' kangaroo rat (*Dipodomys stephensi* [SKR]) is one of nineteen (19) species of kangaroo rat and is found at elevations ranging from approximately 180 to 4,100 feet amsl in open grasslands or sparse shrublands with < 50 percent cover. Soil type is an important factor for the presence of SKR; they are typically found in sandy and sandy loam soils with a low clay to gravel content. SKR tend to utilize flatter slopes (< 30 percent slope) for burrowing. SKR has a patchy distribution in western Riverside County, ranging from Corona/Norco Hills just west of Highway 91 to the Anza Valley in the eastern, and in the southern Temecula area to Potrero Valley and the Badlands in the north. As with other kangaroo rats, SKR is primarily nocturnal and mostly feeds on the seeds of filaree (*Erodium* sp.) and annual brome grasses.

Separate from the MSHCP, USFWS and CDFW issued the Riverside County Habitat Conservation Agency a Section 10 (a) Permit and CFGC Section 2081 Management Authorization in 1996 establishing the Long-Term Stephens' Kangaroo Rat Habitat Conservation Plan (SKR HCP). Based on a review of the SKR HCP, the project site is not located within a SKR Reserve Area but is located within the boundaries of the Mitigation Fee Area for the SKR HCP. Therefore, with payment of the Local Development Mitigation Fee, no additional measures would be required.

Conclusions and Recommendations

One (1) special-status plant species was observed within the survey area during the 2018-2019 rare plant surveys, chaparral sand verbena. Based on the project footprint, no individuals of chaparral sand verbena will be impacted by the proposed project. In addition, Michael Baker determined that all other special-status plant species either have a low potential to occur or are not expected within the survey area based on existing site conditions and a review of specific habitat requirements, occurrence records, and known distributions. Therefore, no direct, indirect, or cumulative impacts to rare plants and rare plant communities are anticipated to occur as a result of the proposed project. No additional measures to avoid, minimize, or mitigate impacts to rare plants and rare plant communities are recommended.

No special-status wildlife species were observed within the survey area during the 2017-2019 field surveys. Based on the results of the literature review and the field surveys, Michael Baker determined that orange-throated whiptail, coastal whiptail, and Jacumba pocket mouse have a moderate or high potential to occur within the survey area. However, the proposed project would be limited to developed areas and heavily disturbed land that provides a limited about of suitable habitat and reduces the potential of encountering these species during construction. Therefore, any potential impacts to these species are expected to be less than significant and no additional measures to avoid, minimize, or mitigate are recommended.

The vegetation communities, including ornamental trees and unvegetated, open ground, within and surrounding the survey area provide suitable nesting opportunities for a variety of year-round and seasonal bird species that may be present during the breeding season. Implementation of the following mitigation measure would reduce such potential indirect impacts to nesting birds to below significance:

> **MM BIO-1**: A pre-construction clearance survey would need to be conducted to confirm the absence of burrowing owl (*Athene cunicularia*) and ensure that project-related activities do not result in impacts to any occupied burrows that may be located within or adjacent to the project site. The pre-construction burrowing owl clearance survey should be conducted by a qualified biologist no more than 30 days prior to any ground disturbance or vegetation removal activities occur in accordance with the *Staff Report on Burrowing Owl Mitigation* (Department of Fish and Game, 2012). Upon completion of the survey and any follow-up measures that may be required, a report shall be prepared and submitted to the RCWD for mitigation monitoring compliance record keeping. If ground disturbing activities are not completed within 30 days of a negative survey, the clearance survey must be repeated to confirm the absence of burrowing owls.
>
> **MM BIO-2:** If site disturbance is scheduled to occur between January through September, a pre-disturbance nesting bird survey shall be conducted by a qualified biologist within 3 days of site disturbance, to determine the presence of nests or nesting birds. If active nests are identified, the biologist shall establish non-disturbance buffers around them (500 feet for raptors and sensitive species, 200 feet for non-raptors/non-sensitive species). The biologist shall monitor these buffers weekly to ensure no work occurs within them, until the nesting effort is finished (i.e., the juveniles have successfully fledged and are surviving independent from the nest). Work can resume within the buffers when no other active nests are found. Alternatively, a qualified biologist may determine that construction can be permitted within the non-disturbance buffer areas with implementation of a monitoring and mitigation plan to prevent any impacts while the nest continues to be active (eggs, chicks, etc.). Upon completion of the survey and any follow-up measures that may be required, a report

shall be prepared and submitted to the RCWD for mitigation monitoring compliance record keeping. If vegetation clearing is not completed within 3 days of a negative survey, the nesting survey must be repeated to confirm the absence of nesting birds.

Please feel free to contact me at (949) 330-4176 or at stephen.anderson@mbakerintl.com, or Tom Millington at (949) 855-5777 or tommillington@mbakerintl.com with any questions you may have regarding the results and/or conclusions of this report.

Sincerely,

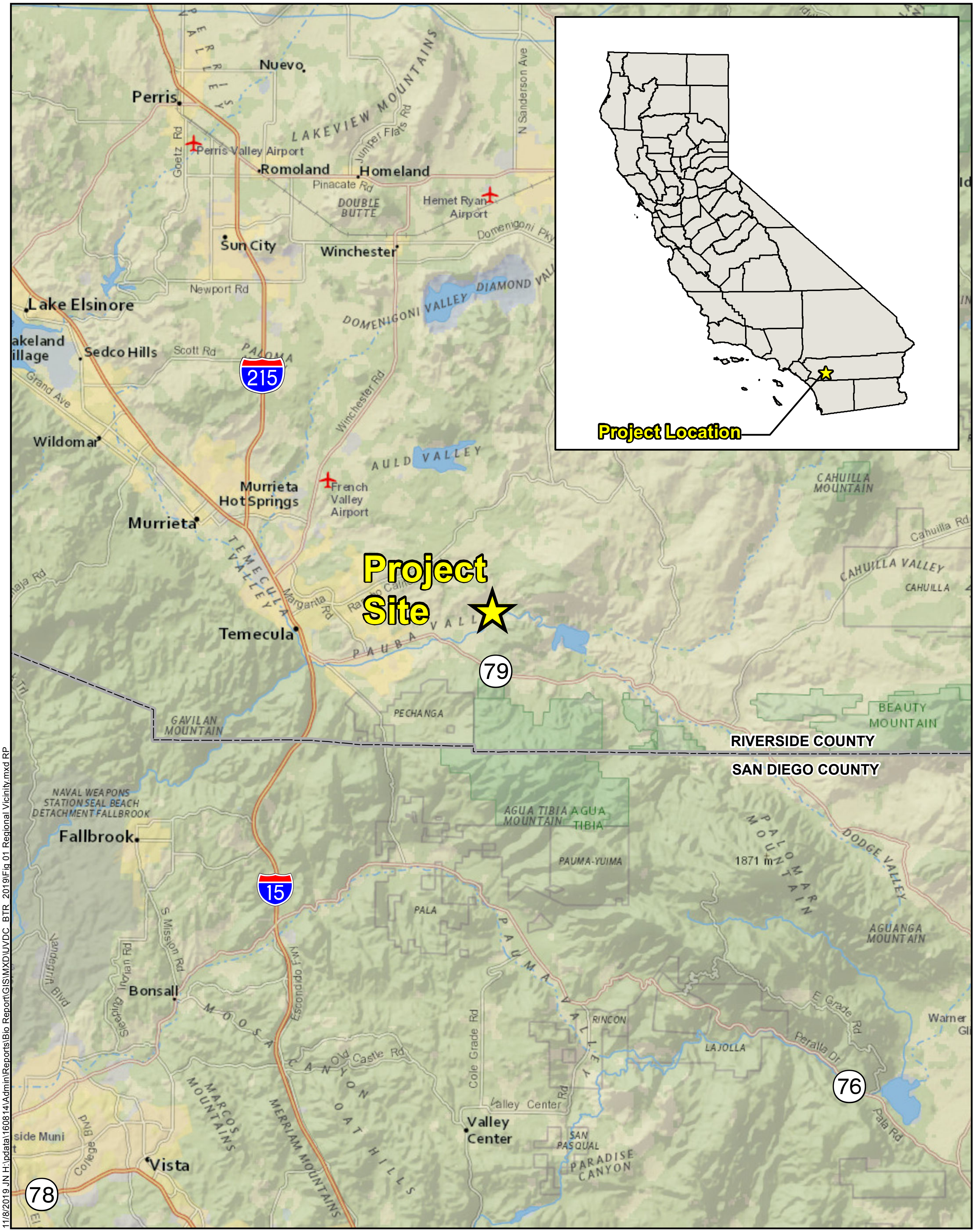
Stephen Anderson	Thomas Millington
Biologist	Senior Biologist
Natural Resources and Regulatory Permitting	Natural Resources and Regulatory Permitting

Attachments:

- *A. Project Figures*
- *B. References*
- *C. USDA Web Soil Survey*
- *D. Site Photographs*
- *E. Potentially Occurring Special Status Biological Resources*

Attachment A

Project Figures



UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION PROJECT
BIOLOGICAL RESOURCES ASSESSMENT

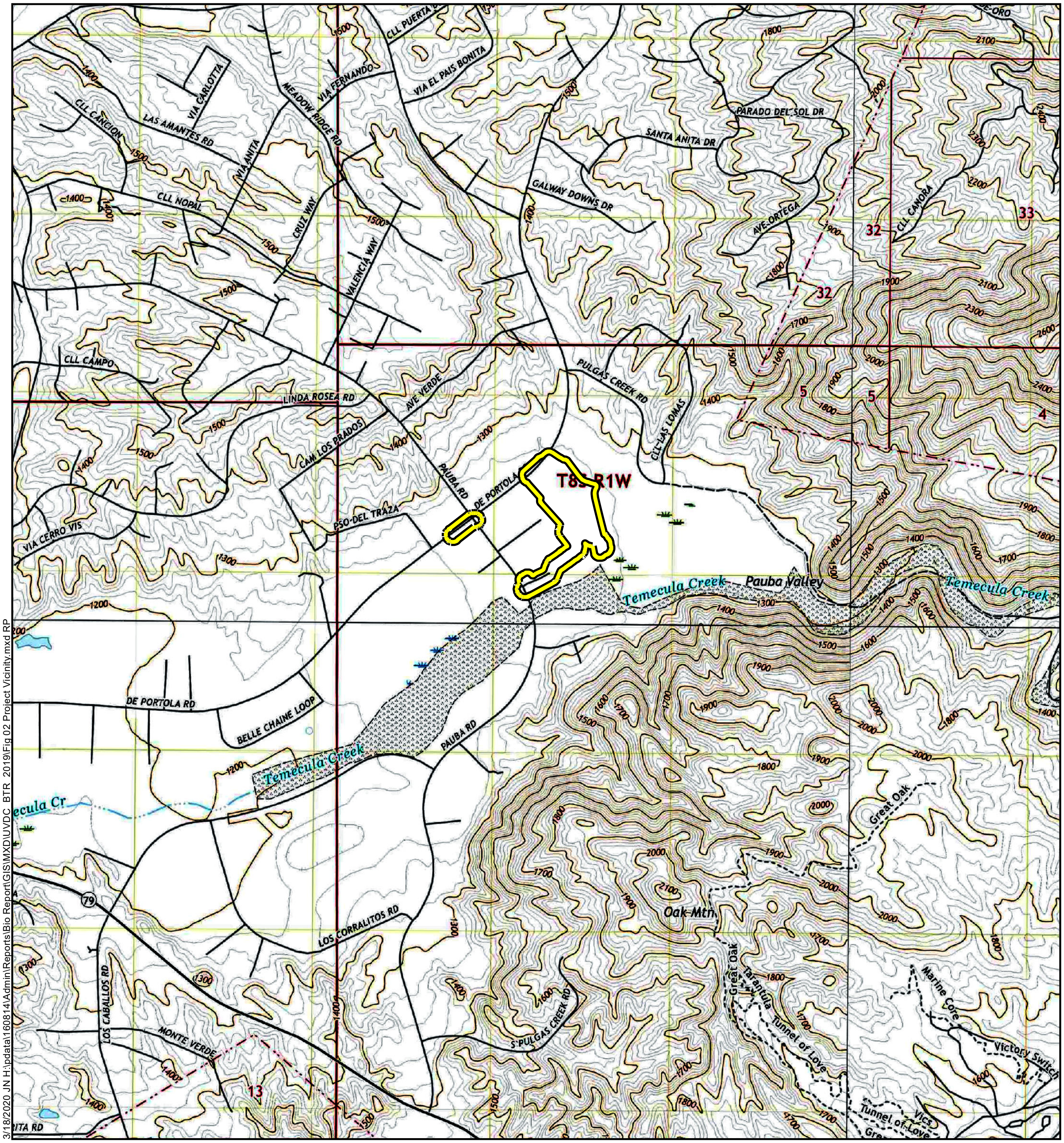
Regional Vicinity

Michael Baker INTERNATIONAL

0 2.5 5 Miles

Source: ArcGIS Online, 2018

Figure 1



3/18/2020 JN H:\pdata\160814\Admin\Reports\Bio Report\GIS\MXD\UVDC_BTR_2019\Fig 02 Project Vicinity.mxd RP

Legend

Survey Area

UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION PROJECT
BIOLOGICAL RESOURCES TECHNICAL REPORT AND MSHCP CONSISTENCY ANALYSIS

Project Vicinity

Michael Baker INTERNATIONAL

0 0.25 0.5 Miles

Source: USGS 7.5-Minute topographic quadrangle maps: *Bachelor Mountain, Sage, Pechanga, Vail Lake, California (2018)*

Figure 2

Michael Baker INTERNATIONAL

Source: ArcGIS Online, 2018

UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION PROJECT
BIOLOGICAL RESOURCES TECHNICAL REPORT AND MSHCP CONSISTENCY ANALYSIS

Survey Area

Figure 3

3/18/2020 JN H:\pdata\160814\Admin\Reports\Bio Report\GIS\MXD\UVDC_BTR_2019\Fig 04 Project Depiction.mxd RP

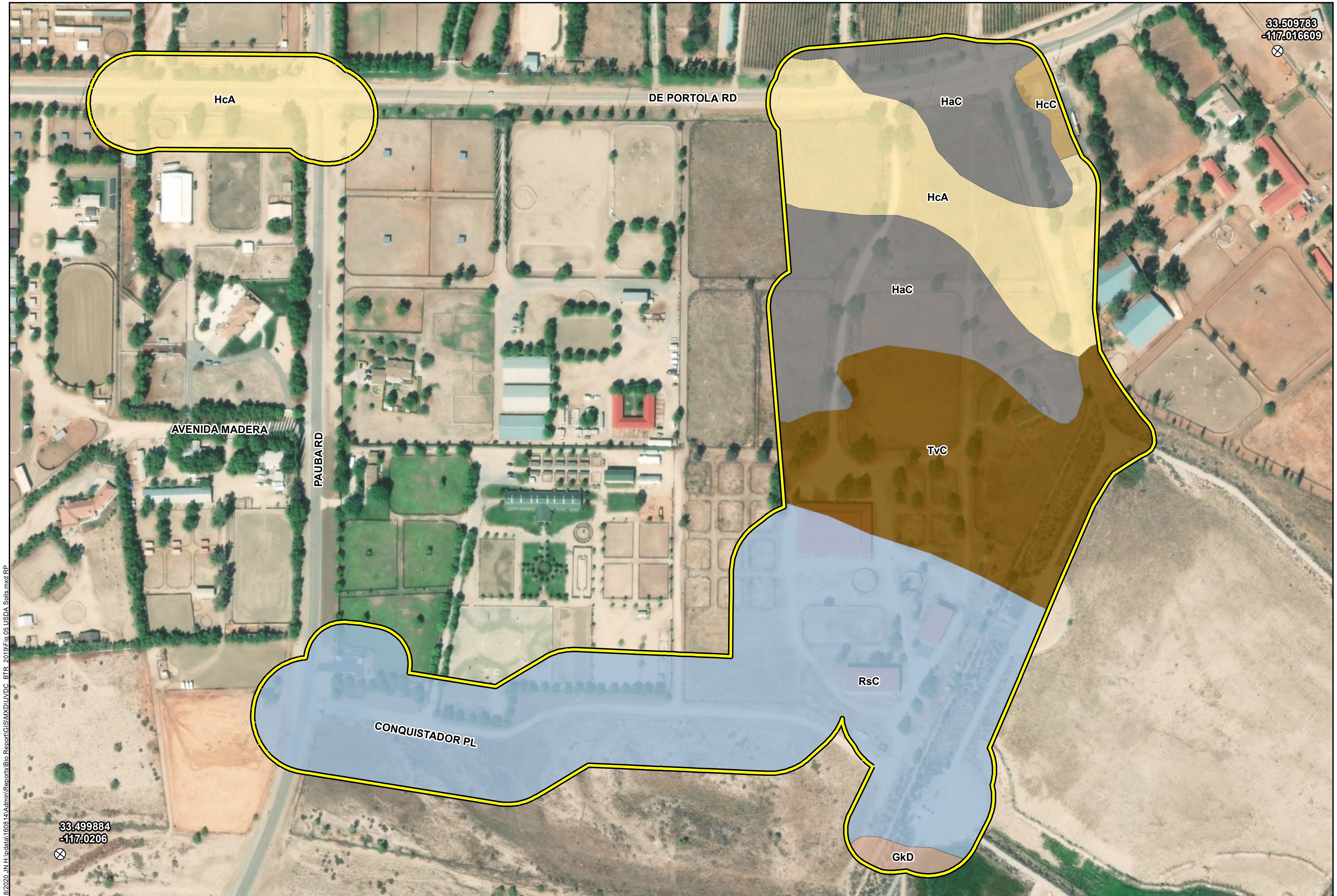
Michael Baker INTERNATIONAL

Source: ArcGIS Online, 2018

UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION PROJECT
BIOLOGICAL RESOURCES TECHNICAL REPORT AND MSHCP CONSISTENCY ANALYSIS

Project Depiction

Figure 4



Legend

- Survey Area
- GkD Gorgonio loamy sand, channeled, 2 to 15 percent slopes
- HcA Hanford coarse sandy loam,0 to 2 percent slopes
- HcC Hanford coarse sandy loam, 2 to 8 percent slopes
- HaC Hanford loamy fine sand, 0 to 8 percent slopes
- RsC Riverwash
- TvC Tujunga loamy sand, channeled, 0 to 8 percent slopes
- Reference Point

0 125 250 Feet

3/18/2020 JN H:\pdata\160814\Admin\Reports\Bio Report\GIS\MXD\UVDC_BTR_2019\Fig 05 USDA Soils.mxd RP

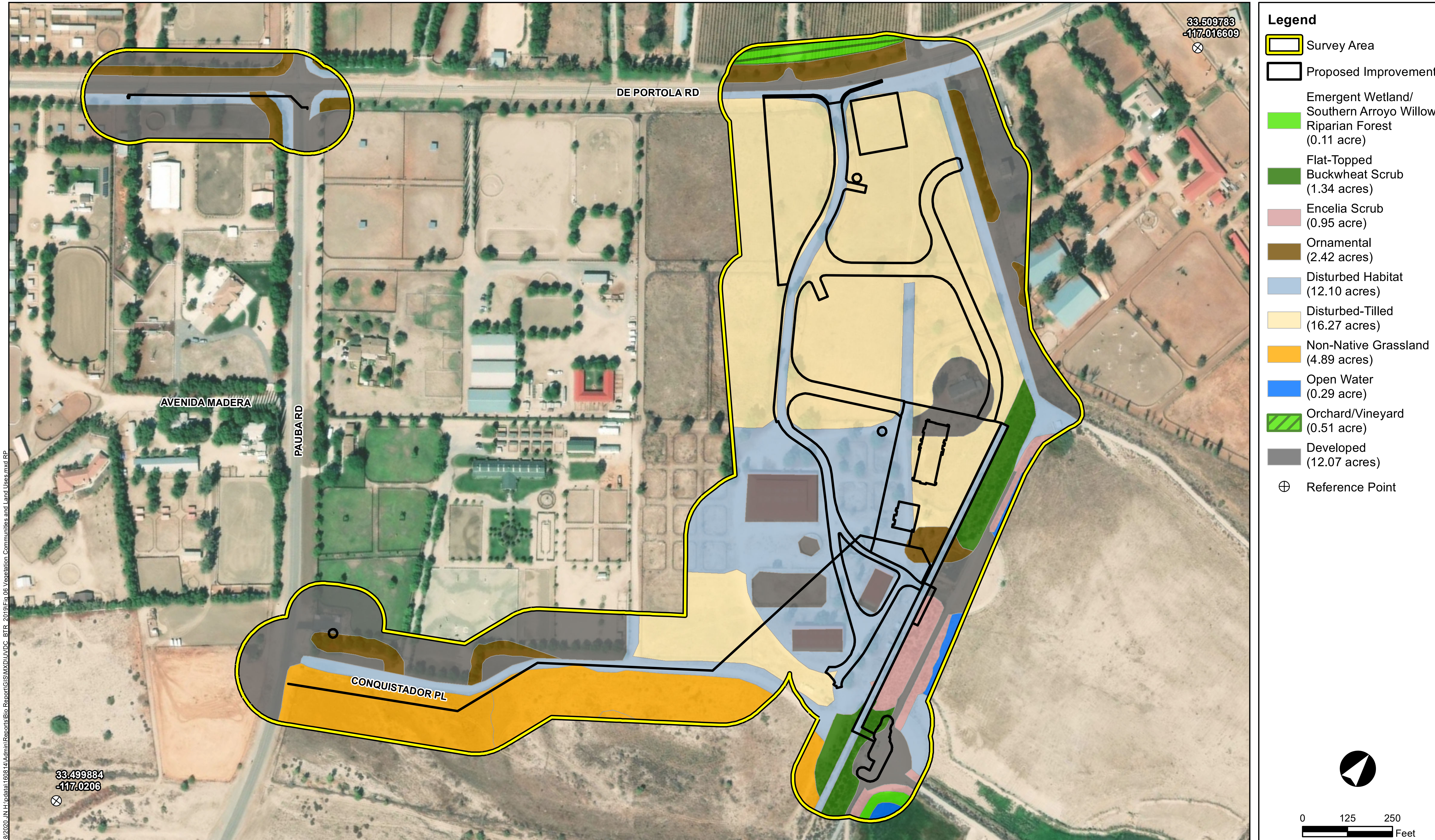
Michael Baker INTERNATIONAL

Source: ArcGIS Online, 2015

UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION PROJECT
BIOLOGICAL RESOURCES TECHNICAL REPORT AND MSHCP CONSISTENCY ANALYSIS

USDA Soils

Figure 5



3/18/2020 JN H:\pdata\160814\Admin\Reports\Bio Report\GIS\MXD\UVDC_BTR_2019\Fig 06 Vegetation Communities and Land Uses.mxd RP

Michael Baker INTERNATIONAL

UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION PROJECT
BIOLOGICAL RESOURCES TECHNICAL REPORT AND MSHCP CONSISTENCY ANALYSIS

Vegetation Communities and Land Uses

Source: ArcGIS Online, 2015

Figure 6

3/18/2020 JN H:\pdata\160814\Admin\Reports\Bio Report\GIS\MXD\UVDC_BTR_2019\Fig 07 Rare Plant Survey Results.mxd RP

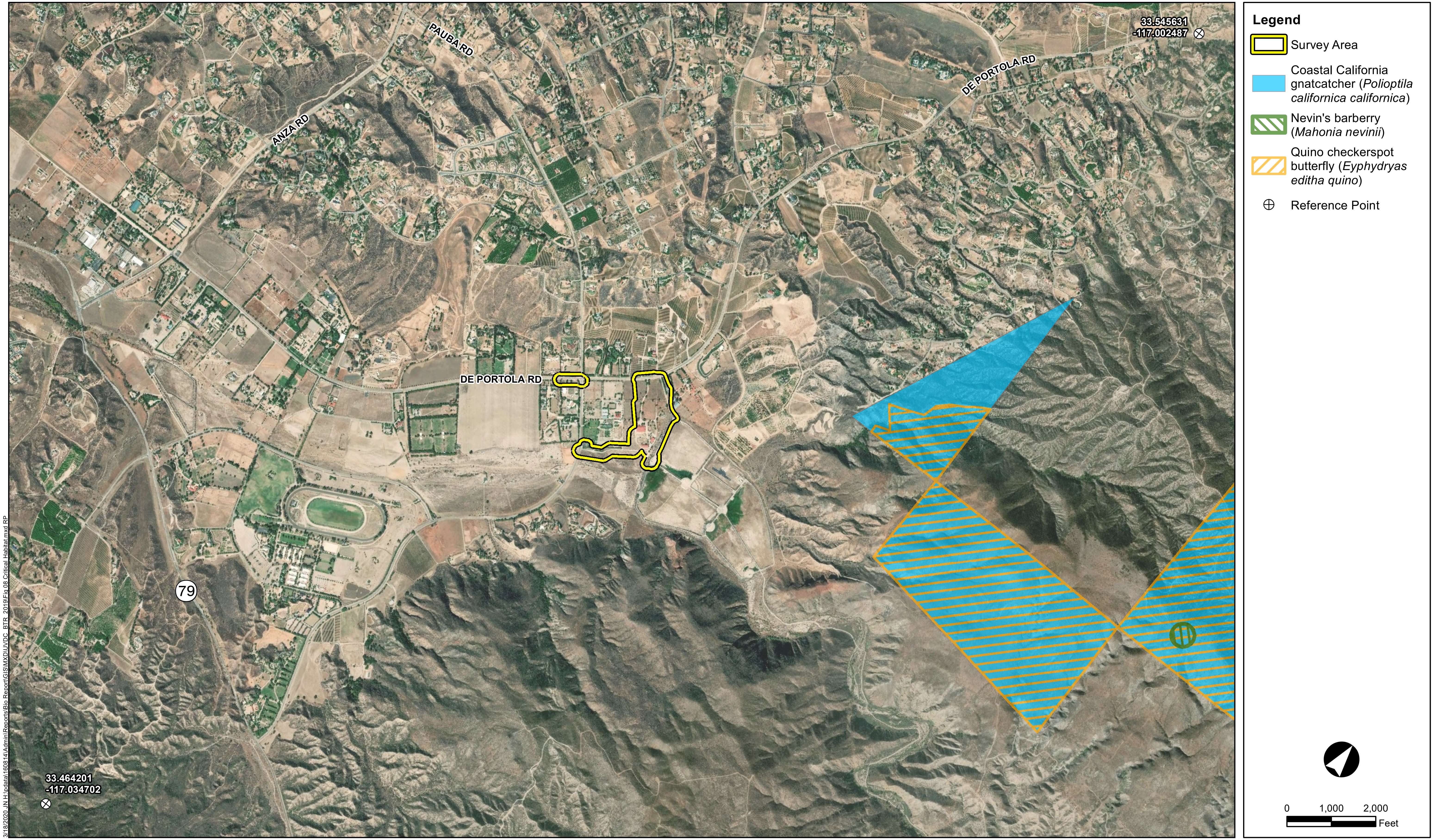
Michael Baker INTERNATIONAL

Source: ArcGIS Online, 2018

UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION PROJECT
BIOLOGICAL RESOURCES TECHNICAL REPORT AND MSHCP CONSISTENCY ANALYSIS

Rare Plant Survey Results

Figure 7



Michael Baker INTERNATIONAL

Source: ArcGIS Online, 2018

UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION PROJECT
BIOLOGICAL RESOURCES TECHNICAL REPORT AND MSHCP CONSISTENCY ANALYSIS

Critical Habitat

Figure 8

Attachment B
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Attachment C

USDA Web Soil Survey

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for
Western Riverside Area, California

November 6, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map

Map Scale: 1:6,780 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 100, 200, 400, 600

Feet: 0, 300, 600, 1200, 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 12, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Oct 22, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GkD	Gorgonio loamy sand, channeled, 2 to 15 percent slopes	0.4	0.9%
HaC	Hanford loamy fine sand, 0 to 8 percent slopes	9.3	18.7%
HcA	Hanford coarse sandy loam, 0 to 2 percent slopes	10.3	20.8%
HcC	Hanford coarse sandy loam, 2 to 8 percent slopes	0.1	0.2%
RsC	Riverwash	20.7	41.8%
TvC	Tujunga loamy sand, channeled, 0 to 8 percent slopes	8.7	17.5%
Totals for Area of Interest		**49.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Western Riverside Area, California

GkD—Gorgonio loamy sand, channeled, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: hcvd
Elevation: 20 to 3,000 feet
Mean annual precipitation: 8 to 25 inches
Mean annual air temperature: 46 to 63 degrees F
Frost-free period: 110 to 310 days
Farmland classification: Not prime farmland

Map Unit Composition

Gorgonio and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gorgonio

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 15 inches: loamy sand
H2 - 15 to 60 inches: stratified gravelly loamy sand to gravelly loamy fine sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A
Ecological site: SANDY ALLUVIAL (1975) (R019XD069CA)
Hydric soil rating: No

Minor Components

Riverwash

Percent of map unit: 10 percent
Landform: Drainageways
Hydric soil rating: Yes

Riverwash

Percent of map unit: 4 percent
Landform: Channels
Hydric soil rating: Yes

Tujunga

Percent of map unit: 3 percent
Hydric soil rating: No

Soboba

Percent of map unit: 3 percent
Hydric soil rating: No

HaC—Hanford loamy fine sand, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: hcw0
Elevation: 150 to 900 feet
Mean annual precipitation: 9 to 20 inches
Mean annual air temperature: 63 to 64 degrees F
Frost-free period: 250 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hanford and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hanford

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 8 inches: loamy fine sand
H2 - 8 to 40 inches: fine sandy loam
H3 - 40 to 60 inches: stratified loamy sand to coarse sandy loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Available water storage in profile: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: SANDY (R020XD012CA)
Hydric soil rating: No

Minor Components

Ramona

Percent of map unit: 5 percent
Hydric soil rating: No

Greenfield

Percent of map unit: 5 percent
Hydric soil rating: No

Tujunga

Percent of map unit: 5 percent
Hydric soil rating: No

HcA—Hanford coarse sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hcw1
Elevation: 150 to 900 feet
Mean annual precipitation: 9 to 20 inches
Mean annual air temperature: 63 to 64 degrees F
Frost-free period: 250 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hanford and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hanford

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 8 inches: coarse sandy loam
H2 - 8 to 40 inches: fine sandy loam
H3 - 40 to 60 inches: stratified loamy sand to coarse sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: SANDY (1975) (R019XD035CA)
Hydric soil rating: No

Minor Components

Tujunga

Percent of map unit: 5 percent
Hydric soil rating: No

Greenfield

Percent of map unit: 5 percent
Hydric soil rating: No

Ramona

Percent of map unit: 5 percent
Hydric soil rating: No

HcC—Hanford coarse sandy loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: hcw2
Elevation: 150 to 900 feet
Mean annual precipitation: 9 to 20 inches
Mean annual air temperature: 63 to 64 degrees F
Frost-free period: 250 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hanford and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hanford

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 8 inches: coarse sandy loam
H2 - 8 to 40 inches: fine sandy loam
H3 - 40 to 60 inches: stratified loamy sand to coarse sandy loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: SANDY (R020XD012CA)
Hydric soil rating: No

Minor Components

Greenfield

Percent of map unit: 5 percent
Hydric soil rating: No

Ramona

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 2 percent
Hydric soil rating: No

Tujunga

Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 1 percent
Hydric soil rating: No

RsC—Riverwash

Map Unit Setting

National map unit symbol: hcym
Elevation: 700 to 2,900 feet
Mean annual precipitation: 8 to 15 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 110 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Riverwash: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riverwash

Setting

Landform: Channels
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and gravelly alluvium derived from mixed sources

Typical profile

H1 - 0 to 6 inches: gravelly coarse sand
H2 - 6 to 60 inches: stratified extremely gravelly coarse sand to gravelly sand

Properties and qualities

Slope: 0 to 8 percent
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Available water storage in profile: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: Yes

TvC—Tujunga loamy sand, channeled, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: hczl
Elevation: 10 to 2,900 feet

Mean annual precipitation: 8 to 25 inches
Mean annual air temperature: 46 to 64 degrees F
Frost-free period: 110 to 350 days
Farmland classification: Not prime farmland

Map Unit Composition

Tujunga and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tujunga

Setting

Landform: Flood plains, alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium derived from granite

Typical profile

H1 - 0 to 10 inches: loamy sand
H2 - 10 to 60 inches: loamy sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A
Ecological site: SANDY ALLUVIAL (1975) (R019XD069CA)
Hydric soil rating: No

Minor Components

Riverwash

Percent of map unit: 10 percent
Landform: Drainageways
Hydric soil rating: Yes

Delhi

Percent of map unit: 10 percent
Hydric soil rating: No

Soboba

Percent of map unit: 5 percent
Hydric soil rating: No

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Attachment D

Site Photographs




Photographs 1-4: Views of encelia scrub along the upper banks and emergent wetland/southern arroyo willow riparian forest along the lower banks and water's edge associated with the open water (RCWD freshwater percolation Ponds U-5 and U-2) within the survey buffer adjacent to (southeast quadrant) the oval-shaped dirt pad/maintenance access road for the existing SCE Feeder Station and Well No. 154.


Photographs 5-6: Views of disturbed tilled fields and encelia scrub along the banks within the survey buffer adjacent to (northeast quadrant) the oval-shaped dirt pad/maintenance access road for the existing SCE Feeder Station and Well No. 154.

Photographs 7–10: Views of encelia scrub (background of Photo 7) transitioning to flat-topped buckwheat scrub along the banks within the survey buffer adjacent to (west) of the existing SCE Feeder Station and Well No. 154.

Photograph 11: View of disturbed-tilled field south of abandoned equestrian pens, west of the abandoned hay and salt storage structures, and north of the dirt road separating the north and south halves of the site.

Photograph 12: View of abandoned equestrian pens, dirt road, and abandoned main barn structure in the central portion of the site.

Photographs 13-14: View of abandoned equestrian pens, dirt road, and abandoned main residential/office structure in the central portion of the site.




Photographs 15-18: Views of the abandoned corrals in the northernmost portion of the site containing disturbed-tilled fields with heavy growth of non-native weedy and ruderal species (especially Russian thistle) in some areas.


Photographs 19-20: Representative views of disturbed areas and planted ornamental trees along the paved roads within the survey buffer adjacent to the north and west of the site.

Attachment E

Potentially Occurring Special Status Biological Resources

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Covered by MSHCP**	Observed On-site	Potential to Occur
SPECIAL-STATUS WILDLIFE SPECIES					
Accipiter cooperii Cooper's hawk	WL G5 S4	Yearlong resident of California. Generally, found in forested areas up to 3,000 feet above mean sea level (amsl) in elevation, especially near edges and rivers. Prefers hardwood stands and mature forests, but can be found in urban and suburban areas where there are tall trees for nesting. Common in open areas during nesting season.	Yes	No	**Not Expected:** This species is not expected to nest or forage within the survey area due to the lack of suitable habitat.
Agelaius tricolor tricolored blackbird	ST SSC G2G3 S1S2	Range is limited to the coastal areas of the Pacific coast of North America, from Northern California to upper Baja California. Can be found in a wide variety of habitat including annual grasslands, wet and dry vernal pools and other seasonal wetlands, agricultural fields, cattle feedlots, and dairies. Occasionally forage in riparian scrub habitats along marsh borders. Basic habitat requirements for breeding include open accessible water, protected nesting substrate freshwater marsh dominated by tall, dense cattails (*Typha* spp.), willow (*Salix* spp.) thickets, and bulrushes (*Schoenoplectus* spp.), and either flooded or thorny/spiny vegetation and suitable foraging space providing adequate insect prey.	Yes	No	**Not Expected:** This species is not expected to nest or forage within the survey area due to the lack of dense freshwater marsh habitats adjacent to riparian scrub and the survey area is outside the known range of this species.
Aimophila ruficeps canescens southern California rufous-crowned sparrow	WL G5T3 S3	Yearlong resident that is typically found between 3,000 and 6,000 feet amsl. Breed in sparsely vegetated scrubland on hillsides and canyons. Prefers coastal sage scrub dominated by California sagebrush (*Artemisia californica*), but they can also be found breeding in coastal bluff scrub, low-growing serpentine chaparral, and along the edges of tall chaparral habitats.	Yes	No	**Not Expected:** This species is not expected to nest or forage within the survey area due to the lack of suitable habitat.
Anaxyrus californicus arroyo toad	FE SSC G2G3 S2S3	Occurs in semi-arid regions near washes or intermittent streams, including valley-foothill grasslands, desert riparian, desert washes, and oak woodlands. Breeding habitat consists of shallow streams with a mixture of sandy and gravelly substrate and sandy terraces. Generally, requires mule fat (*Baccharis salicifolia*) and willow in the streambed for vegetative canopy for breeding areas and forages for insects primarily under oak (*Quercus* spp.), Fremont cottonwood (*Populus fremontii*), and California sycamore (*Platanus racemosa*) trees. Occurs at elevations from near sea level to about 4,600 feet amsl.	Yes (a/c)	No	**Low:** The non-native grassland within the survey area provides marginal suitable habitat for this species. However, the nearest documented extant occurrence is approximately 2.5 miles southeast of the survey area (Occurrence Number 87).

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Covered by MSHCP****	**Observed On-site**	**Potential to Occur**
Anniella stebbinsi southern California legless lizard	SSC G3 S3	Locally abundant specimens are found in coastal sand dunes and a variety of interior habitats, including sandy washes and alluvial fans. A large protected population persists in the remnant of the once extensive El Segundo Dunes at Los Angeles International Airport.	No	No	**Not Expected:** This species is not expected to occur within the survey area due to the lack of suitable coastal sand dune and sandy wash habitat. Additionally, the nearest documented extant occurrence is approximately 2.5 miles southeast of the survey area (Occurrence Number 183).
Aquila chrysaetos golden eagle	FP WL G5 S3	Yearlong resident of California. Occupies nearly all terrestrial habitats of the western states except densely forested areas. Favors secluded cliffs with overhanging ledges and large trees for nesting and cover. Hilly or mountainous country where takeoff and soaring are supported by updrafts is generally preferred to flat habitats. Deeply cut canyons rising to open mountain slopes and crags are ideal habitat.	Yes	No	**Not Expected:** This species is not expected to nest or forage within the survey area due to the lack of secluded cliffs with overhanging ledges, and mountainous or hilly terrain.
Arizona elegans occidentalis California glossy snake	SSC G5T2 S2	Inhabits arid scrub, rocky washes, grasslands, and chaparral habitats. Appears to prefer microhabitats of open areas and areas with soil loose enough for easy burrowing.	No	No	**Low:** The non-native grassland within the survey area provides marginal suitable habitat for this species. However, the nearest documented extant occurrence is approximately 1.5 miles southwest of the survey area (Occurrence Number 121).
Artemisiospiza belli belli Bell's sage sparrow	WL G5T2T3 S3	This species has a wide, but sparse distribution in western Riverside County, specifically within the "Riverside lowlands, San Jacinto Foothills, Santa Ana Mountains, and Desert Transition Bioregions. Yearlong resident on the coastal side of southern California mountains. Breeds in coastal sage scrub and chaparral habitats from February to August. They require semi-open habitats with evenly spaced shrubs one to two meters high. Occurs in chaparral dominated by fairly dense stands of chamise (*Adenostoma fasciculatum*).	Yes	No	**Not Expected:** This species is not expected to nest or forage within the survey area due to the lack of suitable habitat.
Aspidoscelis hyperythra orange-throated whiptail	WL G5 S2S3	Uncommon to fairly common over much of its range in Orange, Riverside, and San Diego counties. Also occurs in southwestern San Bernardino County near Colton. Semi-arid brushy areas typically with loose soil and rocks, including washes, streamsides, rocky hillsides, and coastal chaparral.	Yes	No	**Moderate:** The survey area provides suitable habitat for this species. Further, the nearest documented extant occurrence is from 1997 approximately 0.5 mile north of the survey area (Occurrence Number 292).

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Covered by MSHCP****	**Observed On-site**	**Potential to Occur**
Aspidoscelis tigris stejnegeri coastal whiptail	SSC G5T5 S3	This subspecies is found in coastal southern California, mostly west of the Peninsular Ranges and south of the Transverse Ranges, and north into Ventura County. Ranges south into Baja California. Found in a variety of ecosystems, primarily hot and dry open areas with sparse vegetation in chaparral, woodland, and riparian areas. Associated with rocky areas with little vegetation or sunny microhabitats within shrub or grassland associations.	Yes	No	**Moderate:** The survey area provides suitable habitat for this species. Further, the nearest documented extant occurrence is from 1997 approximately 0.5 mile north of the survey area (Occurrence Number 30).
Athene cunicularia burrowing owl	SSC G4 S3	Primarily a grassland species, but it persists and even thrives in some landscapes highly altered by human activity. Occurs in open, annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. The overriding characteristics of suitable habitat appear to be burrows for roosting and nesting and relatively short vegetation with only sparse shrubs and taller vegetation.	Yes (c)	No	**Low:** Although suitable habitat is present within the survey area, no burrowing owls or sign (i.e., pellets, white wash, feathers, or prey remains) were observed. Further, the nearest documented extant occurrence is located approximately 4.6 miles northwest of the survey area (Occurrence Number 363).
Bombus crotchii Crotch bumble bee	CSE G3G4 S1S2	Primarily occurs in California, including the Mediterranean region, Pacific coast, western desert, great valley, and adjacent foothills through most of southwestern California. Has also been recorded in Baja California, Baja California Sur, and in southwest Nevada. Inhabits open grassland and scrub habitats. Primarily nests underground. Food plant genera include *Antirrhinum*, *Phacelia*, *Clarkia*, *Dendromecon*, *Eschscholzia*, and *Eriogonum*.	No	No	**Low:** Food plants (*Eriogonum*) are present within the survey area. However, there are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019).
Branchinecta lynchi vernal pool fairy shrimp	FT G3 S3	Endemic to California and only found in vernal pools. Vernal pool habitats form in depressions above an impervious substrate layer, or claypan/duripan. This species does not occur in riverine, marine, or other permanent bodies of water. When the temporary pools dry, offspring persist in suspended development as desiccation-resistant embryos (commonly called cysts) in the pool substrate until the return of winter rains and appropriate temperatures allow some of the cysts to hatch.	Yes (a)	No	**Not Expected:** There is no suitable vernal pool habitat within or adjacent to the survey area. The mapped soils within the survey area primarily consist of sandy loam textures which do not support the formation of vernal pools or ponds. Additionally, there are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019).

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Covered by MSHCP**	Observed On-site	Potential to Occur
Buteo regalis ferruginous hawk	WL G4 S3S4	Common winter resident of grasslands and agricultural areas in southwestern California. Frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys, and fringes of pinyon-juniper habitats. This species does not breed in California.	Yes	No	**Low (Foraging):** The non-native grassland vegetation community provides marginal foraging habitat. However, the nearest documented extant occurrence is approximately 1 mile east of the survey area (Occurrence Number 97).
Buteo swainsoni Swainson's hawk	ST G5 S3	Typical habitat is open desert, grassland, or cropland containing scattered, large trees or small groves. Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah in the Central Valley. Forages in adjacent grassland or suitable grain or alfalfa fields or livestock pastures.	Yes	No	**Low (Foraging):** The non-native grassland within the survey area provides marginal foraging habitat for this species. However, there are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019).
Chaetodipus californicus femoralis Dulzura pocket mouse	SSC G5T3 S3	Found most often in grass-chaparral edges but may also be found in coastal scrub or other habitats, primarily in San Diego County.	No	No	**Low:** The non-native grassland within the survey area provides marginal habitat for this species. However, there are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019).
Chaetodipus fallax fallax northwestern San Diego pocket mouse	SSC G5T3T4 S3S4	Found terrestrially in a wide variety of temperate habitats ranging from chaparral and grasslands to scrub forests and deserts. Open habitat on the Pacific slope from southwestern San Bernardino County to northwestern Baja California. Habitat types include coastal sage scrub, sage scrub/grassland ecotones, and chaparral communities. Major habitat requirement is the presence of low growing vegetation or rocky outcroppings, as well as sandy soil to dig burrows.	Yes	No	**Low:** The non-native grassland vegetation community provides marginal habitat for this species. However, the nearest documented extant occurrence is located approximately 3 miles southwest of the survey area (Occurrence Number 28).
Circus hudsonius northern harrier	SSC G5 S3	Yearlong resident of California. Frequents meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands; seldom found in wooded area. In general, it prefers saltwater marshes, wet meadows, sloughs, and bogs for nesting and foraging. Nests on the ground in shrubby vegetation or patches of dense vegetation, usually at the marsh edge.	Yes	No	**Low (Foraging):** The non-native grassland habitat provides marginal foraging habitat for this species. However, the nearest documented extant occurrence is approximately 3.5 miles west of the survey area (Occurrence Number 24).
Coleonyx variegatus abbotti San Diego banded gecko	SSC G5T3T4 S1S2	Prefers rocky areas in coastal sage and chaparral within granite or rocky outcrops. Occurs in coastal and cismontane southern California from interior Ventura Co. south.	Yes	No	**Not Expected:** This species is not expected to occur within the survey area due to the lack of CSS and chaparral habitat.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Covered by MSHCP**	Observed On-site	Potential to Occur
Corynorhinus townsendii Townsend's big-eared bat	SSC G3G4 S2	Found throughout California, but the details of its distribution area not well known. Now considered uncommon in California. Details of its distribution are not well known. This species is found in all but subalpine and alpine habitats and may be found at any season throughout its range. Most abundant in mesic habitats. Requires caves, mines, tunnels, buildings, or other human-made structures for roosting.	No	No	**Not Expected:** This species is not expected to occur within the survey area due to the lack of suitable habitat. Further, there are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019).
Crotalus ruber red-diamond rattlesnake	SSC G4 S3	Found in southwestern California, from the Morongo Valley west to the coast and south along the peninsular ranges to mid Baja California. It can be found from the desert, through dense chaparral in the foothills (it avoids the mountains above around 4,000 feet amsl), to warm inland mesas and valleys, all the way to the cool ocean shore. It is most commonly associated with heavy brush with large rocks or boulders. Dense chaparral in the foothills, boulders associated coastal sage scrub, oak/pine woodlands, and desert slope scrub associations; however, chamise and red shank (*Adenostoma sparsifolium*) associations may offer better structural habitat for refuges and food resources for this species than other habitats.	Yes	No	**Not Expected:** This species is not expected to occur within the survey area due to the lack of suitable habitat.
Diadophis punctatus modestus San Bernardino ringneck snake	G5T2T3 S2?	Most common in open, relatively rocky areas. Often in somewhat moist microhabitats near intermittent streams. This species avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous vegetation.	No	No	**Not Expected:** This species is not expected to occur within the survey area due to the lack of suitable habitat.
Dipodomys stephensi Stephens' kangaroo rat	FE ST G2 S2	Occur in arid and semi-arid habitats with some grass or brush. Prefer open habitats with less than 50% protective cover. Require soft, well-drained substrate for building burrows and are typically found in areas with sandy soil.	Yes	No	**Low:** There is marginal habitat within the survey area. Further, the survey area is located in the southeast corner of the SKR HCP but outside of Core Reserve areas.
Elanus leucurus white-tailed kite	FP G5 S3S4	Yearlong resident along the coastal ranges and valleys of California. Occurs in low elevation, open grasslands, savannah-like habitats, agricultural areas, wetlands, and oak woodlands. Uses trees with dense canopies for cover. Important prey item is the California vole (*Microtus californicus*). Nests in tall (20 to 50 feet) coast live oaks (*Quercus agrifolia*).	Yes	No	**Low (Foraging):** The non-native grassland provides marginal foraging habitat for this species. However, the nearest documented extant occurrence is located approximately 3.7 miles southeast of the survey area (Occurrence Number 95).

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Covered by MSHCP****	**Observed On-site**	**Potential to Occur**
Emys marmorata western pond turtle	SSC G3G4 S3	Found in ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches, with abundant vegetation, either rocky or muddy bottoms, in woodland, forest, and grassland. In streams, prefers pools to shallower areas. Logs, rocks, cattail mats, and exposed banks are required for basking. May enter brackish water and even seawater. Found at elevations from sea level to over 5,900 feet amsl.	Yes	No	**Not Expected:** The open water and emergent wetland provide marginal suitable habitat for this species within the survey area. However, the nearest documented extant occurrence is located approximately 4.5 miles northwest of the survey area (Occurrence Number 847).
Eremophila alpestris actia California horned lark	WL G5T4Q S4	Yearlong resident of California. This subspecies is typically found in coastal regions. Breed in level or gently sloping shortgrass prairie, montane meadows, "bald" hills, open coastal plains, fallow grain fields, and alkali flats. Within southern California, California horned larks breed primarily in open fields, (short) grasslands, and rangelands. Nests on the open ground.	Yes	No	**Moderate (Foraging/Nesting):** The non-native grassland vegetation community provides marginal foraging and nesting habitat for this species. However, the nearest documented extant occurrence is approximately 3.5 miles west of the survey area (Occurrence Number 36).
Eumops perotis californicus western mastiff bat	SSC G5T4 S3S4	Primarily a cliff-dwelling species, roost generally under exfoliating rock slabs. Roosts are generally high above the ground, usually allowing a clear vertical drop of at least 3 meters below the entrance for flight. In California, it is most frequently encountered in broad open areas. Its foraging habitat includes dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, and agricultural areas.	No	No	**Low (Foraging):** The non-native grassland vegetation community provides marginal foraging habitat for this species. However, this species is not expected to roost within the survey area due to the lack of high cliff roosts.
Euphydryas editha quino quino checkerspot butterfly	FE G5T1T2 S1S2	Occupies a variety of habitat types that support California plantain (*Plantago erecta*), the species primary larval host plant, including grasslands, coastal sage scrub, chamise chaparral, red shank chaparral, juniper woodland, and semi-desert scrub. Can also be found in desert canyons and washes at the lower edge of chaparral habitats.	Yes	No	**Not Expected:** The species primary larval host plant California plantain was not observed within the survey area during the field surveys. The nearest documented extant occurrence is approximately 0.25 mile east of the survey area (Occurrence Number 55).

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Covered by MSHCP****	**Observed On-site**	**Potential to Occur**
Gila orcuttii arroyo chub	SSC G2 S2	Native to the Los Angeles, San Gabriel, San Luis Rey, Santa Ana, and Santa Margarita rivers and to Malibu and San Juan creeks. This species has been introduced and have successfully established populations in the Santa Ynez, Santa Maria, Cuyama and Mojave river systems as well as smaller coastal streams such as Arroyo Grande Creek and Chorro Creek in San Luis Obispo County. Warm streams of the Los Angeles Plain, which are typically muddy torrents during the winter, and clear quiet brooks in the summer, possibly drying up in places. They are found both in slow-moving and fast-moving sections, but generally deeper than 16 inches.	Yes	No	**Not Expected:** This species is not expected to occur within the survey area due to the lack of suitable habitat.
Haliaeetus leucocephalus bald eagle	SE FP G5 S3	Locally common yearlong resident of southern California. Typically prefer areas near large water bodies such as sea coasts, coastal estuaries and inland lakes and rivers, in many areas, these birds are found within two miles of a water source. Most populations, specifically those in northern regions, migrate to southern, milder climates annually. Generally, these birds' nest in the canopy of tall, coniferous trees, surrounded by smaller trees. They have been reported nesting on the ground, on cliffs, on cellular phone towers, on electrical poles and in artificial nesting towers.	Yes (a)	No	**Not Expected:** Areas near large water bodies typically preferred by this species is not present within the survey area. Additionally, this species is not expected to nest within the survey area due to the lack tall coniferous trees.
Lanius ludovicianus loggerhead shrike	SSC G4 S4	Yearlong resident of California. Prefers open habitats with bare ground, scattered shrubs, and areas with low or sparse herbaceous cover including open-canopied valley foothill hardwood, riparian, pinyon-juniper desert riparian, creosote bush scrub, and Joshua tree woodland. Requires suitable perches including trees, posts, fences, utility lines, or other perches. Nests in branches up to 14 feet above the ground frequently in a shrub with thorns or with tangled branching habitats.	Yes	No	**Not Expected:** This species is not expected to nest or forage within the survey area due to the lack of suitable habitat. Additionally, there are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019).
Lepus californicus bennettii San Diego black-tailed jackrabbit	SSC G5T3T4 S3S4	Occupies many diverse habitats, but primarily is found in arid regions supporting short-grass habitats, agricultural fields, or sparse coastal scrub.	Yes	No	**Low:** The non-native grassland within the survey area provide marginal habitat for this species. The nearest documented extant occurrence is approximately 0.5 mile northeast of the survey area (Occurrence Number 15).

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Covered by MSHCP**	Observed On-site	Potential to Occur
Neotoma lepida intermedia San Diego desert woodrat	SSC G5T3T4 S3S4	Occurs in coastal scrub communities between San Luis Obispo and San Diego Counties. Found in a variety of shrub and desert habitats, primarily associated with rock outcroppings, boulders, cacti, or areas of dense undergrowth. Woodrats often are associated with cholla cactus which they use for water and dens or boulders and boulder piles. The most common natural habitats for records are chaparral, coastal sage scrub (including RSS and Diegan coastal sage scrub) and grassland.	Yes	No	**Not Expected:** Although suitable marginal habitat is present, the survey area lacks the rock outcroppings, boulders, cacti, and areas of dense undergrowth typically preferred by this species.
Onychomys torridus ramona southern grasshopper mouse	SSC G5T3 S3	Common in arid desert habitats of the Mojave and southern Central Valley of California. Known elevation range is generally below 3,000 feet amsl. Little is known about habitat requirements; however, it is commonly found in scrub habitats with friable soils for digging in desert areas. It is believed that alkali desert scrub and desert scrub habitats are preferred, with somewhat lower densities expected in other desert habitats, including succulent shrub, wash, and riparian areas. Also occurs in coastal scrub, mixed chaparral, sagebrush, low sage, and bitterbrush habitats.	No	No	**Low:** There is marginal habitat for this species within the survey area. However, there are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019).
Perognathus longimembris brevinasus Los Angeles pocket mouse	SSC G5T1T2 S1S2	Occurs in lower elevation grasslands and coastal sage scrub communities in and around the Los Angeles Basin. Prefers open ground with fine sandy soils. May not dig extensive burrows, but instead will seek refuge under weeds and dead leaves instead.	Yes (c)	No	**Not Expected:** Suitable soils are marginally present within the survey area. However, the nearest documented extant occurrence is approximately 5 miles northwest of the survey area (Occurrence Number 22).
Perognathus longimembris internationalis Jacumba pocket mouse	SSC G5T2T3 S2	Occurs in desert riparian, desert scrub, desert wash, coastal scrub, and sagebrush. This species is rarely found on rocky sites and uses all canopy coverages.	No	No	**High:** Marginal habitat is present within the survey area. Further, this species was documented within the survey area in 1993 and is presumed extant (Occurrence Number 3).

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Covered by MSHCP**	Observed On-site	Potential to Occur
Phrynosoma blainvillii coast horned lizard	SSC G3G4 S4	Occurs in a wide variety of vegetation types including coastal sage scrub, annual grassland, chaparral, oak woodland, riparian woodland and coniferous forest. Its elevational range extends up to 4,000 feet in the Sierra Nevada foothills and up to 6,000 feet in the mountains of southern California. In inland areas, this species is restricted to areas with pockets of open microhabitat, created by disturbance (e.g. fire, floods, unimproved roads, grazing lands, and fire breaks). The key elements of such habitats are loose, fine soils with a high sand fraction; an abundance of native ants or other insects; and open areas with limited overstory for basking and low, but relatively dense shrubs for refuge.	Yes	No	**Low:** The non-native grassland vegetation community provides marginal habitat for this species. The nearest documented extant occurrence is approximately 0.5 miles northeast of the survey area (Occurrence Number 464).
Piranga rubra summer tanager	SSC G5 S1	Summer resident in southern California where it breeds in low-elevation willow and Fremont cottonwood woodlands, and in higher-elevation mesquite and saltcedar (*Tamarix* spp.) stands. Winters in the tropics, mainly in lowlands but also up to middle elevations in mountains, both in solid forest and in edges and clearings with scattered trees. Nests close to creeks, favoring broad riparian zones (196 feet [60 meters]).	No	No	**Not Expected:** The nesting and foraging habitat that is typically preferred by this species is not present within the survey area.
Polioptila californica californica coastal California gnatcatcher	FT SSC G4G5T2Q S2	Yearlong resident of sage scrub habitats that are dominated by California sagebrush. This species generally occurs below 750 feet amsl in coastal regions and below 1,500 feet amsl inland. Ranges from the Ventura County, south to San Diego County and northern Baja California and it is less common in sage scrub with a high percentage of tall shrubs. Prefers habitat with more low-growing vegetation.	Yes	No	**Not Expected:** Habitat dominated by California sagebrush that is typically preferred by this species is not present within the survey area. Further, this species was not detected during any of the field surveys conducted by Michael Baker between 2017 and 2019.
Salvadora hexalepis virgultea coast patch-nosed snake	SSC G5T4 S2S3	Occurs in brushy vegetation including coastal scrub and chaparral from the coast to the mountains. Takes refuge in existing small mammal burrows.	No	No	**Not Expected:** The habitats that is are typically preferred by this species are not present within the survey area.
Setophaga petechia yellow warbler	SSC G5 S3S4	Yearlong resident along the southern coast of California with the remainder of the State being occupied during the summer. The species also winters along the Colorado River and in parts of Imperial and Riverside Counties. Nests in riparian areas dominated by willows, cottonwoods, California sycamores, or alders (*Alnus* spp.) or in mature chaparral. May also use oaks, conifers, and urban areas near stream courses.	Yes	No	**Not Expected:** The nesting and foraging habitat that is typically preferred by this species is not present within the survey area.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Covered by MSHCP****	**Observed On-site**	**Potential to Occur**
Spea hammondii western spadefoot	SSC G3 S3	Prefers open areas with sandy or gravelly soils, in a variety of habitats including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Rain pools which do not contain American bullfrogs (*Lithobates catesbeianus*), predatory fish, or crayfish are necessary for breeding. Estivates in upland habitats adjacent to potential breeding sites in burrows approximating 3 feet in depth.	Yes	No	**Not Expected:** The suitable habitat that is typically preferred by this species is not present within the survey area. Additionally, the nearest documented extant occurrence is approximately 3.7 miles northwest of the survey area (Occurrence Number 876).
Streptocephalus wootoni Riverside fairy shrimp	FE G1G2 S1S2	Restricted to deep seasonal vernal pools, vernal pool like ephemeral ponds, and stock ponds and other human modified depressions. Basins that support Riverside fairy shrimp are typically dry a portion of the year, but usually are filled by late fall, winter, or spring rains, and may persist through May. Endemic to western Riverside, Orange, and San Diego Counties in tectonic swales/earth slump basins in grassland and coastal sage scrub. In Riverside County, the species been found in pools formed over the following soils: Murrieta stony clay loams, Las Posas series, Wyman clay loam, and Willows soils. All known habitat lies within annual grasslands, which may be interspersed through chaparral or coastal sage scrub vegetation.	Yes (a)	No	**Not Expected:** The **s**easonal pools within annual grasslands that is typically preferred by this species is not present within the survey area.
Thamnophis hammondii two-striped garter snake	SSC G4 S3S4	Occurs in or near permanent fresh water, often along streams with rocky beds and riparian growth up to 7,000 feet amsl.	No	No	**Not Expected:** The suitable habitat that is typically preferred by this species is not present within the survey area. Further, there are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019).
Toxostoma bendirei Bendire's thrasher	SSC G4G5 S3	Occurs in various kinds of dry, semi-open habitats. Most common in the Sonoran Desert with a variety of shrubs and cholla cactus with some understory of grass. Also found where dense hedges or shrubs are next to farmland and in grassland with scattered shrubs and yucca (*Yucca* sp.).	No	No	**Not Expected:** The suitable habitat that is typically preferred by this species is not present within the survey area. Further, there are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019).

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Covered by MSHCP**	Observed On-site	Potential to Occur
Vireo bellii pusillus least Bell's vireo	FE SE SSC G5T2 S2	Summer resident in southern California. Breeding habitat generally consists of dense, low, shrubby vegetation in riparian areas, and mesquite brushlands, often near water in arid regions. Early successional cottonwood-willow riparian groves are preferred for nesting. The most critical structural component of nesting habitat in California is a dense shrub layer that is 2 to 10 feet (0.6 to 3.0 meters) above ground. The presence of water, including ponded surface water or moist soil conditions, may also be a key component for nesting habitat.	Yes (a)	No	**Not Expected:** Dense riparian areas typically preferred by this species are not present within the survey area.
SPECIAL-STATUS PLANT SPECIES					
Abronia villosa* var. *aurita chaparral sand-verbena	1B.1 G5T2? S2	Annual herb. Occurs on sandy soils within chaparral, coastal scrub, and desert dunes habitat. Found at elevations ranging from 246 to 5,249 feet amsl. Blooming period is (January) March through September.	No	Yes	**Present:** Several individuals were identified within the southern portion of the survey area during the 2019 rare plant survey.
Allium munzii Munz's onion	FE ST 1B.1 G1 S1	Perennial bulbiferous herb. Grows in mesic, clay soils within chaparral, cismontane woodland, coastal scrub, pinyon and juniper woodland, and valley and foothill grassland habitats. Found at elevations ranging from 974 to 3,510 feet amsl. Blooming period is March through May.	Yes (b)	No	**Not Expected:** Although the non-native grassland vegetation community could provide marginal habitat for this species, the clay soils preferred by this species are not present within the survey area. Additionally, there are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019).
Almutaster pauciflorus alkali marsh aster	2B.2 G4 S1S2	Perennial herb. Found on alkaline soils within meadows and seeps. Found at elevations ranging from 787 to 2,625 feet amsl. Blooming period is from June to October.	No	No	**Not Expected:** Alkaline soils within meadows and seeps are not present within the survey area.
Ambrosia pumila San Diego ambrosia	FE 1B.1 G1 S1	Perennial rhizomatous herb. Occurs on sandy loam or clay soils (often in disturbed areas) and sometimes alkaline soils. Habitats include chaparral, coastal scrub, valley and foothill grassland, and vernal pools. Grows in elevation ranging from 66 to 1,362 feet amsl. Blooming period is April through October.	Yes (b)	No	**Not Expected:** The non-native grassland vegetation community could provide marginal habitat for this species. However, there are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019). Further, the species was not observed during any of the surveys conducted by Michael Baker between November 14, 2017 and July 25, 2019.
Arctostaphylos rainbowensis Rainbow manzanita	1B.1 G2 S2	Perennial evergreen shrub. Found in chaparral habitats. Found at elevations ranging from 673 to 2,198 feet amsl. Blooming period is from December to March.	Yes	No	**Not Expected:** The chaparral habitat typically preferred by this species is not present within the survey area.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Covered by MSHCP**	Observed On-site	Potential to Occur
Asplenium vespertinum western spleenwort	4.2 G4 S4	Fern. Found on rocky soils within chaparral, cismontane woodland, and coastal scrub habitat. Found at elevations ranging from 591 to 3,281 feet amsl. Blooming period is from February to June.	No	No	**Not Expected:** There is no suitable habitat within the survey area.
Astragalus pachypus* var. *jaegeri Jaeger's bush milk-vetch	1B.1 G4T2 S2	Perennial shrub. Occurs within chaparral, cismontane woodland, coastal scrub, valley, and foothill grassland. Grows in elevations ranging from 1,197 to 3,199 feet amsl. Blooming period is from December to June.	Yes	No	**Low:** The non-native grassland vegetation community could provide marginal habitat for this species. However, the nearest documented extant occurrence is approximately 2.5 miles east of the survey area (Occurrence Number 1).
Berberis nevinii Nevin's barberry	FE SE 1B.1 G1 S1	Shrub. Occurs on steep, north-facing slopes or in low-grade sandy washes in chaparral, cismontane woodland, coastal scrub, and riparian scrub. Found at elevations ranging from 899 to 2,707 feet amsl. Blooming period is from March to June.	Yes	No	**Not Expected:** There is no suitable habitat within the survey area.
Brodiaea orcuttii Orcutt's brodiaea	1B.1 G2 S2	Perennial bulbiferous herb. Occurs on mesic, clay soils within closed-cone coniferous forest, chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, and vernal pools. Found at elevations ranging from 98 to 5,551 feet amsl. Blooming period is from May to July.	Yes	No	**Not Expected:** Although non-native grassland is marginally present within the survey area, the clay soils typically preferred by this species are not present.
Calandrinia breweri Brewer's calandrinia	4.2 G4 S4	Annual herb. Grows on sandy or loamy soils within chaparral and coastal scrub habitats. Found at elevations ranging from 33 to 4,003 feet amsl. Blooming period is (January) March through June.	No	No	**Not Expected:** The CSS and chaparral vegetation communities typically preferred by this species are not present within the survey area.
Calochortus plummerae Plummer's mariposa-lily	4.2 G4 S4	Perennial bulbiferous herb. Occurs on granitic and rocky soils within chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and valley/foothill grassland. Grows in elevations ranging from 328 to 5,577 feet amsl. Blooming period is from May to July.	Yes	No	**Not Expected:** The non-native grassland vegetation community could provide marginal habitat for this species. However, there are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019). Further, the species was not observed during any of the surveys conducted by Michael Baker between November 14, 2017 and July 25, 2019.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Covered by MSHCP****	**Observed On-site**	**Potential to Occur**
Calochortus weedii* var. *intermedius intermediate mariposa-lily	1B.2 G3G4T2 S2	Perennial bulbiferous herb. Found in chaparral, coastal scrub, and valley and foothill grasslands in rocky or calcareous soils. Found at elevations ranging from 344 to 2,805 feet amsl. Blooming period is May through July.	Yes	No	**Not Expected:** The non-native grassland vegetation community could provide marginal habitat for this species. However, the nearest documented extant occurrence is approximately 2 miles east of the survey area (Occurrence Number 20). Further, the species was not observed during any of the surveys conducted by Michael Baker between November 14, 2017 and July 25, 2019.
Caulanthus simulans Payson's jewelflower	4.2 G4 S4	Annual herb. Occurs on sandy, granitic soils in chaparral and coastal scrub habitats. Found at elevations ranging from 295 to 7,218 feet amsl. Blooming period is from (February) March to May (June).	Yes	No	**Not Expected:** The chaparral and coastal scrub habitats typically preferred by this species are not present within the survey area.
Ceanothus cyaneus Lakeside ceanothus	1B.2 G2 S2	Shrub. Occurs in closed-cone coniferous forest and chaparral. Found at elevations ranging from 500 to 3400 feet amsl. Blooming period is from April to June	No	No	**Not Expected:** There is no suitable habitat within the survey area.
Ceanothus ophiochilus Vail Lake ceanothus	FT FE 1B.1 G1 S1	Shrub. Occurs on Gabbro seams on north-facing ridges on the eastern sides of mountains within chaparral. Found at elevations ranging from 2030 to 3000 feet amsl. Blooming period is from February to March.	Yes	No	**Not Expected:** The survey area is outside of the known elevation range for this species.
Centromadia pungens* ssp. *laevis smooth tarplant	1B.1 G3G4T2 S2	Annual herb. Occurs in alkaline soils within chenopod scrub, meadows and seeps, playas, riparian woodland, and valley/foothill grassland habitats. Grows in elevation from 0 to 2,100 feet amsl. Blooming period is April through September.	Yes (a/c)	No	**Not Expected:** The alkaline soils preferred by this species are not present within the survey area. Additionally, there are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019).
Chaenactis parishii Parish's chaenactis	1B.3 G3G4 S3	Perennial herb. Occurs on rocky sites within chaparral. Found at elevations ranging from 2200 to 7000 feet amsl.	No	No	**Not Expected:** The survey area is outside of the known elevation range for this species.
Chorizanthe leptotheca Peninsular spineflower	4.2 G3 S3	Annual herb. Occurs on alluvial, granitic soils within chaparral, coastal scrub, and lower montane coniferous forest habitats. Found at elevations ranging from 984 to 6,233 feet amsl. Blooming period is May through August.	Yes	No	**Not Expected:** The suitable habitat preferred by this species is not present within the survey area. Additionally, there are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019).

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Covered by MSHCP****	**Observed On-site**	**Potential to Occur**
Chorizanthe parryi* var. *parryi Parry's spineflower	1B.1 G3T2 S2	Annual herb. Occurs on sandy and/or rocky soils in chaparral, coastal sage scrub, and sandy openings within alluvial washes and margins. Found at elevations ranging from 951 to 3,773 feet amsl. Blooming period is from April to June.	Yes	No	**Not Expected:** The suitable habitat preferred by this species is not present within the survey area. Additionally, the nearest documented extant occurrence is approximately 3.5 miles east of the survey area (Occurrence Number 42). Further, the species was not observed during any of the surveys conducted by Michael Baker between November 14, 2017 and July 25, 2019.
Chorizanthe polygonoides* var. *longispina long-spined spineflower	1B.2 G5T3 S3	Annual herb. Occurs on clay soils within chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, and vernal pools. Found at elevations ranging from 98 to 5,020 feet amsl. Blooming period is April through July.	Yes	No	**Not Expected:** Although the non-native grassland vegetation community could provide marginal habitat, the clay soils preferred by this species are not present. Further, no vernal pools, meadows, or seeps occur within the survey area.
Clarkia delicata delicate clarkia	1B.2 G3 S3	Annual herb. Often occurs on gabbro soils within cismontane woodland and chaparral. Found at elevations ranging from 310 to 5900 feet amsl. Blooming period is April to June.	No	No	**Not Expected:** The suitable habitat preferred by this species is not present within the survey area. Additionally, there are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019).
Convolvulus simulans small-flowered morning-glory	4.2 G4 S4	Annual herb. Found on wet clay and serpentine ridges within chaparral, coastal scrub, and valley and foothill grassland. Found at elevations ranging from 100 to 2820 feet amsl. Blooming period is March through July.	Yes	No	**Not Expected:** Although the non-native grassland vegetation community could provide marginal habitat, they lack the clay and serpentine soils preferred by this species.
Cryptantha wigginsii Wiggins' cryptantha	1B.2 G2 S1	Annual herb. Found in clay soils within coastal scrub habitat. Found at elevations ranging from 100 to 350 feet amsl.	No	No	**Not Expected:** The coastal scrub habitat with clay soils typically preferred by this species is not present within the survey area.
Deinandra mohavensis Mojave tarplant	SE 1B.3 G2 S2	Annual herb. Occurs on mesic soils within chaparral, coastal scrub, and riparian scrub. Grows in elevations ranging from 2,100 to 5,249 feet amsl. Blooming period is from (May) June to October (January).	Yes	No	**Not Expected:** The survey area is outside of the known elevation range for this species.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Covered by MSHCP**	Observed On-site	Potential to Occur
Deinandra paniculata paniculate tarplant	4.2 G4 S4	Annual herb. Occurs in coastal scrub, vernal pools, and valley/foothill grassland habitats. Found at elevations ranging from 82 to 3,084 feet amsl. Blooming period is April through November.	No	No	**Low:** The non-native grassland vegetation community could provide marginal habitat for this species. However, there are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019). Further, the species was not observed during any of the surveys conducted by Michael Baker between November 14, 2017 and July 25, 2019.
Dodecahema leptoceras slender-horned spineflower	FE SE 1B.1 G1 S1	Annual herb. Occurs on flood deposited terraces and washes in chaparral, coastal scrub, and alluvial fan sage scrub habitats. Found at elevations ranging from 1,181 to 2,690 feet amsl. Blooming period is from April to June.	Yes	No	**Not Expected:** There is no suitable habitat within the survey area. Further, the nearest documented extant occurrence is approximately 2.5 miles southeast of the survey area (Occurrence Number 24). Further, the species was not observed during any of the surveys conducted by Michael Baker between November 14, 2017 and July 25, 2019.
Dudleya multicaulis many-stemmed dudleya	1B.2 G2 S2	Perennial herb. Often occurs on clay soils and around granitic outcrops in chaparral, coastal sage scrub, and grasslands. Found at elevations ranging from 0 to 2,592 feet amsl. Blooming period is April through July.	Yes (b)	No	**Not Expected:** The non-native grasslands habitat preferred by the species is marginally present within the survey area. However, the nearest documented extant occurrence is approximately 3 miles east of the survey area (Occurrence Number 132). Further, the species was not observed during any of the surveys conducted by Michael Baker between November 14, 2017 and July 25, 2019.
Erythranthe diffusa Palomar monkeyflower	4.3 G4 S3	Annual herb. Grows on sandy or gravelly soils within chaparral and lower montane coniferous forest. Found at elevations ranging from 4,003 to 6,004 feet amsl. Blooming period is April through June.	Yes	No	**Not Expected:** The survey area is outside of the known elevation range for this species.
Githopsis diffusa* ssp. *filicaulis Mission Canyon bluecup	3.1 G5T1Q S1	Annual herb. Occurs in open, grassy places and mesic, disturbed areas in chaparral. Found at elevations ranging from 1480 to 2300 feet amsl. Blooming period is from April to June.	No	No	**Not Expected:** The survey area is outside of the known elevation range for this species.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Covered by MSHCP**	Observed On-site	Potential to Occur
Harpagonella palmeri Palmer's grapplinghook	4.2 G4 S3	Annual herb. Occurs on clay soils within open grassy areas within chaparral, coastal scrub, and valley and foothill grassland habitats. Found at elevations ranging from 66 to 3,133 feet amsl. Blooming period is March through May.	Yes	No	**Not Expected:** Although the non-native grassland vegetation communities could provide marginal habitat, they lack the clay soils preferred by this species. Further, the nearest documented extant occurrence is approximately 4 miles north of the survey area (Occurrence Number 13).
Hesperocyparis forbesii Tecate cypress	1B.1 G2 S2	Perennial evergreen tree. Occurs on clay, gabbroic or metavolcanic soils within closed-cone coniferous forest and chaparral habitats. Found at elevations ranging from 262 to 4,921 feet amsl. This species does not have a blooming period.	No	No	**Not Expected:** Suitable chaparral and closed-cone coniferous forest habitats with clay, gabbroic, or metavolcanic soils preferred by this species are not present within the survey area.
Horkelia cuneata* var. *puberula mesa horkelia	1B.1 G4T1 S1	Perennial herb. Found in sandy or gravelly soils within chaparral, cismontane woodland, and coastal scrub habitats. Found at elevations ranging from 230 to 2,657 feet amsl. Blooming period is February through September.	No	No	**Not Expected:** There is no suitable habitat within the survey area. Further, the species was not observed during any of the surveys conducted by Michael Baker between November 14, 2017 and July 25, 2019.
Hulsea californica San Diego sunflower	1B.3 G3 S3	Perennial herb. Occurs in burns, clearings, or openings in chaparral and pine-oak woodland. Found at eleveations ranging from 1263 to 6300 feet amsl. Blooming period is from April to June.	No	No	**Not Expected:** There is no suitable habitat within the survey area.
Lasthenia glabrata* ssp. *coulteri Coulter's goldfields	1B.1 G4T2 S2	Annual herb. Prefers playas, vernal pools, and coastal salt marshes and swamps. Found at elevations ranging from 3 to 4,003 feet amsl. Blooming period is from February to June.	Yes (c)	No	**Not Expected:** The wetland habitats typically preferred by this species is not present within the survey area.
Lepechinia cardiophylla heart-leaved pitcher sage	1B.2 G3 S2S3	Perennial shrub. Found in openings within closed-cone coniferous forest, chaparral, and cismontane woodland habitats. Found at elevations ranging from 1,706 to 4,495 feet amsl. Blooming period is April through July.	Yes (c)	No	**Not Expected:** The survey area is outside of the known elevation range for this species.
Lepidium virginicum* var. *robinsonii Robinson's pepper-grass	4.3 G5T3 S3	Annual herb. Dry soils on chaparral and coastal sage scrub. Found at elevations ranging from 66 to 4,396 feet amsl. Blooming period is January through July.	No	No	**Not Expected:** The CSS and chaparral vegetation communities typically preferred by this species are not present within the survey area.
Lilium humboldtii* ssp. *ocellatum ocellated Humboldt lily	4.2 G4T4? S4?	Perennial bulbiferous herb. Found in openings within chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland habitats. Found at elevations ranging from 98 to 5,906 feet amsl. Blooming period is March through August.	Yes (a)	No	**Not Expected:** There is no suitable habitat within the survey area. Further, there are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019).

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Covered by MSHCP****	**Observed On-site**	**Potential to Occur**
Linanthus orcuttii Orcutt's linanthus	1B.3 G3 S2	Annual herb. Found in openings within chaparral, lower montane coniferous forest, and pinyon and juniper woodland habitats. Found at elevations ranging from 3,002 to 7,037 feet amsl. Blooming period is from May to June.	No	No	**Not Expected:** The survey area is outside of the known elevation range for this species.
Microseris douglasii* ssp. *platycarpha small-flowered microseris	4.2 G4T4 S4	Annual herb. Occurs in alkaline soil in river bottoms in cismontane woodland, valley and foothill grassland, coastal scrub, and vernal pools. Found at elevations ranging from 50 to 3510 feet amsl. Blooming period is from March to May.	Yes	No	**Not Expected:** There is no suitable habitat within the survey area.
Monardella hypoleuca* ssp. *intermedia intermediate monardella	1B.3 G4T2? S2?	Perennial rhizomatous herb. Usually found in the understory, within chaparral, cismontane woodland, and sometimes lower montane coniferous forest habitats. Grows in elevation ranging from 1,312 to 4,101 feet amsl. Blooming period is from April to September.	Yes	No	**Not Expected:** The survey area is outside of the known elevation range for this species.
Monardella hypoleuca* ssp. *lanata felt-leaved monardella	1B.2 G4T3 S3	Perennial rhizomatous herb. Occurs in sandy soils within the understory of mixed chaparral, chamise chaparral, and southern oak woodland. Found at elevations ranging from 984 to 5200 feet amsl. Blooming period is from June to August.	No	No	**Not Expected:** There is no suitable habitat within the survey area.
Monardella macrantha ssp. hallii Hall's monardella	1B.3 G5T3 S3	Perennial rhizomatous herb. Occurs on dry slopes and ridges in openings within broadleafed upland forest, chaparral, lower montane coniferous forest, cismontane woodland, and valley and foothill grassland. Found at elevations ranging from 2300 to 5900 feet amsl. Blooming period is from June to October.	Yes	No	**Not Expected:** The survey area is outside of the known elevation range for this species.
Navarretia fossalis spreading navarretia	FE 1B.1 G2 S2	Annual herb. Habitats include chenopod scrub, marshes and swamps (assorted shallow freshwater), playas, and vernal pools. Grows in elevation ranging from 98 to 2,149 feet amsl. Blooming period is from April to June.	Yes (b)	No	**Not Expected:** The wetland vegetation communities typically preferred by this species are not present within the survey area.
Nolina cismontana chaparral nolina	1B.2 G3 S3	Perennial evergreen shrub. Occurs on sandstone or gabbro soils within chaparral and coastal scrub habitats. Found at elevations ranging from 459 to 4,183 feet amsl. Blooming period is (March) May through July.	No	No	**Not Expected:** There is no suitable habitat within the survey area.
Orcuttia californica California Orcutt grass	FE SE 1B.1 G1 S1	Annual herb. Restricted to vernal pool habitats. Found at elevations ranging from 49 to 2,165 feet amsl. Blooming period is from April to August.	Yes	No	**Not Expected:** The vernal pool vegetation community typically preferred by this species is not present within the survey area.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Covered by MSHCP**	Observed On-site	Potential to Occur
Packera ganderi Gander's ragwort	1B.2 G2 S2	Perennial herb. Occurs in recently burned sits and gabbro outcrops within chaparral. Found at elevations ranging from 1590 to 4300 feet amsl. Blooming period is from April to June.	No	No	**Not Expected:** The survey area is outside of the known elevation range for this species.
Penstemon californicus California beardtongue	1B.2 G3 S2	Perennial herb. Occurs on sandy soils within chaparral, lower montane coniferous forest, and pinyon and juniper woodland habitats. Found at elevations ranging from 3,839 to 7,546 feet amsl. Blooming period is May through June (August).	Yes	No	**Not Expected:** The survey area is outside of the known elevation range for this species.
Phacelia keckii Santiago Peak phacelia	1B.3 G1 S1	Annual herb. Grows in closed-cone coniferous forest and chaparral habitats. Found at elevations ranging from 1,788 to 5,249 feet amsl. Blooming period is May through June.	No	No	**Not Expected:** The survey area is outside of the known elevation range for this species.
Pickeringia montana* var. *tomentosa woolly chaparral-pea	4.3 G5T3T4 S3S4	Evergreen shrub. Occurs on gabbroic, granitic, clay soils within chaparral habitats. Found at elevations ranging from 0 to 5,577 feet amsl. Blooming period is from May to August.	No	No	**Not Expected:** Chaparral habitats with gabbroic, granitic, and clay soils are not present within the survey area.
Polygala cornuta* var. *fishiae Fish's milkwort	4.3 G5T4 S4	Perennial deciduous shrub. Occurs in chaparral, cismontane woodland, and riparian woodland habitats. Found at elevations ranging from 328 to 3,281 feet amsl. Blooming period is May through August.	Yes (a)	No	**Not Expected:** There is no suitable habitat within the survey area.
Pseudognaphalium leucocephalum white rabbit-tobacco	2B.2 G4 S2	Perennial herb. Found on sandy and gravelly soils within chaparral, cismontane woodland, coastal scrub, and riparian woodland habitats. Found at elevations ranging from 0 to 6,890 feet amsl. Blooming period is July through December.	No	No	**Not Expected:** There is no suitable habitat within the survey area.
Quercus engelmannii Engelmann oak	4.2 G4T3 S3	Perennial deciduous tree. Occurs in chaparral, cismontane woodland, riparian woodland, and valley/foothill grassland. Grows in elevations ranging from 160 to 4,275 feet amsl. Blooming period is from March to June.	Yes	No	**Not Expected:** There are no occurrence records for this species within 5 miles of the survey area (CNDDB, 2019). Further, the species was not observed during any of the surveys conducted by Michael Baker between November 14, 2017 and July 25, 2019.
Saltugilia latimeri Latimer's woodland-gilia	1B.2 G3 S3	Annual herb. Found in rocky or sandy substrate within chaparral, Mojavean desert scrub, and pinyon and juniper woodland. Sometimes found in washes and limestone. Found at elevations ranging from 360 to 6,600 feet amsl. Blooming period is from March to June.	No	No	**Not Expected:** There is no suitable habitat within the survey area.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Covered by MSHCP**	Observed On-site	Potential to Occur
Selaginella cinerascens ashy spike-moss	4.1 G3G4 S3	Rhizomatous fern. Occurs in chaparral and coastal scrub. Found at elevations ranging from 30 to 2100 feet amsl.	No	No	**Not Expected:** There is no suitable habitat within the survey area.
Senecio aphanactis chaparral ragwort	2B.2 G3 S2	Annual herb. Grows on alkaline soils within chaparral, cismontane woodland, and coastal scrub habitats. Found at elevations ranging from 49 to 2,625 feet amsl. Blooming period is from January to April.	No	No	**Not Expected:** There is no suitable habitat within the survey area.
Senecio astephanus San Gabriel ragwort	4.3 G3 S3	Perennial herb. Occurs on rocky slopes within coastal bluff scrub and chaparral habitats. Found at elevations ranging from 1,312 to 4,921 feet amsl. Blooming period is from May to July.	No	No	**Not Expected:** There is no suitable habitat within the survey area.
Sidalcea neomexicana Salt Spring checkerbloom	2B.2 G4 S2	Perennial herb. Found on alkaline and mesic soils within chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, and playas. Found at elevations ranging from 49 to 5,020 feet amsl. Blooming period is from March to June.	No	No	**Not Expected:** There is no suitable habitat within the survey area.
Tetracoccus dioicus Parry's tetracoccus	1B.2 G2G3 S2	Perennial deciduous shrub. Occurs in chaparral and coastal scrub habitats. Found at elevations ranging from 541 to 3,281 feet amsl. Blooming period is from April to May.	No	No	**Not Expected:** There is no suitable habitat within the survey area.
Texosporium sancti-jacobi woven-spored lichen	3 G3 S2	Lichen. Found in open sites within chaparral. Typically found on soil, small mammal pellets, dead twigs, and on *Selaginella*. In California, this species is typically associated with *Adenostoma fasciculatum, Eriogonum*, and *Selaginella*.	No	No	**Not Expected:** The chaparral vegetation community typically preferred by this species is not present within the survey area.
Viola purpurea* ssp. *aurea golden violet	2B.2 G5T2 S2	Perennial herb. Occurs on dry, sandy slopes in Great Basin scrub and pinyon-juniper woodland. Found at elevations ranging from 3280 to 8200 feet amsl.	No	No	**Not Expected:** The survey area is outside of the known elevation range for this species.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Special-Status Rank***	**Habitat Preferences and Distribution Affinities**	**Covered by MSHCP****	**Observed On-site**	**Potential to Occur**
SPECIAL-STATUS VEGETATION COMMUNITIES					
CNDDB/Holland (1986) Riversidian Alluvial Fan Sage Scrub **MCV (1995)** Scalebroom Series **NVCS (2009)** *Lepidospartum squamatum* intermittently flooded Shrubland Alliance	G3 S3	Found at elevations ranging from 164 to 4,922 feet amsl on intermittently or rarely flooded, low-gradient alluvial deposits along streams, washes, and fans. Scalebroom (*Lepidospartum squamatum*) is dominant, co-dominant, or conspicuous in the shrub canopy with burrobrush (*Ambrosia salsola*), California sagebrush, mulefat, bladderpod (*Cleome isomeris*), California cholla (*Cylindropuntia californica*), brittlebush (*Encelia farinosa*), thick leaved yerba santa (*Eriodictyon crassifolium*), hairy yerba santa (*Eriodictyon trichocalyx*), California buckwheat, chaparral yucca (*Hesperoyucca whipplei*), deerweed (*Acmispon glaber*), laurel sumac (*Malosma laurina*), prickly-pear cactus, lemonade berry (*Rhus integrifolia*), sugar bush (*Rhus ovata*), skunkbrush (*Rhus aromatica*), and poison oak (*Toxicodendron diversilobum*). Emergent trees or tall shrubs may be present at low cover, including mountain mahogany (*Cercocarpus betuloides*), southern California black walnut, California juniper (*Juniperus californica*), California sycamore, Fremont cottonwood, or black elderberry. Shrubs are less than 7 feet tall; canopy is open to continuous, and two tiered. Herbaceous is layer variable and may be grassy.	-	No	**Absent:** This vegetation community does not occur within the survey area.
CNDDB/Holland (1986) Southern Coast Live Oak Riparian Forest **MCV (1995)** Coast Live Oak Series **NVCS (2009)** *Quercus agrifolia* Woodland Alliance	G5 S4	Found at elevations ranging from sea level to 3,937 feet amsl in alluvial terraces, canyon bottoms, stream banks, slopes, and flats, Soils are deep, sandy or loamy with high organic matter. Coast live oak is a dominant or co-dominant in the tree canopy with bigleaf maple (*Acer macrophyllum*), box elder (*Acer negundo*), madrono (*Arbutus menziesii*), southern California black walnut, California sycamore, Fremont cottonwood, blue oak (*Quercus douglasii*), Engelmann oak (*Quercus engelmannii*), California black oak (*Quercus kelloggii*), valley oak, arroyo willow, and California bay. Trees are less than 98 feet tall; canopy is open to continuous. Shrub layer is sparse to intermittent. Herbaceous layer is sparse or grassy.	-	No	**Absent:** This vegetation community does not occur within the survey area.

Table E-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	Special-Status Rank*	Habitat Preferences and Distribution Affinities	Covered by MSHCP**	Observed On-site	Potential to Occur
CNDDB/Holland (1986) Southern Cottonwood Willow Riparian Forest **MCV (1995)** Fremont Cottonwood Series **NVCS (2009)** *Populus fremontii* Forest Alliance	G4 S3.2	Found at elevations ranging from sea level to 7,874 feet amsl on floodplains, along low-gradient rivers, perennial or seasonally intermittent streams, springs, in lower canyons in desert mountains, in alluvial fans, and in valleys with a dependable subsurface water supply that varies considerably during the year. Fremont cottonwood is a dominant or co-dominant in the tree canopy with box elder, desert baccharis (*Baccharis sergiloides*), Oregon ash (*Fraxinus latifolia*), northern California black walnut (*Juglans hindsii*), California sycamore, coast live oak, narrowleaf willow (*Salix exigua*), Gooding's willow (*Salix goodingii*), polished willow (*Salix laevigata*), arroyo willow, pacific willow (*Salix lasiandra* ssp. *lasiandra*), and yellow willow (*Salix lutea*). Trees and less than 25 meters tall; canopy is continuous to open. Shrub layer is intermittent to open. Herbaceous layer is variable.	-	No	**Absent:** This vegetation community does not occur within the survey area.
CNDDB/Holland (1986) Southern Willow Scrub **MCV (1995)** N/A **NVCS (2009)** N/A	N/A N/A	Dense, broadleaved, winter-deciduous riparian thickets dominated by several willow species, with scattered emergent Fremont's cottonwood and California sycamore. Most stands are too dense to allow much understory development. Loose, sandy or fine gravelly alluvium deposited near stream channels during flood flows. This early seral type required repeated flooding to prevent succession to Southern Cottonwood-Sycamore Riparian Forest.	-	No	**Absent:** This vegetation community does not occur within the survey area.

* **U.S. Fish and Wildlife Service (USFWS)**

- FE Endangered – any species which is in danger of extinction throughout all or a significant portion of its range.
- FT Threatened – any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

California Department of Fish and Wildlife (CDFW)

- SE Endangered – any native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.
- ST Threatened – any native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required under the California Endangered Species Act.
- CSE Candidate State Endangered – The classification provided to a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the Fish and Game Commission has formally noticed as being under review by the Department of Fish and Wildlife for addition to the list of endangered species, or a species for which the commission has published a notice of proposed regulation to add the species to the list of endangered species.
- FP Fully Protected – any native species or subspecies of bird, mammal, fish, amphibian, or reptile that were determined by the State of California to be rare or face possible extinction.
- SSC Species of Special Concern – any species, subspecies, or distinct population of fish, amphibian, reptile, bird, or mammal native to California that currently satisfies one or more of the following criteria: is extirpated from California or, in the case of birds, in its primary seasonal or breeding role; is listed as Federally-, but not State-, threatened or endangered; meets the State definition of threatened or endangered but has not formally been listed; is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status; or has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status.
- WL Watch List - taxa that were previously designated as "Species of Special Concern" but no longer merit that status, or which do not yet meet SSC criteria, but for which there is concern and a need for additional information to clarify status.

California Native Plant Society (CNPS) California Rare Plant Rank

1B Plants rare, threatened, or endangered in California and elsewhere.

2B Plants rare, threatened, or endangered in California but more common elsewhere.

3 Plant that lack the necessary information to assign them to one of the other ranks or to reject them.

4 Plants of limited distribution – Watch List.

Threat Ranks

.1 Seriously threatened in California (over 80% of occurrences threatened/high degree any immediacy of threat).

.2 Moderately threatened in California (20 to 80 percent of occurrences threatened/moderate degree and immediacy of threat).

.3 Not very threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known).

NatureServe Conservation Status Rank

The Global Rank (G#) reflects the overall condition and imperilment of a species throughout its global range. The Infraspecific Taxon Rank (T#) reflects the global situation of just the subspecies or variety. The State Rank (S#) reflects the condition and imperilment of an element throughout its range within California. (G#Q) reflects that the element is very rare but there are taxonomic questions associated with it; the calculated G rank is qualified by adding a Q after the G#). Adding a ? to a rank expresses uncertainty about the rank.

G1/T1 Critically Imperiled – At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

G2/T2 Imperiled— At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.

G3/T3 Vulnerable— At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

G4/T4 Apparently Secure— Uncommon but not rare; some cause for long-term concern due to declines or other factors.

G5/T5 Secure – Common; widespread and abundant.

S1 Critically Imperiled – Critically imperiled in the state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the State.

S2 Imperiled – Imperiled in the State because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or State.

S3 Vulnerable – Vulnerable in the State due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.

** **Western Riverside County Multiple Species Habitat Conservation Plan**

Yes – Fully Covered.

No – Not Covered.

Yes (a) – May require additional surveys pursuant to Section 6.1.2, *Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools*.

Yes (b) – May require additional surveys pursuant to Section 6.1.3, *Protection of Narrow Endemic Plant Species*.

Yes (c) – May require additional surveys pursuant to Section 6.3.2, *Additional Survey Needs and Procedures*.

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Appendix C-1
Cultural Resources Report

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UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION PROJECT

CULTURAL RESOURCES REPORT

(Project No. D1903)

Prepared for:

RANCHO CALIFORNIA WATER DISTRICT

Prepared by:

NICHOLE JORDAN DAVIS, RPA

Michael Baker INTERNATIONAL

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DECEMBER 2017

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APPENDIX

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INTRODUCTION

At the request of the Rancho California Water District (RCWD), Michael Baker International conducted a cultural resources investigation for the Upper Valle De Los Caballos Regional Pump Station Project (project). This Cultural Resources Report describes known cultural and tribal cultural resources that have the potential to be impacted by the project and documentation that may be required by future projects. The study area is depicted in **Appendix B**.

PROJECT DESCRIPTION

The Rancho California Water District (RCWD) proposes improvements to the Upper Valle Los Caballos (UVDC) Regional Pump Station and supporting facilities (RCWD Project No. D1903). The project will increase Metropolitan Water District (MWD) raw water application to the existing UVDC recharge basins, add centralized disinfection and pumping facilities, and reroute existing wells to the new facilities. The UVDC recharge system has been under development since the 1980's and has recently been refined with optimization studies and master plans.

The project site is located in southwestern Riverside County, just east of the City of Temecula, within the RCWD's service boundaries. Regional access to the site is provided by State Route 79 (SR 79) which generally runs east-west approximately two miles south of the site. Lands affected by the proposed improvements generally include De Portola Road, Conquistador Place, and property to the south of De Portola Road, east of Pauba Road and north of Winners Circle. The affected County Assessor's Parcel Numbers (APNs) include 927-150-038, -018, -037, -039, -048, and -049; and 927-320-045.

The UVDC Regional Pump Station Project (RCWD Project No. D1903) will construct additional potable water transmission facilities and provide financial and operational benefits to RCWD. New facilities will augment capacity in the 1305 and 1380 Pressure Zones (PZs) and will include:

- Pump station building.
- Imported fill material to raise the site pad above existing ground elevation by approximately six feet at the pump station site and 3 feet on the access roads to the pump station.
- A chlorine contact tank for disinfection of groundwater.
- An on-site sodium hypochlorite generation and feed system, the primary disinfectant.
- Extension of the existing ammonia feed facility at the Los Caballos pump station and add liquid ammonium sulfate facilities at the new pump station.
- Three 1305 PZ vertical turbine pumps with provisions to add a fourth in the future and three 1380 PZ pumps.
- A wet well and a wet well transition pipeline to direct flow from the chlorine contact tank to the pump station.
- A diesel fuel driven engine/generator set to provide emergency power to new facilities.
- Discharge piping outside of the public right-of-way to route 1305 and 1380 PZ potable water flow to De Portola Road, route raw water from existing wells along Pauba Road to the new facilities and route raw water from the existing UVDC wells to the new facilities, and route raw water from the existing UVDC well manifold to the new facilities.
- Two new wells and piping from those wells.

SITE DESIGN AND IMPROVEMENTS

Facilities will be situated within the site to allow sufficient clearance for the salt delivery truck, the largest vehicle allowed on secondary roads in Riverside County, to have clear access and egress, to provide efficient, functional access to RCWD operations and to allow separation between buried piping to permit excavation and repairs without damaging adjacent pipes.

Existing on-site elevation of the selected pump station site is approximately 1,262 feet above mean sea level (amsl). The pad will be set back approximately 920 feet from De Portola Road, with the pad area being approximately 62,500 square feet (s.f.). The site will be filled using 2:1 fill slopes to a minimum finished pavement elevation of 1,262 feet amsl. The area within the fence line will be asphalt paved.

CORE FACILITIES

Core facilities will include:

- Chlorine contact tank
- Forebay
- Building with pump room, electrical room, chemical feed pump room and sodium hypochlorite (NaOCl) generation room
- NaOCl and liquid ammonium sulfate (LAS) bulk storage area and feed system.

PUMP STATION BUILDING

The pump station building will be approximately 3,570 s.f. in size with architecture similar to the District's existing Senga Doherty pump station located in Murrieta at 43250 Elm Street in Riverside County. Building walls will be precision block with painted stucco exterior finish and unfinished interior. The roof will have parapet walls with down drains and be equipped with sky lights that also function as hatches for pump removal.

The electrical room will be equipped with an air conditioner, preliminarily sized at seven ton. All other rooms in the building will be equipped with supply and exhaust fans that yield six air changes per hour.

PIPELINES

The following pipeline improvements are proposed with the project:

- New pipelines to route raw water from the existing UVDC wells to the new facilities.
- New potable water transmission mains from the new facilities and connecting to existing 1305 and 1380 PZ transmission mains in De Portola Road.
- Reconfiguration of raw water piping from Well 203 to allow its flow to be rerouted to the new facilities.
- Reconfiguration of piping at existing Well 164 to connect to the raw water pipe in Pauba Road (converted from the existing 1305 PZ pipeline located there).
- A new raw water pipeline from Pauba Road to the new regional pump station.
- LAS chemical feed line between the existing ammonia feed facility and the regional pump station.

GRADING

Fill material will be imported to the site to raise the site pad above existing ground elevation approximately 6 feet. Anticipated grading would require approximately 45,000 cubic yards (c.y.) of fill. The import of fill is required to raise the building pad elevation for the pump station and for connecting access road improvements. It is anticipated the fill soils would be obtained at an off-site facility under ownership of the District where recharge ponds are currently maintained. The facility is located approximately 10 miles to the west of the project site, just west of Diaz Road; however, the source of the import soils would ultimately be determined by the contractor at the time when project construction occurs.

CONCEPTS AND TERMINOLOGY

The below definitions are used for the identification of cultural resources and Tribal Cultural Resources.

Cultural resources include archaeological and built environment resources. Definitions provided in the National Register of Historic Places (National Register) and adopted by the California Office of Historic Preservation (OHP) are below.

> **Archaeological resources** are defined as sites in the National Register and by OHP. These resources are subsurface human cultural remains that are over 50 years old. Archaeological resources in the region are generally divided into two temporal categories: prehistoric (12,000 years ago–1541) and historic-period (1542–50 years ago).
>
> > **Site**: A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the value of any existing structure.
>
> **Built environment** resources are defined as buildings, structures, objects, and districts in the National Register and by OHP.
>
> > **Building**: A building, such as a house, barn, church, hotel, or similar construction, is created principally to shelter any form of human activity. "Building" may also be used to refer to a historically and functionally related unit, such as a courthouse and jail or a house and barn.
> >
> > **Structure**: The term "structure" is used to distinguish from buildings those functional constructions made usually for purposes other than creating human shelter.
> >
> > **Object**: The term "object" is used to distinguish from buildings and structures those constructions that are primarily artistic in nature or are relatively small in scale and simply constructed. Although it may be, by nature or design, movable, an object is associated with a specific setting or environment.
> >
> > **District**: A district possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development.
> >
> > **Designed historic landscape**: A designed historic landscape is a designed landscape such as a park, battlefield, or golf course.

Tribal cultural resources are defined in CEQA as a site, feature, place, cultural landscape, sacred place, or object with cultural value to a California Native American tribe, which may include nonunique archaeological resources previously subject to limited review under CEQA.

REGULATORY TERMS FOR CULTURAL RESOURCES

Historic properties: A term defined by the National Historic Preservation Act as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on, the National Register, including artifacts, records, and material remains related to such a property.

Historical resource: As described in CEQA, includes buildings, sites, structures, objects, districts, or designed historic landscapes, each of which may have historical, prehistoric, architectural, archaeological, cultural, or scientific importance and is eligible for listing or is listed in the California Register of Historical Resources (California Register) or a local register of historical resources. The California Register includes resources listed in, or formally determined eligible for listing in, the National Register, as well as some California State Landmarks and Points of Historical Interest.

Paleontological resource: Defined as a locality containing vertebrate, invertebrate, or plant fossils (i.e., fossil location, fossil bearing formation, or a formation with the potential to bear fossils).

REGULATORY FRAMEWORK

California Environmental Quality Act

Under CEQA, public agencies must consider the impacts of their actions on both historical resources and unique archaeological resources. Pursuant to Public Resources Code Section 21084.1, a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant impact on the environment. Section 21083.2 requires agencies to determine whether proposed projects would have impacts on unique archaeological resources.

Historical resource is a term with a defined statutory meaning (Public Resources Code Section 21084.1; determining significant impacts to historical and archaeological resources is described in CEQA Guidelines Section 15064.5[a], [b]). Under Section 15064.5(a), historical resources include the following:

1. A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Public Resources Code Section 5024.1).

2. A resource included in a local register of historical resources, as defined in Public Resources Code Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g), will be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

3. Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource will be considered by the lead agency to be historically significant if the resource meets the criteria for listing in the California Register (Public Resources Code Section 5024.1), including the following:

    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.

4. The fact that a resource is not listed in, or determined to be eligible for listing in the California Register, not included in a local register of historical resources (pursuant to Public Resources Code Section 5020.1(k)), or identified in a historical resources survey (meeting the criteria in Section 5024.1(g)) does not preclude a lead agency from determining that the resource may be a historical resource as defined in Section 5020.1(j) or 5024.1.

Historic resources are usually 50 years old or older and must meet at least one of the criteria for listing in the California Register, described above (such as association with historical events, important people, or architectural significance), in addition to maintaining a sufficient level of physical integrity.

Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the California Register and are presumed to be historical resources for purposes of CEQA unless a preponderance of evidence indicates otherwise (Public Resources Code Section 5024.1 and Title 14 California Code of Regulations Section 4850). Unless a resource listed in a survey has been demolished, lost substantial integrity, or there is a preponderance of evidence indicating that it is otherwise not eligible for listing, a lead agency should consider the resource to be potentially eligible for the California Register.

For historical resources, CEQA Guidelines Section 15064.5(b)(3) indicates that a project following the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings, or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings, is considered to be mitigating impacts to a less than significant level.

As noted above, the act also requires lead agencies to consider whether projects will impact unique archaeological resources. Public Resources Code Section 21083.2(g) states:

> *"Unique archaeological resource" means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria*:
>
> - *Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.*
> - *Has a special and particular quality such as being the oldest of its type or the best available example of its type.*
> - *Is directly associated with a scientifically recognized important prehistoric or historic event or person.*

Treatment options under Section 21083.2 include activities that preserve such resources in place in an undisturbed state. Other acceptable methods of mitigation under Section 21083.2 include excavation and curation or study in place without excavation and curation (if the study finds that the artifacts would not meet one or more of the criteria for defining a unique archaeological resource).

CEQA Guidelines Section 15064.5(e) requires that excavation activities stop whenever human remains are uncovered and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the Native American Heritage Commission must be contacted within 24 hours. At that time, the lead agency must consult with the appropriate Native Americans, if any, as timely identified by the commission. Section 15064.5 directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

In addition to the mitigation provisions pertaining to accidental discovery of human remains, the guidelines also require that a lead agency make provisions for the accidental discovery of historical or archaeological resources, generally. Pursuant to Section 15064.5(f), these provisions should include "an immediate evaluation of the find by a qualified archaeologist. If the find is determined to be an historical or unique archaeological resource, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or appropriate mitigation should be available. Work could continue on other parts of the building site while historical or unique archaeological resource mitigation takes place."

Impacts to Historical Resources

Following Public Resources Code Sections 21083.2 and 21084.1, CEQA Section 15064.5, and CEQA Guidelines Appendix G, cultural resource impacts are considered to be significant if project implementation results in any of the following:

1) Causes a substantial adverse change in the significance of a historical resource as defined in Public Resources Code Section 21084.1 and CEQA Guidelines Section 15064.5, respectively.

2) Causes a substantial adverse change in the significance of an archaeological resource as defined in CEQA Guidelines Section 15064.5.

3) Directly or indirectly destroys a unique paleontological resource or site or unique geological feature.

4) Disturbs any human remains, including those interred outside of formal cemeteries.

5) Causes a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code 21074.

CEQA Guidelines Section 15064.5 defines "substantial adverse change" as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource is materially impaired.

CEQA Guidelines, Section 15064.5(b)(2) defines "materially impaired" for purposes of the definition of substantial adverse change as follows:

The significance of an historical resource is materially impaired when a project:

(A) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or

(B) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or

(C) Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility

> *for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.*

CEQA requires that if a project would result in an impact that may cause a substantial adverse change in the significance of a historical resource or would cause significant effects on a unique archaeological resource, then alternative plans or mitigation measures must be considered. Therefore, prior to assessing impacts or developing mitigation measures, the significance of cultural resources must first be determined. The steps that are normally taken in a cultural resources investigation for CEQA compliance are as follows:

- Identify potential historical resources and unique archaeological resources.
- Evaluate the eligibility of cultural resources.
- Evaluate the impacts of the project on eligible historical resources.

California Health and Safety Code

California Health and Safety Code Section 7050.5 regulates the procedure in the event of human remains discovery. Pursuant to Public Resources Code Section 5097.98, in the event of human remains discovery, no further disturbance is allowed until the county coroner has made the necessary findings regarding the origin and disposition of the remains. If the remains are determined to be Native American, the coroner is required to contact the Native American Heritage Commission. The commission is responsible for contacting the most likely Native American descendent, who will consult with the local agency regarding how to proceed with the remains. According to CEQA Guidelines Section 15064.5, all human remains are a significant resource.

Assembly Bill (AB) 52

On September 25, 2014, California's governor, Jerry Brown, signed AB 52, Native Americans: California Environmental Quality Act, requires consultation between lead agencies and Native American Tribes on any project subject to CEQA. The bill specifies that any project that may affect or cause a substantial adverse change in the significance of a tribal cultural resource (TCRs) would require a lead agency to "begin consultation with a California Native American tribe that is traditional and culturally affiliated with the geographic area of the proposed project." Section 21074 of AB 52 defines tribal cultural resources as sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe, and is either listed on, or eligible for, the California Register of Historical Resources (CRHR) or a local historic register, or if the lead agency chooses to treat the resource as a tribal cultural resource.

With the enactment of AB 52, CEQA recognizes tribal cultural values in addition to the scientific and archaeological values when determining impacts and mitigation by identifying a category of resources called tribal cultural resources. In order to identify TCRs, lead agencies are required to consult with local Native American tribes in a manner that is cognizant of all parties' cultural values and, where feasible, seek agreement on a proposed action. A project with an effect that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment (PRC Section 21084.2).

AB 52 specifically reads:

> In recognition of California Native American tribal sovereignty and the unique relationship of California local governments and public agencies with California Native American tribal governments, and respecting the interests and roles of project proponents, it is the intent of the Legislature, in enacting this act, to accomplish all of the following: (1) Recognize that California Native American prehistoric, historic, archaeological, cultural, and sacred places are essential elements in tribal cultural traditions, heritages, and identities. (2) Establish a new category of resources in the California Environmental Quality Act called "tribal cultural resources" that considers the tribal cultural values in addition to the scientific and archaeological values when determining impacts and mitigation. (3) Establish examples of mitigation measures for tribal cultural resources that uphold the existing mitigation preference for historical and archaeological resources of preservation in place, if feasible. (4) Recognize that California Native American tribes may have expertise with regard to their tribal history and practices, which concern the tribal cultural resources with which they are traditionally and culturally affiliated. Because the California Environmental Quality Act calls for a sufficient degree of analysis, tribal knowledge about the land and tribal cultural resources at issue should be included in environmental assessments for projects that may have a significant impact on those resources. (5) In recognition of their governmental status, establish a meaningful consultation process between California Native American tribal governments and lead agencies, respecting the interests and roles of all California Native American tribes and project proponents, and the level of required confidentiality concerning tribal cultural resources, at the earliest possible point in the California Environmental Quality Act environmental review process, so that tribal cultural resources can be identified, and culturally appropriate mitigation and mitigation monitoring programs can be considered by the decision making body of the lead agency. (6) Recognize the unique history of California Native American tribes and uphold existing rights of all California Native American tribes to participate in, and contribute their knowledge to, the environmental review process pursuant to the California Environmental Quality Act (Division 13 (commencing with §21000) of the Public Resources Code). (7) Ensure that local and tribal governments, public agencies, and project proponents have information available, early in the California Environmental Quality Act environmental review process, for purposes of identifying and addressing potential adverse impacts to tribal cultural resources and to reduce the potential for delay and conflicts in the environmental review process. (8) Enable California Native American tribes to manage and accept conveyances of, and act as caretakers of, tribal cultural resources. (9) Establish that a substantial adverse change to a tribal cultural resource has a significant effect on the environment.

IDENTIFICATION

Michael Baker International conducted archaeological and historical investigations for the project. These investigations included a records search at the Eastern Information Center (EIC) at the University of California Riverside, historic map review, and a field survey by a Registered Professional Archaeologist. The results of the investigations are presented below.

MAP REVIEW

Michael Baker International reviewed historic and geological maps depicting the project area. Maps included:

- *Elsinore, Calif*. 1:125, 000 scale topographic quadrangle (USGS 1901)
- *Murrieta, Calif*., 1:62,500 scale topographic quadrangle (USGS 1942)
- *Bachelor Mtn., Calif*., 1:24,000 topographic quadrangle (USGS 1953, 1973)
- *GEOLOGIC ATLAS OF CALIFORNIA - SANTA ANA SHEET. California Geological Survey, Geologic Atlas of California Map No. 019, 1:250,000 scale (Rogers 1965)*

Map Review Results

A 1901 map depicts De Portola Road in nearly the same alignment that it's in today with a residence just outside the project area that is no longer extant (USGS 1901). There are no changes to area maps until 1942 when additional area roads are depicted and the residence depicted on the 1901 map is not depicted (USGS 1942). The 1953 and 1973 maps depict Pauba Road in its current alignment (USGS 1953, 1973). Rogers 1965 depicts nonmarine Pleistocene landforms that are sensitive for surficial archaeology and paleontology, adjacent to the project area. The alluvium that covers the surface of the project area formed at an unknown date and is moderately sensitive for buried, geoarchaeological resources and paleontological resources.

FIELD SURVEY

On November 6, 2017, Nichole Davis, a Registered Professional Archaeologist, surveyed the project area. In the areas where the project area is covered by buildings and roads, ground visibility was zero. In the horse corrals visibility ranged from 10 to 80 percent due to dense vegetation. Ground visibility in areas outside the former horse ranch ranged from 70 to 100 percent due to vegetation. Because the former horse ranch was built from 1996 and 2002, it is not identified as a cultural resource. No cultural resources or paleontological resources were observed within the project area.

CULTURAL RESOURCES

Records Search

The Eastern Information Center at the University of California Riverside conducted a records search for previous investigations within ¼ mile of the project site (File Number: ST-RIV-4422; November 2017); see **Appendix A**. As part of the records search, the following federal and State of California inventories were reviewed:

- California Inventory of Historic Resources (OHP 1976).
- California Points of Historical Interest (OHP 1992 and updates).
- California Historical Landmarks (OHP 1996).
- Directory of Properties in the Historic Property Data File for San Joaquin County (OHP 2012a). The directory includes the listings of the National Register, National Historic Landmarks, California Register, California Historical Landmarks, and California Points of Historical Interest.
- Archaeological Determinations of Eligibility for San Joaquin County (OHP 2012b). The directory includes the listings of the National Register and California Register for archaeological resources.

Results

No cultural resources were identified within the project area or quarter-mile search radius.

Three cultural resources studies have been completed within portions of the project area and three have been completed within the quarter-mile radius.

Tribal Cultural Resources

Tribal cultural resources are defined as a site, feature, place, cultural landscape, sacred place, or object with cultural value to a California Native American tribe, which may include nonunique archaeological resources previously subject to limited review under CEQA. Tribal consultation will be conducted by the RCWD as the lead agency per the provisions of AB 52.

Paleontological Resources

Michael Baker International reviewed a geologic map (Rogers 1965) and background information regarding paleontological sensitivity in the project area. Michael Baker International did not conduct a locality search or complete a literature review.

Results

The entire project area has a low surficial sensitivity for paleontological resources due to the presence of surficial alluvium; however, adjacent landforms north and south of Pauba Valley are Pleistocene nonmarine landforms that are sensitive for paleontological resources. Alluvial sediments within the project area extend to an unknown depth and are underlain by nonmarine landforms that are sensitive for paleontological resources. Therefore, the project has the potential to encounter paleontological resources. No paleontological resources were observed during the November 6, 2017 field survey.

SUMMARY AND RECOMMENDATIONS

CULTURAL RESOURCES

The EIC records search results, field survey and historic map review identified no cultural resources within the project area.

Archaeological Sensitivity Analysis

The records search and field survey identified no archaeological resources within the project area; however, the literature review identified geoarchaeological sensitivity. Tribal consultation will be conducted by the RCWD as the lead agency per the provisions of AB 52.

TRIBAL CULTURAL RESOURCES

Tribal cultural resources sensitivity is unknown at the time of preparation of this report.

PALEONTOLOGICAL RESOURCES

The project area is underlain with nonmarine Pleistocene deposits that are sensitive for paleontological resources.

REFERENCES

Rogers, Thomas H. 1965. *GEOLOGIC ATLAS OF CALIFORNIA - SANTA ANA SHEET. California Geological Survey, Geologic Atlas of California Map No. 019, 1:250,000 scale.*

OHP (California Office of Historic Preservation). 1976. California Inventory of Historic Resources.

———.1992. Points of Historical Interest.

———.1996. California Historical Landmarks.

———. 2012a. Directory of Properties in the Historic Property Data File.

______. 2012b. Archaeological Determinations of Eligibility.

USGS (United States Geological Survey). 1901. *Elsinore, Calif*. 1:125, 000 scale topographic quadrangle.

_____. 1942. Murrieta, Calif., 1:62,500 scale topographic quadrangle.

_____. 1953. Bachelor Mtn., Calif., 1:24,000 topographic quadrangle.

_____. 1973. *Stockton West, Calif*., 7.5-minute topographic quadrangle.

APPENDIX A – CONFIDENTIAL EIC RECORDS SEARCH RESULTS
(AVAILABLE UNDER SEPARATE COVER)

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APPENDIX B – FIGURE

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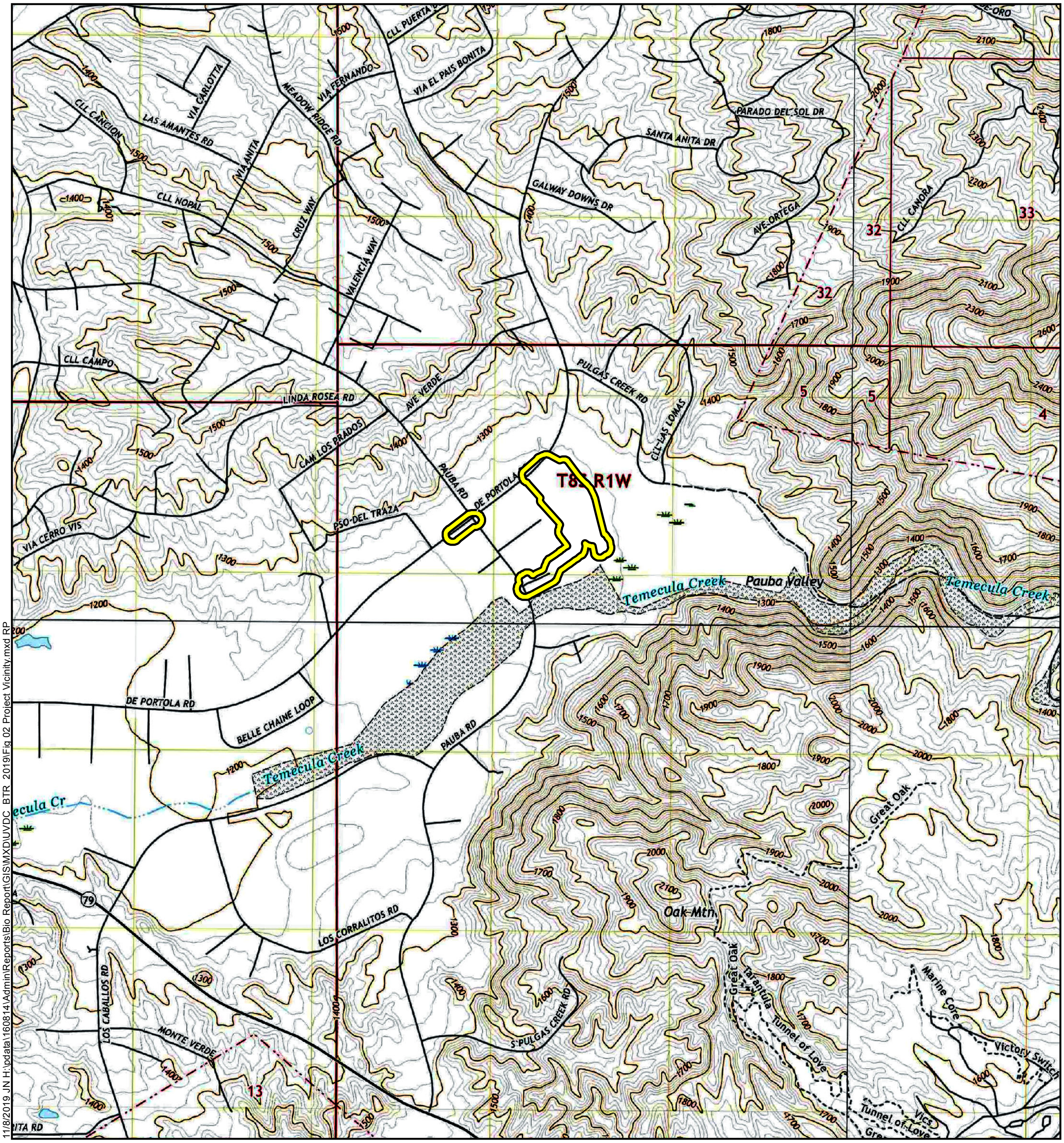

11/8/2019 JN H:\pdata\160814\Admin\Reports\Bio Report\GIS\MXD\UVDC_BTR_2019\Fig 02 Project Vicinity.mxd RP

Legend

Project Area

UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION PROJECT

Michael Baker INTERNATIONAL

0 0.25 0.5 Miles

Project Vicinity

Source: USGS 7.5-Minute topographic quadrangle maps: *Bachelor Mountain, Sage, Pechanga, Vail Lake, California (2018)*

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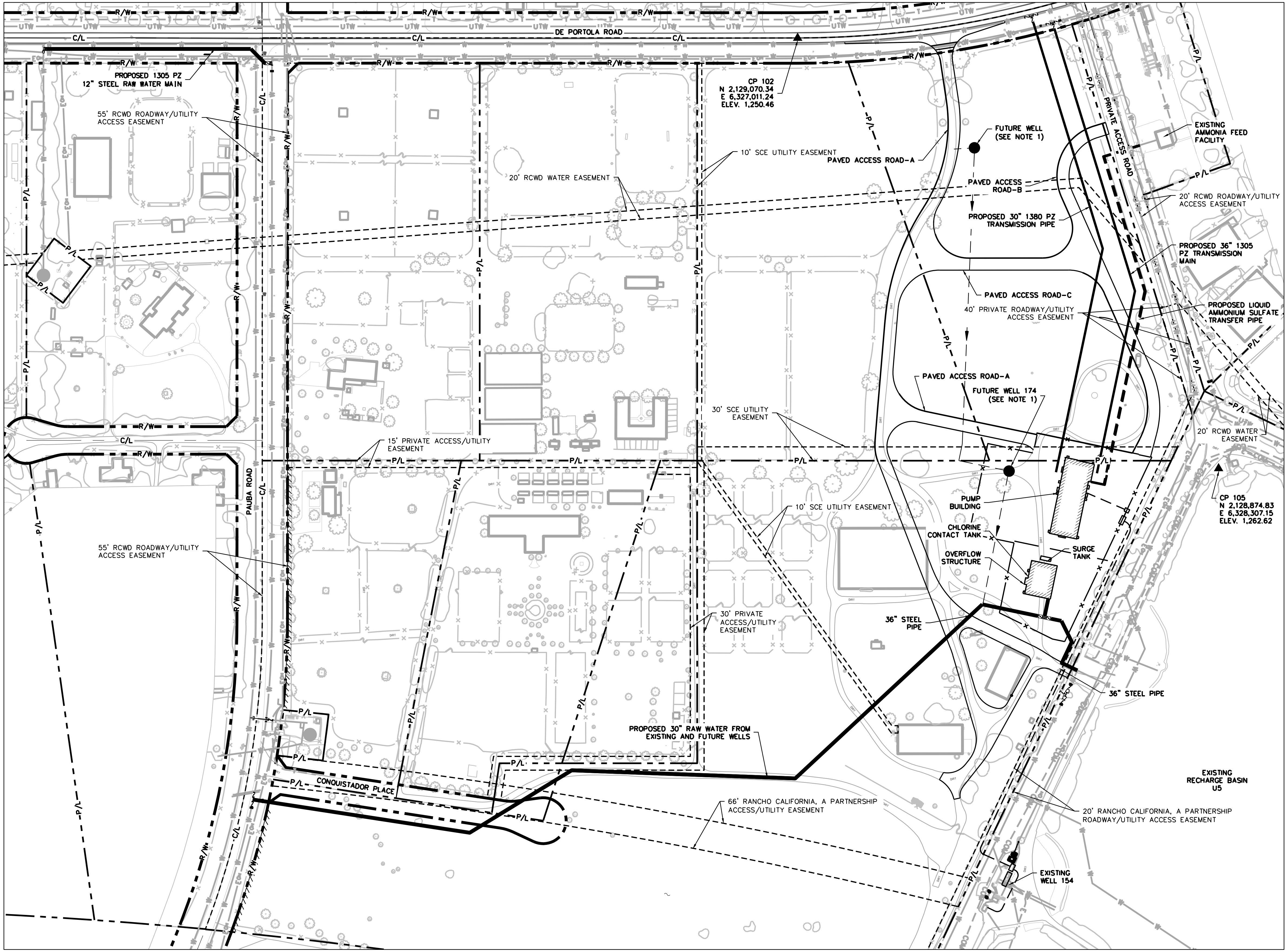


BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, NAD 83 (CCS83) [EPOCH 2011.00], ZONE 6, AS DETERMINED LOCALLY BY A LINE BETWEEN CONTINUOUS OPERATING REFERENCE STATIONS (CORS) BILL AND P479 BEING N69°49'45"W AS DERIVED FROM GEODETIC VALUES PUBLISHED BY THE CALIFORNIA SPATIAL REFERENCE CENTER (CSRC).

BENCHMARK

DESCRIPTION: THE BASIS OF ELEVATIONS FOR THIS SURVEY IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) PER THE NATIONAL GEODETIC SURVEY. BEING A 2.5" BRASS DISK IN A CONCRETE CYLINDER STAMPED T-5-81. IT IS LOCATED 5.7 MILES SOUTHEAST ON HWY 79 FROM THE INTERSECTION OF MAIN AND FRONT STREETS IN TEMECULA, 41' N. OF CENTERLINE OF HWY 79, 2.4' S. OF 6' CHAIN LINK FENCE AROUND WELL SITE, 12' E. OF FENCE CORNER AND P.P. # 1894599E. ELEVATION: 1149.93

NOTE

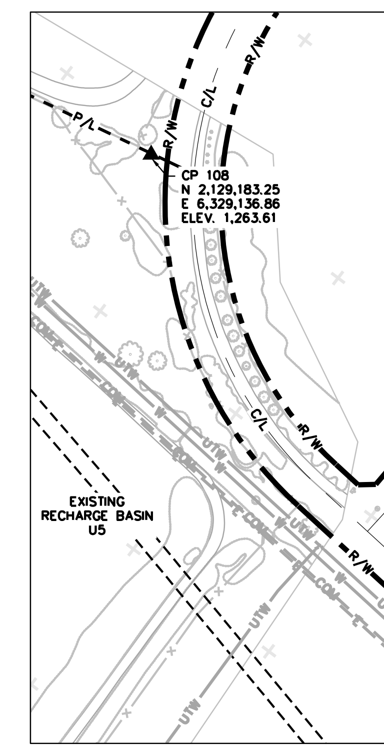
1. FUTURE WELLS ARE CURRENTLY UNDER DESIGN. FINAL LOCATIONS ARE TO BE DETERMINED.

LEGEND

▲ SURVEY CONTROL POINT

● POSSIBLE FUTURE WELL LOCATION

100 50 0 100 200 300



UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION PROJECT

Michael Baker INTERNATIONAL

Civil Site Overview Plan (Conceptual)

Source: Michael Baker, March 2020, Sheet C-1

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Appendix C-2
AB 52 Consultation Documentation

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NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691 Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov

September 19, 2019

Jake Wiley
Rancho California Water District

VIA Email to: wileyj@ranchowater.com

RE: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, Upper Valle De Los Caballos Regional Pump Station Project, Riverside County

Dear Mr. Wiley:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

> Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

- A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;

- Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;

- Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and

- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

   - Any report that may contain site forms, site significance, and suggested mitigation measures.

   All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the NAHC was negative.

4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: steven.quinn@nahc.ca.gov.

Sincerely,

Steven Quinn

Steven Quinn
Associate Governmental Program Analyst

Attachment

Native American Heritage Commission
Tribal Consultation List
Riverside County
9/19/2019

Agua Caliente Band of Cahuilla Indians
Jeff Grubbe, Chairperson
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264
Phone: (760) 699 - 6800
Fax: (760) 699-6919

La Jolla Band of Luiseno Indians
Fred Nelson, Chairperson
22000 Highway 76 — Luiseno
Pauma Valley, CA, 92061
Phone: (760) 742 - 3771

Pala Band of Mission Indians
Shasta Gaughen, Tribal Historic Preservation Officer
PMB 50, 35008 Pala Temecula Rd. — Cupeno, Luiseno
Pala, CA, 92059
Phone: (760) 891 - 3515
Fax: (760) 742-3189
sgaughen@palatribe.com

Pauma Band of Luiseno Indians
Temet Aguilar, Chairperson
P.O. Box 369 — Luiseno
Pauma Valley, CA, 92061
Phone: (760) 742 - 1289
Fax: (760) 742-3422
bennaecalac@aol.com

Pechanga Band of Luiseno Indians
Mark Macarro, Chairperson
P.O. Box 1477 — Luiseno
Temecula, CA, 92593
Phone: (951) 770 - 6000
Fax: (951) 695-1778
epreston@pechanga-nsn.gov

Rincon Band of Luiseno Indians
Jim McPherson, Tribal Historic Preservation Officer
One Government Center Lane — Luiseno
Valley Center, CA, 92082
Phone: (760) 749 - 1051
Fax: (760) 749-5144
vwhipple@rincontribe.org

Rincon Band of Luiseno Indians
Bo Mazzetti, Chairperson
One Government Center Lane — Luiseno
Valley Center, CA, 92082
Phone: (760) 749 - 1051
Fax: (760) 749-5144
bomazzetti@aol.com

San Luis Rey Band of Mission Indians
San Luis Rey, Tribal Council
1889 Sunset Drive — Luiseno
Vista, CA, 92081
Phone: (760) 724 - 8505
Fax: (760) 724-2172
cjmojado@slrmissionindians.org

Soboba Band of Luiseno Indians
Scott Cozart, Chairperson
P. O. Box 487 — Cahuilla, Luiseno
San Jacinto, CA, 92583
Phone: (951) 654 - 2765
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov

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 Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Upper Valle De Los Caballos Regional Pump Station Project, Riverside County.

Rancho Water

August 28, 2019

VIA U.S. MAIL AND E-MAIL AT: eozdil@pechanga-nsn.gov

Ebru T. Ozdil, Cultural Analyst
Pechanga Band of Luiseño Mission Indians
Post Office Box 2183
Temecula, CA 92593

SUBJECT: AB52 NATIVE AMERICAN CONSULTATION AND PROJECT NOTIFICATION, PROPOSED UVDC REGIONAL PUMP STATION AND CHLORINE CONTACT TANK PROJECT, RIVERSIDE COUNTY, CALIFORNIA [RCWD PROJECT NO. D1903]

Dear Ms. Ozdil:

In accordance with Public Resources Code, section 21080.3.1(d), Rancho California Water District (District) hereby notifies you of the proposed Upper Valle de los Caballos (UVDC) Regional Pump Station and Chlorine Contact Tank project in Riverside County, California. Please find enclosed a brief description of the proposed project and its location.

The District is the lead agency for the proposed project. The lead agency contact person is Jacob Wiley; contact information is as follows:

Jacob Wiley, P.E.
Rancho California Water District
42135 Winchester Road
Temecula, CA 92590
(951) 296-6980, wileyj@ranchowater.com

You and/or your tribe have previously requested to receive notice of qualifying projects under Public Resources Code, section 21080.3.1. You were identified by the Pechanga Band of Luiseño Mission Indians as the Tribe's designated lead contact, or tribal representative.

To that end, please take notice that you and your tribe have thirty (30) days from the date of this letter to request consultation on the proposed project pursuant to Public Resources Code, section 21080.3.1.

If you should have any questions or concerns, please contact me at the phone number or email address above.

Sincerely,

RANCHO CALIFORNIA WATER DISTRICT

Jacob Wiley, P.E.
Engineering Manager-CIP & Development

Enclosures

cc: Jeffrey Armstrong, General Manager
Phillip Dauben, Principal Engineer

19\JW:PD:lm044\F475\D1903

PROJECT DESCRIPTION

PROJECT NAME: Upper Valle Los Caballos Regional Pump Station Project (Project No. D1903)

PROJECT LOCATION: The project site is located in southwestern Riverside County, just east of the City of Temecula, within the RCWD's service boundaries. Lands affected by the proposed improvements generally include De Portola Road, Conquistador Place, and property to the south of De Portola Road, east of Pauba Road, and north of Winners Circle. The affected County Assessor's Parcel Numbers (APNs) include 927-150-018, -030, -038, -047, and -048.

PROJECT DESCRIPTION: The Upper Valle De Los Caballos (UVDC) Regional Pump Station Project (Rancho California Water District [RCWD] Project No. D1903) will increase capacity at the UVDC Regional Pump Station and provide financial and operational benefits to RCWD. New facilities will augment capacity in the 1305 and 1380 Pressure Zones (PZ) and will include:

- Imported fill material to raise the site pad above existing ground elevation by approximately six feet.
- A Chlorine Contact Tank for disinfection of groundwater.
- An on-site sodium hypochlorite generation and feed system, the primary disinfectant.
- Upgrades to the existing Ammonia Feed Facility.
- Three 1305 PZ vertical turbine pumps with provisions to add a fourth in the future and three 1380 PZ pumps.
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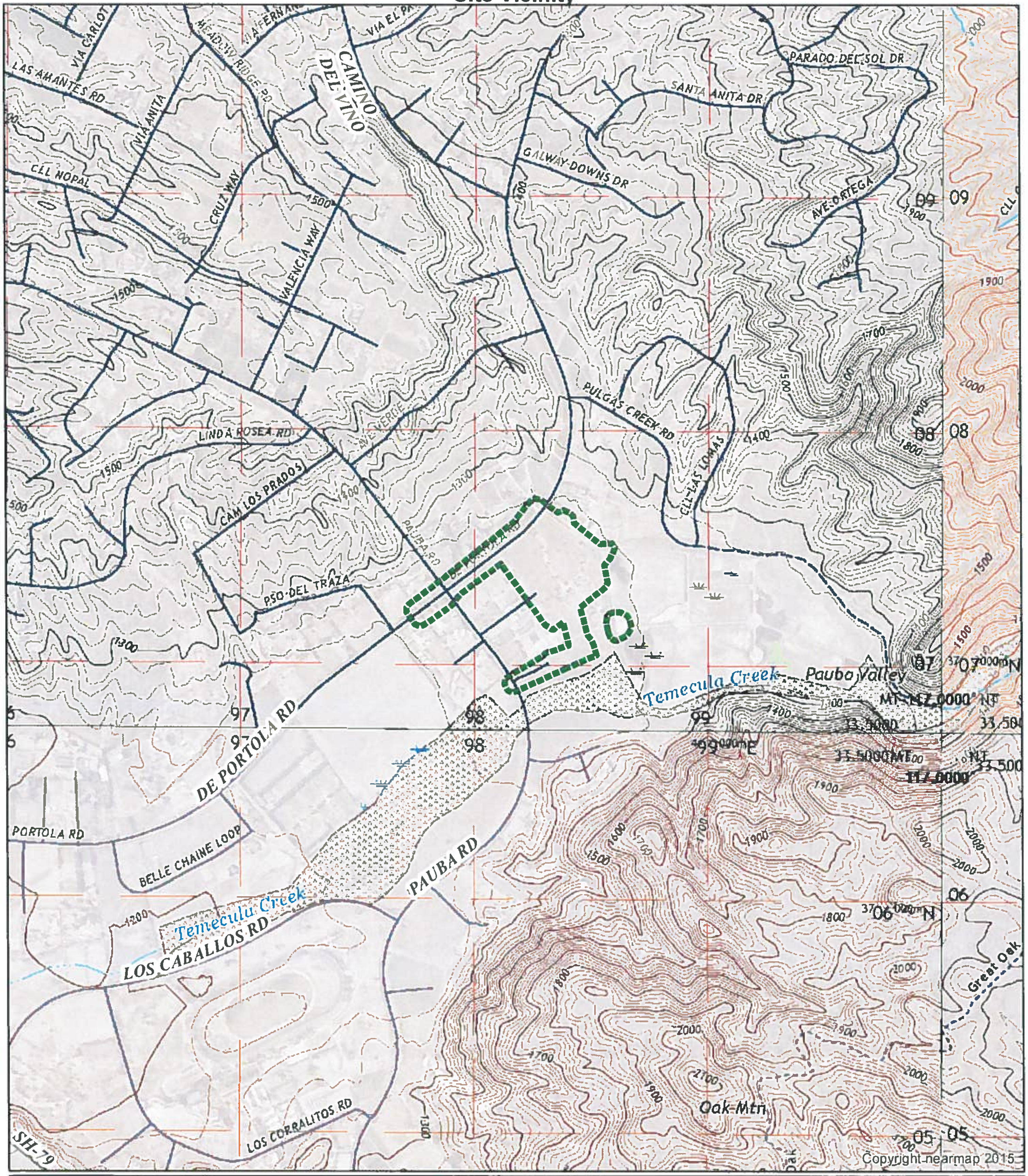
- Two new wells and piping from those wells to the project.

Figure 1
Site Vicinity



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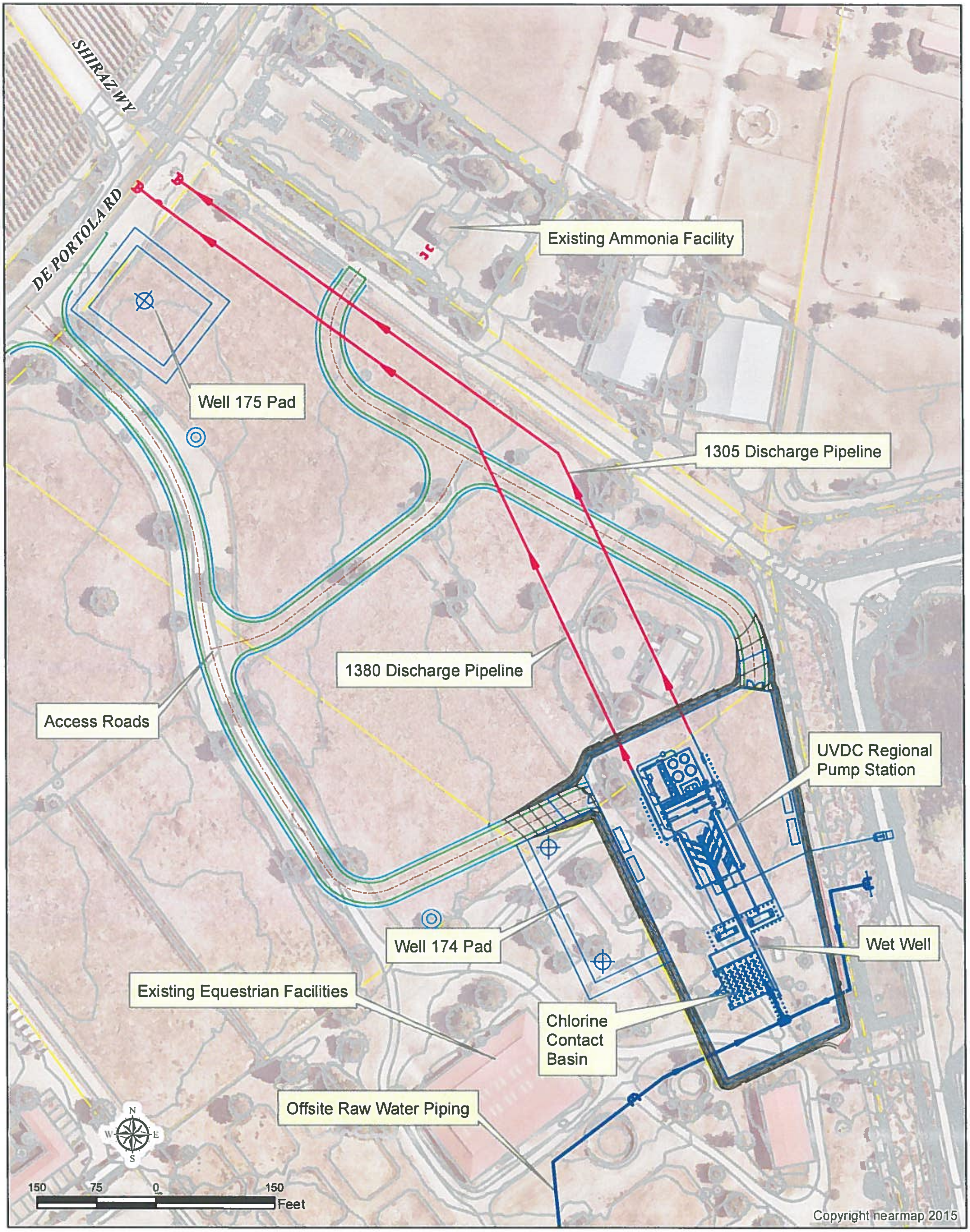
Approximate Project Area

Figure 2



SHIRAZ WY
DE PORTOLA RD
Existing Ammonia Facility
Well 175 Pad
1305 Discharge Pipeline
1380 Discharge Pipeline
Access Roads
UVDC Regional
Pump Station
Wet Well
Well 174 Pad
Existing Equestrian Facilities
Chlorine
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Offsite Raw Water Piping
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Rancho Water

September 23, 2019

VIA U.S. MAIL AND EMAIL: dcolocho@rincontribe.org

Destiny Colocho, Manager
Cultural Resources Department
Rincon Band of Luiseño Indians
1 West Tribal Road
Valley Center, CA 92082

SUBJECT: AB52 NATIVE AMERICAN CONSULTATION AND PROJECT NOTIFICATION, PROPOSED UVDC REGIONAL PUMP STATION AND CHLORINE CONTACT TANK PROJECT, RIVERSIDE COUNTY, CALIFORNIA [RCWD PROJECT NO. D1903]

Dear Ms. Colocho:

In accordance with Public Resources Code, section 21080.3.1(d), Rancho California Water District (District) hereby notifies you of the proposed Upper Valle de los Caballos (UVDC) Regional Pump Station and Chlorine Contact Tank project in Riverside County, California. Please find enclosed a brief description of the proposed project and its location.

The District is the lead agency for the proposed project. The lead agency contact person is Jacob Wiley; contact information is as follows:

Jacob Wiley, P.E.
Rancho California Water District
42135 Winchester Road
Temecula, CA 92590
(951) 296-6980, wileyj@ranchowater.com

You and/or your tribe have previously requested to receive notice of qualifying projects under Public Resources Code, section 21080.3.1. You were identified by the Rincon Band of Luiseño Indians as the Tribe's designated lead contact, or tribal representative.

To that end, please take notice that you and your tribe have thirty (30) days from the date of this letter to request consultation on the proposed project pursuant to Public Resources Code, section 21080.3.1.

If you should have any questions or concerns, please contact me at the phone number or email address above.

Sincerely,

RANCHO CALIFORNIA WATER DISTRICT

Jacob Wiley, P.E.
Engineering Manager-CIP & Development

Enclosures

cc: Jeffrey Armstrong, General Manager
Phillip Dauben, Principal Engineer

19\JW:PD:lm051\F475\D1903

PROJECT DESCRIPTION

PROJECT NAME: Upper Valle Los Caballos Regional Pump Station Project (Project No. D1903)

PROJECT LOCATION: The project site is located in southwestern Riverside County, just east of the City of Temecula, within the RCWD's service boundaries. Lands affected by the proposed improvements generally include De Portola Road, Conquistador Place, and property to the south of De Portola Road, east of Pauba Road, and north of Winners Circle. The affected County Assessor's Parcel Numbers (APNs) include 927-150-018, -030, -038, -047, and -048.

PROJECT DESCRIPTION: The Upper Valle De Los Caballos (UVDC) Regional Pump Station Project (Rancho California Water District [RCWD] Project No. D1903) will increase capacity at the UVDC Regional Pump Station and provide financial and operational benefits to RCWD. New facilities will augment capacity in the 1305 and 1380 Pressure Zones (PZ) and will include:

- Imported fill material to raise the site pad above existing ground elevation by approximately six feet.
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- Two new wells and piping from those wells to the project.

Figure 1
Site Vicinity

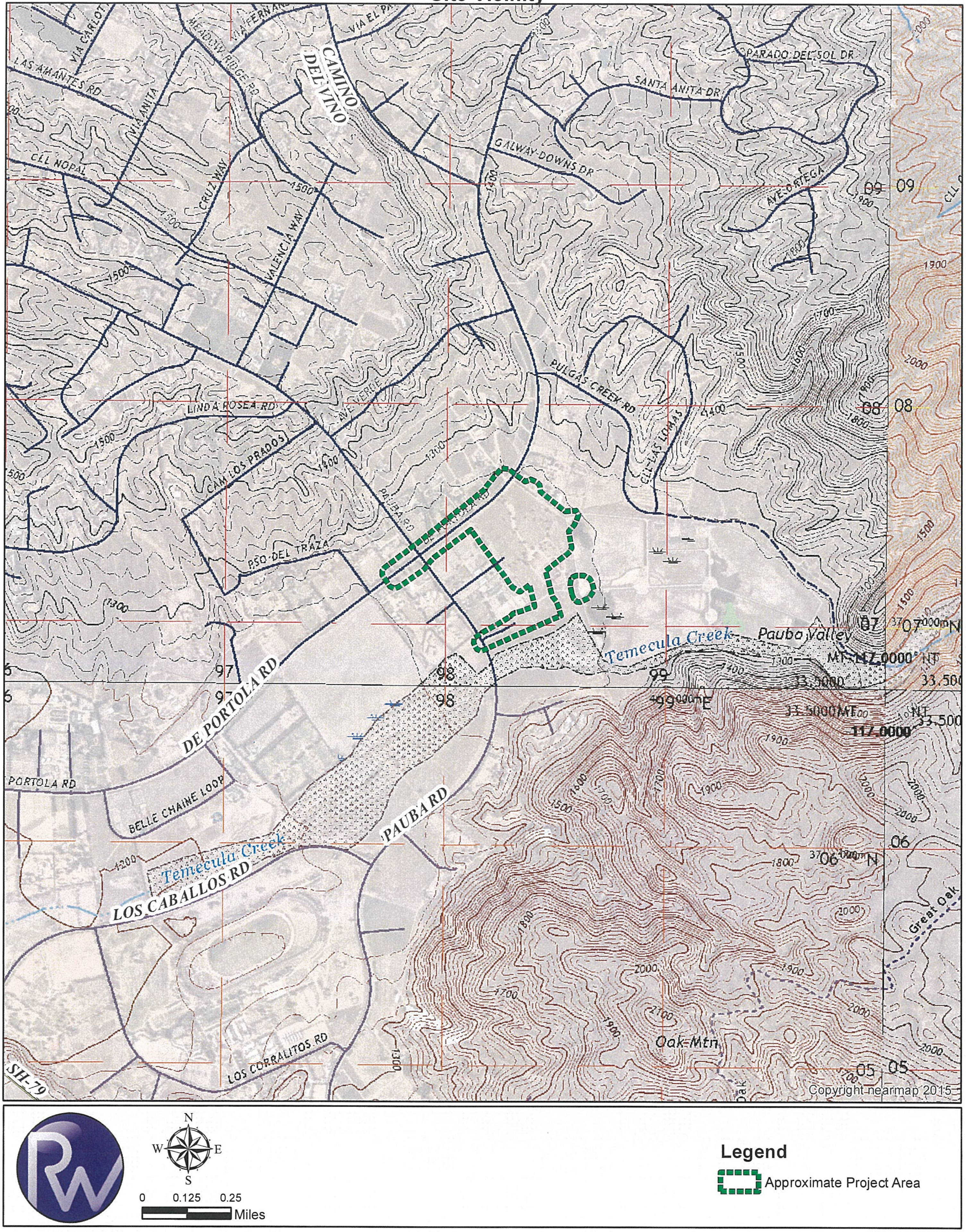
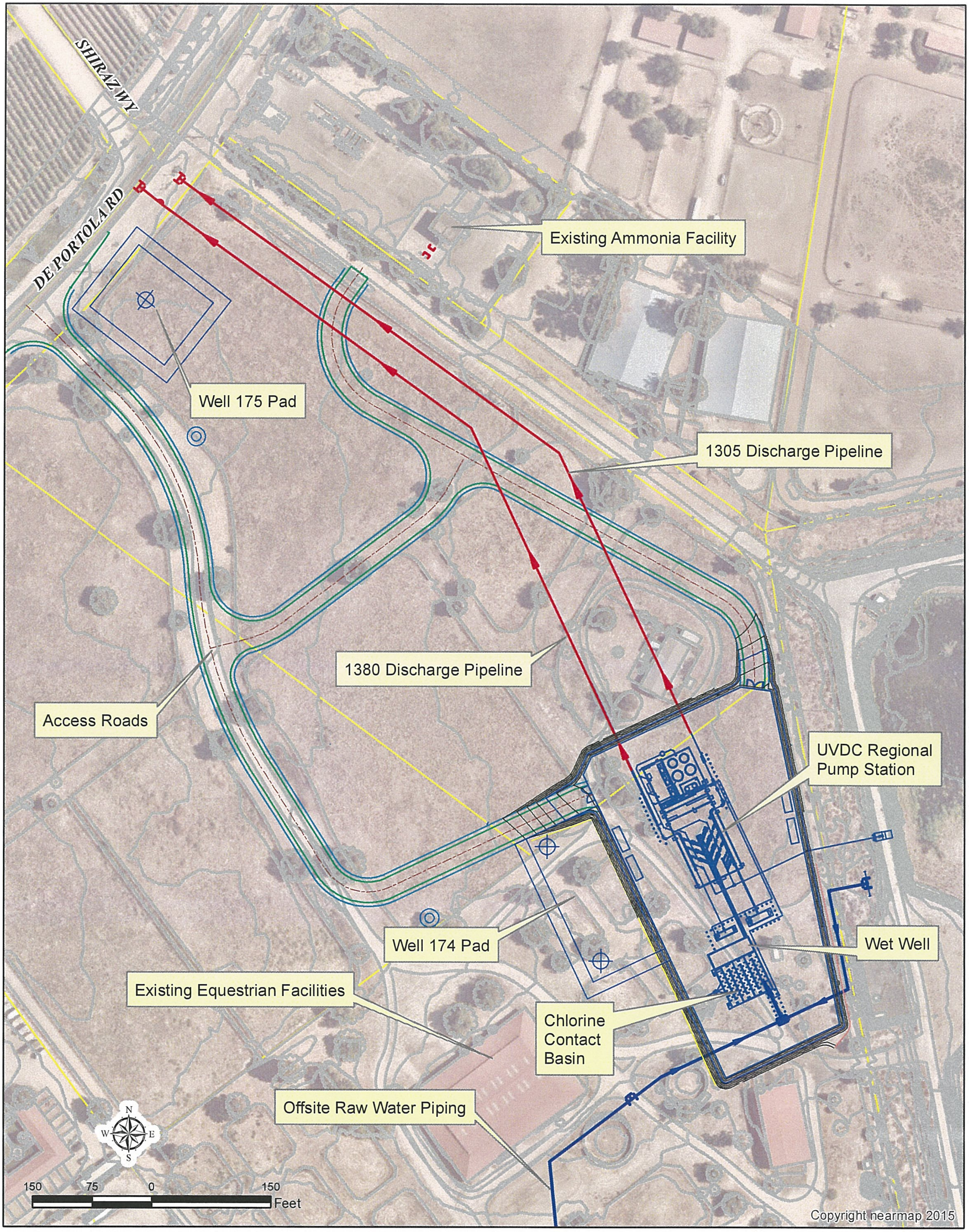


Figure 2



SHIRAZ WY
DE PORTOLA RD
Existing Ammonia Facility
Well 175 Pad
1305 Discharge Pipeline
1380 Discharge Pipeline
Access Roads
UVDC Regional Pump Station
Wet Well
Well 174 Pad
Existing Equestrian Facilities
Chlorine Contact Basin
Offsite Raw Water Piping
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Rancho Water

September 23, 2019

VIA U.S. MAIL AND E-MAIL AT: ACBCI-THPO@aguacaliente.net

Patricia Garcia
Director of Tribal Historic Preservation Office
Agua Caliente Band of Cahuilla Indians
5401 Dinah Shore Drive
Palm Springs, CA 92264

SUBJECT: AB52 NATIVE AMERICAN CONSULTATION AND PROJECT NOTIFICATION, PROPOSED UVDC REGIONAL PUMP STATION AND CHLORINE CONTACT TANK PROJECT, RIVERSIDE COUNTY, CALIFORNIA [RCWD PROJECT NO. D1903]

Dear Ms. Garcia:

In accordance with Public Resources Code, section 21080.3.1(d), Rancho California Water District (District) hereby notifies you of the proposed Upper Valle de los Caballos (UVDC) Regional Pump Station and Chlorine Contact Tank project in Riverside County, California. Please find enclosed a brief description of the proposed project and its location.

The District is the lead agency for the proposed project. The lead agency contact person is Jacob Wiley; contact information is as follows:

Jacob Wiley, P.E.
Rancho California Water District
42135 Winchester Road
Temecula, CA 92590
(951) 296-6980, wileyj@ranchowater.com

You and/or your tribe have previously requested to receive notice of qualifying projects under Public Resources Code, section 21080.3.1. You were identified by the Agua Caliente Band of Cahuilla Indians as the Tribe's designated lead contact, or tribal representative.

To that end, please take notice that you and your tribe have thirty (30) days from the date of this letter to request consultation on the proposed project pursuant to Public Resources Code, section 21080.3.1.

If you should have any questions or concerns, please contact me at the phone number or email address above.

Sincerely,

RANCHO CALIFORNIA WATER DISTRICT

Jacob Wiley, P.E.
Engineering Manager-CIP & Development

Enclosures

cc: Jeffrey Armstrong, General Manager
Phillip Dauben, Principal Engineer

19\JW:PD:lm050\F475\D1903

PROJECT DESCRIPTION

PROJECT NAME: Upper Valle Los Caballos Regional Pump Station Project (Project No. D1903)

PROJECT LOCATION: The project site is located in southwestern Riverside County, just east of the City of Temecula, within the RCWD's service boundaries. Lands affected by the proposed improvements generally include De Portola Road, Conquistador Place, and property to the south of De Portola Road, east of Pauba Road, and north of Winners Circle. The affected County Assessor's Parcel Numbers (APNs) include 927-150-018, -030, -038, -047, and -048.

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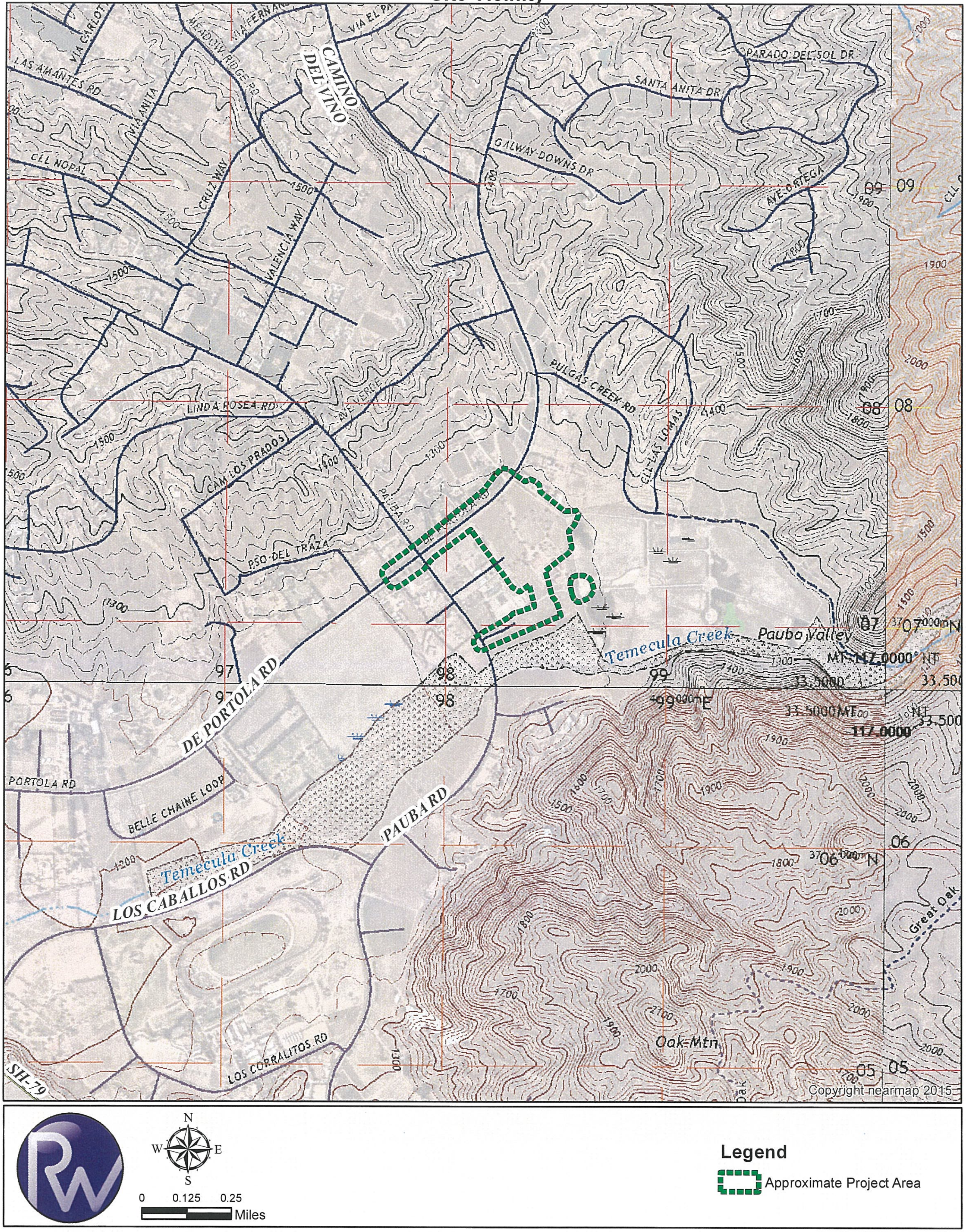
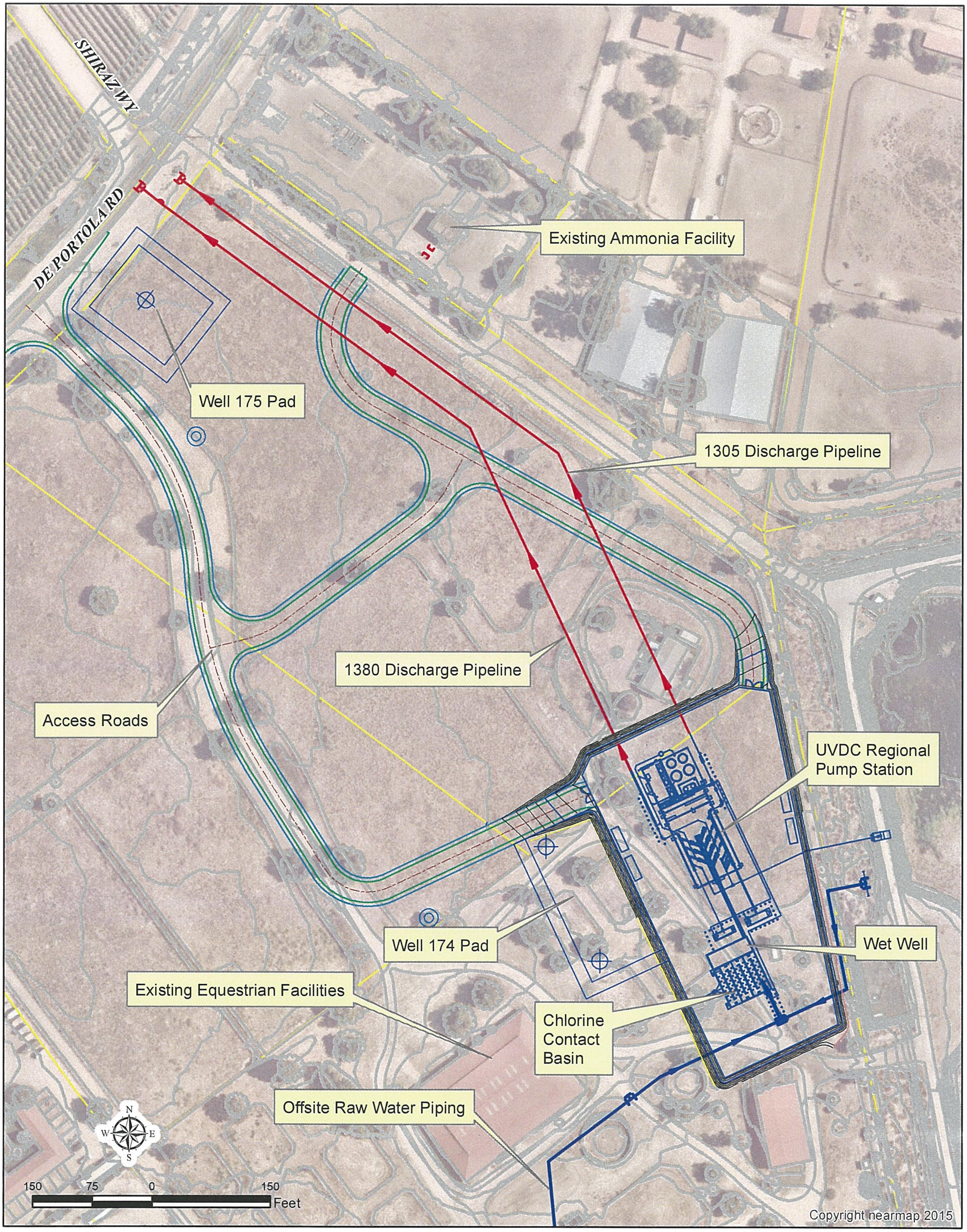


Figure 2



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Chlorine
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September 23, 2019

VIA U.S. MAIL AND E-MAIL AT: rhuaute@morongo-nsn.gov

Raymond Huaute
Cultural Resource Specialist
Morongo Band of Mission Indians
12700 Pumarra Road
Banning, CA 92220

SUBJECT: AB52 NATIVE AMERICAN CONSULTATION AND PROJECT NOTIFICATION, PROPOSED UVDC REGIONAL PUMP STATION AND CHLORINE CONTACT TANK PROJECT, RIVERSIDE COUNTY, CALIFORNIA [RCWD PROJECT NO. D1903]

Dear Mr. Huaute:

In accordance with Public Resources Code, section 21080.3.1(d), Rancho California Water District (District) hereby notifies you of the proposed Upper Valle de los Caballos (UVDC) Regional Pump Station and Chlorine Contact Tank project in Riverside County, California. Please find enclosed a brief description of the proposed project and its location.

The District is the lead agency for the proposed project. The lead agency contact person is Jacob Wiley; contact information is as follows:

Jacob Wiley, P.E.
Rancho California Water District
42135 Winchester Road
Temecula, CA 92590
(951) 296-6980, wileyj@ranchowater.com

You and/or your tribe have previously requested to receive notice of qualifying projects under Public Resources Code, section 21080.3.1. You were identified by the Morongo Band of Mission Indians as the Tribe's designated lead contact, or tribal representative.

To that end, please take notice that you and your tribe have thirty (30) days from the date of this letter to request consultation on the proposed project pursuant to Public Resources Code, section 21080.3.1.

If you should have any questions or concerns, please contact me at the phone number or email address above.

Sincerely,

RANCHO CALIFORNIA WATER DISTRICT

Jacob Wiley

Jacob Wiley, P.E.
Engineering Manager-CIP & Development

Enclosures

cc: Jeffrey Armstrong, General Manager
Phillip Dauben, Principal Engineer

19\JW:PD:lm052\F475\D1903

PROJECT DESCRIPTION

PROJECT NAME: Upper Valle Los Caballos Regional Pump Station Project (Project No. D1903)

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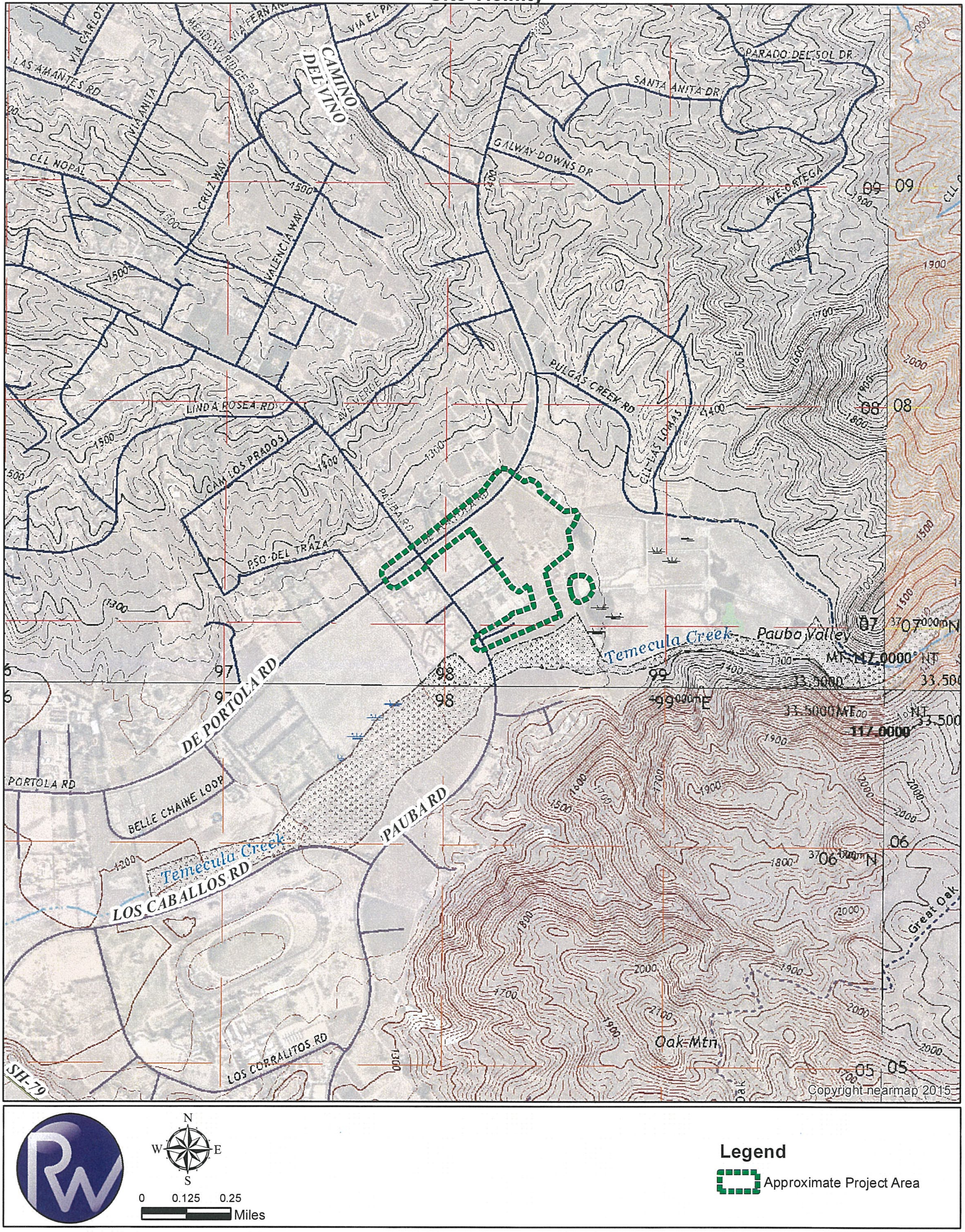

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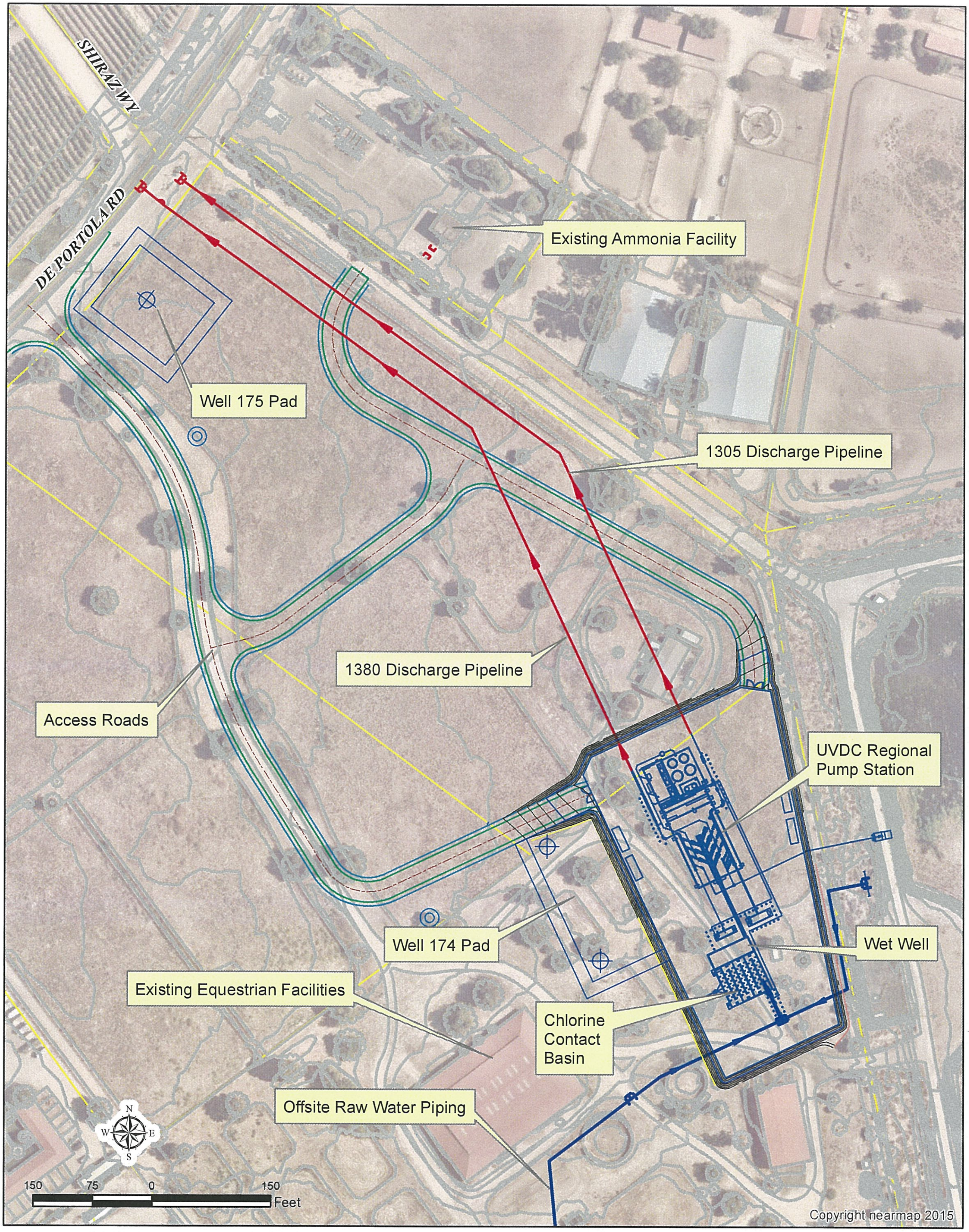
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Appendix D
Preliminary Geotechnical Investigation

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GEOCON
WEST, INC.

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

REVISED GEOTECHNICAL INVESTIGATION

UPPER VALLE DE LOS CABALLOS REGIONAL PUMP STATION RANCHO CALIFORNIA WATER DISTRICT PROJECT NO. D1903 TEMECULA AREA, RIVERSIDE COUNTY, CALIFORNIA

PREPARED FOR

MICHAEL BAKER INTERNATIONAL
TEMECULA, CALIFORNIA

PROJECT NO. T2779-22-01
MAY 30, 2018
REVISED DECEMBER 7, 2018

GEOCON
WEST, INC.
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. T2779-22-01
May 30, 2018
REVISED December 7, 2018

MICHAEL BAKER INTERNATIONAL
40810 County Center Drive, Suite 100
Temecula, California 92591

Attention: Mr. Kevin Schmidt, P.E.

Subject: REVISED GEOTECHNICAL INVESTIGATION
UPPER VALLE DE LOS CABALLOS
REGIONAL PUMP STATION
RANCHO CALIFORNIA WATER DISTRICT
PROJECT NO. D1903
TEMECULA AREA, RIVERSIDE COUNTY, CALIFORNIA

Dear Mr. Schmidt,

In accordance with your authorization of our Proposal IE-1889, dated April 4, 2017, Geocon West, Inc. (Geocon) has performed a geotechnical investigation for the Upper Valle De Los Caballos (UVDC) Regional Pump Station, Rancho California Water District (RCWD) Project No. D1903, located east of Pauba and De Portola Roads in the Temecula area of Riverside County, California. The accompanying report presents the findings of our study and our conclusions and recommendations pertaining to the geotechnical aspects of the proposed project. Based on the results of our investigation, it is our opinion that the project is feasible as proposed, provided the recommendations of this report are followed and implemented during design and construction. This report has been revised to address the following comments:

- A discrepancy in the information source on Table 1;
- A question on liquefaction potential, *Section 6.2*;
- A comment in *Section 6.8, Subsidence*;
- A comment with regards to native soil being able to be used as backfill Section 7.5.7, addressed in *Section 7.3.15*;

If you have any questions regarding this report, or if we may be of further service, please contact the undersigned.

Very truly yours,

GEOCON WEST, INC.

Chet E. Robinson
GE 2890

REGISTERED PROFESSIONAL ENGINEER
CHET E. ROBINSON
No. 2890
GEOTECHNICAL
STATE OF CALIFORNIA

Lisa A. Battiato
CEG 2316

PROFESSIONAL GEOLOGIST
LISA A. BATTIATO
No. 2316
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

PDT:LAB:CER:hd

Distribution: Addressee (via email)

TABLE OF CONTENTS

GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the results of a geotechnical investigation for the Upper Valle De Los Caballos (UVDC) Regional Pump Station, Rancho California Water District (RCWD) Project No. D1903, located east of Pauba and De Portola Roads in the Temecula area of Riverside County, California (see *Vicinity Map*, Figure 1). The purpose of the investigation was to evaluate subsurface soil and geologic conditions underlying the proposed pump station, disinfection facilities, and conveyance pipelines and improvements, and to provide conclusions and recommendations pertaining to the proposed design and construction of the expansion based on the conditions encountered.

The scope of this investigation included a performing a site reconnaissance, obtaining an encroachment permit from the County of Riverside, performing a field exploration program, laboratory testing, engineering analysis, and preparing this report. The site exploration was performed on May 7, 2018 by drilling eight 8-inch-diameter borings utilizing a truck-mounted hollow-stem auger drilling machine. The borings were advanced to depths between approximately 21½ and 51½ feet below the existing ground surface. The approximate locations of the borings are indicated on the *Boring Location Map* (see Figure 2). A detailed discussion of the field investigation, including boring logs, is presented in *Appendix A*.

Laboratory tests were performed on selected soil samples obtained during the investigation to determine pertinent physical and chemical soil properties. *Appendix B* presents a summary of the laboratory test results.

The recommendations presented herein are based on analysis of the data obtained during the investigation and our experience with similar soil and geologic conditions. References reviewed to prepare this report are provided in the *List of References* section. If project details vary significantly from those described herein, Geocon West, Inc. (Geocon) should be contacted to evaluate the necessity for review and possible revision of this report.

2. SITE AND PROJECT DESCRIPTION

The project site is located southeast of De Portola Road, northeast of Pauba Road, and southwest of the existing chloramination facility, at approximately 33.5058 latitude and -117.0171 longitude. The majority of the site was previously a horse ranch. At the time of our exploration, there were a manufactured home, several barns, and other buildings on the old ranch property. A basin was observed southeast of the horse ranch. The site is within the Temecula Creek flood plain and the Pauba Valley and slopes gently toward the west. Site elevations range from approximately 1,244 to 1,261 feet above mean sea level (MSL) within the project area.

The project consists of Phase III of the Upper Valle De Los Caballos Recharge and Recovery Facility, including construction of a pump station, disinfection facilities, conveyance pipelines, storage tanks, and improvements associated with the expansion. The pump station and storage tanks are currently planned to be located together near the location of the manufactured home within the old horse ranch. New pipelines will consist of 24- to 36-inch-diameter water lines that will either replace existing lines or be installed as new lines to connect a new well array to the system. A total of approximately 7,250 linear feet of pipelines will be designed and installed along De Portola Road from Pauba Road to the chloramination facility; southeast from the chloramination facility to the new pump station; from the new pump station southwestward to Conquistador Place; and southwestward along Conquistador Place into Pauba Road.

Due to the preliminary nature of the design, wall and column loads for the pump station were not available. We expect that column loads for the proposed structures will be up to 20 kips, and wall loads will be up to 5 kips per linear foot. We have assumed that the storage tanks will be supported by a perimeter ring foundation and loads will be up to 10 kips per linear foot. We have assumed water lines will be placed within 10 feet of the current ground surface. Once the design phase and foundation loading configuration proceeds to a more finalized plan, the recommendations within this report should be reviewed and revised, if necessary. Any changes in the design, location or elevation of the improvements, as outlined in this report, should be reviewed by this office. Geocon should be contacted to evaluate the necessity for review and possible revision of this report.

3. GEOLOGIC SETTING

The site is located in the Peninsular Ranges Geomorphic Province (Province) which is characterized as broad northwest trending valleys subparallel to faults branching from the San Andreas fault. The Province is bound by the Transverse Ranges (San Gabriel and San Bernardino Mountains) to the north, and the Colorado Desert Geomorphic Province to the east. The Province extends westward into the Pacific Ocean and southward to the tip of Baja California. Geologic units within the Province consist of granitic and metamorphic bedrock highlands and deep broad alluvial valleys. Faulting within the Province is typically northwest trending and includes the San Andreas, San Jacinto, Elsinore, and Newport-Inglewood faults.

Specifically, the site is located within the eastern portion of the Pauba Valley which is an east-west alluvial valley created by Temecula Creek as sediment was deposited from the Aguanga, Radec, and Butterfield Valleys by Temecula Creek; the Lancaster Valley by Wilson Creek; and Agua Tibia Mountain by Arroyo Seco. Granitic and metamorphic bedrock form the highlands to the east of the site. Pauba Sandstone and Temecula Arkose form the sedimentary mesas north and south of the site.

4. GEOLOGIC MATERIALS

4.1 General

Based on the field exploration and published geologic maps of the areas, the subsurface conditions within the project area consist of previously placed artificial fill, topsoil, and young alluvial channel deposits overlying Pauba Formation sandstone at depth. As encountered in our borings, topsoil consists of disturbed surficial soils to depths of 1½ to 2 feet. For descriptive purposes, topsoil is included in this report as part of the topmost soil layer and is not assigned a geologic unit. Previously placed fill was encountered in the borings to depths of 2 feet. Localized areas of undocumented fill are likely present within areas of the site not explored during this investigation, such as existing building locations. Individual soil units are described below. Detailed stratigraphic profiles are provided in the boring logs in *Appendix A.*

4.2 Previously Placed Artificial Fill (afp)

Previously-placed artificial fill, placed in association with road grading and improvements, was encountered along De Portola Road to depths of 1½ to 2 feet. The fill is likely derived from on-site materials and consists of silty sand with trace gravel. Fill soil encountered was loose to medium dense, dry to damp, and brown.

4.3 Young Alluvial Channel Deposits (Qya)

Young alluvial channel deposits were encountered beneath the topsoil and previously placed fill to depths of 51½ feet and consisted of poorly-graded to silty and clayey sands, silts, and clays. Sands often contained gravel and cobbles and were loose to very dense, damp to wet, and olive brown to reddish brown. Silts and clays were soft to hard, damp to moist, and brown to dark brown.

5. GROUNDWATER

Groundwater was not encountered during our exploration to a maximum depth of 51½ feet below the existing ground surface. California Department of Water Resources (DWR, 2018b) well records indicate groundwater in well no. RCWD 417, located approximately 1 mile southwest of the site, has been measured at 86 to 118 feet below ground surface between 2011 and 2018. Fluctuations in groundwater level may occur due to infiltration of water during and after precipitation events or due to irrigation, variations in ground surface topography, subsurface geologic conditions and structure, rainfall, irrigation, and other factors.

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 within a currently established State of California or Riverside County Earthquake Fault Zone for surface fault rupture hazards. No active or potentially active faults with the potential for surface fault rupture are known to pass directly beneath the site.

The closest active fault to the site is the Wildomar branch of the Elsinore fault zone located approximately 5.3 miles southwest of the site. Riverside County does have a fault zone mapped in the vicinity of Vail Lake dam. However, the faults within this zone appear to be bedrock faults affecting the granitic and metamorphic bedrock and Temecula Arkose. Faults within a 50-mile radius of the site are listed in Table 1. Historic earthquakes in southern California of magnitude 6.0 and greater, their magnitude, distance, and direction from the site are listed in Table 2.

Table 1
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
Elsinore (Wildomar)	6.8	RL-SS	5	a	5	W-SW
Elsinore (Wildomar)	6.8	RL-SS	5	a	5	W-SW
San Jacinto (Casa Loma)	6.9	RL-SS	12	a	16	NE
San Jacinto (Casa Loma)	6.9	RL-SS	12	a	16	NE
San Jacinto (Claremont)	6.7	RL-SS	12	a	18	NE
Elsinore Fault (Glen Ivy)	6.8	RL-SS	5	a	18	NW
San Jacinto (Claremont)	6.7	RL-SS	12	a	18	NE
Elsinore (Julian)	7.1	RL-SS	5	a	22	SE
San Jacinto (Clark)	7.2	RL-SS	12	a	24	E
San Jacinto (Coyote Creek)	6.8	RL-SS	4	a	28	E
San Gorgonio Pass	n/a	THRUST	n/a	a	29	NE
Earthquake Valley	6.5	RL-SS	2	a	34	SE
Newport-Inglewood-Rose Canyon	7.1	RL-SS	1	a	36	SW
Chino	6.7	RL-R-O	1	a	41	NW
Pinto Mountain	7.2	LL-SS	2.5	a	42	NE
Morongo Valley	7.2	LL-SS	2.5	a	42	NE
San Andreas (North Branch)	7.4	RL-SS	30	a	43	NE

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 2
Historic Earthquake Events with Respect to the Site

Earthquake (Oldest to Youngest)	Date of Earthquake	Magnitude	Distance to Epicenter (Miles)	Direction to Epicenter
San Jacinto	April 21, 1918	6.8	8	NE
Loma Linda Area	July 22, 1923	6.3	22	NNW
Big Bear	June 28, 1992	6.4	39	W
Desert Hot Springs	December 4, 1948	6.0	45	E
Long Beach	March 10, 1933	6.4	49	NE
Buck Ridge	March 25, 1937	6.0	54	ENE
Imperial Valley	May 18, 1940	6.9	54	ESE
Joshua Tree	April 22, 1992	6.1	54	ESE
Landers	June 28, 1992	7.3	55	NW
Arroyo Salada	March 19, 1954	6.4	66	ENE
Borrego Mountain	April 8, 1968	6.5	72	NE
Hector Mine	October 16, 1999	7.1	82	NNE
San Fernando	February 9, 1971	6.6	94	WNW
Northridge	January 17, 1994	6.7	95	NE

6.2 Liquefaction Potential and Seismic Settlement

Liquefaction is a phenomenon in which loose, saturated, relatively cohesionless 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. Liquefaction is typified by a loss of shear strength in the liquefied layers due to rapid increases in pore water pressure generated by earthquake accelerations.

Seismically induced settlement may occur whether the potential for liquefaction exists or not. The site is mapped within a zone having a “Very High” potential for liquefaction in accordance with the County of Riverside parcel reports (RCIT, 2018).

Liquefaction analysis of the soils underlying the site was performed using the spreadsheet template LIQ2_30.WQ1 developed by Thomas F. Blake (1996). This program utilizes the 1996 NCEER method of analysis. The liquefaction potential evaluation was performed by utilizing the limited subsurface information from our borings, a depth to groundwater of greater than 50 feet below the ground surface, a magnitude 6.87 earthquake, and the peak horizontal acceleration for the site from the 2016 CBC. This semi-empirical method is based on a correlation between values of Standard Penetration Test (SPT) resistance and field performance data.

Based on the lack of shallow groundwater, liquefaction is not a design consideration. Based on the medium dense to dense consistency of the alluvium and the results of the analyses, a negligible seismic settlement is estimated.

A review of available historic well data in the area identified three wells were identified within two miles of the site as shown in Table 6.2, below.

TABLE 6.2
Wells Near Upper Valle De Los Caballos Pump Station

Well Identification	Date of Reading	Depth Below Ground Surface (in feet)	Distance from Site (in miles)
334956N1170337W001	10/01/1967	96	0.9 to the west
085S02W11J004S	10/01/1967	67	1.8 to the west
334917N1170509W001	10/01/1967	67	1.8 to the west

Historical high groundwater elevations of 67 feet below the ground surface were recorded near the site prior to over pumping in the Temecula area which resulted in subsidence in the late 1980's. If a groundwater recharge program is being conducted that could raise groundwater elevations to within 50 feet of the ground surface, Geocon should be allowed to review the liquefaction potential of the site and provide additional recommendations if needed.

6.3 Expansive Soil

The soils encountered within the site primarily consist of sands with varying amounts of silt, clay, and gravel. The materials are anticipated to exhibit a "low" expansion potential (expansion index [EI] of less than 50).

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.

Alluvial soil samples obtained during our investigation were tested for hydrocompression and exhibited a collapse potential of 0.0 to 1.0 percent when loaded to the anticipated post-grading pressures. The test results indicate that the alluvial soils are classified as having a "slight" (0.1 to 2.0 percent) degree of specimen collapse in accordance with ASTM D5333.

6.5 Slope Stability

Graded slopes greater than 10 feet in height and inclined steeper than 2:1 (horizontal:vertical) are not anticipated at the site. In general, graded fill slopes 10 feet in height or less, constructed of on-site soils, and with gradients of 2:1 (horizontal:vertical) or flatter are anticipated to possess factors of safety of 1.5 or greater. Geocon should be contacted for additional evaluation if steeper slopes or slopes greater than 10 feet in height are planned.

6.6 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.*, 2003). Since the site is located approximately 30 miles from the Pacific Ocean with the coastal mountain range between the site and the ocean, the risk of a tsunami at the site is considered negligible and is not a design consideration.

Seiches are standing wave oscillations of an enclosed water body after the original driving force has dissipated. Driving forces are typically caused by fault- or landslide-induced ground displacement. The nearest standing body of water is Vail Lake, located approximately 2.3 miles east-southeast of the site at approximately 1,420 feet elevation above MSL. Vail Lake is utilized as a reservoir and has a storage capacity of 51,000 acre-feet (DWR, 2018a). However, Riverside County planning documents indicate that the shape and depth of Vail Lake make it an unlikely candidate for seiche development. Within Riverside County, only Lake Perris and Lake Elsinore are considered seiche hazards (RCTLMA, 2015). Therefore, the risk of a seiche affecting the project site is considered negligible and is not a design consideration.

6.7 Earthquake-Induced Flooding

Earthquake-induced flooding is inundation caused by failure of dams or other water-retaining structures located upstream of the site due to earthquakes. According to Riverside County planning documents, Vail Lake is considered a “high” hazard potential due to failure based on its storage capacity (greater than 1,000 acre-feet of water), the height of its dam (higher than 150 feet), and the potential for downstream property damage or evacuation (RCTLMA, 2015). The project site is within a direct flow path of the reservoir. Therefore, the site could experience flooding if an earthquake caused significant damage to the reservoir or dam.

6.8 Subsidence

Subsidence occurs when land is displaced vertically, usually due to the withdrawal of groundwater, oil, or natural gas. Soil types that are particularly subject to subsidence include those with high silt or clay content. Land subsidence has been documented within the Murrieta and Temecula areas north and west of the site due to groundwater withdrawal and the presence of significant layers of clay soil. The site is mapped as "Susceptible" to subsidence in accordance with the County of Riverside parcel reports (RCIT, 2018).

Planned water recharge is not expected to lead to subsidence. If fluctuations in groundwater elevations occur, times of groundwater withdraw may result in subsidence. We expect the subsidence would be on a regional scale throughout the valley. Subsidence typically occurs over a relatively large geographic area and is not expected to cause differential settlement over a relatively short horizontal distance such as the various sites for the subject project.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 General

7.1.1 It is our opinion that neither soil nor geologic conditions were encountered during this site investigation that would preclude the construction of the proposed pump facility or water line improvements provided the recommendations presented herein are followed and implemented during design and construction of the project.

7.1.2 Potential geologic hazards at the site include seismic shaking. Based on our investigation and available geologic information, active, potentially active, or inactive faults are not present underlying or trending toward the site.

7.1.3 The topsoil and previously placed fill are considered unsuitable to support the proposed improvements and will require remedial grading.

7.1.4 Cut and fill of up to 5 feet in depth are anticipated during grading for the proposed pump facility and tank foundations. Recommendations for foundations are provided in this report.

7.1.5 Excavations of up to 10 feet in depth are anticipated for the new and replacement water lines. Recommendations for excavations and backfill of the water lines are provided in this report.

7.1.6 Due to the cohesionless nature of some of the site soils encountered in the borings, we anticipate that sloped excavations or shoring will be required for excavation and construction of portions of the water line trenches.

7.1.7 The site soils contain gravel and cobbles. Oversize materials greater than 3 inches are not suitable for reuse as backfill in the water line trenches, and oversize materials greater than 6 inches are not suitable for reuse as compacted fill during grading. Processing of the site soils (screening or crushing) may be needed prior to reuse as backfill.

7.1.8 Some of the water lines will be installed adjacent to existing roadways with conventional cut-and-cover methods. Excavations for construction of the water lines will encounter loose, cohesionless, and sloughing soils. Sloping and/or shoring measures should be anticipated in order to provide stable excavations. Recommendations for temporary excavations are provided in this report. The contractor should take precautionary measures not to cause damage to the existing roadways and structures during installation of the water lines.

7.1.9 Based on the borings, we expect that previously placed fill soils and young alluvial channel deposits will be exposed in the site excavation walls and bottom. We expect that subsequent to installation of the water lines, the fill soils and alluvial deposits will be suitable for backfill of trenches and building foundations, provided oversize material and deleterious debris is removed. Based on the sand equivalent test results, some of the deposits may be suitable for pipe bedding. If used for pipe bedding, the deposits should be processed to meet the requirements for pipe bedding in Section 217-1.1 of the 2015 *Standard Specifications for Public Works Construction* (Greenbook).

7.1.10 Groundwater was not encountered during our site exploration within the depths explored of up to 51 ½ feet below the existing ground surface.

7.1.11 Any changes in the design, location or elevation of improvements, as outlined in this report, should be reviewed by this office. Geocon should be contacted to determine the necessity for review and possible revision of this report.

7.1.12 Recommended grading specifications are provided in Appendix C.

7.2 Soil and Excavation Characteristics

7.2.1 Site soils can be excavated with moderate effort using conventional excavation equipment. Caving should be expected in unshored vertical excavations, especially where loose or cohesionless granular soils are encountered within the trench walls.

7.2.2 It is the responsibility of the contractor to ensure that excavations and trenches are properly shored and maintained in accordance with applicable OSHA rules and regulations to maintain safety and maintain the stability of existing adjacent improvements.

7.2.3 Onsite excavations must be conducted in such a manner that potential surcharges from existing structures, construction equipment, and vehicle loads are resisted. The surcharge area may be defined by a 1:1 projection down and away from the bottom of an existing foundation or vehicle load. Penetrations below this 1:1 projection will require special excavation measures such as sloping or shoring as outlined in the *Temporary Excavations* section of this report.

7.2.4 Laboratory tests were performed on representative samples of the site materials to measure the percentage of water-soluble sulfate content. Results from these tests indicate that the on-site materials tested possess sulfate contents of 0.000% equating to an exposure class of S0 (negligible) to concrete structures as defined by 2016 CBC Section 1904.3 and ACI 318. Table 7.2.4 below presents a summary of concrete requirements set forth by 2016 CBC Section 1904.3 and ACI 318.

TABLE 7.2.4
REQUIREMENTS FOR CONCRETE
EXPOSED TO SULFATE-CONTAINING SOLUTIONS

Sulfate Exposure	Exposure Class	Water-Soluble Sulfate Percent by Weight	Cement Type	Maximum Water to Cement Ratio by Weight	Minimum Compressive Strength (psi)
Negligible	**S0**	**0.00-0.10**	**--**	**--**	**2,500**
Moderate	S1	0.10-0.20	II	0.50	4,000
Severe	S2	0.20-2.00	V	0.45	4,500
Very Severe	S3	> 2.00	V+Pozzolan or Slag	0.45	4,500

7.2.5 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 along the access roads or from nearby developments (i.e., addition of fertilizers and other soil nutrients) may affect the concentration.

7.2.6 Laboratory testing indicates the site soils have a minimum electrical resistivity of 8,000 to 15,000 ohm-cm, possess 40 to 90 parts per million (ppm) chloride, 0.000% sulfate (0 ppm), and have a pH of 6.8 to 7.2. As shown in Table 7.2.6 below, the site would **not** be classified as "corrosive" to buried improvements, in accordance with the Caltrans Corrosion Guidelines (Caltrans, 2015).

TABLE 7.2.6
CALTRANS CORROSION GUIDELINES

Corrosion Exposure	Resistivity (ohm-cm)	Chloride (ppm)	Sulfate (ppm)	pH
Corrosive	<1,100	500 or greater	1,500 or greater	5.5 or less

7.2.7 Geocon does not practice in the field of corrosion engineering. Therefore, further evaluation by a corrosion engineer should be performed if improvements that could be susceptible to corrosion are planned.

7.3 Grading and Backfill

7.3.1 Grading should be performed in accordance with the *Recommended Grading Specifications* contained in *Appendix C* and the Grading Ordinances of Riverside County.

7.3.2 Earthwork should be observed and compacted backfill tested by representatives of Geocon. The existing soils encountered during our exploration are considered suitable for re-use as an engineered fill, provided any encountered oversize material (greater than 6 inches in fill and greater than 3 inches in trench backfill) and any encountered deleterious debris are removed.

7.3.3 A preconstruction conference should be held at the site prior to the beginning of earthwork operations with the owner, contractor, civil engineer, geotechnical engineer, and building official in attendance. Special soil handling requirements can be discussed at that time.

7.3.4 Based on observations during site exploration, we expect that portions of the excavations may expose cohesionless soils which will require shoring prior to trenchless construction of the pipeline.

7.3.5 The recommendations in this report have been provided to assist the contractor in evaluating the means and methods needed to perform earthwork for the water lines. However, stability of the excavations and influence of the earthwork on the adjacent roadways and structures will depend on the contractor’s procedures and the materials encountered during construction. The contractor should take precautionary measures to avoid damaging the existing improvements.

7.3.6 Earthwork should commence with the removal of existing vegetation and existing improvements planned for removal. Once a clean bottom has been established it must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon). Deleterious debris such as wood and root structures should be exported from the site and should not be mixed with the backfill soils. Asphalt and concrete should not be mixed with the backfill soils unless approved by the Geotechnical Engineer. Existing underground improvements planned for removal should be completely excavated and the resulting depressions properly backfilled in accordance with the procedures described herein.

7.3.7 Undocumented fill, topsoil and surficial alluvium within the building area should be removed to expose competent alluvium with a relative compaction of at least 85 percent (ASTM D1557). Removals in the alluvium should extend at least 2 feet below existing grades or 1 foot below the bottom of the planned foundations, whichever is deeper. 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 building 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 as necessary, and properly compacted to 90 percent of the maximum dry density as determined by ASTM 1557.

7.3.8 The fill placed within the structural improvement areas should possess a "low" expansion potential (EI of 50 or less).

7.3.9 The site should be brought to finish grade elevations with fill compacted in layers. 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 at 0 to 2 percent above optimum moisture content as determined by ASTM D 1557. Fill materials placed below optimum moisture content may require additional moisture conditioning prior to placing additional fill.

7.3.10 For trench excavations, encountered artificial fill or loose, soft, unsuitable soil should be removed from the trench bottom or stabilized as necessary at the direction of the Geotechnical Engineer.

7.3.11 Based on observations during site exploration and soils encountered in the subsurface borings, it is possible that portions of the excavations may expose relatively loose, cohesionless soils which will likely require stabilization prior to construction of the water lines. Portions of the excavations which require subgrade stabilization will be identified by a representative of Geocon during inspection of the excavation bottom.

7.3.12 In general, unstable bottom conditions due to loose, cohesionless soils may be mitigated by using a stabilizing geogrid, placing a layer of crushed rock, or over excavating the trench bottom to suitable depths and replacing with compacted fill. Recommendations for stabilizing excavation bottoms should be based on an evaluation in the field by Geocon and the contractor at the time of construction.

7.3.13 The water lines installed should be properly backfilled in accordance with the requirements of RCWD and the *Greenbook* (latest edition). The pipes should be bedded with clean sands (sand equivalent greater than 30) to a depth of at least one foot over the pipes. The bedding material must be inspected and approved in writing by the Geotechnical Engineer (a representative of Geocon). We recommend that jetting only be performed if trench wall soils have an SE of 15 or greater. The tested sand equivalent of some of the onsite soils is greater than 30, therefore, the onsite soils that are processed in accordance with Section 217-1.1 of the *Greenbook* to remove cobbles and gravel-sized particles may be used for pipe bedding. The processed onsite soils should be tested during construction to verify that they meet this criteria prior to their use. The use of well graded crushed rock is only acceptable if 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, compacted as necessary, until the required compaction is obtained. The use of 2-sack slurry is also acceptable. 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. Prior to placing any bedding materials or pipes, the excavation bottom must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon).

7.3.14 The contractor should take precautionary measures not to cause damage to existing structures such as roadways, utility lines, residences, power poles, etc. The contractor may need to use localized sheet piles, construction by slot cutting, and/or providing shoring or forming against the excavated soil to protect the existing structures. The contractor should provide monitoring of the existing structures on the adjoining properties before, during, and after earthwork activities. If significant movement is observed, the earthwork procedures should be re-evaluated to reduce the potential for movement.

7.3.15 If imported soils are required, representative samples of the imported fill should be tested and approved by Geocon prior to bringing soil to the site. Rocks larger than 6 inches in diameter should not be used in the fill, and rocks larger than 3 inches in diameter should not be used in trench backfill. If necessary, import soils used as structural fill should have an expansion index less than 20 and be non-corrosive in accordance with Caltrans corrosion criteria.

7.3.16 Excavation bottoms must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon), prior to placing bedding materials for the pipeline.

7.4 Seismic Design Criteria

7.4.1 The following table summarizes site-specific design criteria obtained from the 2016 California Building Code (CBC; Based on the 2015 International Building Code [IBC] and ASCE 7-10), 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 2016 CBC and Table 20.3-1 of ASCE 7-10. The values presented below are for the risk-targeted maximum considered earthquake (MCER).

TABLE 7.4.1
2016 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	2016 CBC Reference
Site Class	D	Section 1613.3.2
MCE_R Ground Motion Spectral Response Acceleration – Class B (short), S_S	1.522g	Figure 1613.3.1(1)
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S_1	0.627g	Figure 1613.3.1(2)
Site Coefficient, F_A	1.0	Table 1613.3.3(1)
Site Coefficient, F_V	1.5	Table 1613.3.3(2)
Site Class Modified MCE_R Spectral Response Acceleration (short), S_{MS}	1.522g	Section 1613.3.3 (Eqn 16-37)
Site Class Modified MCE_R Spectral Response Acceleration (1 sec), S_{M1}	0.940g	Section 1613.3.3 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (short), S_{DS}	1.015g	Section 1613.3.4 (Eqn 16-39)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.627g	Section 1613.3.4 (Eqn 16-40)

7.4.2 Table 7.4.2 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 7-10.

TABLE 7.4.2
2016 CBC SITE ACCELERATION DESIGN PARAMETERS

Parameter	Value	ASCE 7-10 Reference
Mapped MCE_G Peak Ground Acceleration, PGA	0.594	Figure 22-7
Site Coefficient, F_{PGA}	1.0	Table 11.8-1
Site Class Modified MCE_G Peak Ground Acceleration, PGA_M	0.594g	Section 11.8.3 (Eqn 11.8-1)

7.5 Foundation and Concrete Slabs-on-Grade

7.5.1 The foundation recommendations presented herein are for the proposed buildings and storage tanks assuming grading is performed as recommended herein and the structures are founded in soils with a low expansion potential. If soils with a medium or high expansion potential are encountered, then Geocon should be contacted for additional recommendations. We understand that future buildings will be supported on conventional shallow foundations with a concrete slab-on-grade deriving support in newly placed engineered fill. We understand that the storage tanks will be supported on a perimeter ring foundation. If alternate foundations are being considered, Geocon should be contacted for additional recommendations.

7.5.2 Foundations for the structures may consist of either continuous strip footings (applicable to the perimeter ring foundation) 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 wall/column footing dimension detail depicting footing embedment is provided on Figure 4.

7.5.3 From a geotechnical engineering standpoint, concrete slabs-on-grade for the structure should be at least 5 inches thick and be reinforced with No. 4 steel reinforcing bars placed 18 inches on 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 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

7.5.4 Steel reinforcement for continuous footings should consist of at least four No. 4 steel reinforcing bars placed horizontally in the footings, two near the top and two near the bottom. Steel reinforcement for the spread footings should be designed by the project structural engineer.

7.5.5 Following remedial grading, foundations for the buildings may be designed for an allowable soil bearing pressure of 2,500 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.

7.5.6 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 1 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.

7.5.7 Slabs-on-grade that may receive moisture-sensitive floor coverings or may be used to store moisture-sensitive materials should be underlain by a vapor retarder placed directly beneath the slab. The vapor retarder and acceptable permeance should be specified by the project architect or developer based on the type of floor covering that will be installed. The vapor retarder design should be consistent with the guidelines presented in Section 9.3 of the American Concrete Institute's (ACI) Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials (ACI 302.2R-06) and should be installed in general conformance with ASTM E1643 (latest edition) and the manufacturer's recommendations. A minimum thickness of 15 mils extruded polyolefin plastic is recommended; vapor retarders which contain recycled content or woven materials are not recommended. The vapor retarder should have a permeance of less than 0.01 perms demonstrated by testing before and after mandatory conditioning. The vapor retarder should be installed in direct contact with the concrete slab with proper perimeter seal. If the California Green Building Code requirements apply to this project, the vapor retarder should be underlain by 4 inches of clean aggregate. It is important that the vapor retarder be puncture resistant since it will be in direct contact with angular gravel. As an alternative to the clean aggregate suggested in the Green Building Code, the concrete slab-on-grade may be underlain by a vapor retarder over 4 inches of clean sand (sand equivalent greater than 30), since the sand will serve as a capillary break and will minimize the potential for punctures and damage to the vapor barrier.

7.5.8 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.

7.5.9 Exterior slabs supporting ancillary equipment for the water main, and not subject to traffic loads, should be at least 4 inches thick and reinforced with No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions, positioned near the slab midpoint. Prior to construction of slabs, the upper 12 inches of soil should be moisture conditioned to near optimum moisture content and property compacted to at least 95 percent relative compaction, as evaluated by ASTM D1557. Crack control joints should be constructed at regular intervals specified by the structural engineer and should be constructed using saw-cuts or other methods as soon as practical following concrete placement. Crack control joints should extend a minimum depth of one-fourth the slab thickness. The project structural engineer should design construction joints as necessary.

7.5.10 No special subgrade presaturation is required prior to placement of concrete. However, the exposed foundation and slab subgrade soil should be moisture conditioned, as necessary, to maintain a moist condition as would be expected in such concrete placement.

7.5.11 The recommendations of this report are intended to reduce the potential for cracking of slabs due to expansive soil and differential settlement of existing soil. However, even with the incorporation of the recommendations presented herein 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.

7.6 Lateral Design

7.6.1 Resistance to lateral loading may be provided by friction acting at the base of foundations, slabs and by passive earth pressure. A passive pressure exerted by an equivalent fluid weight of 325 pounds per cubic foot (pcf) with a maximum earth pressure of 3,250 psf should be used for the design of footings or shear keys poured neat against newly compacted fill. 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 floor slabs or pavement should not be included in design for passive resistance.

7.6.2 If friction is to be used to resist lateral loads, an allowable coefficient of friction between newly compacted fill soil and concrete of 0.40 should be used for design. When combining passive pressure and friction for lateral resistance, the passive component should be reduced by one-third.

7.7 Preliminary Pavement Recommendations

7.7.1 The planned water line is expected to be constructed beneath roadways within the project limits, or the project may include new access roads to the pump station. Pavements should be constructed in accordance with the County of Riverside Ordinance 461 (County of Riverside, 2015).

7.7.2 In areas to receive new pavements, the upper 12 inches of soil at the pavement subgrade should be moisture conditioned to near optimum moisture content and property compacted to at least 95 percent of the maximum dry density as evaluated by ASTM D1557.

7.7.3 The following pavement sections are based on laboratory test results from site soils using an estimated R-Value of 40 and the minimum street structural sections by the County of Riverside. Once site earthwork activities are complete R-Value tests should be performed on a soil samples from the street subgrade areas to confirm soil properties prior to placing pavement. Pavement thicknesses were determined following procedures outlined in the *California Highway Design Manual* (Caltrans).

7.7.4 The traffic index to be used for pavement section design for each roadway should be selected by the project civil engineer based on the expected traffic loading of each roadway. Traffic indices for various roadways were selected from the County of Riverside Standard No. 114, Roadway Design Requirements and the recommended pavement sections are provided in Table 7.7.4. If other traffic indices are needed, Geocon should be contacted for additional recommendations.

TABLE 7.7.4
PRELIMINARY PAVEMENT DESIGN SECTIONS

Traffic Index (TI)	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
5.0	3.0	4.0
6.0	3.5	5.5
7.0	4.0	7.0

7.7.5 Asphalt concrete should conform to Section 203-6 of the *Standard Specifications for Public Works Construction* (Green Book). Class 2 aggregate base materials should conform to Section 26-1.02A of the Caltrans *Standard Specifications*. Crushed Miscellaneous Base should conform to Section 200-2.4 of the Greenbook.

7.7.6 The performance of pavements is highly dependent upon providing positive surface drainage away from the edge of pavements. Ponding of water on or adjacent to the pavement will likely result in saturation of the subgrade materials and subsequent cracking, subsidence and pavement distress.

7.8 Temporary Excavations

7.8.1 Excavations up to 10 feet below the existing ground surface are expected during grading and for construction of the proposed water lines using conventional cut-and-cover methods.

7.8.2 The site soils contain cohesionless sands and gravels. The contractor should be prepared for the difficult excavations conditions that are anticipated due to the cohesionless soils and possibly oversize materials.

7.8.3 The excavations are expected to expose previously placed fill soils and alluvial deposits which are suitable for vertical excavations up to 5 feet where loose soils or caving sands are not present and where not surcharged by adjacent traffic or structures.

7.8.4 Vertical excavations greater than 5 feet will require sloping measures in order to provide a stable excavation. Where sufficient space is available, temporary unsurcharged embankments could be sloped back at a uniform 1.5:1 slope gradient or flatter.

7.8.5 Where there is insufficient space for sloped excavations, shoring or trench shields should be used to support excavations. Shoring may also be necessary where sloped excavation could remove vertical or lateral support of existing improvements, including existing utilities and adjacent structures. Recommendations for temporary shoring are provided in the following section.

7.8.6 Where sloped embankments are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction embankments are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. The contractor’s competent person should inspect the soils exposed in the cut slopes during excavation in accordance with OSHA requirements so that modifications of the slopes can be made if variations in the soil conditions occur.

7.9 Temporary Shoring

7.9.1 Where there is insufficient space to perform sloped excavations, shoring may be implemented. 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.

7.9.2 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 7.9.2
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 15	25	45

7.9.3 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.

7.9.4 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.

7.9.5 In addition to the recommended earth pressure, the upper ten feet of the shoring adjacent to the street 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 ten feet from the shoring, the traffic surcharge may be neglected.

7.9.6 It is difficult to accurately predict the amount of deflection of a shored embankment although 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 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. The contractor's shoring designer should review the site for the presence of structure that could be affected by shoring deflection. Where structures that could be sensitive to ground deflections are within the shoring surcharge area it is recommended that 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.

7.9.7 Prior to excavation, we recommend that existing improvements near the proposed excavation be inspected to document the present condition. For documentation purposes, photographs should be taken of preconstruction distress conditions and level surveys of adjacent grade and pavement should be considered. Preconstruction documentation is not the responsibility of the geotechnical engineer.

7.9.8 Because of the depth of the excavation, some means of monitoring the performance of the shoring system is suggested. The monitoring should consist of periodic surveying of the lateral and vertical movement at the top of the shoring systems. In addition, the adjacent structures and pavement should be periodically inspected for signs of distress. In the event that distress, or settlement is noted, an investigation should be performed and corrective measures taken so that continued or worsened distress or settlement is mitigated.

7.10 Surface Drainage

7.10.1 Proper surface drainage is critical to the future performance of the project. Uncontrolled infiltration of irrigation excess and storm runoff into the supporting soil can adversely affect the performance of the planned improvements. Saturation of a soil can cause it to lose internal shear strength and increase its compressibility, resulting in a change in the original designed engineering properties. Proper drainage should be maintained at all times.

7.10.2 Site drainage should be collected and controlled in non-erosive drainage devices. Drainage should not be allowed to pond anywhere on the site, and especially not against any foundation or retaining wall. The site should be graded and maintained such that surface drainage is directed away from structures in accordance with Section 1804.4 of the 2016 CBC or other applicable standards. Drainage should not be allowed to flow uncontrolled over any descending slope.

7.10.3 Positive site drainage should be provided away from structures, pavement, and the tops of slopes to swales or other controlled drainage structures. The improvement pad and pavement areas should be fine graded such that water is not allowed to pond.

7.11 Plan Review

7.11.1 Plans should be reviewed by the Geotechnical Engineer (a representative of Geocon), prior to finalization to verify that the plans have been prepared in substantial conformance with the recommendations of this report and to provide additional analyses or recommendations.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. 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 the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon West, Inc. should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon West, Inc.

2. This report is issued with the understanding that it is the responsibility of the owner, or of his 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.

3. 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.

4. 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 Maps, 2018

VICINITY MAP

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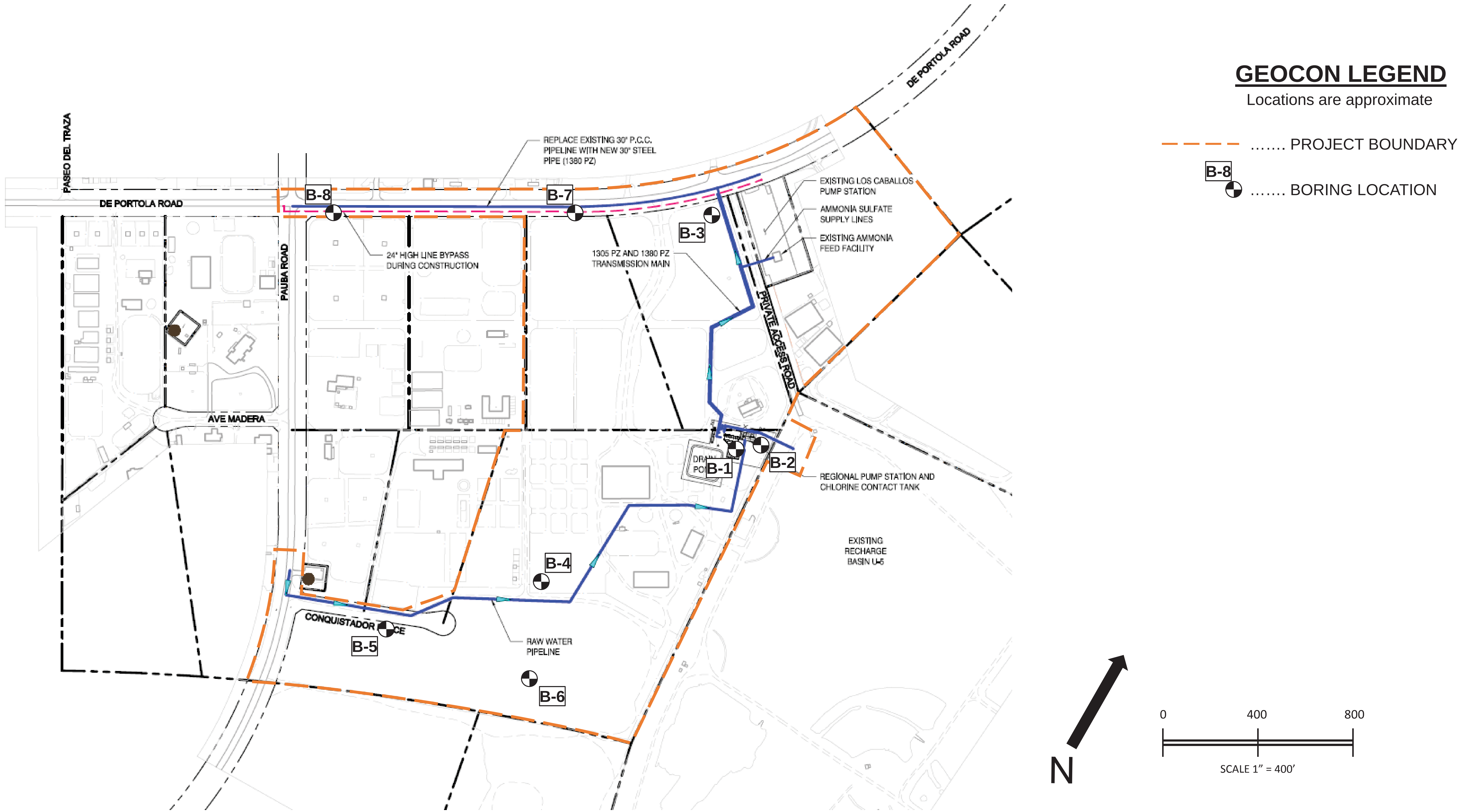
UPPER VALLE DE LOS CABALLOS
REGIONAL PUMP STATION
RANCHO CALIFORNIA WATER DISTRICT
PROJECT NO. D1903
TEMECULA AREA, RIVERSIDE COUNTY, CALIFORNIA

AMO			DECEMBER, 2018	PROJECT NO. T2779-22-01	FIG. 1



Source: Michael Baker International, 2018, *Rancho California Water District UVDC Regional Pump Station Location Map*, dated 05/07/2018.

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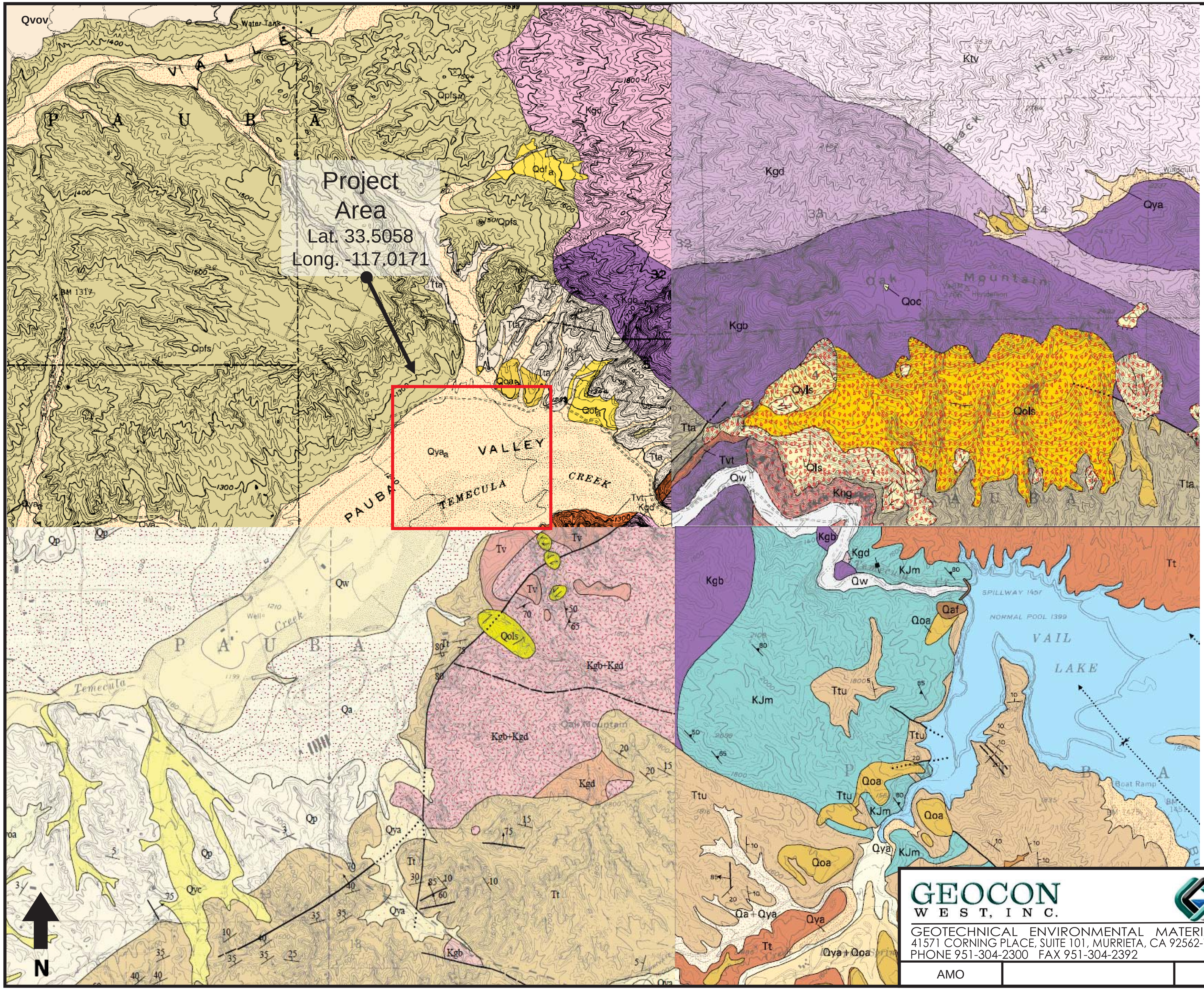
BORING LOCATION MAP

UPPER VALLE DE LOS CABALLOS
REGIONAL PUMP STATION
RANCHO CALIFORNIA WATER DISTRICT
PROJECT NO. D1903
TEMECULA AREA, RIVERSIDE COUNTY, CALIFORNIA

AMO			DECEMBER, 2018	PROJECT NO. T2779-22-01	FIG. 2



Legend

Qaf	Artificial fill
Qw	Wash deposits
Qls	Very young landslide deposits
Qa	Alluvial flood plain deposits
Qya	Young alluvial flood plain or channel deposits
Qyc	Young colluvial deposits
Qyls	Young landslide deposits
Qof	Old alluvial fan deposits
Qoa	Old alluvial flood plain or channel deposits
Qoc	Old colluvial deposits
Qols	Old/older landslide deposits
Qvov	Very old alluvial valley deposits
Qvoa	Very old alluvial flood plain deposits
Qp	Pauba Formation
Qpfs	Pauba Formation, sandstone member
Qds	Dripping Springs Formation
Tt	Temecula Arkose (late Pliocene to Pleistocene)
Tta or Ttu	Temecula Arkose (Pliocene)
Tv or Tvt	Miocene basalt
Ktv	Tonalite of the Tucalota Valley pluton
Kgd	Granodiorite
Kt	Tonalite, undifferentiated
Khg	Heterogeneous granitic rocks
Kgb	Gabbro

0 2,500 5,000

SCALE 1" = 2,500'

SOURCE MAPS:

Kennedy, M.P., 2000, *Geologic Map of the Pechanga 7.5' Quadrangle, San Diego and Riverside Counties, California: A Digital Database*, Version 1.0, California Department of Conservation, Division of Mines and Geology; scale 1:24,000.

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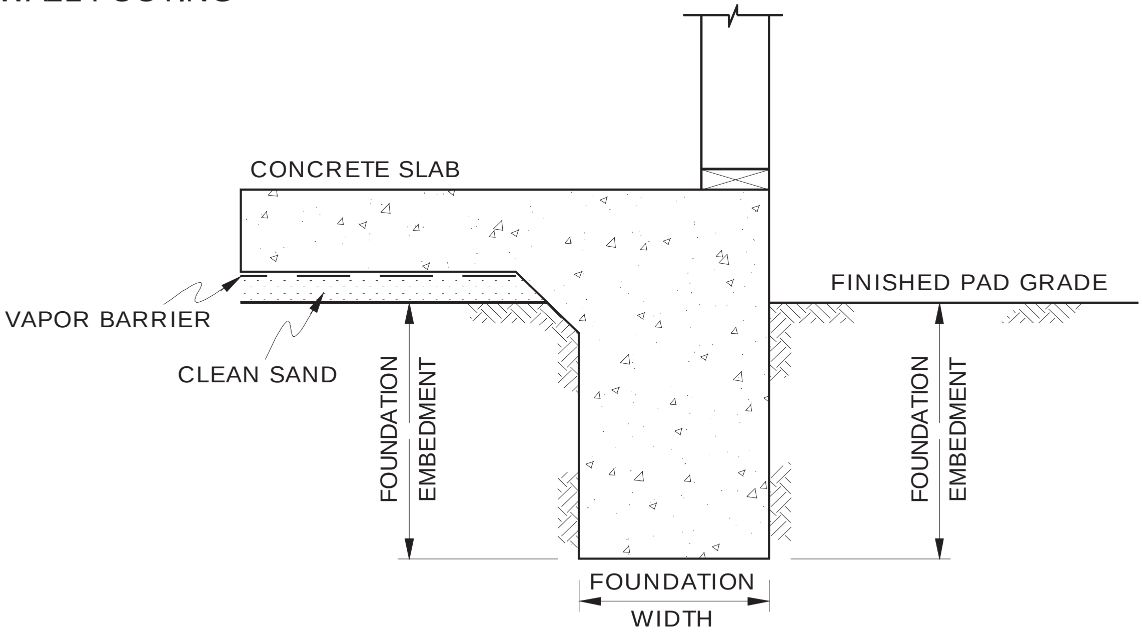
REGIONAL GEOLOGIC MAP

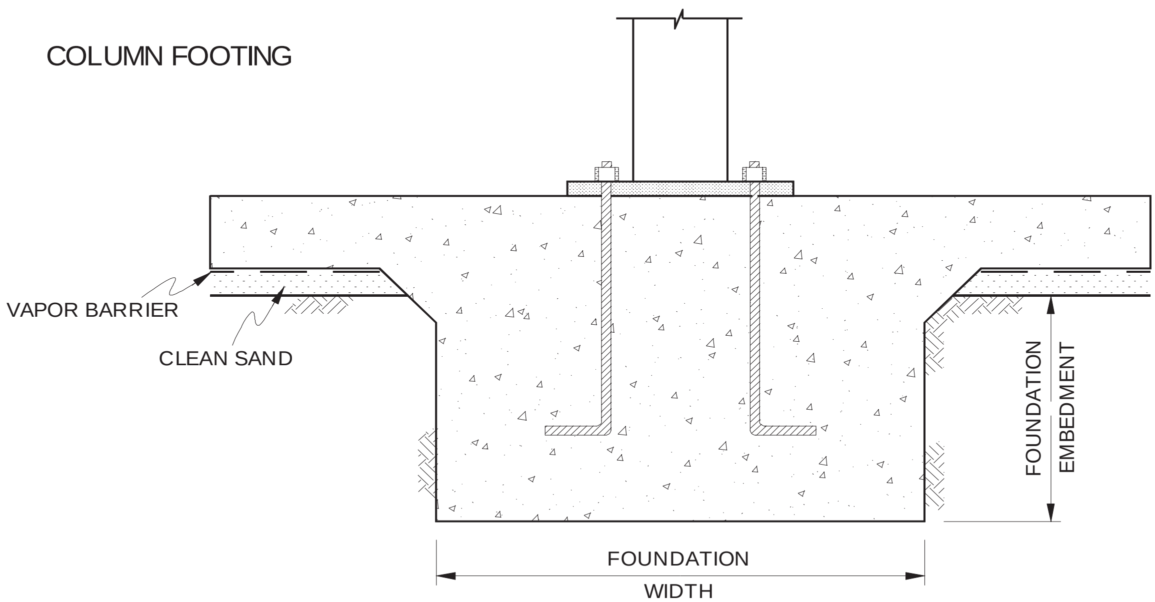
UPPER VALLE DE LOS CABALLOS
REGIONAL PUMP STATION
RANCHO CALIFORNIA WATER DISTRICT
PROJECT D1903
TEMECULA AREA, RIVERSIDE COUNTY, CALIFORNIA

AMO		
DECEMBER, 2018	PROJECT NO. T2779-22-01	FIG. 3

WALL FOOTING



COLUMN FOOTING



NOTE: SEE REPORT FOR FOUNDATION WIDTH AND DEPTH RECOMMENDATION

NO SCALE

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CER

WALL / COLUMN FOOTING DETAIL

UPPER VALLE DE LOS CABALLOS
REGIONAL PUMP STATION
RANCHO CALIFORNIA WATER DISTRICT
PROJECT NO. D1903
TEMECULA AREA, RIVERSIDE COUNTY, CALIFORNIA

DECEMBER, 2018	PROJECT NO. T2779-22-01	FIG. 4

APPENDIX A

APPENDIX A

FIELD INVESTIGATION

The site exploration was performed on May 7, 2018 by drilling eight 8-inch-diameter borings utilizing a truck-mounted hollow-stem auger drilling machine. The borings were advanced to depths of approximately 20½ to 51½ feet below the existing ground surface. Representative relatively undisturbed samples were obtained by driving a 3-inch O. D., California Modified Sampler into the "undisturbed" soil mass with blows from a 140-pound hammer falling 30 inches. The California Modified Sampler was equipped with 1-inch high by 2⅜-inch diameter brass sampler rings to facilitate removal and testing. Bulk samples of disturbed soils were also collected.

The soil conditions encountered in the borings were visually examined, classified and logged in general accordance with the Unified Soil Classification System (USCS). Logs of the borings are presented on Figures A-1 through A-8. The blow counts for the last 12 inches of the drive are recorded on the boring logs. The logs depict the soil and geologic conditions encountered and the depths at which samples were obtained. The approximate locations of the borings are indicated the *Boring Location Map*, Figure 2.

PROJECT NO. T2779-22-01

BORING B-1

ELEV. (MSL.) 1260 DATE COMPLETED 05/07/2018

EQUIPMENT HOLLOW STEM AUGER BY: A. ORTON

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 to medium dense, dry to damp, light brown; fine sand; trace medium to coarse sand; trace gravel; trace mica; weeds near surface			
2	B-1@2.5'			SP-SM	**YOUNG ALLUVIAL CHANNEL DEPOSITS (Qya)** Poorly-graded SAND with Silt, loose, damp, light brown; fine sand; few medium sand; trace mica	15	99.0	3.0
4	B-1@5' B-1@5-10'			SM	Silty SAND, medium dense, damp, light brown; fine sand; trace mica	23	101.1	3.6
6								
8	B-1@7.5'			SW-SM	Well-graded SAND with Silt and Gravel, loose, damp, light brown; fine to coarse sand; trace gravel	10	104.5	2.6
				SP-SM	Poorly-graded SAND with Silt, loose, damp, light brown; fine sand			
10	B-1@10'				-Partial recovery -Becomes fine to medium sand; trace gravel	34		2.2
12								
14								
16	B-1@15'				-Becomes fine to coarse sand; trace gravel	31	106.7	4.7
18				SW-SM	Well-graded SAND with Silt and Gravel, medium dense, damp, light brown; fine to coarse sand; fine to medium gravel; trace mica			
20	B-1@20'					43		

Total depth 21.5 feet
Groundwater not encountered
Penetration resistance for 140-lb hammer falling 30" by auto-hammer
Backfilled with cuttings 05/07/2018

Figure A-1,
Log of Boring B-1, Page 1 of 1

T2779-22-01 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. T2779-22-01

BORING B-2

ELEV. (MSL.) **1259** DATE COMPLETED **05/07/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **A. ORTON**

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-2@0-5'			SP-SM	**TOPSOIL** Poorly-graded SAND with Silt, medium dense, dry to moist, light brown; fine sand; trace medium sand; trace mica		99.3	14.1
2	B-2@2.5'			SP-SM	**YOUNG ALLUVIAL CHANNEL DEPOSITS (Qya)** Poorly-graded SAND with Silt, medium dense, damp, light olive brown; fine sand; trace medium to coarse sand; trace mica	18	99.3	3.1
4	B-2@5'			SW-SM	Well-graded SAND with Silt, medium dense, damp, light olive brown; fine to coarse sand; trace gravel; trace mica	19	109.5	2.6
6–8	B-2@7.5'			SP-SM	Poorly-graded SAND with Silt, loose, damp, light olive brown; fine to medium sand; trace mica	14	99.8	2.4
10	B-2@10'			SW-SM	Well-graded SAND with Silt and Gravel, medium dense, moist, light olive brown; fine to coarse sand; few gravel	24	94.8	12.1
12–16	B-2@15'				-Becomes moist, brown; trace mica	39	117.5	3.4
18–20	B-2@20'			SP-SM	Poorly-graded SAND with Silt, medium dense, damp, light brown; fine sand; little coarse gravel	27	115.4	11.0
22–24	B-2@25'			SM	Silty SAND, medium dense, moist, brown; fine to medium sand; trace mica	49	111.1	5.3
26–28				SP-SM	Poorly-graded SAND with Silt, dense, damp, light brown; fine to medium sand; trace coarse sand; trace mica			

Figure A-2,
Log of Boring B-2, Page 1 of 2

T2779-22-01 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

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	**BORING B-2** ELEV. (MSL.) **1259** DATE COMPLETED **05/07/2018** EQUIPMENT **HOLLOW STEM AUGER** BY: **A. ORTON**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
30	B-2@30'			SP-SM	Poorly-graded SAND with Silt, dense, damp, light brown; fine to medium sand; trace coarse sand; trace gravel; trace mica -From 30.5 to 31', fining upward sequence: poorly-graded coarse sand with silt at bottom, medium to fine in center, silty sand at top	54		
32								
34								
	B-2@35'				-Becomes medium dense; fine sand; trace medium to coarse sand	34	112.3	3.2
36								
38								
40	B-2@40'				-Becomes dense; fine to medium sand; trace gravel; trace mica	67		
42								
44				SM	Silty SAND, medium dense, moist, brown; fine sand; trace mica			
	B-2@45'					23	104.7	10.5
46				ML	SILT, stiff, moist, brown; trace fine sand; micaceous			
48								
				CL	Sandy CLAY, hard, moist, brown; fine to coarse sand; trace gravel			
50	B-2@50'					54	121.4	15.0

Total depth 51.5 feet
Groundwater not encountered
Penetration resistance for 140-lb hammer falling 30" by auto-hammer
Backfilled with cuttings 05/07/2018

Figure A-2,
Log of Boring B-2, Page 2 of 2

T2779-22-01 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. T2779-22-01

BORING B-3

ELEV. (MSL.) 1256 DATE COMPLETED 05/07/2018

EQUIPMENT HOLLOW STEM AUGER BY: A. ORTON

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-3@0-5'			SM	**TOPSOIL** Silty SAND, loose, dry to damp, brown; fine sand; trace medium to coarse sand; trace gravel; trace mica			
2				SM	**YOUNG ALLUVIAL CHANNEL DEPOSITS (Qya)** Silty SAND, loose, damp, brown; fine sand; trace medium to coarse sand; trace gravel; trace mica			
	B-3@2.5'					12	103.1	6.4
4					-Becomes moist, brown; very fine sand			
	B-3@5'					6	107.1	16.3
6								
8	B-3@7.5'			SP-SM	Poorly-graded SAND with Silt, loose, damp, light brown; fine to medium sand	15	102.4	3.6
10	B-3@10'					15	102.0	7.2
	B-3@10-15'							
12								
14								
	B-3@15'			SW-SM	Well-graded SAND with Silt, medium dense, damp, light brown; fine to coarse sand	17		1.4
16				SM	Silty SAND with Gravel, medium dense, moist, brown -Partial recovery			
18								
20	B-3@20'					12	114.7	15.9
22				SC-SM	Silty, Clayey SAND, loose, moist, reddish brown; fine sand			
				SM	Silty SAND, medium dense, moist, yellowish brown; fine sand; trace medium sand			
24								
	B-3@25'					17		
26								

Total depth 26.5 feet
Groundwater not encountered
Penetration resistance for 140-lb hammer falling 30" by auto-hammer
Backfilled with cuttings 05/07/2018

Figure A-3,
Log of Boring B-3, Page 1 of 1

T2779-22-01 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.

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PROJECT NO. T2779-22-01

BORING B-4

ELEV. (MSL.) 1253 DATE COMPLETED 05/07/2018

EQUIPMENT HOLLOW STEM AUGER BY: A. ORTON

DEPTH IN FEET	SAMPLE NO.	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-4@0-5'	SP-SM	**TOPSOIL** Poorly-graded SAND with Silt, medium dense, dry to damp, light brown; fine sand; trace medium to coarse sand; trace gravel; trace mica; weeds near surface			
2	B-4@2.5'	SP-SM	**YOUNG ALLUVIAL CHANNEL DEPOSITS (Qya)** Poorly-graded SAND with Silt, medium dense, damp, light brown; fine sand; trace medium to coarse sand; trace gravel; trace mica	19	103.6	1.8
4	B-4@5'	SW-SM	Well-graded SAND with Silt, medium dense, damp, light brown; fine to coarse sand; trace mica	23	110.4	3.2
6	B-4@7.5'	SP-SM	Poorly-graded SAND with Silt, medium dense, damp, light olive brown; fine to medium sand; trace coarse sand; trace gravel; trace mica	26		
10	B-4@10'			27	110.7	3.1
	B-4@10-15'	SW-SM	Well-graded SAND with Silt, medium dense, damp, light brown; fine to coarse sand; trace mica			
12		SP	Poorly-graded SAND, medium dense, damp, light brown; fine to medium sand; trace mica			
14	B-4@15'			37	114.9	2.3
18		SW-SM	Well-graded SAND with Silt, medium dense, damp, light brown; fine to coarse sand; trace gravel; trace mica			
20	B-4@20'			46	116.4	3.5
		SP-SM	Poorly-graded SAND with Silt, medium dense, damp, light brown; fine sand; trace medium sand; trace mica			

Total depth 21.5 feet
Groundwater not encountered
Penetration resistance for 140-lb hammer falling 30" by auto-hammer
Backfilled with cuttings 05/07/2018

Figure A-4,
Log of Boring B-4, Page 1 of 1

T2779-22-01 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.

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BORING B-5

ELEV. (MSL.) 1248 DATE COMPLETED 05/07/2018

EQUIPMENT HOLLOW STEM AUGER BY: A. ORTON

DEPTH IN FEET	SAMPLE NO.	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-5@0-5'	SM	**TOPSOIL** Silty SAND, medium dense, moist, yellowish brown; fine to coarse sand; trace gravel			
2	B-5@2.5'	SM	**YOUNG ALLUVIAL CHANNEL DEPOSITS (Qya)** Silty SAND, medium dense, damp, yellowish brown; fine to coarse sand; trace gravel	14	105.0	1.4
4		SW-SM	Well-graded SAND with Silt, loose, damp, light brown; fine to coarse sand			
	B-5@5'	SM	Silty SAND, medium dense, damp, light brown; fine sand; trace medium to coarse sand; trace mica	33		
6	B-5@5-10'	SW-SM	Well-graded SAND with Silt, medium dense, damp, light brown; fine to coarse sand; trace gravel			
8	B-5@7.5'	SP-SM	Poorly-graded SAND with Silt, medium dense, damp, light brown; fine to coarse sand; trace mica	24	107.5	2.8
10	B-5@10'			29		
12			-Becomes yellowish brown; trace gravel			
14						
	B-5@15'			36	117.1	2.5
16		SM	Silty SAND, medium dense, damp, brown; micaceous			
18						
		SP-SM	Poorly-graded SAND with Silt, medium dense, damp, brown; fine sand; trace medium to coarse sand			
20	B-5@20'			48	113.6	4.3
			-Gravel in shoe			

Total depth 21.5 feet
Groundwater not encountered
Penetration resistance for 140-lb hammer falling 30" by auto-hammer
Backfilled with cuttings 05/07/2018

Figure A-5,
Log of Boring B-5, Page 1 of 1

T2779-22-01 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. T2779-22-01

BORING B-6

ELEV. (MSL.) 1251 DATE COMPLETED 05/07/2018

EQUIPMENT HOLLOW STEM AUGER BY: A. ORTON

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-6@0-5'			SM	**TOPSOIL** Silty SAND, loose, dry to damp, light brown; fine to coarse sand; trace gravel; weeds near surface			
2				SP-SM	**YOUNG ALLUVIAL CHANNEL DEPOSITS (Qya)**			
	B-6@2.5'				Poorly-graded SAND with Silt, loose, damp, light brown; fine to medium sand; trace coarse sand; trace mica	13	108.7	2.5
4								
	B-6@5'				-Becomes medium dense; 2-3" layers of coarse sand	25	115.9	2.6
6								
8	B-6@7.5'					19	104.8	3.8
10	B-6@10'					25		
					-Becomes fine to medium sand; trace coarse sand; trace gravel; trace mica			
12								
14				SM	Silty SAND, medium dense, damp, brown; fine sand; trace medium to coarse sand; trace mica			
	B-6@15'					37	113.4	3.7
16				SW-SM	Well-graded SAND with Silt, medium dense, damp, light brown; fine to coarse sand; trace mica; trace gravel			
18								
20	B-6@20'				-Becomes dense, brown; few gravel	54		
22				SP-SM	Poorly-graded SAND with Silt, medium dense, damp, light brown; fine to medium sand; trace coarse sand; trace gravel; trace mica			
24								
	B-6@25'					42	111.9	5.0
26								
28								

Figure A-6,
Log of Boring B-6, Page 1 of 2

T2779-22-01 BORING LOGS.GPJ

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... 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.

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BORING B-6

ELEV. (MSL.) **1251** DATE COMPLETED **05/07/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **A. ORTON**

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-6@30'			SP-SM	Poorly-graded SAND with Silt, medium dense, damp, light brown; fine to medium sand; 2-3" layers of coarse sand; trace gravel; trace mica	32		

Total depth 31.5 feet
Groundwater not encountered
Penetration resistance for 140-lb hammer falling 30" by auto-hammer
Backfilled with cuttings 05/07/2018

Figure A-6,
Log of Boring B-6, Page 2 of 2

T2779-22-01 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. T2779-22-01

BORING B-7

ELEV. (MSL.) **1254** DATE COMPLETED **05/07/2018**

EQUIPMENT **HOLLOW STEM AUGER** BY: **A. ORTON**

DEPTH IN FEET	SAMPLE NO.	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-7@0-5'	SM	**PREVIOUSLY PLACED ARTIFICIAL FILL (afp)** Silty SAND, medium dense, dry to damp, brown; fine to coarse sand; trace gravel; trace mica			
2	B-7@2.5'	SP-SM	**YOUNG ALLUVIAL CHANNEL DEPOSITS (Qya)** Poorly-graded SAND with Silt, loose, moist, light olive brown; fine to medium sand; trace coarse sand	5	96.6	13.8
4		ML	SILT, soft, moist, dark brown; trace fine sand; micaceous			
6	B-7@5'	SM	Silty SAND, loose, wet, brown; fine to medium sand; trace coarse sand; micaceous	5	102.3	8.3
8	B-7@7.5'	SP-SM	Poorly-graded SAND with Silt, medium dense, damp, light grayish brown; fine to medium sand; trace mica	19	107.5	3.8
			-Trace coarse sand; trace gravel			
10	B-7@10'			33		
12		SW	Well-graded SAND with Gravel, medium dense, damp, brown; fine to coarse sand; little gravel; trace mica			
14	B-7@15'			34	109.6	3.4
16		SP-SM	Poorly-graded SAND with Silt, medium dense, damp, light brown; fine sand; trace medium to coarse sand; trace mica			
18						
20	B-7@20'	ML	SILT with Sand, very stiff, moist, dark brown; fine sand; micaceous	28	115.5	11.8
		SM	Silty SAND, medium dense, moist, brown; fine sand; micaceous			

Total depth 21.5 feet
Groundwater not encountered
Penetration resistance for 140-lb hammer falling 30" by auto-hammer
Backfilled with cuttings 05/07/2018

Figure A-7,
Log of Boring B-7, Page 1 of 1

T2779-22-01 BORING LOGS.GPJ

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... 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. T2779-22-01

BORING B-8

ELEV. (MSL.) 1245 DATE COMPLETED 05/07/2018

EQUIPMENT HOLLOW STEM AUGER BY: A. ORTON

DEPTH IN FEET	SAMPLE NO.	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B-8@0-5'	SM	**PREVIOUSLY PLACED ARTIFICIAL FILL (afp)** Silty SAND, medium dense, dry, brown; fine to coarse sand; trace gravel			
2	B-8@2.5'	SP-SM	**YOUNG ALLUVIAL CHANNEL DEPOSITS (Qya)** Poorly-graded SAND with Silt, loose, moist, dark brown; fine sand; trace mica	13	101.0	10.0
4		ML	Sandy SILT, firm, moist, dark brown; some fine sand; micaceous			
	B-8@5'	SP	Poorly-graded SAND, loose, damp, light brown; fine sand; trace medium to coarse sand; trace mica	25	105.5	2.9
6						
8	B-8@7.5'	SP	Poorly-graded SAND with Gravel and Cobbles, loose, damp, light olive brown; fine sand; some medium to coarse sand; little gravel and cobbles	19	113.9	1.7
10	B-8@10'		-Becomes medium dense; decrease in gravel and cobbles	25		
12			-Increase in gravel and cobbles			
14		SP	Poorly-graded SAND, medium dense, damp, olive brown; fine to medium sand			
	B-8@15'			37	118.1	3.8
16		SM	Silty SAND with Gravel, medium dense, damp, olive brown; fine to medium sand; some gravel			
18						
20	B-8@20'	SP-SM	Poorly-graded SAND with Silt, medium dense, damp, light brown; fine sand; few medium to coarse sand	54		
22						
24						
	B-8@25'	SW-SM	Well-graded SAND with Silt and Gravel, very dense, damp, brown; fine to coarse sand; few gravel	76/10"	114.4	2.8
26						

Total depth 27.5 feet (refusal)
Groundwater not encountered
Penetration resistance for 140-lb hammer falling 30" by auto-hammer
Backfilled with cuttings 05/07/2018

Figure A-8,
Log of Boring B-8, Page 1 of 1

T2779-22-01 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.

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APPENDIX B

APPENDIX B

LABORATORY TESTING

Laboratory tests were performed in accordance with generally accepted test methods of ASTM International, or other suggested procedures. Selected samples were tested for direct shear strength, grain size distribution, consolidation and/or collapse potential, corrosion screening, maximum density/optimum moisture, sand equivalent, and in-place dry density and moisture content. The results of the laboratory tests are summarized on Figures B-1 through B-9. The in-place dry density and moisture content of the samples tested are presented in the boring logs, *Appendix A*.

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-2 @ 0-5’	Poorly-graded SAND with Silt (SP-SM), light olive brown	110.3	14.1
B-7 @ 0-5’	Poorly-graded SAND with Silt (SP-SM), light olive brown	115.5	12.0

SUMMARY OF CORROSIVITY TEST RESULTS

Sample No.	Chloride Content (ppm)	Sulfate Content (%)	pH	Resistivity (ohm-centimeter)
B-1 @ 5-10’	90	0.000	7.1	8,000
B-3 @ 10-15’	40	0.000	7.2	15,000
B-4 @ 10-15’	60	0.000	6.9	13,000
B-5 @ 5-10’	60	0.000	6.8	13,000

Chloride content determined by California Test 422.
Water-soluble sulfate determined by California Test 417.
Resistivity and pH determined by Caltrans Test 643.

SUMMARY OF LABORATORY SAND EQUIVALENT TEST RESULTS ASTM D2419

Sample No.	Sand Equivalent
B-3 @ 10’	79
B-8 @ 10’	78

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SUMMARY OF PERCENT COLLAPSE DURING
ONE-DIMENSIONAL CONSOLIDATION TESTS
ASTM D2435 / ASTM D4546 (Method 'B')

Sample No.	In-situ Dry Density (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Axial Load with Water Added (psf)	Percent Collapse
B-2 @ 2.5'	99.3	3.1	17.5	2,000	0.4
B-2 @ 5'	109.5	2.6	12.3	2,000	0.6
B-2 @ 7.5'	99.8	2.4	15.2	2,000	0.4
B-2 @ 10'	94.8	12.1	15.7	2,000	1.0
B-2 @ 20'	115.4	11.0	13.1	4,000	0.1
B-3 @ 5'	107.1	16.3	15.5	2,000	0.0
B-3 @ 7.5'	102.4	3.6	16.8	2,000	0.7
B-3 @ 10'	102.0	7.2	16.8	2,000	0.8

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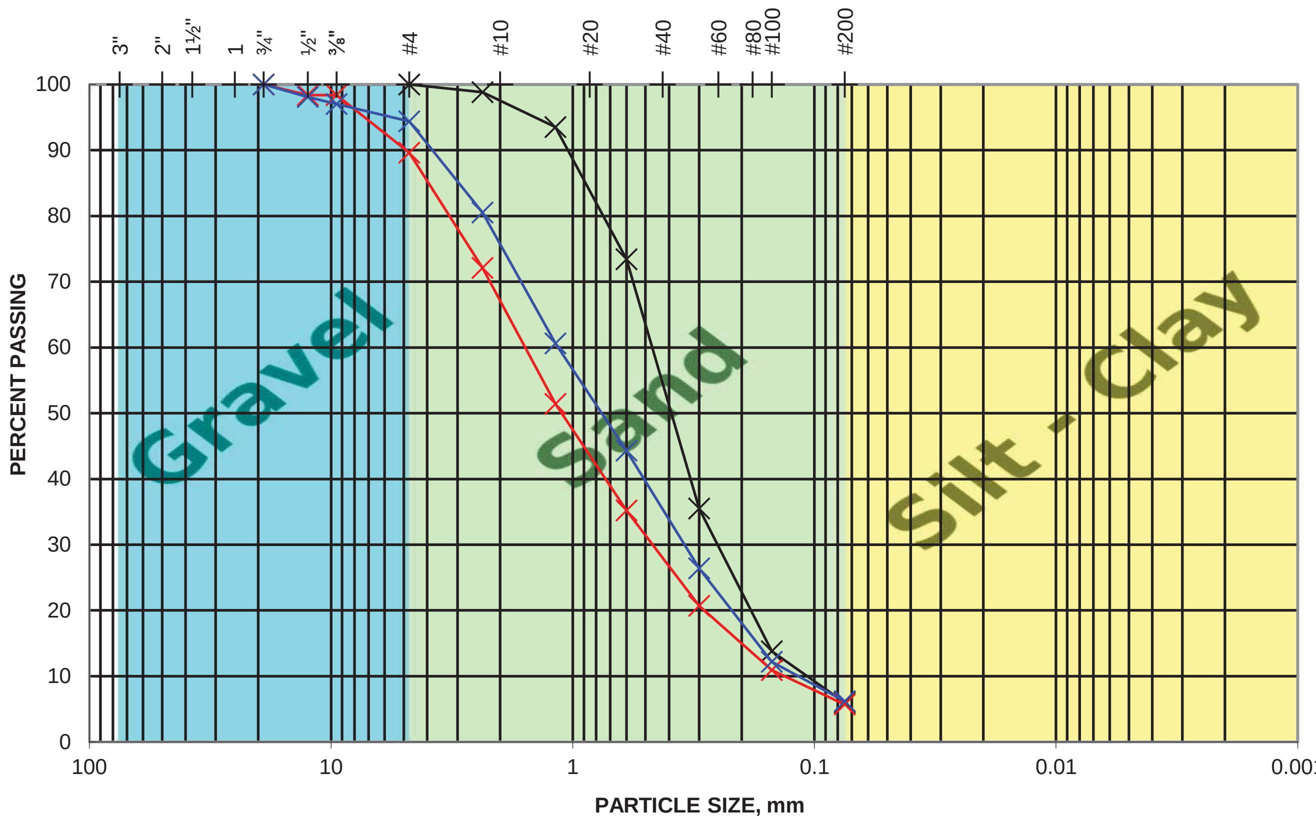

SAMPLE ID	SAMPLE DESCRIPTION
B-2 @ 2.5'	SP-SM Poorly-graded SAND with Silt
B-2 @ 5'	SW-SM Well-graded SAND with Silt and trace Gravel
B-4 @ 7.5'	SP-SM Poorly-graded SAND with Silt and trace Gravel

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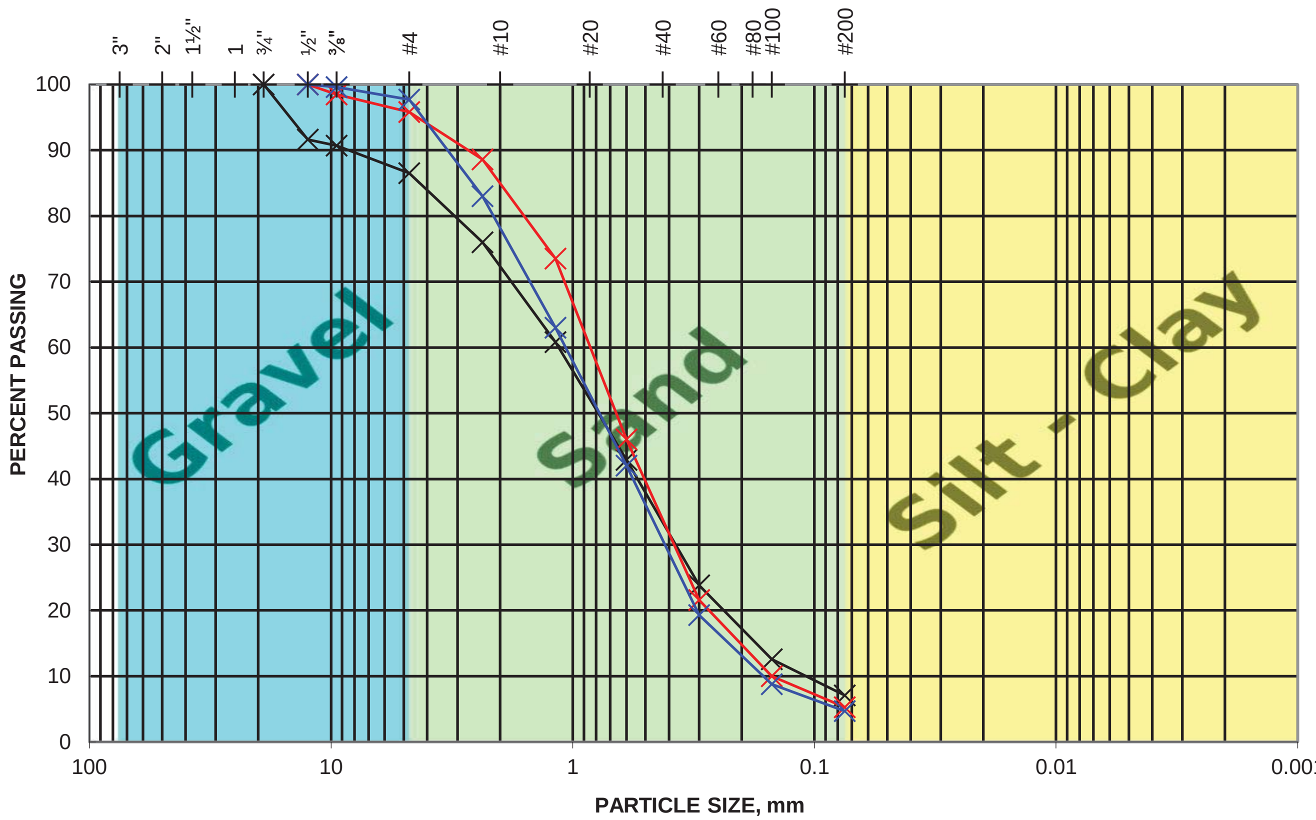
GRAIN SIZE DISTRIBUTION

UPPER VALLE DE LOS CABALLOS
REGIONAL PUMP STATION
RANCHO CALIFORNIA WATER DISTRICT
PROJECT NO. D1903
TEMECULA AREA, RIVERSIDE COUNTY, CALIFORNIA

DECEMBER, 2018 | PROJECT NO. T2779-22-01 | FIG B-3



SAMPLE ID	SAMPLE DESCRIPTION
B-5 @ 5'	SW-SM Well-graded SAND with Silt and trace Gravel
B-5 @ 10'	SP-SM Poorly-graded SAND with Silt and trace Gravel
B-6 @ 10'	SP-SM Poorly-graded SAND with Silt and trace Gravel

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GRAIN SIZE DISTRIBUTION

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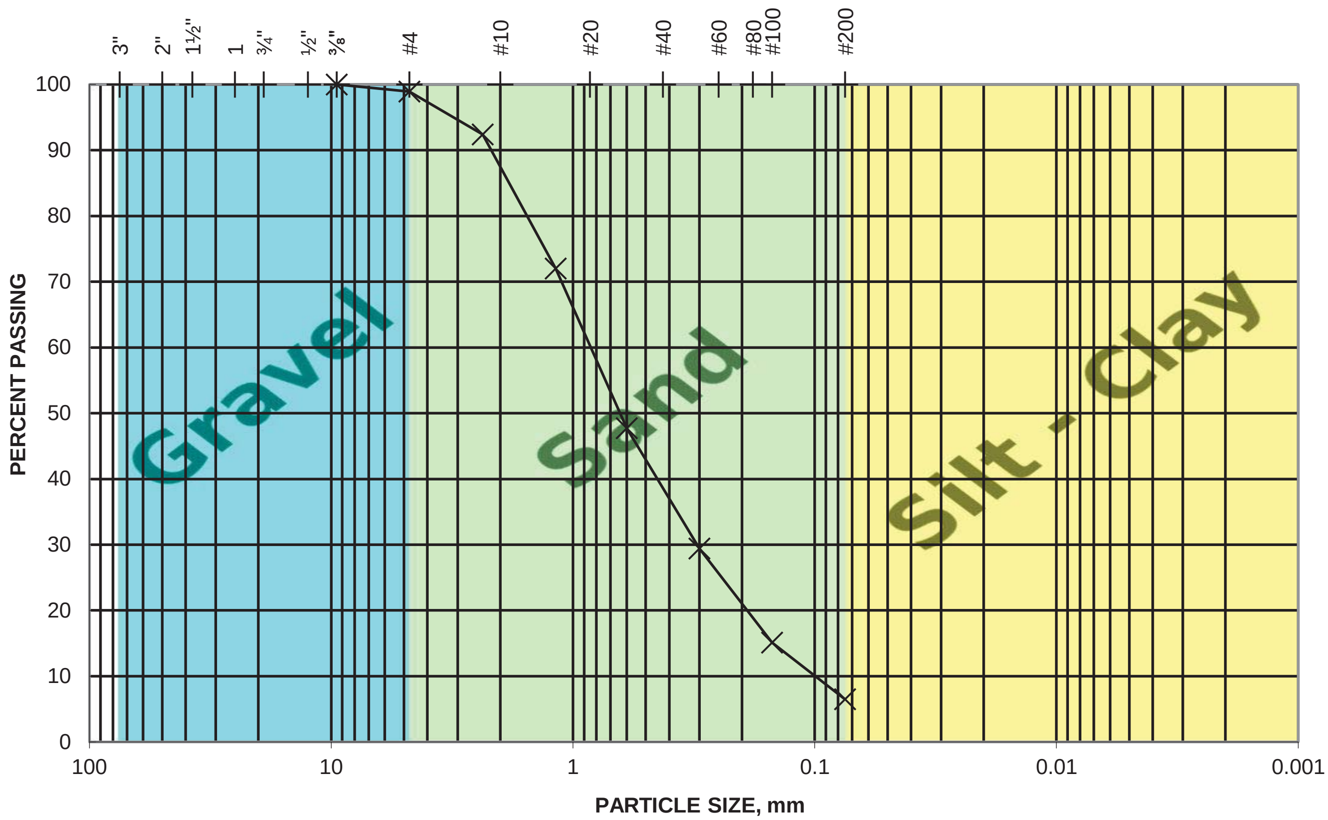
DECEMBER, 2018 | PROJECT NO. T2779-22-01 | FIG B-4



SAMPLE ID	SAMPLE DESCRIPTION
B-7 @ 10'	SP-SM Poorly-graded SAND with Silt

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GRAIN SIZE DISTRIBUTION

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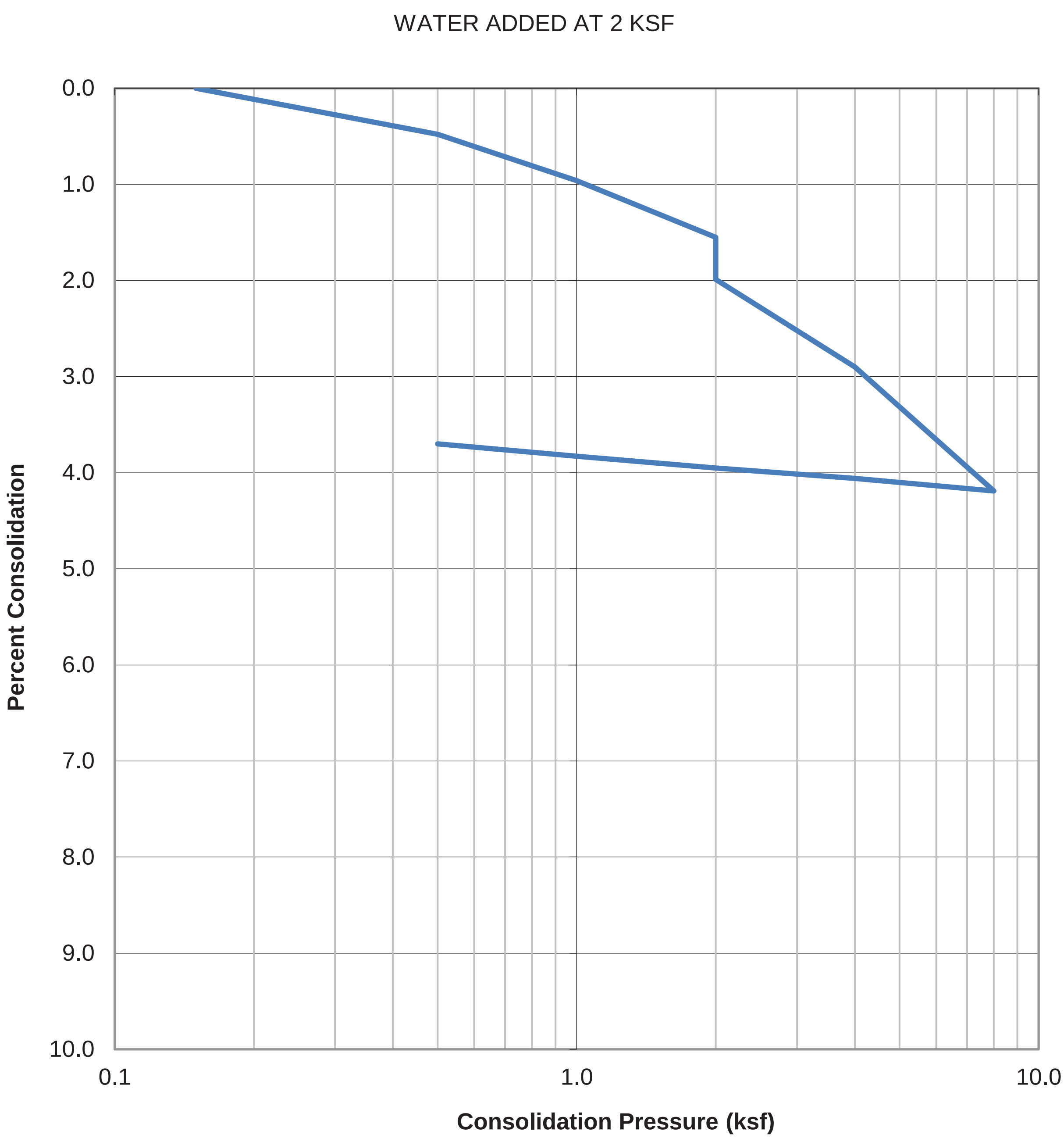
DECEMBER, 2018 | PROJECT NO. T2779-22-01 | FIG B-5



SAMPLE ID	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B-2 @ 7.5'	SP-SM	99.8	2.4	15.2

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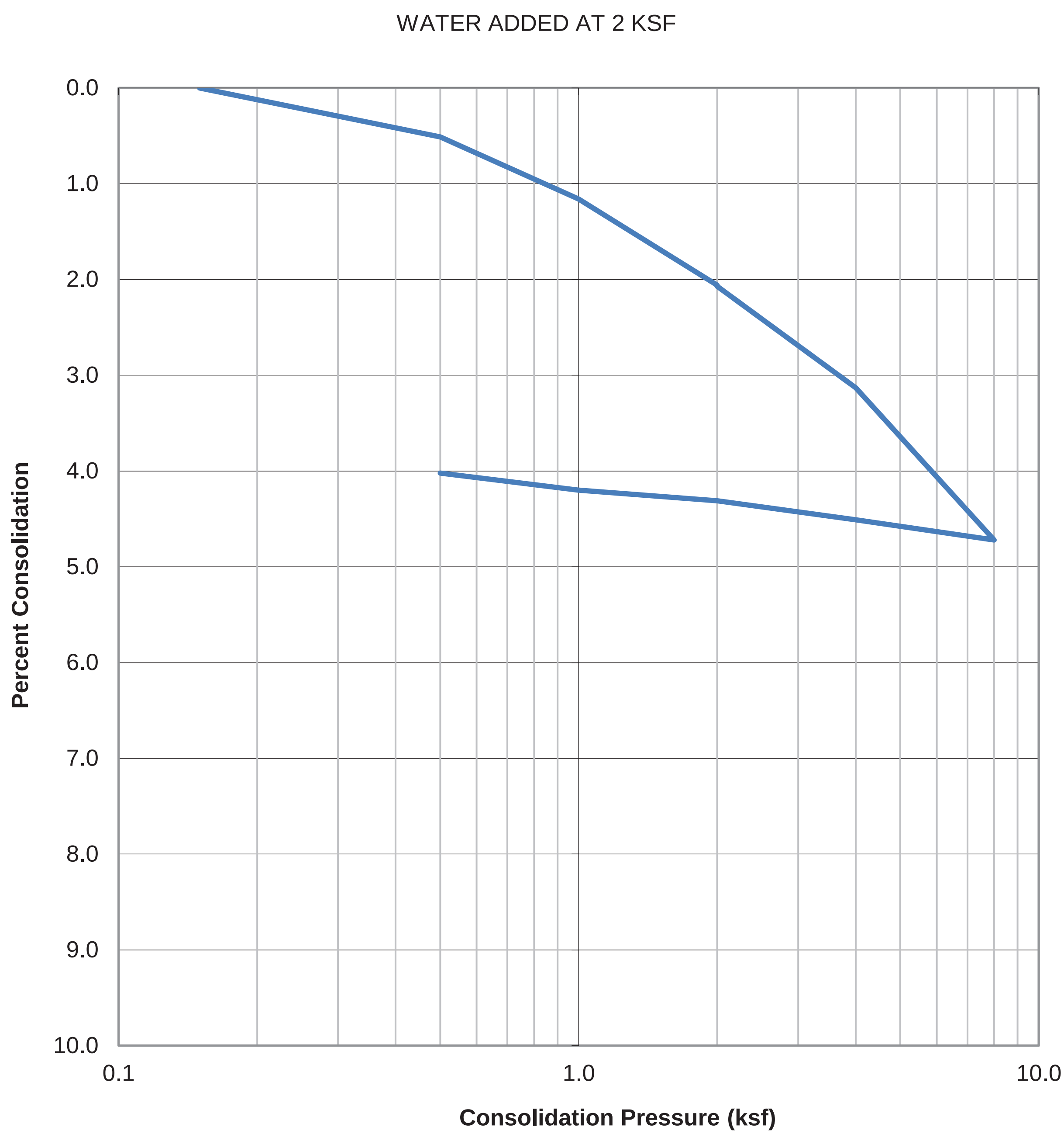
CONSOLIDATION TEST RESULTS

UPPER VALLE DE LOS CABALLOS
REGIONAL PUMP STATION
RANCHO CALIFORNIA WATER DISTRICT
PROJECT NO. D1903
TEMECULA AREA, RIVERSIDE COUNTY, CALIFORNIA

DECEMBER, 2018 | PROJECT NO. T2779-22-01 | FIG B-6



SAMPLE ID	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B-3 @ 5'	SM	107.1	16.3	15.5

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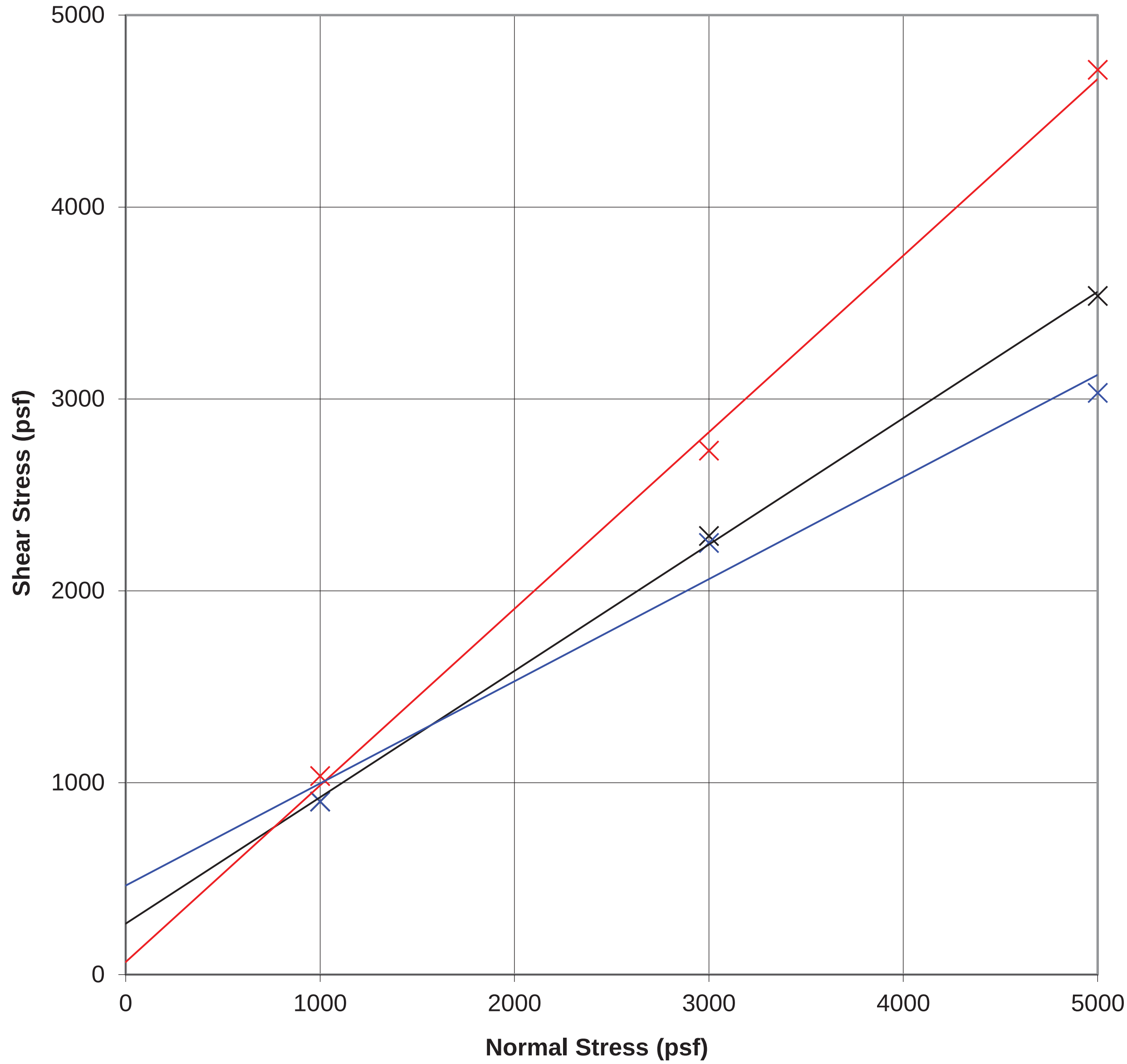
CONSOLIDATION TEST RESULTS

UPPER VALLE DE LOS CABALLOS
REGIONAL PUMP STATION
RANCHO CALIFORNIA WATER DISTRICT
PROJECT NO. D1903
TEMECULA AREA, RIVERSIDE COUNTY, CALIFORNIA

DECEMBER, 2018 | PROJECT NO. T2779-22-01 | FIG B-7



SAMPLE ID	SOIL TYPE	INITIAL DRY DENSITY (pcf)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)	C (psf)	ϕ (deg)
*B-2 @ 0-5'	SP-SM	99.3	14.1	20.5	270	33
B-6 @ 7.5'	SP-SM	104.8	3.8	19.7	70	43
B-7 @ 5'	SM	102.3	8.3	25.4	460	28

*Sample remolded to approximately 90% of the test maximum dry density at optimum moisture content.

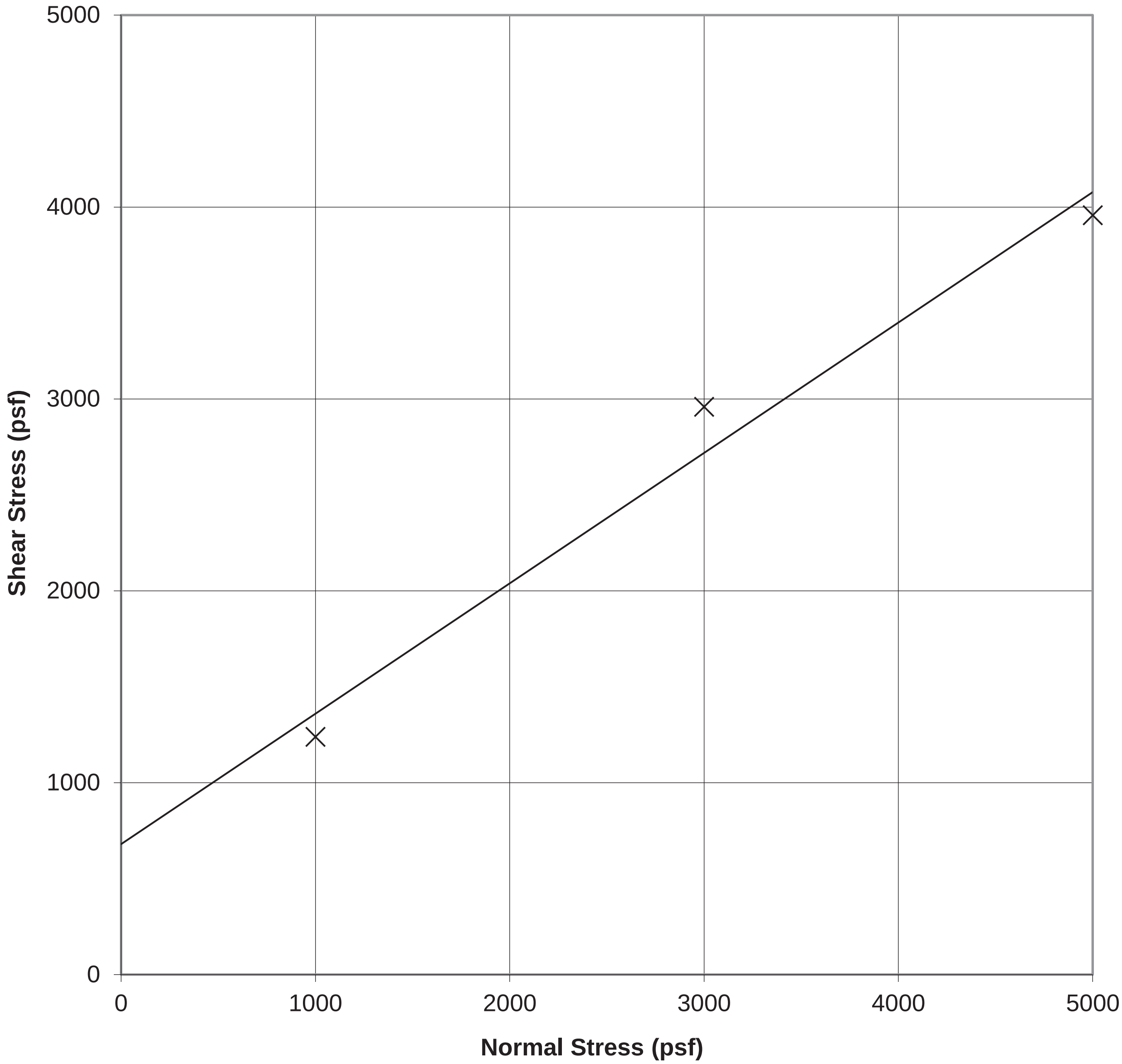
GEOCON
WEST, INC.
GEOTECHNICAL ENVIRONMENTAL MATERIALS
41571 CORNING PLACE, SUITE 101, MURRIETA, CA 92562-7065
PHONE 951-304-2300 FAX 951-304-2392

AMO

DIRECT SHEAR TEST RESULTS

UPPER VALLE DE LOS CABALLOS
REGIONAL PUMP STATION
RANCHO CALIFORNIA WATER DISTRICT
PROJECT NO. D1903
TEMECULA AREA, RIVERSIDE COUNTY, CALIFORNIA

DECEMBER, 2018 | PROJECT NO. T2779-22-01 | FIG B-8



SAMPLE ID	SOIL TYPE	INITIAL DRY DENSITY (pcf)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)	C (psf)	ϕ (deg)
B-8 @ 7.5'	SP	113.9	1.7	18.4	680	34

*Sample remolded to approximately 90% of the test maximum dry density at optimum moisture content.

GEOCON
W E S T, I N C.
GEOTECHNICAL ENVIRONMENTAL MATERIALS
41571 CORNING PLACE, SUITE 101, MURRIETA, CA 92562-7065
PHONE 951-304-2300 FAX 951-304-2392

AMO

DIRECT SHEAR TEST RESULTS

UPPER VALLE DE LOS CABALLOS
REGIONAL PUMP STATION
RANCHO CALIFORNIA WATER DISTRICT
PROJECT NO. D1903
TEMECULA AREA, RIVERSIDE COUNTY, CALIFORNIA

DECEMBER, 2018 | PROJECT NO. T2779-22-01 | FIG B-9

APPENDIX C

APPENDIX C

RECOMMENDED GRADING SPECIFICATIONS

FOR

UPPER VALLE DE LOS CABALLOS
REGIOINAL PUMP STATION
RANCHO CALIFORNIA WATER DISTRICT
PROJECT NO. D1903
TEMECULA AREA, RIVERSIDE COUNTY, CALIFORNIA

PROJECT NO. T2779-22-01

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

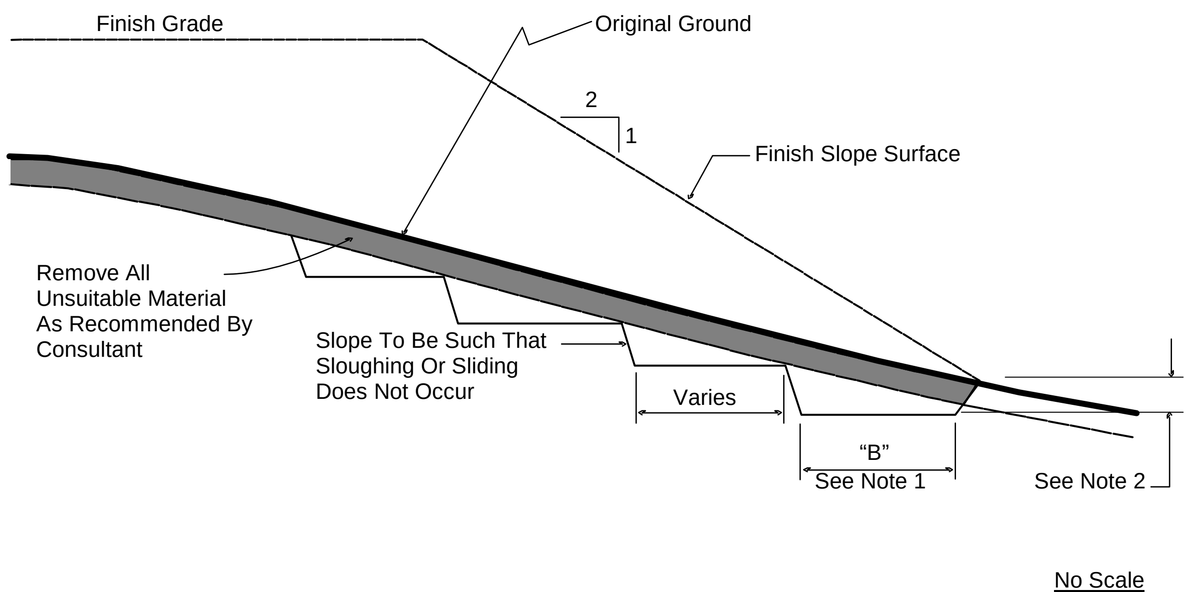
4.1 Areas to be excavated and filled shall be cleared and grubbed. Clearing shall consist of complete removal above the ground surface of trees, stumps, brush, vegetation, man-made structures, and similar debris. Grubbing shall consist of removal of stumps, roots, buried logs and other unsuitable material 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



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.

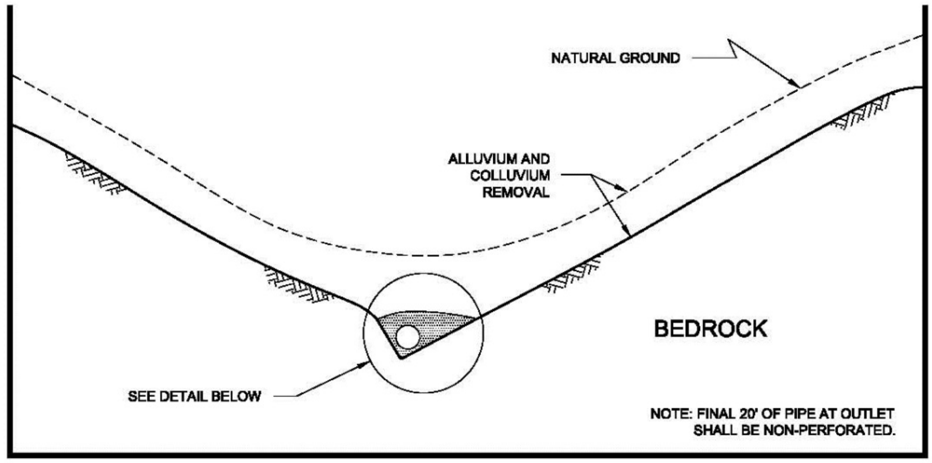
6.3.6 To reduce the potential for “piping” of fines into the *rock* fill from overlying *soil* fill material, a 2-foot layer of graded filter material shall be placed above the uppermost lift of *rock* fill. The need to place graded filter material below the *rock* should be determined by the Consultant 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.

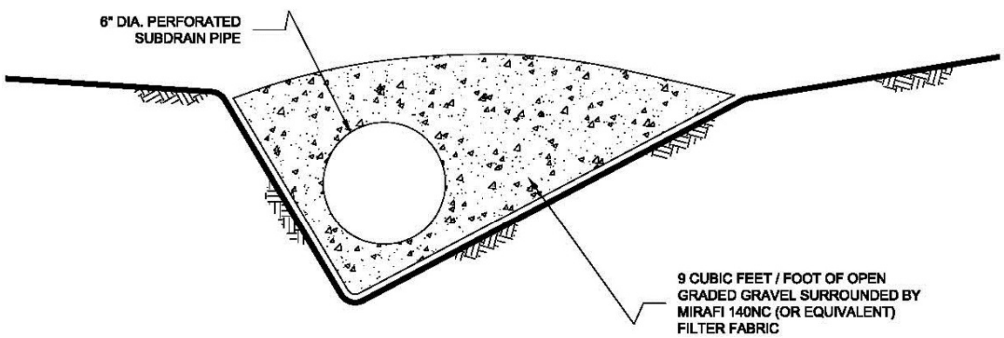
6.3.7 *Rock* fill placement should be continuously observed during placement by the Consultant.

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:

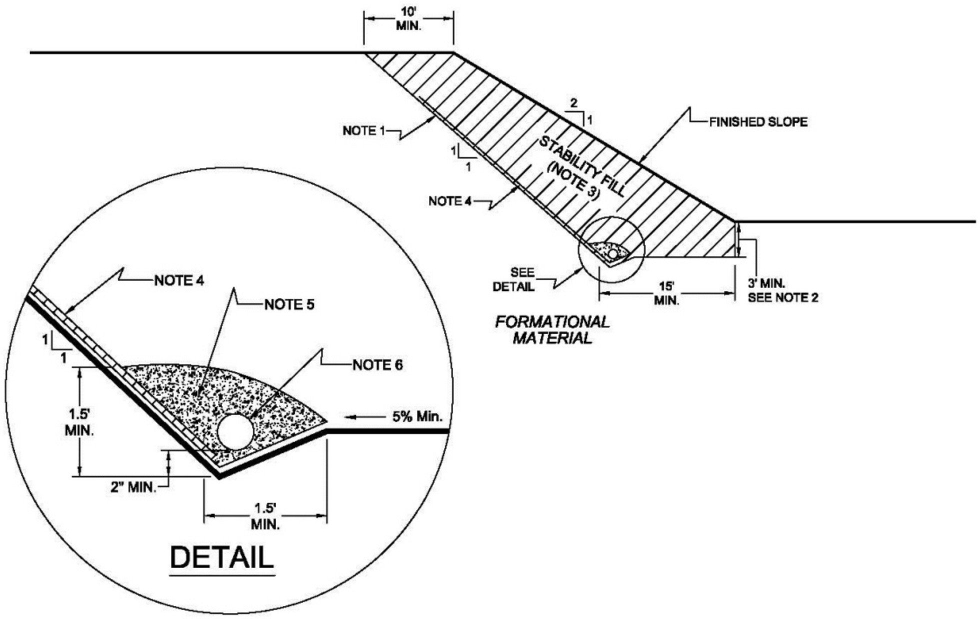
1......8-INCH DIAMETER, SCHEDULE 80 PVC PERFORATED PIPE FOR FILLS
IN EXCESS OF 100-FEET IN DEPTH OR A PIPE LENGTH OF LONGER THAN 500 FEET.

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

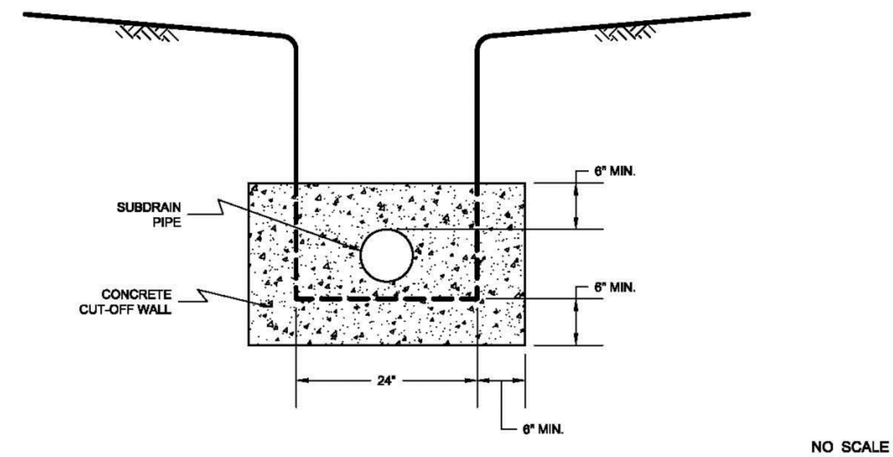
7.3 The actual subdrain locations will be evaluated in the field during the remedial grading operations. Additional drains may be necessary depending on the conditions observed and the requirements of the local regulatory agencies. Appropriate subdrain outlets should be evaluated prior to finalizing 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.

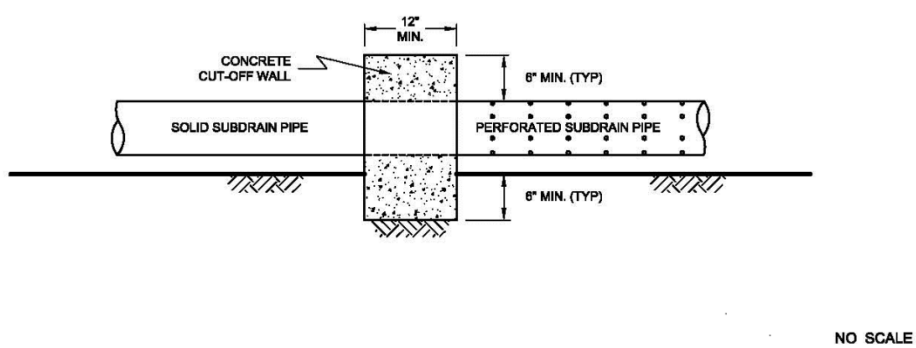
7.5 Prior to outletting, the final 20-foot segment of a subdrain that will not be extended during future development should consist of non-perforated drainpipe. At the non-perforated/ perforated interface, a seepage cutoff wall should be constructed on the downslope side of the pipe.

TYPICAL CUT OFF WALL DETAIL

FRONT VIEW

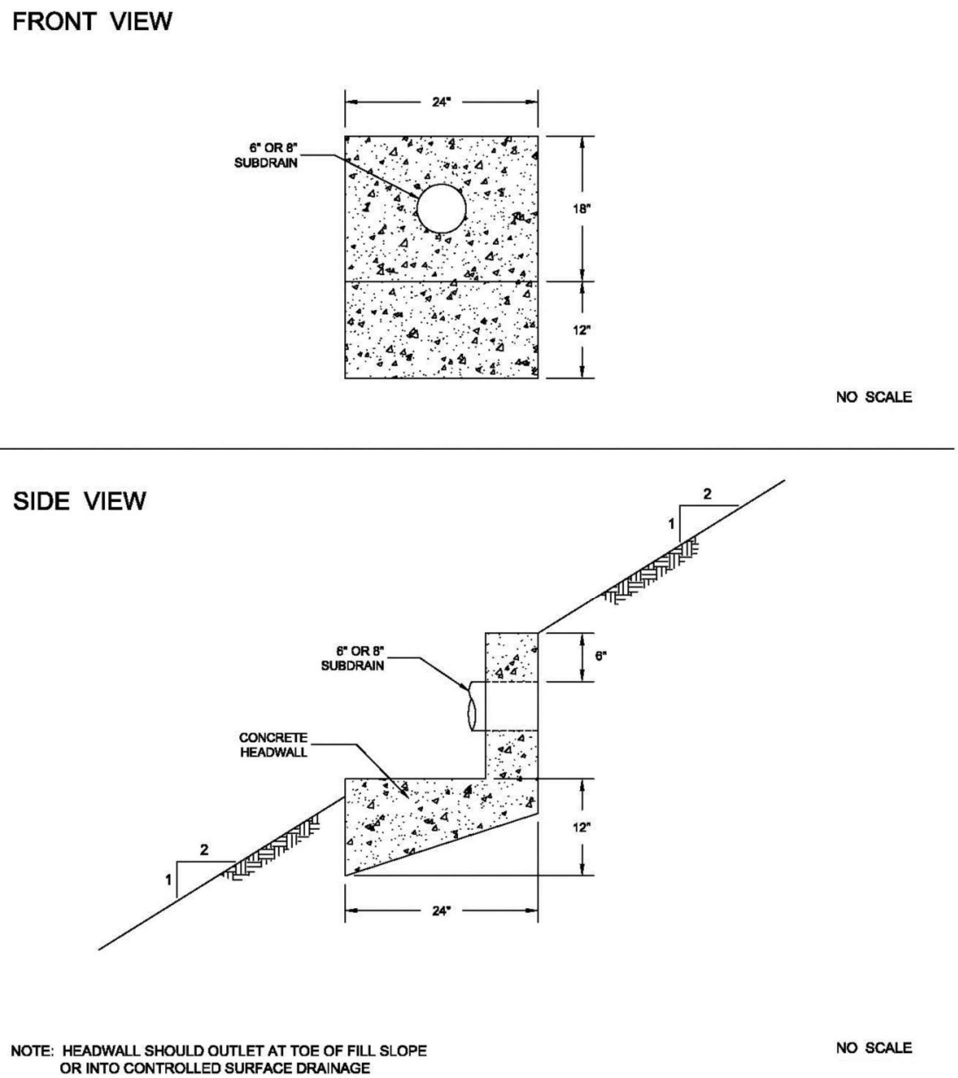


SIDE VIEW



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



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
Noise Modeling Data

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Michael Baker INTERNATIONAL

Source: Google Earth
160814NoiseMeasLocations2020-01.indd

NM: Noise Measurement Location

N

0 500 1000 ft

Rancho California Water District ▪ Upper Valle De Los Caballos Regional Pump Station

NOISE MEASUREMENT LOCATIONS

Figure 1

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Site Number: UVDC Site # 1	
Recorded By: Pierre Glaize & Winnie Woo	
Job Number: 171301	
Date: 09/24/2019	
Time: 10:14 a.m.	
Location: Stop sign at the corner of Pouba and De Portola Road	
Source of Peak Noise: Traffic at stop sign.	

Noise Data			
Leq (dB)	**Lmax(dB)**	**Lmin (dB)**	**Peak (dB)**
64.0	87.6	39.9	107.9

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Brüel & Kjær**	**2250**	**3011133**	**04/08/2019**	
	Microphone	**Brüel & Kjær**	**4189**	**3086765**	**04/08/2019**	
	Preamp	**Brüel & Kjær**	**ZC 0032**	**25380**	**04/08/2019**	
	Calibrator	**Brüel & Kjær**	**4231**	**2545667**	**04/08/2019**	

Weather Data			
Est.	**Duration:** 10 minutes		**Sky:** Sunny
	Note: dBA Offset = 0.01		**Sensor Height (ft):** 5 ft
	Wind Ave Speed (mph / m/s)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (inches)**
	2 mph	77°	29.91

Photo of Measurement Location

2250

Instrument:		2250
Application:		BZ7225 Version 4.7.4
Start Time:		09/24/2019 10:14:11
End Time:		09/24/2019 10:24:11
Elapsed Time:		00:10:00
Bandwidth:		1/3-octave
Max Input Level:		142.08

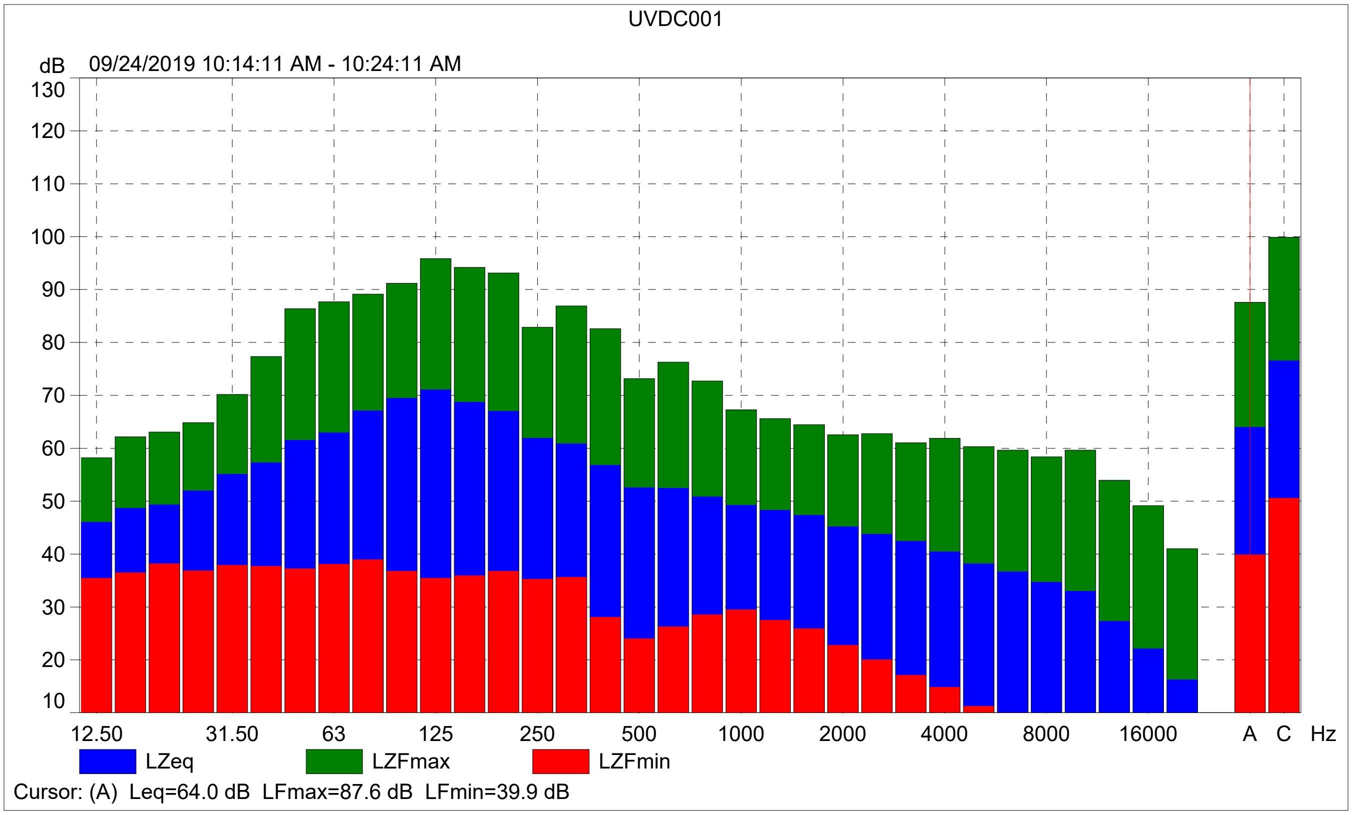
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	Z

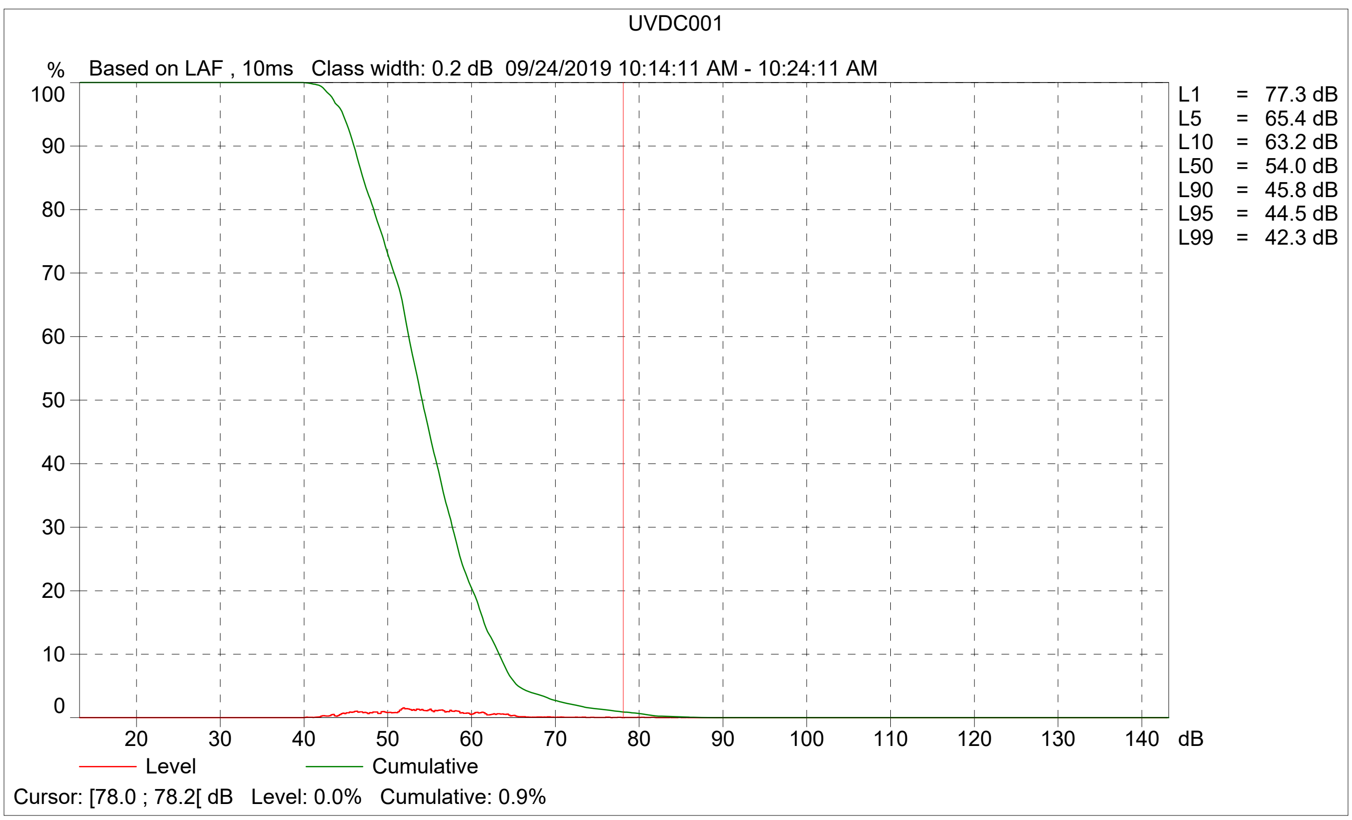
Instrument Serial Number:		3011133
Microphone Serial Number:		3086765
Input:		Top Socket
Windscreen Correction:		UA-1650
Sound Field Correction:		Free-field

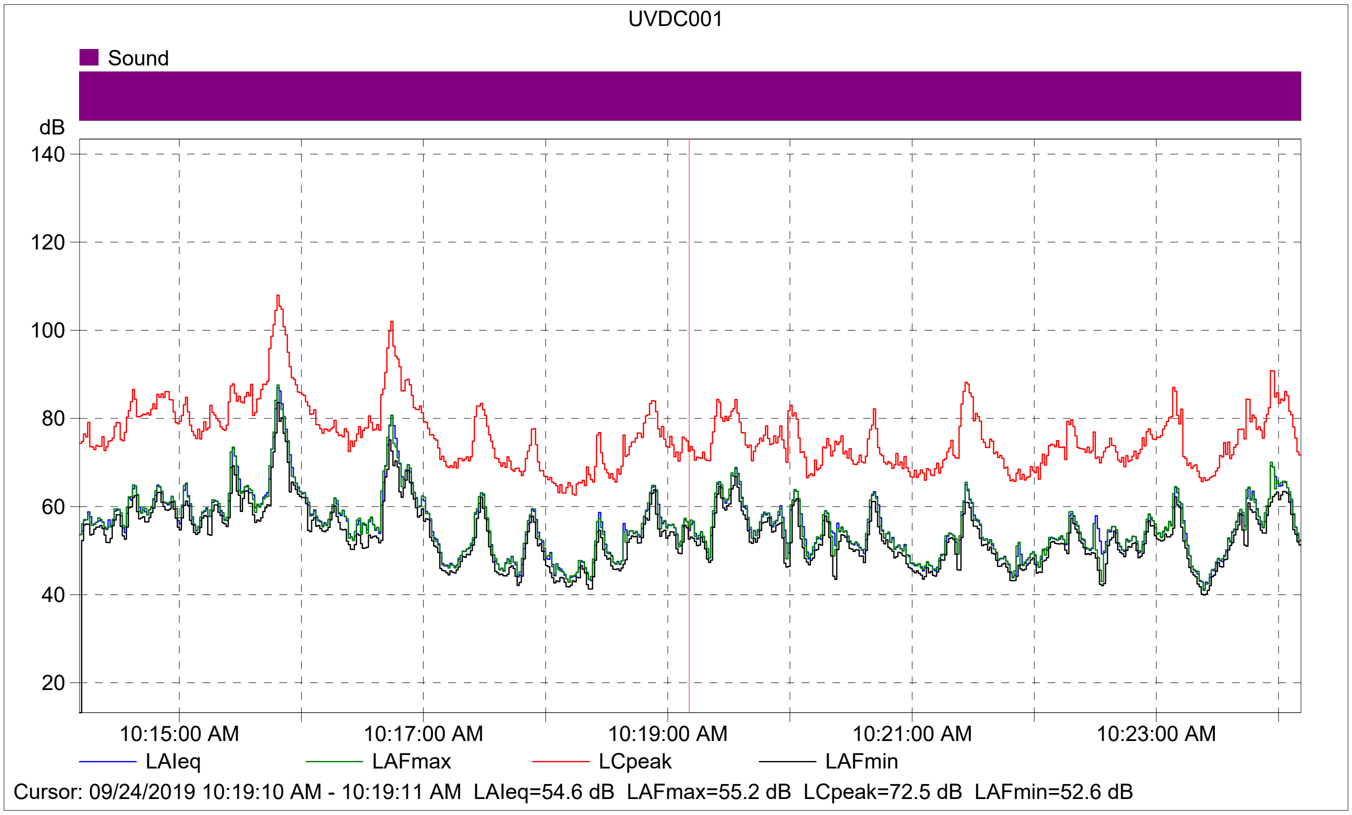
Calibration Time:		09/24/2019 07:59:28
Calibration Type:		External reference
Sensitivity:		43.8475161790848 mV/Pa

UVDC001

	Start time	End time	Elapsed time	Overload [%]	LAeq [dB]	LAFmax [dB]	LAFmin [dB]
Value				0.00	64.0	87.6	39.9
Time	10:14:11 AM	10:24:11 AM	0:10:00				
Date	09/24/2019	09/24/2019					

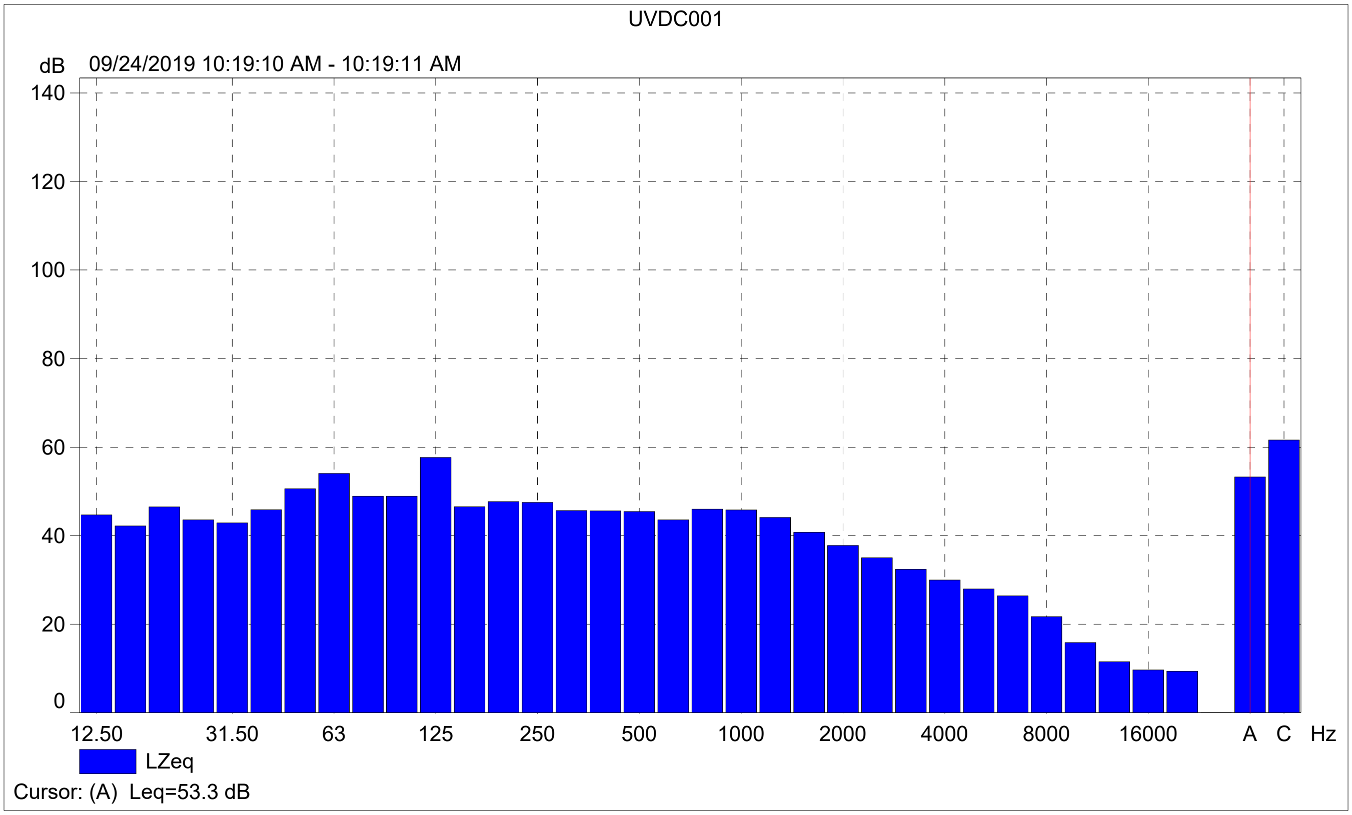

UVDC001
dB 09/24/2019 10:14:11 AM - 10:24:11 AM
130
120
110
100
90
80
70
60
50
40
30
20
10
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
LZFmax
LZFmin
Cursor: (A) Leq=64.0 dB LFmax=87.6 dB LFmin=39.9 dB

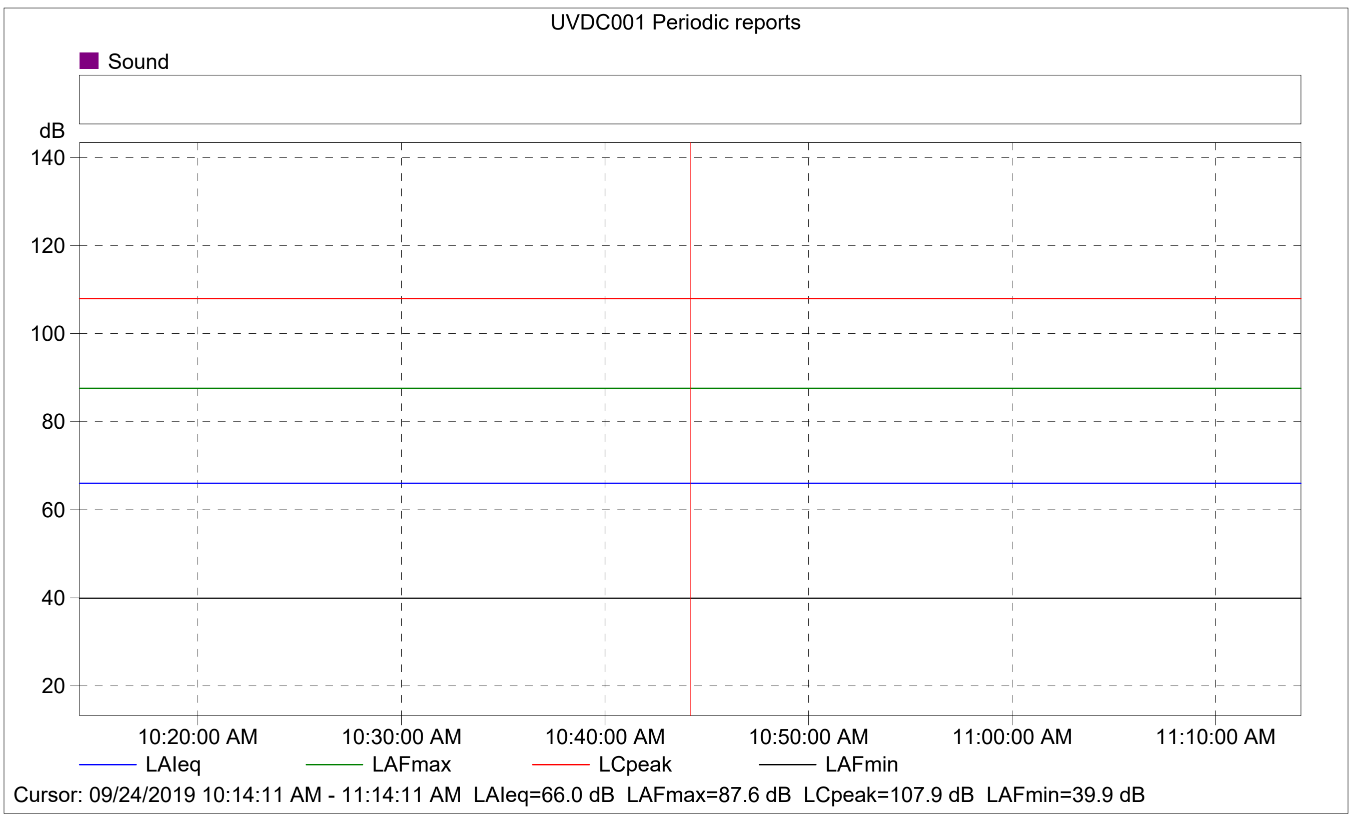

UVDC001
% Based on LAF , 10ms Class width: 0.2 dB 09/24/2019 10:14:11 AM - 10:24:11 AM
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
70
80
90
100
110
120
130
140
dB
L1 = 77.3 dB
L5 = 65.4 dB
L10 = 63.2 dB
L50 = 54.0 dB
L90 = 45.8 dB
L95 = 44.5 dB
L99 = 42.3 dB
Level
Cumulative
Cursor: [78.0 ; 78.2[dB Level: 0.0% Cumulative: 0.9%



UVDC001

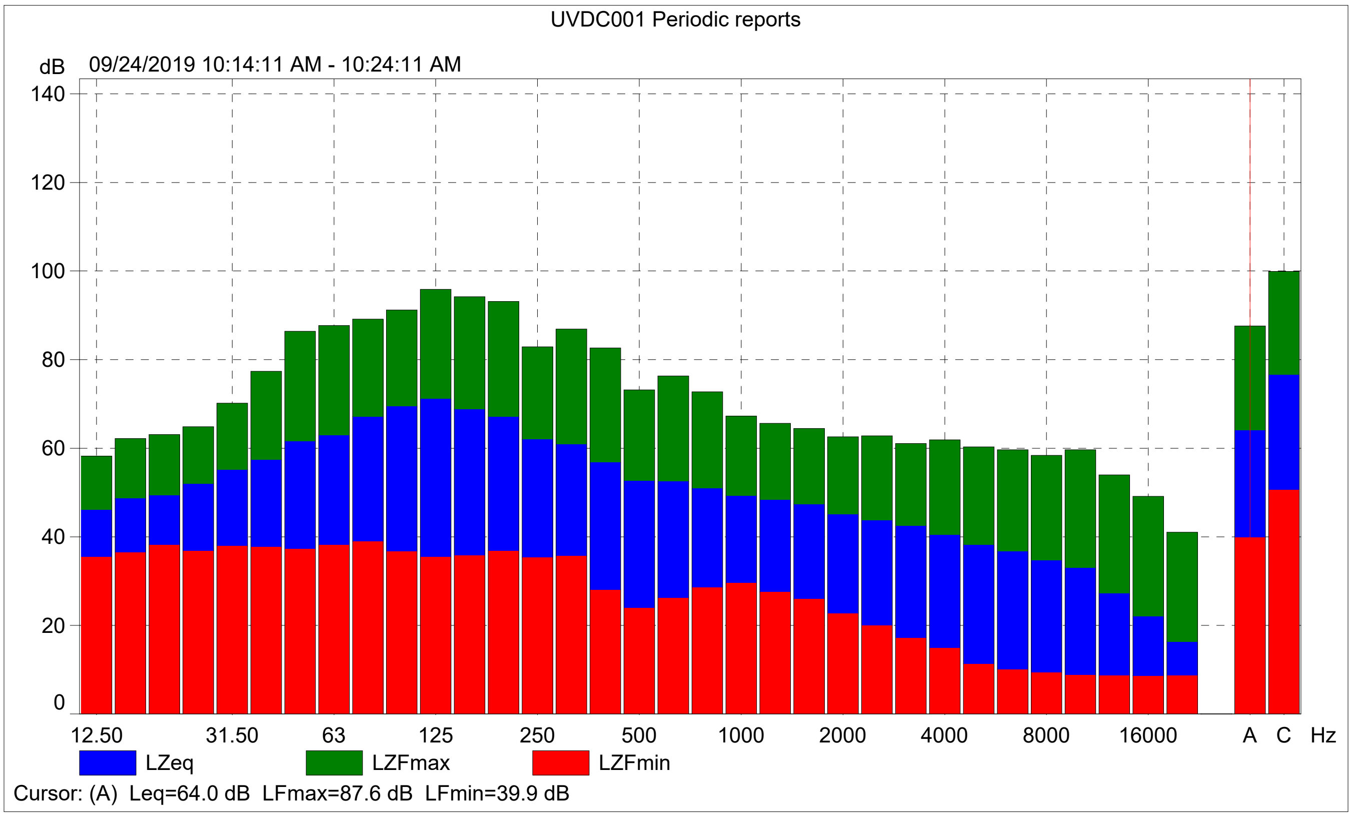
	Start time	Elapsed time	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			54.6	55.2	52.6
Time	10:19:10 AM	0:00:01			
Date	09/24/2019				

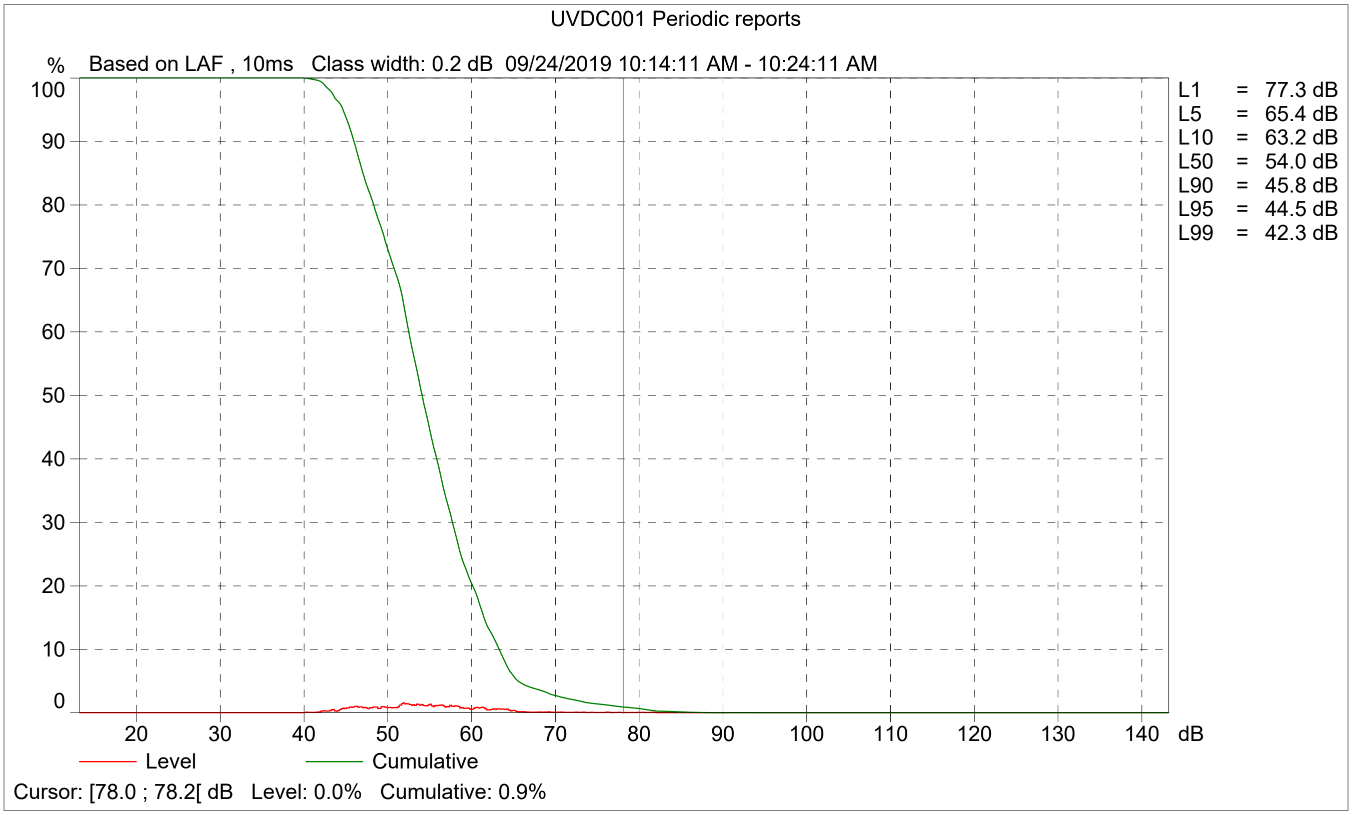

UVDC001
dB 09/24/2019 10:19:10 AM - 10:19:11 AM
140
120
100
80
60
40
20
0
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
Cursor: (A) Leq=53.3 dB


UVDC001 Periodic reports
Sound
dB
140
120
100
80
60
40
20
10:20:00 AM
10:30:00 AM
10:40:00 AM
10:50:00 AM
11:00:00 AM
11:10:00 AM
LAIeq
LAFmax
LCpeak
LAFmin
Cursor: 09/24/2019 10:14:11 AM - 11:14:11 AM LAIeq=66.0 dB LAFmax=87.6 dB LCpeak=107.9 dB LAFmin=39.9 dB

UVDC001 Periodic reports

	Start time	Elapsed time	Overload [%]	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	66.0	87.6	39.9
Time	10:14:11 AM	0:10:00				
Date	09/24/2019					




UVDC001 Periodic reports
%
Based on LAF , 10ms Class width: 0.2 dB 09/24/2019 10:14:11 AM - 10:24:11 AM
100
90
80
70
60
50
40
30
20
10
0
20 30 40 50 60 70 80 90 100 110 120 130 140 dB
L1 = 77.3 dB
L5 = 65.4 dB
L10 = 63.2 dB
L50 = 54.0 dB
L90 = 45.8 dB
L95 = 44.5 dB
L99 = 42.3 dB
Level
Cumulative
Cursor: [78.0 ; 78.2[dB Level: 0.0% Cumulative: 0.9%

Site Number: UVDC Site #2			
Recorded By: Pierre Glaize & Winnie Woo			
Job Number: 171301			
Date: 09/24/2019			
Time: 10:32 a.m.			
Location: Near Deportola Upper Ponds, adjacent to horse stables on dirt road.			
Source of Peak Noise: Power washer being used to clean horse stables.			
Noise Data			
Leq (dB)	**Lmax(dB)**	**Lmin (dB)**	**Peak (dB)**
37.7	55.8	32.9	77.8

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Brüel & Kjær**	**2250**	**3011133**	**04/08/2019**	
	Microphone	**Brüel & Kjær**	**4189**	**3086765**	**04/08/2019**	
	Preamp	**Brüel & Kjær**	**ZC 0032**	**25380**	**04/08/2019**	
	Calibrator	**Brüel & Kjær**	**4231**	**2545667**	**04/08/2019**	

Weather Data			
Est.	**Duration:** 10 minutes		**Sky:** Sunny
	Note: dBA Offset = 0.01		**Sensor Height (ft):** 5 ft
	Wind Ave Speed (mph / m/s)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (inches)**
	2 mph	77°	29.91

Photo of Measurement Location

2250

Instrument:		2250
Application:		BZ7225 Version 4.7.4
Start Time:		09/24/2019 10:32:43
End Time:		09/24/2019 10:42:43
Elapsed Time:		00:10:00
Bandwidth:		1/3-octave
Max Input Level:		142.08

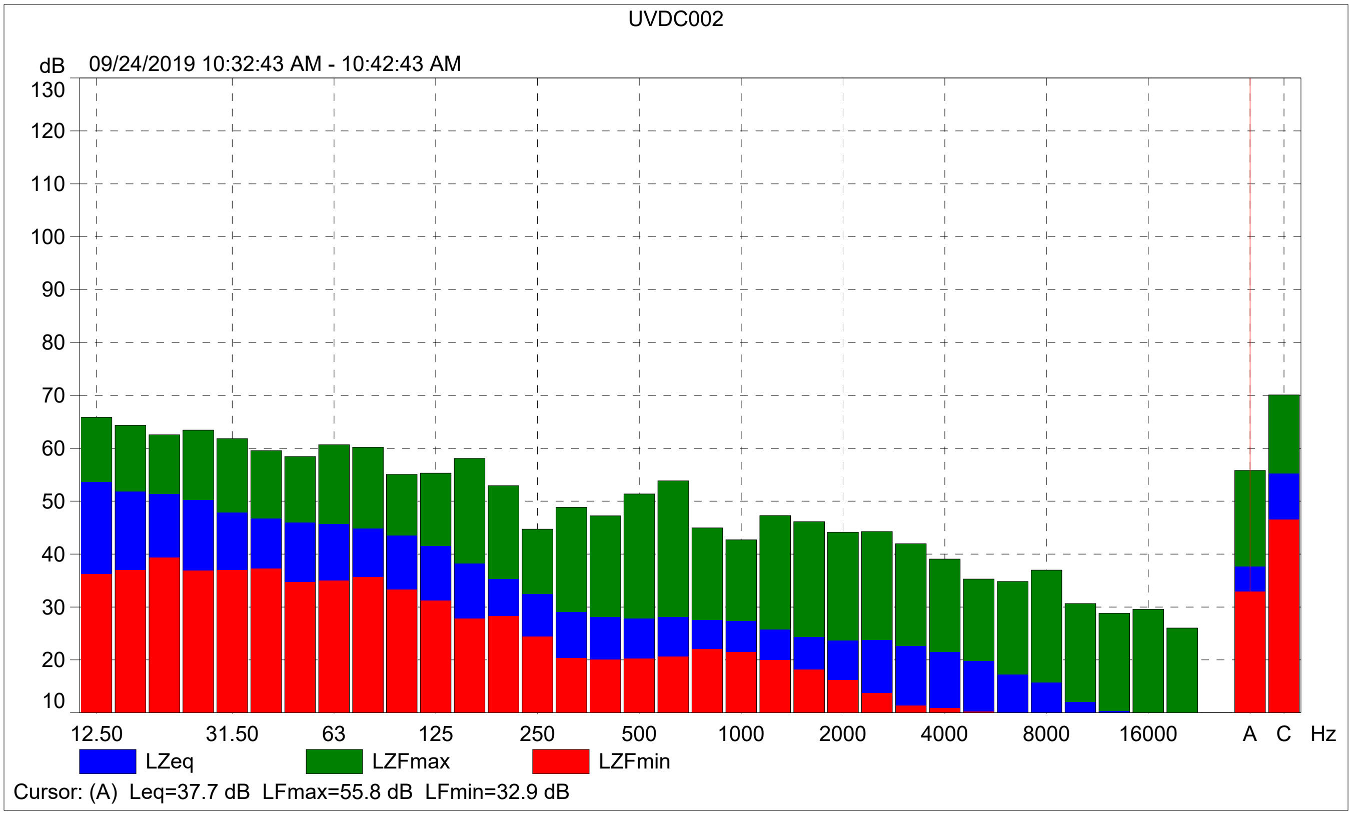
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	Z

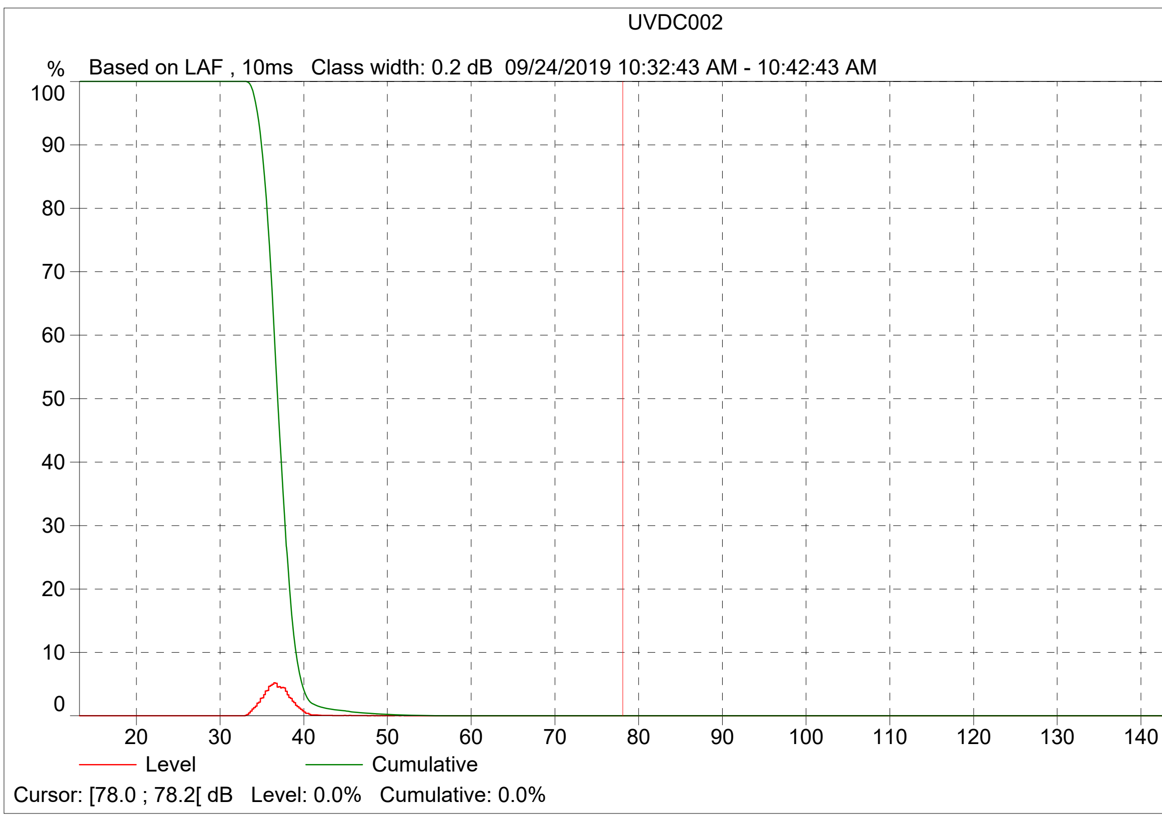
Instrument Serial Number:		3011133
Microphone Serial Number:		3086765
Input:		Top Socket
Windscreen Correction:		UA-1650
Sound Field Correction:		Free-field

Calibration Time:		09/24/2019 07:59:28
Calibration Type:		External reference
Sensitivity:		43.8475161790848 mV/Pa

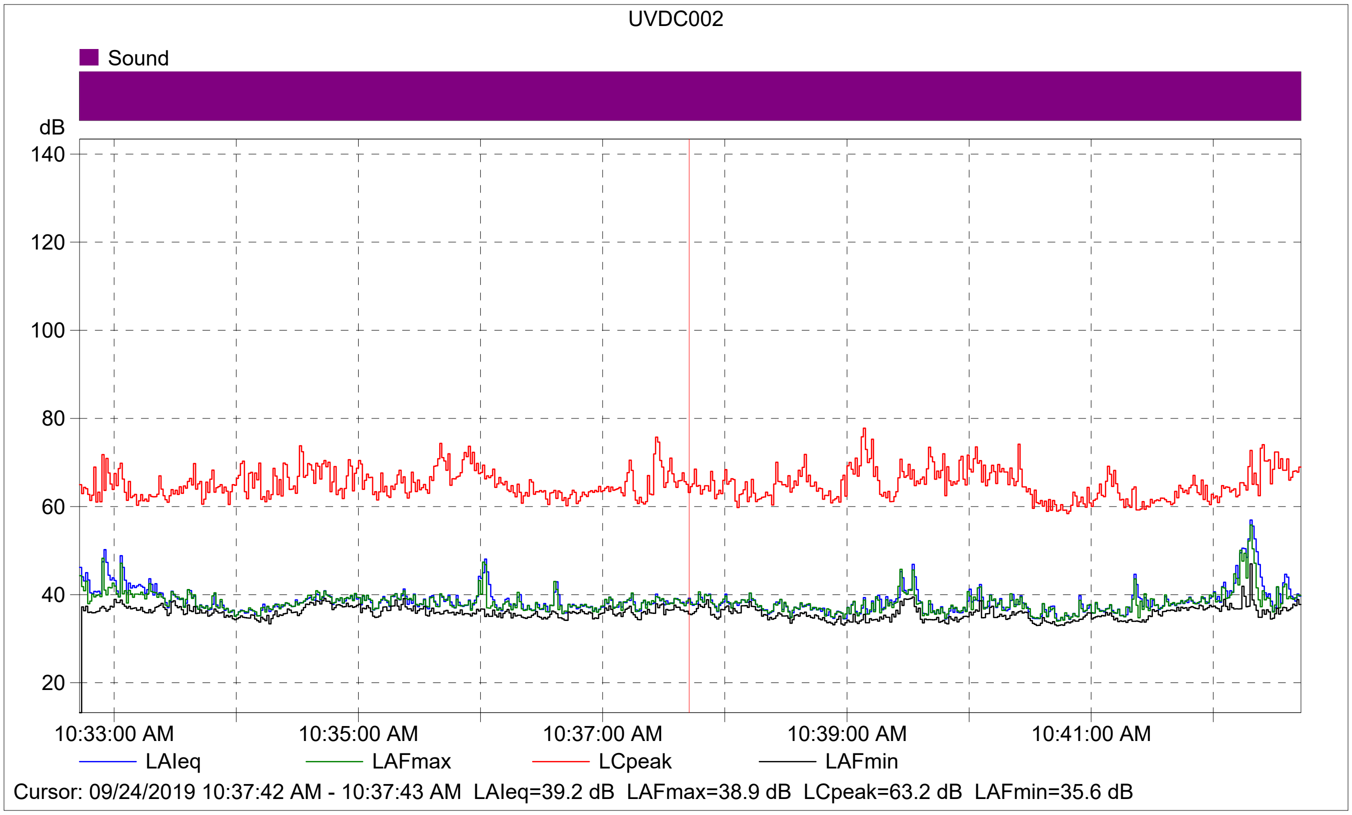
UVDC002

	Start time	End time	Elapsed time	Overload [%]	LAeq [dB]	LAFmax [dB]	LAFmin [dB]
Value				0.00	37.7	55.8	32.9
Time	10:32:43 AM	10:42:43 AM	0:10:00				
Date	09/24/2019	09/24/2019					



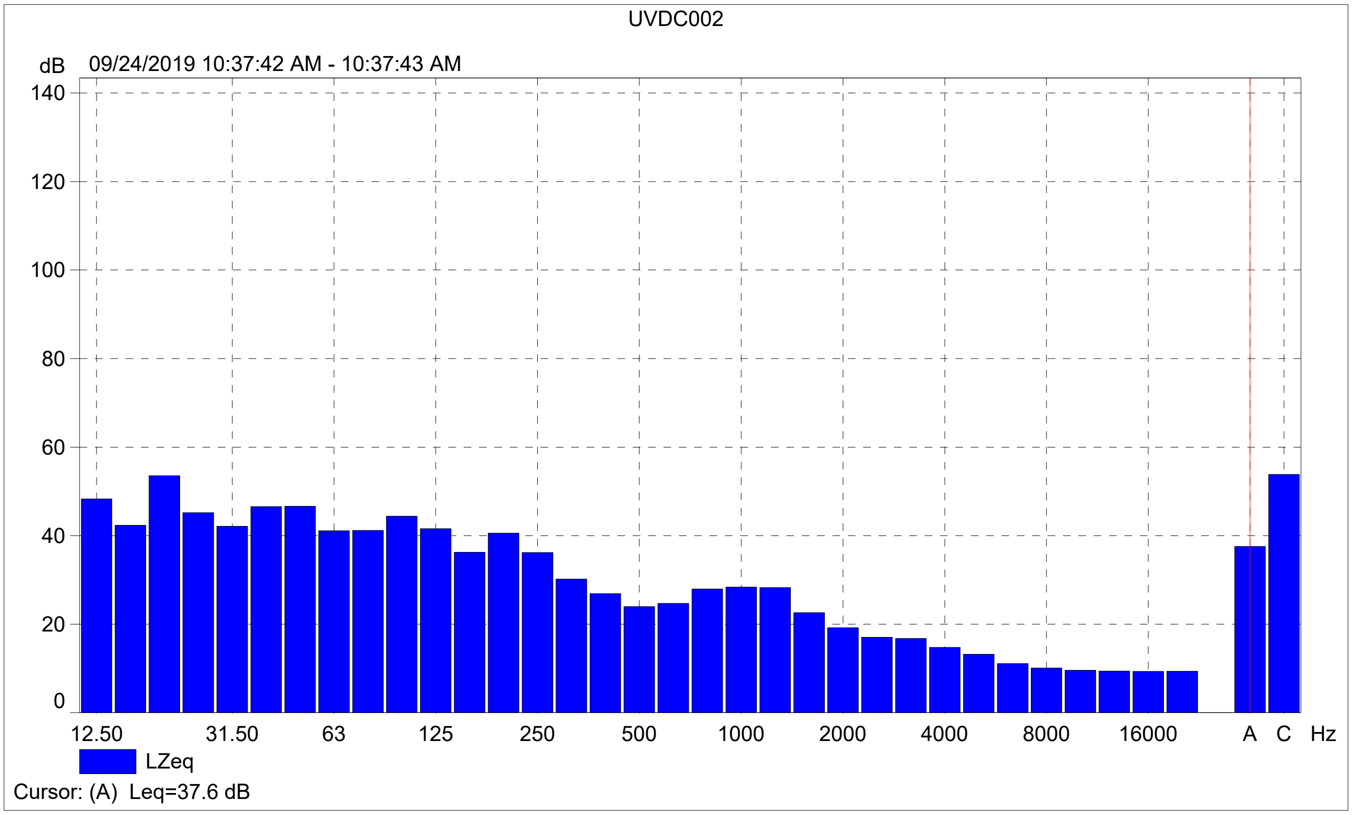


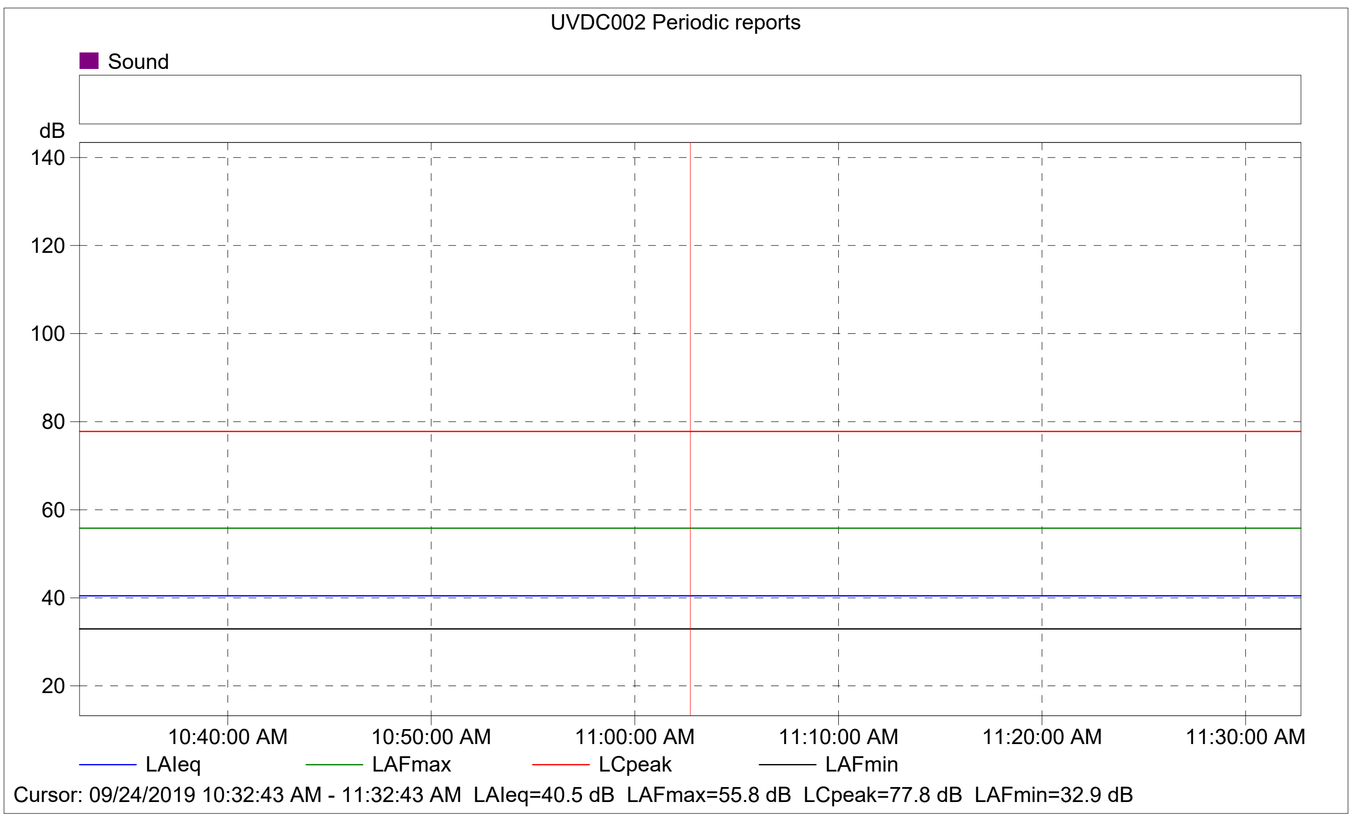
L1	=	43.3 dB
L5	=	39.7 dB
L10	=	39.0 dB
L50	=	36.8 dB
L90	=	34.8 dB
L95	=	34.4 dB
L99	=	33.7 dB



UVDC002

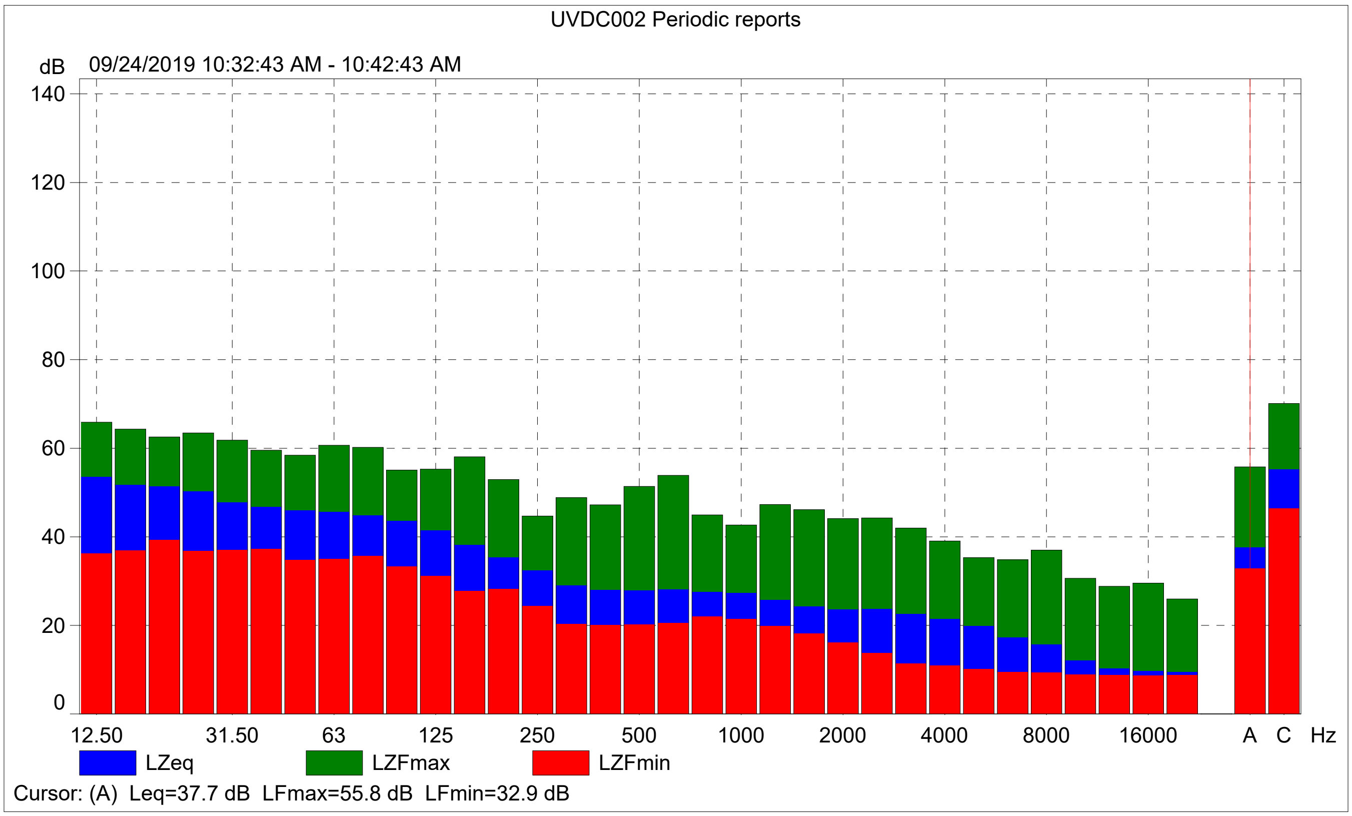
	Start time	Elapsed time	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			39.2	38.9	35.6
Time	10:37:42 AM	0:00:01			
Date	09/24/2019				

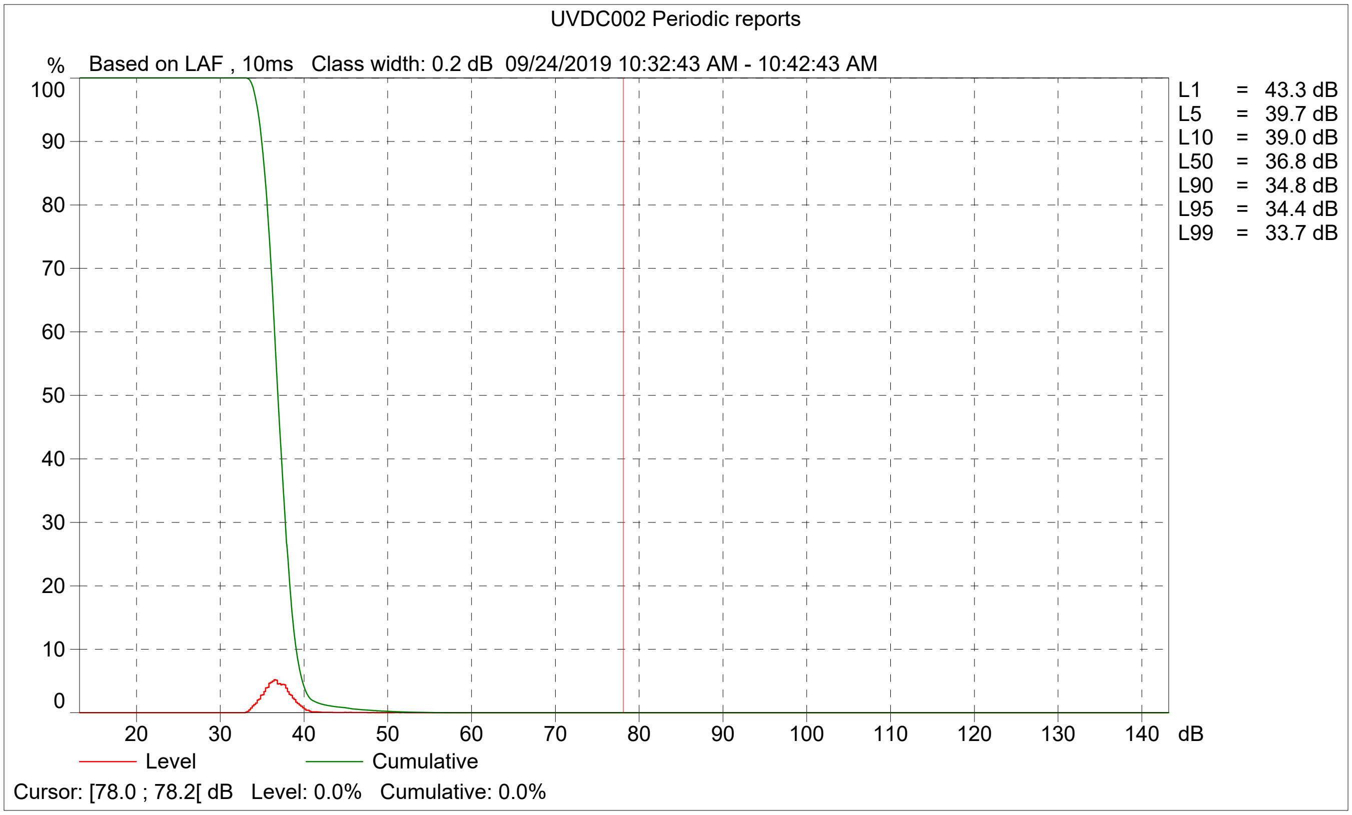

UVDC002
dB
09/24/2019 10:37:42 AM - 10:37:43 AM
140
120
100
80
60
40
20
0
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
Cursor: (A) Leq=37.6 dB


UVDC002 Periodic reports
Sound
dB
140
120
100
80
60
40
20
10:40:00 AM
10:50:00 AM
11:00:00 AM
11:10:00 AM
11:20:00 AM
11:30:00 AM
LAIeq
LAFmax
LCpeak
LAFmin
Cursor: 09/24/2019 10:32:43 AM - 11:32:43 AM LAIeq=40.5 dB LAFmax=55.8 dB LCpeak=77.8 dB LAFmin=32.9 dB

UVDC002 Periodic reports

	Start time	Elapsed time	Overload [%]	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	40.5	55.8	32.9
Time	10:32:43 AM	0:10:00				
Date	09/24/2019					




UVDC002 Periodic reports
% Based on LAF , 10ms Class width: 0.2 dB 09/24/2019 10:32:43 AM - 10:42:43 AM
100
90
80
70
60
50
40
30
20
10
0
20 30 40 50 60 70 80 90 100 110 120 130 140 dB
L1 = 43.3 dB
L5 = 39.7 dB
L10 = 39.0 dB
L50 = 36.8 dB
L90 = 34.8 dB
L95 = 34.4 dB
L99 = 33.7 dB
Level
Cumulative
Cursor: [78.0 ; 78.2[dB Level: 0.0% Cumulative: 0.0%

Site Number: UVDC Site # 3			
Recorded By: Pierre Glaize & Winnie Woo			
Job Number: 171301			
Date: 09/24/2019			
Time: 10:51 a.m.			
Location: Dirt road off Pauba road, near a horse stable and estate.			
Source of Peak Noise: Traffic on Pauba road.			
Noise Data			
Leq (dB)	**Lmax(dB)**	**Lmin (dB)**	**Peak (dB)**
40.1	59.8	29.9	64.9

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Brüel & Kjær**	**2250**	**3011133**	**04/08/2019**	
	Microphone	**Brüel & Kjær**	**4189**	**3086765**	**04/08/2019**	
	Preamp	**Brüel & Kjær**	**ZC 0032**	**25380**	**04/08/2019**	
	Calibrator	**Brüel & Kjær**	**4231**	**2545667**	**04/08/2019**	

Weather Data			
Est.	**Duration:** 10 minutes		**Sky:** Sunny
	Note: dBA Offset = 0.01		**Sensor Height (ft):** 5 ft
	Wind Ave Speed (mph / m/s)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (inches)**
	4 mph	82°	29.90

Photo of Measurement Location

2250

Instrument:		2250
Application:		BZ7225 Version 4.7.4
Start Time:		09/24/2019 10:52:00
End Time:		09/24/2019 11:02:00
Elapsed Time:		00:10:00
Bandwidth:		1/3-octave
Max Input Level:		142.08

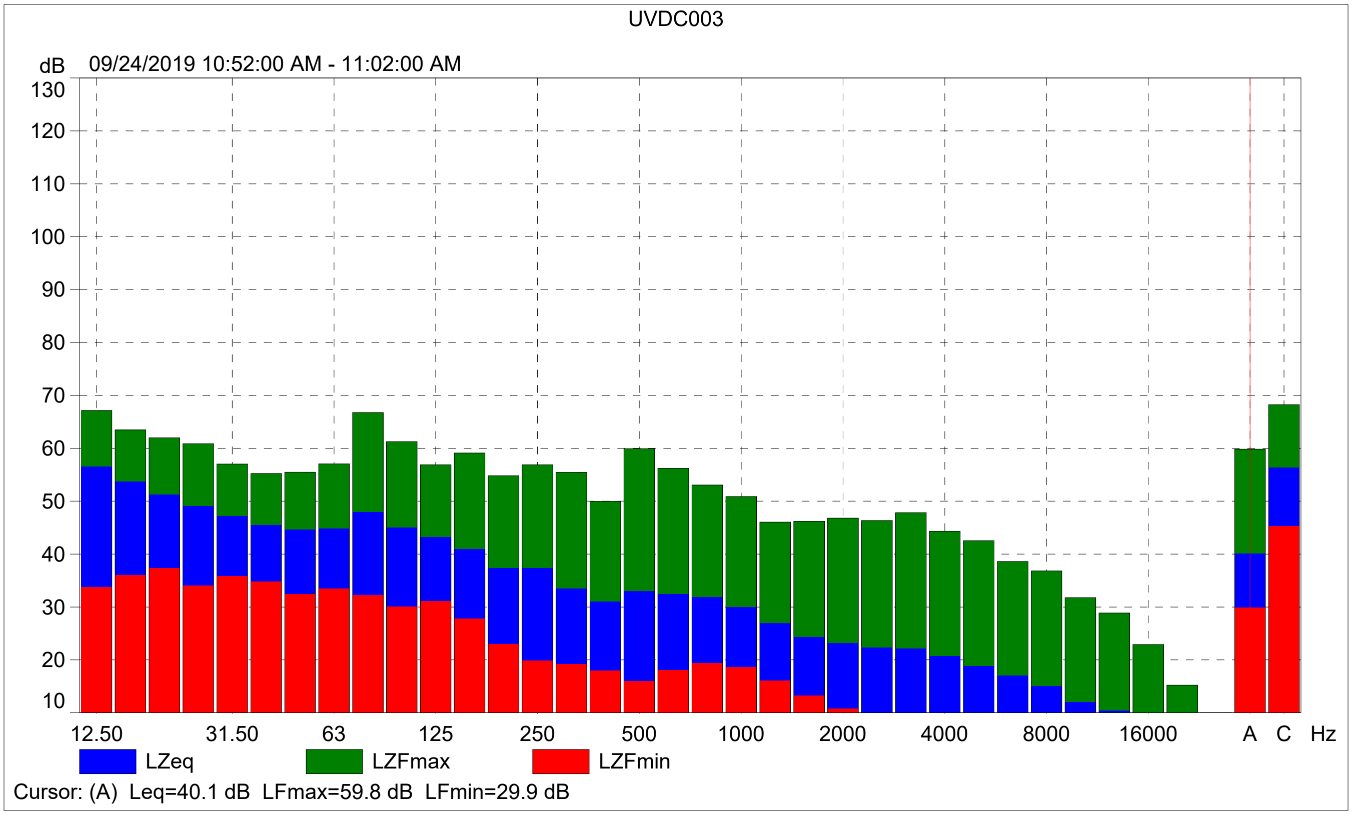
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	Z

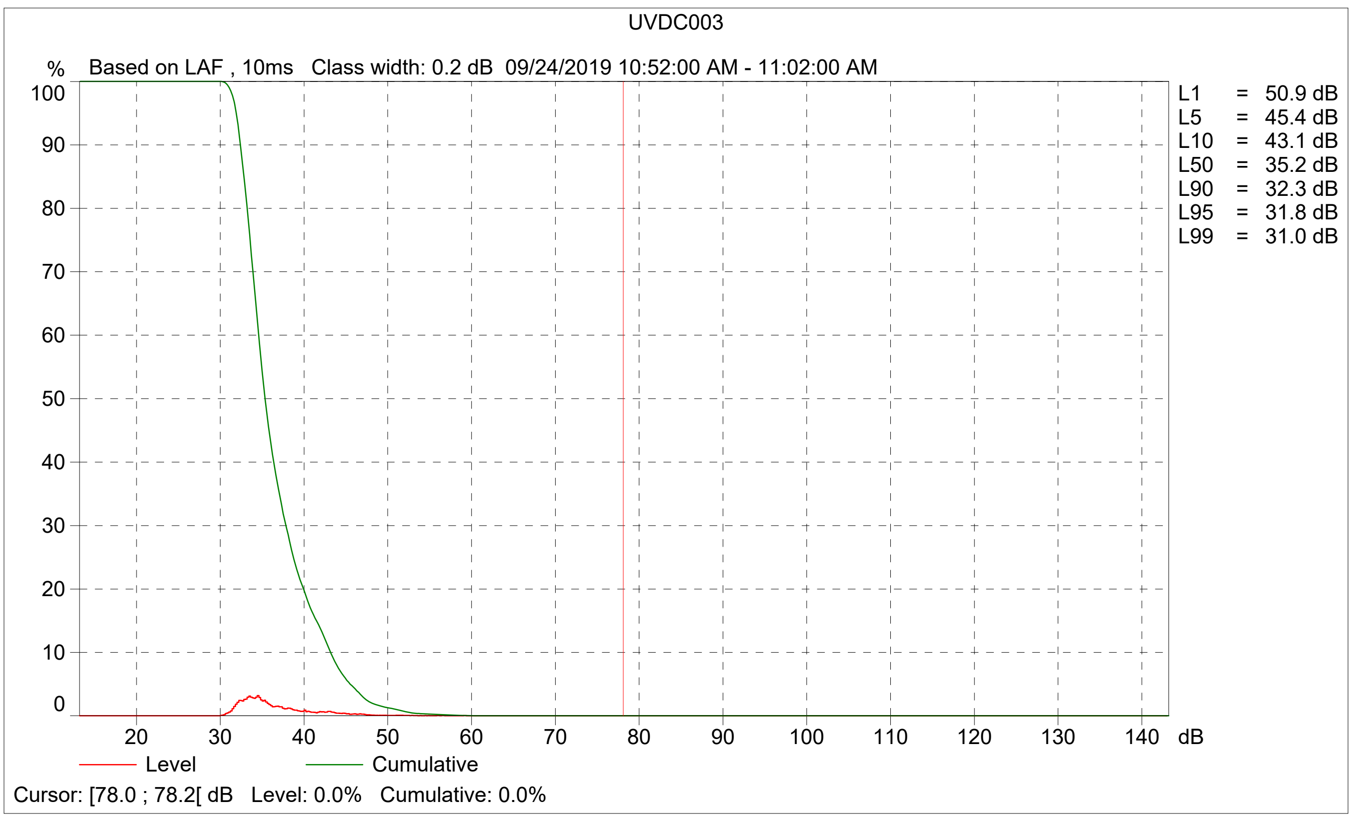
Instrument Serial Number:		3011133
Microphone Serial Number:		3086765
Input:		Top Socket
Windscreen Correction:		UA-1650
Sound Field Correction:		Free-field

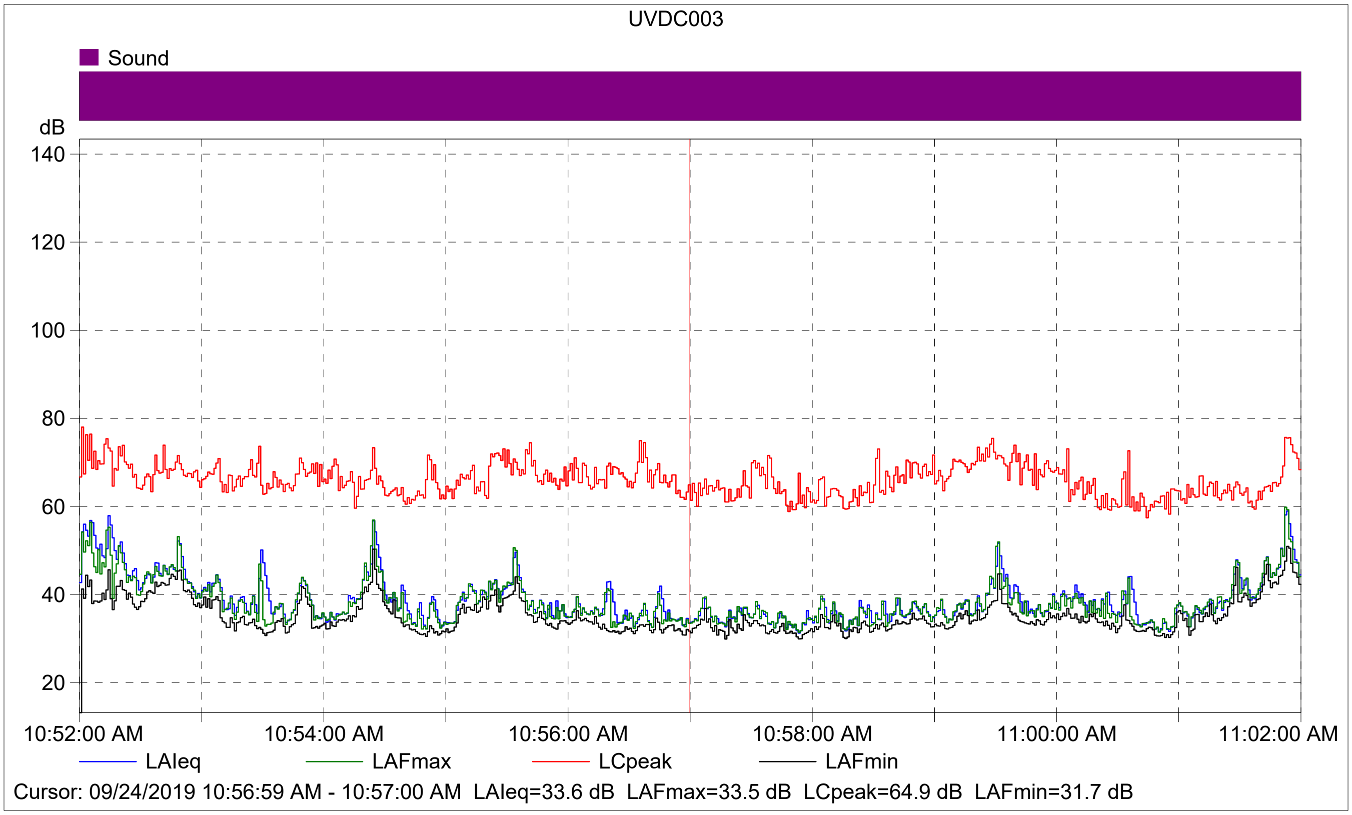
Calibration Time:		09/24/2019 07:59:28
Calibration Type:		External reference
Sensitivity:		43.8475161790848 mV/Pa

UVDC003

	Start time	End time	Elapsed time	Overload [%]	LAeq [dB]	LAFmax [dB]	LAFmin [dB]
Value				0.00	40.1	59.8	29.9
Time	10:52:00 AM	11:02:00 AM	0:10:00				
Date	09/24/2019	09/24/2019					

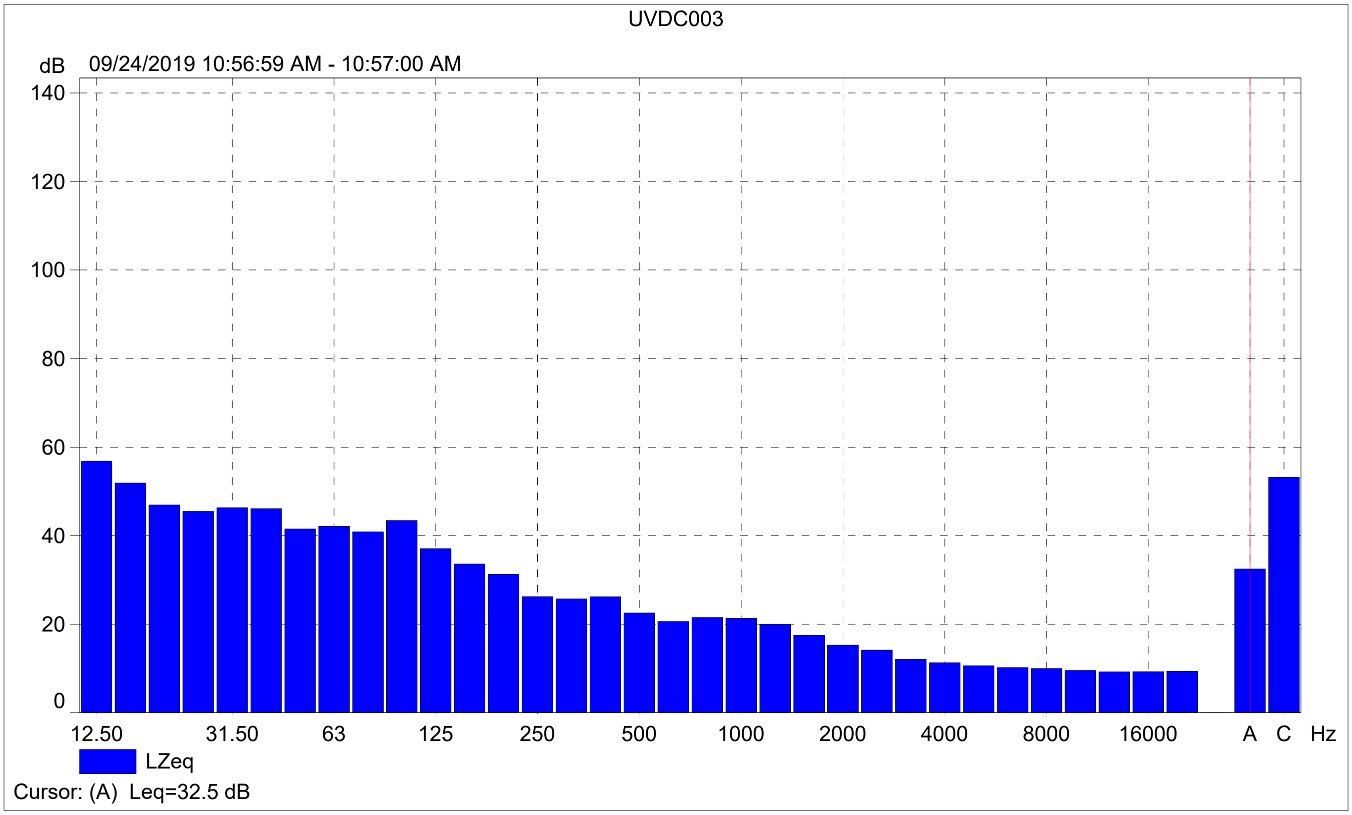

UVDC003
dB 09/24/2019 10:52:00 AM - 11:02:00 AM
130
120
110
100
90
80
70
60
50
40
30
20
10
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
LZFmax
LZFmin
Cursor: (A) Leq=40.1 dB LFmax=59.8 dB LFmin=29.9 dB

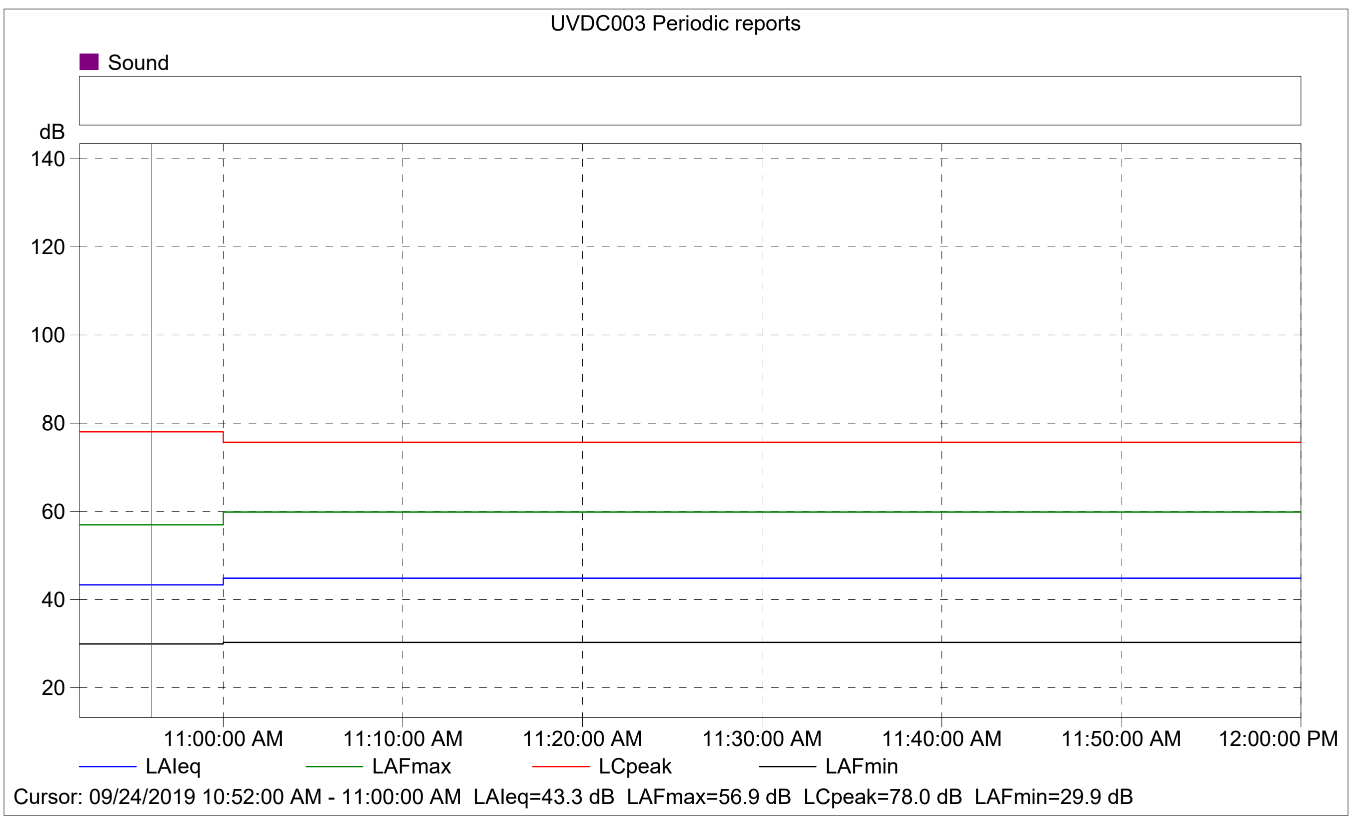

UVDC003
% Based on LAF , 10ms Class width: 0.2 dB 09/24/2019 10:52:00 AM - 11:02:00 AM
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
70
80
90
100
110
120
130
140
dB
L1 = 50.9 dB
L5 = 45.4 dB
L10 = 43.1 dB
L50 = 35.2 dB
L90 = 32.3 dB
L95 = 31.8 dB
L99 = 31.0 dB
Level
Cumulative
Cursor: [78.0 ; 78.2[dB Level: 0.0% Cumulative: 0.0%



UVDC003

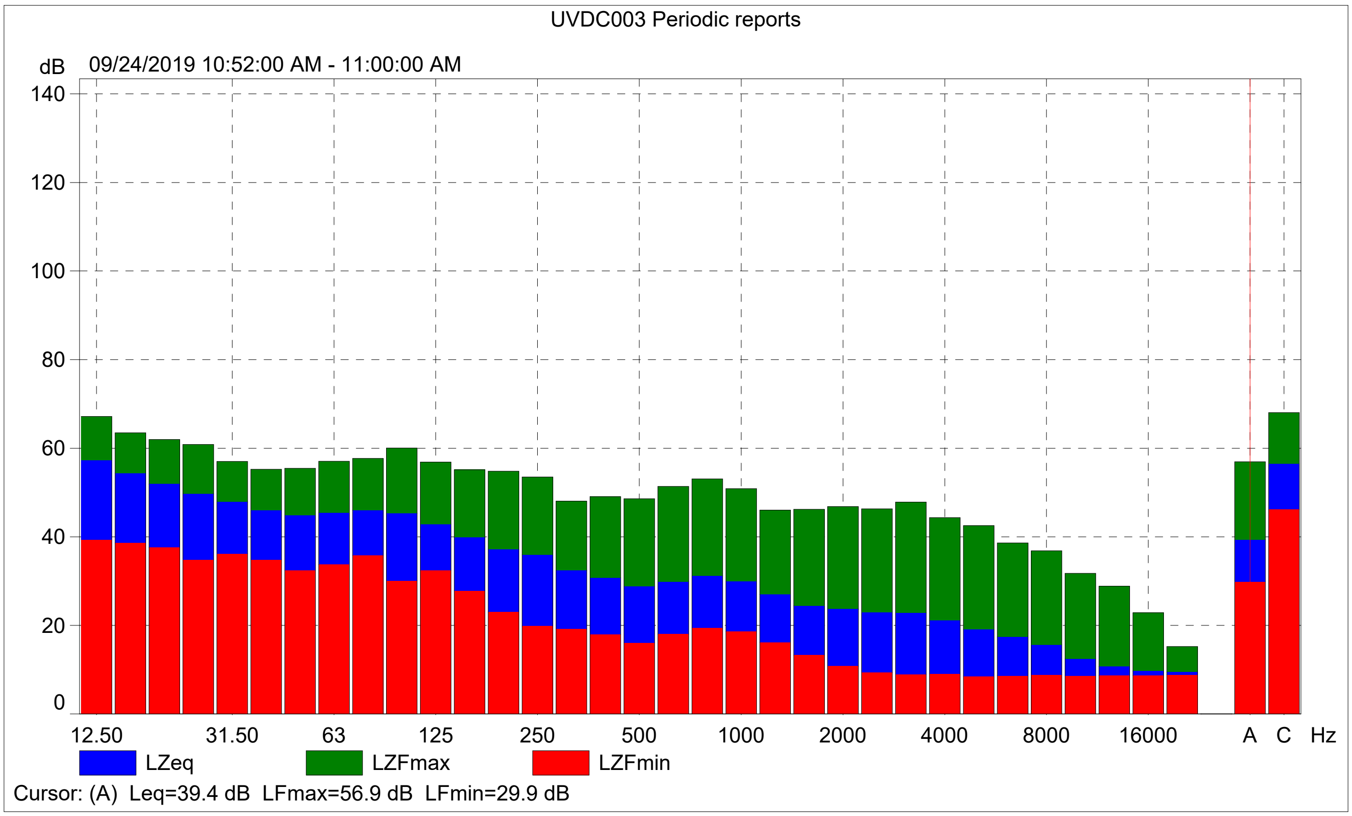
	Start time	Elapsed time	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			33.6	33.5	31.7
Time	10:56:59 AM	0:00:01			
Date	09/24/2019				

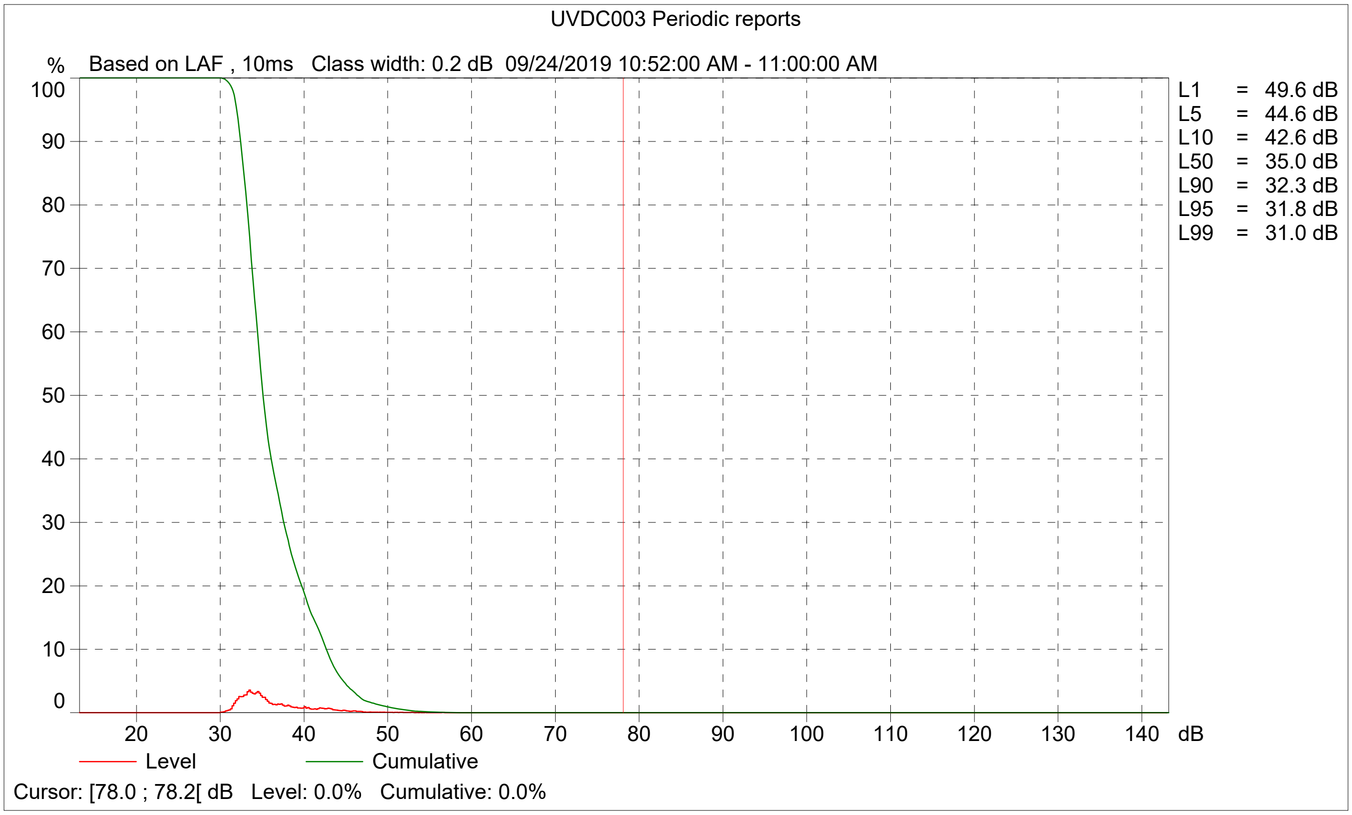

UVDC003
dB
09/24/2019 10:56:59 AM - 10:57:00 AM
140
120
100
80
60
40
20
0
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
Cursor: (A) Leq=32.5 dB


UVDC003 Periodic reports
Sound
dB
140
120
100
80
60
40
20
11:00:00 AM
11:10:00 AM
11:20:00 AM
11:30:00 AM
11:40:00 AM
11:50:00 AM
12:00:00 PM
LAIeq
LAFmax
LCpeak
LAFmin
Cursor: 09/24/2019 10:52:00 AM - 11:00:00 AM LAIeq=43.3 dB LAFmax=56.9 dB LCpeak=78.0 dB LAFmin=29.9 dB

UVDC003 Periodic reports

	Start time	Elapsed time	Overload [%]	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	43.3	56.9	29.9
Time	10:52:00 AM	0:08:00				
Date	09/24/2019					




UVDC003 Periodic reports
% Based on LAF , 10ms Class width: 0.2 dB 09/24/2019 10:52:00 AM - 11:00:00 AM
100
90
80
70
60
50
40
30
20
10
0
20 30 40 50 60 70 80 90 100 110 120 130 140 dB
L1 = 49.6 dB
L5 = 44.6 dB
L10 = 42.6 dB
L50 = 35.0 dB
L90 = 32.3 dB
L95 = 31.8 dB
L99 = 31.0 dB
Level
Cumulative
Cursor: [78.0 ; 78.2[dB Level: 0.0% Cumulative: 0.0%

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