

## **Appendix A. NOP and NOP Comment Letters**

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# NOTICE OF PREPARATION AND SCOPING MEETING CITY OF CORONA

**Date:** May 20, 2020

**Subject:** Notice of Preparation and Scoping Meeting for the City of Corona 2018 Reclaimed Water Master Plan Program Environmental Impact Report

**To:** State Clearinghouse, State Responsible Agencies, State Trustee Agencies, Other Public Agencies, Interested Organizations

**Lead Agency/Sponsor:** City of Corona, Public Works Department

**Project Title:** Program Environmental Impact Report for the City of Corona 2018 Reclaimed Water Master Plan

NOTICE IS HEREBY GIVEN that the City of Corona (City) will prepare a Program Environmental Impact Report (PEIR) for the City of Corona 2018 Reclaimed Water Master Plan (project). The City is the lead agency for the project. The purpose of this notice is (1) to serve as a Notice of Preparation of a PEIR pursuant to the California Environmental Quality Act (CEQA) Guidelines, Section 15082; (2) to advise and solicit comments and suggestions regarding the scope and content of the PEIR to be prepared for the project; and (3) to notice the public scoping meeting.

Consistent with §15168 of the CEQA Guidelines, the City will prepare a PEIR to address the environmental impacts associated with the project. The project is a long-term plan that will assist the City with meeting its goals for reclaimed water use by recommending the implementation of appropriate projects, programs, and additional studies. The 2018 Reclaimed Water Master Plan and all related CEQA documents can be accessed at the following website: [www.CoronaCA.gov/RWMP](http://www.CoronaCA.gov/RWMP)

**Notice of Preparation:** The City, as the lead agency, requests that responsible and trustee agencies respond to this notice in a manner that is consistent with Section 15082(b) of the CEQA Guidelines. Pursuant to CEQA Guidelines, Section 15082(c), responsible agencies must submit any comments in response to this notice no later than 30 days after receipt. Comments in response to this notice must be submitted in writing at the address below at the close of the 30-day Notice of Preparation review period by 5:00 p.m. on June 18, 2020:

Mohammed Ibrahim, PE, Senior Engineer  
City of Corona, Public Works Department  
400 S. Vicentia Avenue, Suite 210, Corona, California 92882  
(951) 739-4840  
[Mohammed.Ibrahim@CoronaCA.gov](mailto:Mohammed.Ibrahim@CoronaCA.gov)

**Scoping Meeting:** The City will hold a scoping meeting in conjunction with this Notice of Preparation to present the project and the PEIR process and to provide an opportunity for agency representatives and the public to assist the lead agency in determining the scope and content of the environmental analysis for the PEIR. The scoping meeting will be held on-line on June 2, 2020, at 5:00 pm. To attend the meeting visit the [City's Website](#). The public can submit written comments at the following email address: [WrittenPublicComments@CoronaCA.gov](mailto:WrittenPublicComments@CoronaCA.gov). The public can provide oral comments during the meeting by emailing [OralPublicComments@CoronaCA.gov](mailto:OralPublicComments@CoronaCA.gov).

X *mohammed ibrahim*

Mohammed Ibrahim, PE, Senior Engineer

## **Project Location**

As shown on Figure 1, Regional Location, the City is the northwesternmost city in the County of Riverside. It is bordered by the County of Orange to the west, the County of San Bernardino to the north, unincorporated communities in the County of Riverside to the east and south, and the incorporated Cities of Norco, Anaheim, Lake Elsinore, Chino Hills, Eastvale, Riverside, and Yorba Linda. The City is accessed by State Route 91 and Interstate 15. The City provides reclaimed water service to customers within its water service area. The City's water service area is in the western portion of the County of Riverside and includes the City and the unincorporated communities of El Cerrito and Coronita and parts of Temescal Canyon (Figure 2, Service Area Boundary). The City's water service area encompasses approximately 39 square miles.

## **Project Description**

The City is in the process of preparing a PEIR for the project in accordance with CEQA. The last PEIR for the City's 2001 Reclaimed Water Master Plan was prepared in May 2001. Significant changes to the environmental resource topics are not anticipated. However, this updated PEIR will include the latest available developments and modeling. The purpose of the project is to assist the City with meeting its goals for reclaimed water use by recommending the implementation of appropriate projects, programs, and additional studies. The purpose is consistent with the City's larger motivations documented in the City of Corona 2004 General Plan, the City of Corona 2014–2019 Strategic Plan, Ordinance 2854 (Recycled Water Rules and Regulations), and the reclaimed water policy set forth by the City's Department of Water and Power.

## **Background Information**

The City provides reclaimed water service to customers within its water service area. The City's water service area, which encompasses approximately 39 square miles, is in the western portion of the County of Riverside and includes the City and the unincorporated communities of El Cerrito and Coronita and parts of Temescal Canyon. The City is a member of the Western Riverside County Regional Wastewater Authority (WRCRWA), which operates a new wastewater reclamation facility in the City of Eastvale. The WRCRWA is a future source of reclaimed water for the City. The project recognizes the implications of the WRCRWA on the City's reclaimed water system, specifically the shift in location of one source of supply from Water Reclamation Facility 3 to the WRCRWA plant. Projects that support the transmission and distribution of reclaimed water from the WRCRWA were prioritized to take full advantage of this new source.

The project is guided by pending state legislation that would dictate the future of direct potable reuse (DPR) of reclaimed water. DPR involves the introduction of reclaimed water into the potable water system or the raw water supply of a potable water treatment facility. The state DPR policy will provide guidance on the level of treatment and safety precautions required to convert reclaimed water into potable water. DPR is anticipated to impact long-term planning of reclaimed water supply statewide; however, specific implications for the City are uncertain. Once the state DPR policy is finalized, the City will compare the feasibility of DPR to the feasibility of expanding the reclaimed water distribution system as an alternative for maximizing reclaimed water supply. The project examines the reclaimed water distribution system performance and expansion but defers expansion projects until the City determines the most effective use of its reclaimed water resources.

Based on the study area for the project, existing reclaimed water supply is provided by three City-owned and operated water reclamation facilities and two non-potable wells. The average annual production from these sources is approximately 11.35 million gallons per day. Supply of reclaimed water is anticipated to incrementally increase by an additional 0.88 million gallons per day (7.8 percent) through 2040 due to population growth. When the WRCRWA is fully implemented, the level of production will stay the same. However, the location of supply sources will shift north, and the City will have access to additional supply from the WRCRWA.

The primary demand for reclaimed water is irrigation. The reclaimed water system serves the irrigation demands of 26 City parks, 17 schools, and numerous City, commercial, industrial, and multi-family residential common area landscaping. A small amount of reclaimed water serves industrial dual plumbing (e.g., toilet flushing), sewer flushing, street sweeping, replenishment of cooling water, replenishment of recreational impoundment, firefighting training, and construction needs (e.g., dust control and soil compaction). The existing reclaimed water distribution system is relatively young, having been built within the last 10 years. The primary system components include 3 storage tanks with a combined capacity of 7 million gallons, 6 pumping facilities, 8 control valve stations, 54.5 miles of pipelines, and 331 permanent meters.

To meet the supply and demand needs of the City, the improvements proposed in the project are evaluated based on their economic, technical, and financial feasibility. Overall, the goals for implementing the WRCRWA are to (1) receive and use the City's full allocation of reclaimed water from the WRCRWA, and (2) to decommission Reclaimed Water Facility 3. Intermediate steps must be taken to achieve these goals, including improvements to the reclaimed water transmission system between the



WRCRWA and customers in the southern part of the water service area and improvements to the wastewater collection system between sewer customers in the southern part of the sewer shed and the water reclamation facilities in the northern part.

Successful implementation of the project would provide operational, economic, and financial opportunities, such as the reduction of demand spikes from parks, landscape management districts, and school districts, that would result in improved system performance. Other economic opportunities include the conversion of demand from potable water to reclaimed water, which would create an advantage for both the customer and the City. The result would be a decrease in the commodity rate of reclaimed water, which would allow reclaimed water to become a feasible alternative for customers, and the City would benefit from a higher net value for reclaimed water supply. Financial opportunities include the feasibility of project funding. A portion of qualifying expenses may be funded by the State Water Resources Control Board, which would make available grants and low interest loans. Other portions of the project may be funded by the Metropolitan Water District, which offers an incentive for the conversion of potable water demand to reclaimed water demand at a rate of \$975 per acre-foot per year. Finally, the City may negotiate with developers on a case-by-case basis to fund a portion of the reclaimed water system.

To be successfully implemented, the project identified 33 projects that were evaluated, prioritized, and scheduled. These projects were split into four recommendations categories: (1) improvements surrounding the WRCRWA, (2) improvements to add demand, (3) enhancements to data collection, and (4) additional studies (Figure 3, Future Reclaimed Water System Projects). There are six projects involving future supply from the WRCRWA that are necessary to accommodate the shift in supply away from Water Reclamation Facility 3 to the WRCRWA. These projects focus on transmission and system performance.

In the future, the City may choose to allocate a portion of its reclaimed water supply to DPR. At this time, the viability of DPR is uncertain because legislation is pending. After the state has created the policy, the City will assess the economic and financial benefits of DPR and compare them to the benefits of expanding the reclaimed water distribution system to deliver non-potable water to customers. Improvements to add demand are in two categories: (1) conversion of adjacent demands and (2) distribution pipelines.

Two projects are recommended to enhance data collection. The City has an extensive automation system for its water facilities called Supervisory Control and Data Acquisition. The Supervisory Control and Data Acquisition system is used primarily for operational control and management of the City's water, wastewater, and reclaimed water assets. Enhancements to the supply management system and the irrigation monitoring system will provide insight on resource and demand management.

Two additional studies related to future uses of reclaimed water are recommended: (1) a study to monitor the County of Riverside's irrigation ordinance and (2) an injection well study. The City recently adopted the County of Riverside's Ordinance 859.3 regarding water-efficient landscape requirements for new construction and retrofit and the establishment of water budgets. The study to monitor the County of Riverside's irrigation ordinance would review the results of and monitoring requirements for implementation of the ordinance, which is anticipated to produce changes in irrigation behavior, demand, and parcel-level compliance calculations. The injection well study would consist of the use of strategically placed injections that should improve the groundwater recovery rate and increase detention time in the aquifer. The injection well study would review possible well locations and quantify the benefits over time.

## Environmental Factors Potentially Affected

The project could potentially affect the following environmental factors, each of which will be addressed in the PEIR:

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

## Attachments

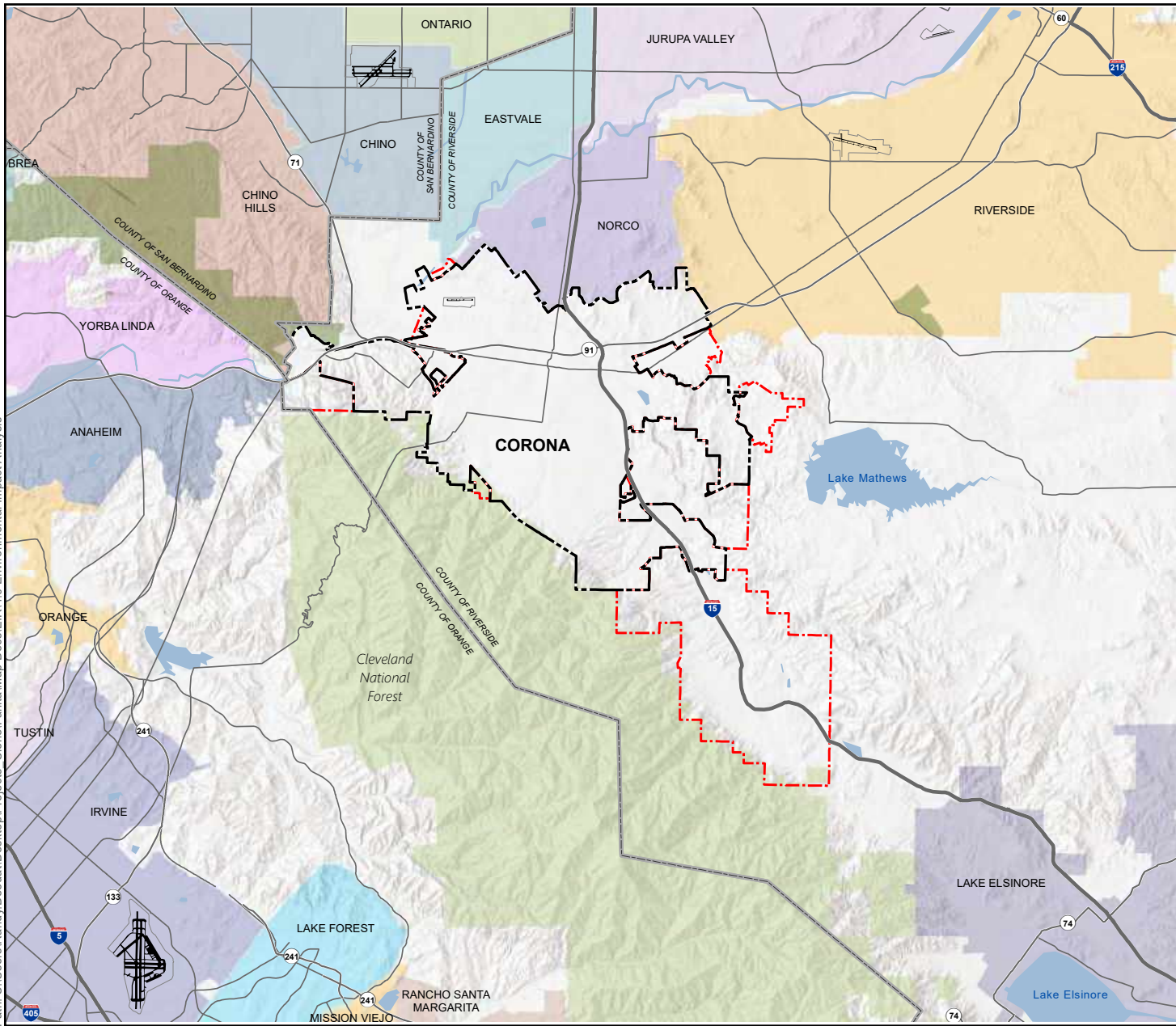
Figure 1, Regional Location

Figure 2, Service Area Boundary





Figure 3, Future Reclaimed Water System Projects



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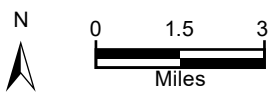
Legend

-  City Boundary
-  Sphere of Influence Areas
-  National Parks and Forests
-  State Parks and Forests

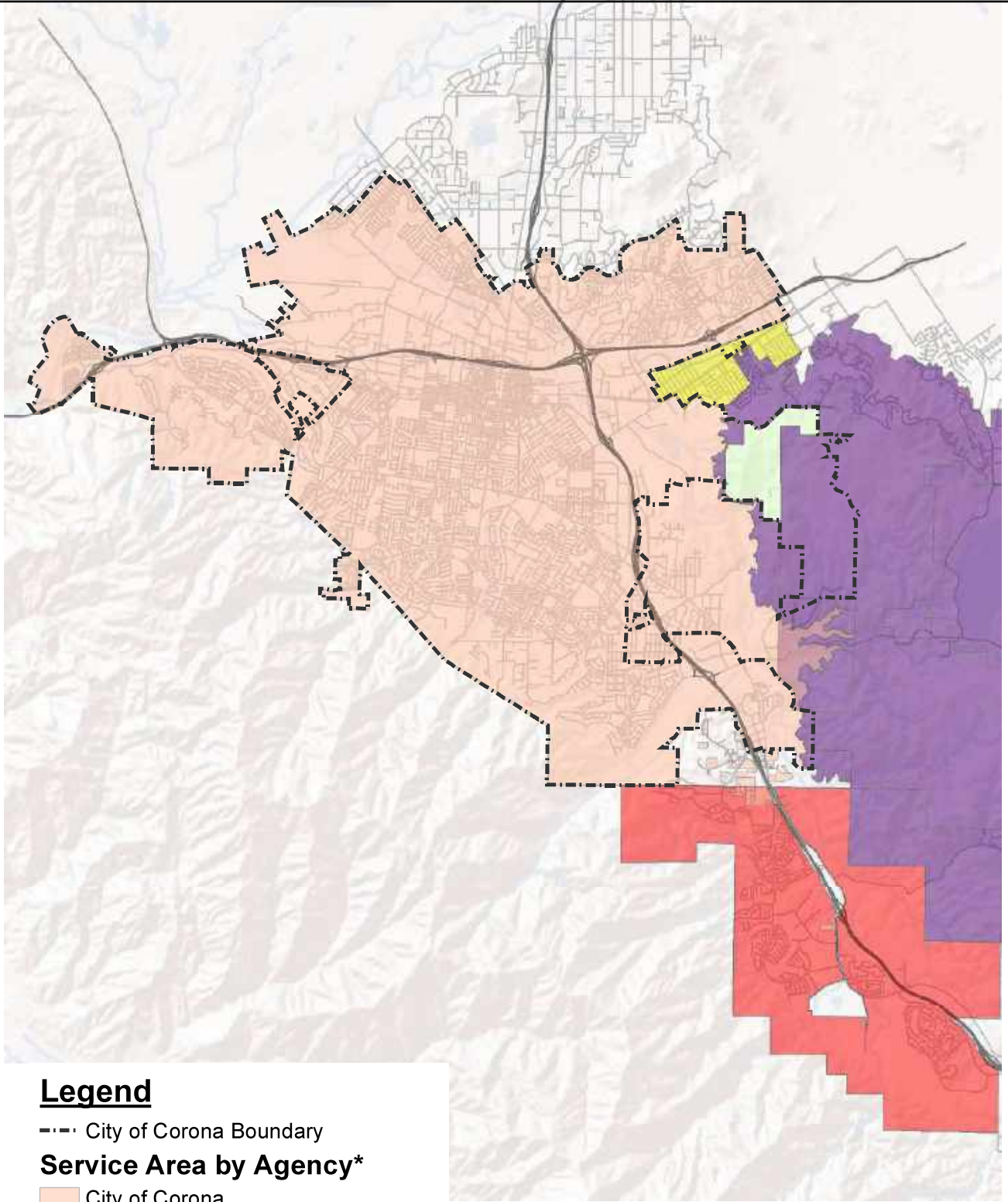
Source: City of Corona 2018.



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**Figure 1**  
Regional Location



**Legend**

- - - - City of Corona Boundary

**Service Area by Agency\***

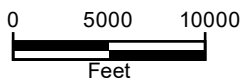
- City of Corona
- Eagle Valley Mutual Water Company
- Home Garden County Water District
- Temescal Valley Water District
- Western Municipal Water District

\*Regards Potable and Reclaimed Distribution Systems

Source: City of Corona 2018.



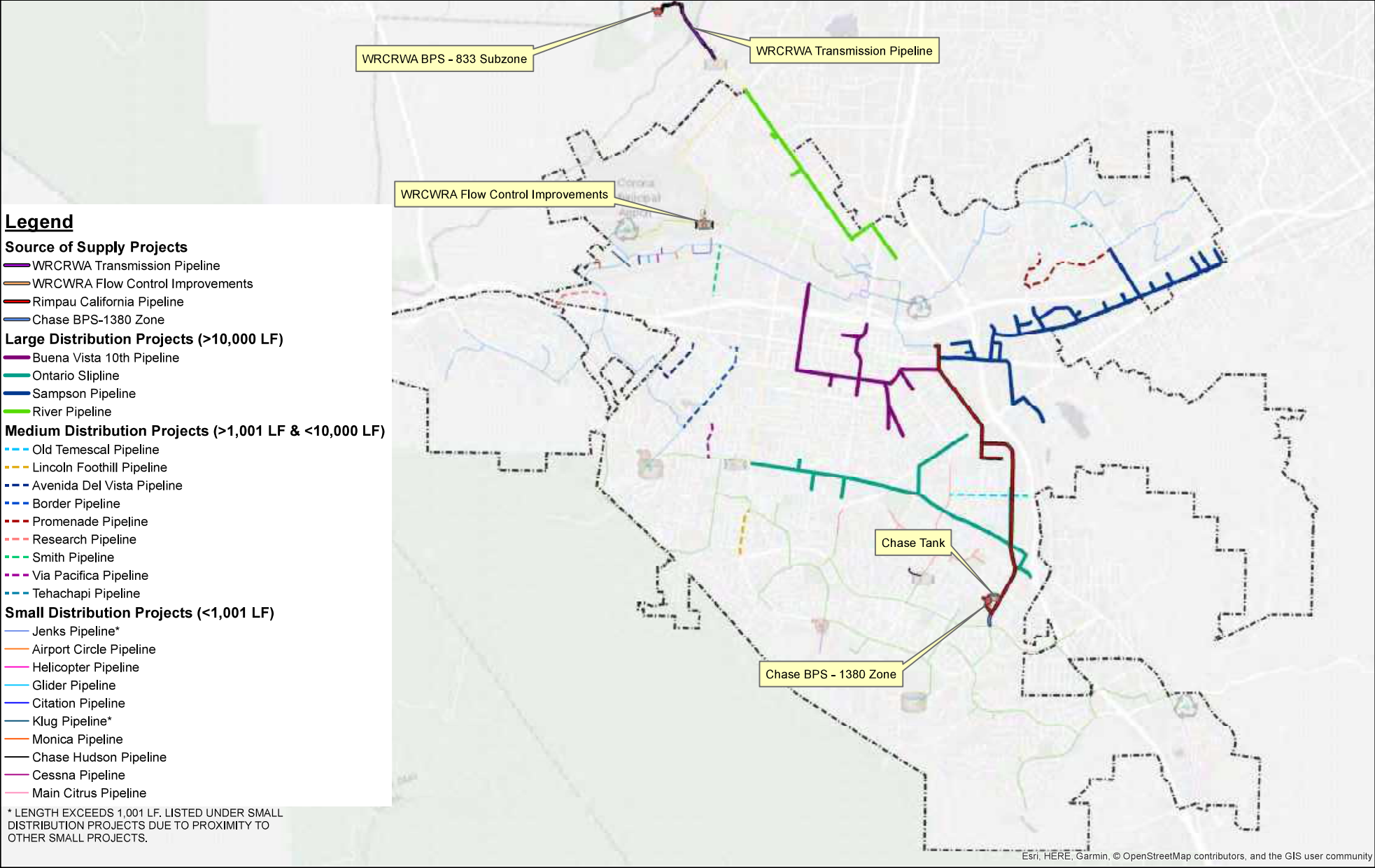
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**Figure 2**  
Service Area Boundary



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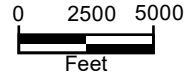


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Source: City of Corona 2018.



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**Figure 3**  
Future Reclaimed Water System Projects





STATE OF CALIFORNIA

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## NATIVE AMERICAN HERITAGE COMMISSION

May 27, 2020

Mohammed Ibrahim, PE, Senior Engineer  
City of Corona  
400 S. Vicentia Ave  
Corona, CA 92882

**Re: 2020050497, City of Corona Reclaimed Water Master Plan (RWMP) EIR Project, Riverside County**

Dear Mr. Ibrahim:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

**Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.**

CHAIRPERSON  
**Laura Miranda**  
Luseño

VICE CHAIRPERSON  
**Reginald Pagaling**  
Chumash

SECRETARY  
**Merri Lopez-Keifer**  
Luseño

PARLIAMENTARIAN  
**Russell Atebery**  
Karuk

COMMISSIONER  
**Marshall McKay**  
Wintun

COMMISSIONER  
**William Mungary**  
Paiute/White Mountain  
Apache

COMMISSIONER  
**Julie Tumamait-  
Stenslie**  
Chumash

COMMISSIONER  
[Vacant]

COMMISSIONER  
[Vacant]

EXECUTIVE SECRETARY  
**Christina Snider**  
Pomo

**NAHC HEADQUARTERS**  
1550 Harbor Boulevard  
Suite 100  
West Sacramento,  
California 95691  
(916) 373-3710  
[nahc@nahc.ca.gov](mailto:nahc@nahc.ca.gov)  
[NAHC.ca.gov](http://NAHC.ca.gov)



## AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

- 1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project:** Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

  - a. A brief description of the project.
  - b. The lead agency contact information.
  - c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
  - d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).
- 2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report:** A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1 (b)).

  - a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).
- 3. Mandatory Topics of Consultation If Requested by a Tribe:** The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

  - a. Alternatives to the project.
  - b. Recommended mitigation measures.
  - c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).
- 4. Discretionary Topics of Consultation:** The following topics are discretionary topics of consultation:

  - a. Type of environmental review necessary.
  - b. Significance of the tribal cultural resources.
  - c. Significance of the project's impacts on tribal cultural resources.
  - d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).
- 5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process:** With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).
- 6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document:** If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

  - a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
  - b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).



- 7. Conclusion of Consultation:** Consultation with a tribe shall be considered concluded when either of the following occurs:
- a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
  - b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).
- 8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document:** Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).
- 9. Required Consideration of Feasible Mitigation:** If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).
- 10. Examples of Mitigation Measures That, if Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:**
- a. Avoidance and preservation of the resources in place, including, but not limited to:
    - i. Planning and construction to avoid the resources and protect the cultural and natural context.
    - ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
  - b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource; including, but not limited to, the following:
    - i. Protecting the cultural character and integrity of the resource.
    - ii. Protecting the traditional use of the resource.
    - iii. Protecting the confidentiality of the resource.
  - c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
  - d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).
  - e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
  - f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).
- 11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource:** An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
- a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
  - b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
  - c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: [http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation\\_CalEPAPDF.pdf](http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf)

## SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: [https://www.opr.ca.gov/docs/09\\_14\\_05\\_Updated\\_Guidelines\\_922.pdf](https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf).

Some of SB 18's provisions include:

1. **Tribal Consultation:** If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. **No Statutory Time Limit on SB 18 Tribal Consultation.** There is no statutory time limit on SB 18 tribal consultation.
3. **Confidentiality:** Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. **Conclusion of SB 18 Tribal Consultation:** Consultation should be concluded at the point in which:
  - a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
  - b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: <http://nahc.ca.gov/resources/forms/>.

## NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center ([http://ohp.parks.ca.gov/?page\\_id=1068](http://ohp.parks.ca.gov/?page_id=1068)) for an archaeological records search. The records search will determine:
  - a. If part or all of the APE has been previously surveyed for cultural resources.
  - b. If any known cultural resources have already been recorded on or adjacent to the APE.
  - c. If the probability is low, moderate, or high that cultural resources are located in the APE.
  - d. If a survey is required to determine whether previously unrecorded cultural resources are present.
2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. 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.



b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:

a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, § 15064.5(f) (CEQA Guidelines § 15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.


b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address:

[Andrew.Green@nahc.ca.gov](mailto:Andrew.Green@nahc.ca.gov).

Sincerely,



Andrew Green  
Staff Services Analyst

cc: State Clearinghouse



# South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4178  
(909) 396-2000 • www.aqmd.gov

SENT VIA E-MAIL:

June 3, 2020

[Mohammed.ibrahim@CoronaCA.gov](mailto:Mohammed.ibrahim@CoronaCA.gov)

Mohammed Ibrahim, PE, Senior Engineer  
City of Corona, Public Works Department  
400 South Vicentia Avenue, Suite 210  
Corona, CA 92882

## **Notice of Preparation of a Program Environmental Impact Report for the Proposed The City of Corona 2018 Reclaimed Water Master Plan**

South Coast Air Quality Management District (South Coast AQMD) staff appreciates the opportunity to comment on the above-mentioned document. South Coast AQMD staff's comments are recommendations regarding the analysis of potential air quality impacts from the Proposed Project that should be included in the Program Environmental Impact Report (EIR). Please send South Coast AQMD a copy of the Program EIR upon its completion and public release. Note that copies of the Program EIR that are submitted to the State Clearinghouse are not forwarded to South Coast AQMD. Please forward a copy of the Program EIR directly to South Coast AQMD at the address shown in the letterhead. **In addition, please send with the Program EIR all appendices or technical documents related to the air quality, health risk, and greenhouse gas analyses and electronic versions of all air quality modeling and health risk assessment files<sup>1</sup>. These include emission calculation spreadsheets and modeling input and output files (not PDF files). Without all files and supporting documentation, South Coast AQMD staff will be unable to complete our review of the air quality analyses in a timely manner. Any delays in providing all supporting documentation will require additional time for review beyond the end of the comment period.**

### **Air Quality Analysis**

South Coast AQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. South Coast AQMD staff recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analyses. Copies of the Handbook are available from the South Coast AQMD's Subscription Services Department by calling (909) 396-3720. More recent guidance developed since this Handbook was published is also available on South Coast AQMD's website at: [http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-\(1993\)](http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-(1993)). South Coast AQMD staff also recommends that the Lead Agency use the CalEEMod land use emissions software. This software has recently been updated to incorporate up-to-date state and locally approved emission factors and methodologies for estimating pollutant emissions from typical land use development. CalEEMod is the only software model maintained by the California Air Pollution Control Officers Association (CAPCOA) and replaces the now outdated URBEMIS. This model is available free of charge at: [www.caleemod.com](http://www.caleemod.com).

On March 3, 2017, the South Coast AQMD's Governing Board adopted the 2016 Air Quality Management Plan (2016 AQMP), which was later approved by the California Air Resources Board on

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<sup>1</sup> Pursuant to the CEQA Guidelines Section 15174, the information contained in an EIR shall include summarized technical data, maps, plot plans, diagrams, and similar relevant information sufficient to permit full assessment of significant environmental impacts by reviewing agencies and members of the public. Placement of highly technical and specialized analysis and data in the body of an EIR should be avoided through inclusion of supporting information and analyses as appendices to the main body of the EIR. Appendices to the EIR may be prepared in volumes separate from the basic EIR document, but shall be readily available for public examination and shall be submitted to all clearinghouses which assist in public review.

March 23, 2017. Built upon the progress in implementing the 2007 and 2012 AQMPs, the 2016 AQMP provides a regional perspective on air quality and the challenges facing the South Coast Air Basin. The most significant air quality challenge in the Basin is to achieve an additional 45 percent reduction in nitrogen oxide (NO<sub>x</sub>) emissions in 2023 and an additional 55 percent NO<sub>x</sub> reduction beyond 2031 levels for ozone attainment. The 2016 AQMP is available on South Coast AQMD's website at: <http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan>.

South Coast AQMD staff recognizes that there are many factors Lead Agencies must consider when making local planning and land use decisions. To facilitate stronger collaboration between Lead Agencies and South Coast AQMD to reduce community exposure to source-specific and cumulative air pollution impacts, South Coast AQMD adopted the Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning in 2005<sup>2</sup>. This Guidance Document provides suggested policies that local governments can use in their General Plans or through local planning to prevent or reduce potential air pollution impacts and protect public health. South Coast AQMD staff recommends that the Lead Agency review this Guidance Document as a tool when making local planning and land use decisions. Additional guidance on siting incompatible land uses (such as placing homes near freeways or other polluting sources) can be found in the California Air Resources Board's *Air Quality and Land Use Handbook: A Community Health Perspective*, which can be found at: <http://www.arb.ca.gov/ch/handbook.pdf>. Guidance<sup>3</sup> on strategies to reduce air pollution exposure near high-volume roadways can be found at: [https://www.arb.ca.gov/ch/rd\\_technical\\_advisory\\_final.PDF](https://www.arb.ca.gov/ch/rd_technical_advisory_final.PDF).

South Coast AQMD has also developed both regional and localized air quality significance thresholds. South Coast AQMD staff requests that the Lead Agency compare the emissions to the recommended regional significance thresholds found here: <http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf>. In addition to analyzing regional air quality impacts, South Coast AQMD staff recommends calculating localized air quality impacts and comparing the results to localized significance thresholds (LSTs). LSTs can be used in addition to the recommended regional significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality analysis for the Proposed Project, it is recommended that the Lead Agency perform a localized analysis by either using the LSTs developed by South Coast AQMD or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at: <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds>.

When specific development is reasonably foreseeable as result of the goals, policies, and guidelines in the Proposed Project, the Lead Agency should identify any potential adverse air quality impacts and sources of air pollution that could occur using its best efforts to find out and a good-faith effort at full disclosure in the EIR. The degree of specificity will correspond to the degree of specificity involved in the underlying activity which is described in the EIR (CEQA Guidelines Section 15146). When quantifying air quality emissions, emissions from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air

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<sup>2</sup> South Coast AQMD. 2005. Accessed at: <http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf>.

<sup>3</sup> In April 2017, CARB published a technical advisory, *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways: Technical Advisory*, to supplement CARB's *Air Quality and Land Use Handbook: A Community Health Perspective*. This technical advisory is intended to provide information on strategies to reduce exposures to traffic emissions near high-volume roadways to assist land use planning and decision-making in order to protect public health and promote equity and environmental justice. The technical advisory is available at: <https://www.arb.ca.gov/ch/landuse.htm>.

quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, such as sources that generate or attract vehicular trips, should be included in the analysis. Furthermore, for phased projects where there will be an overlap between construction and operational activities, emissions from the overlapping construction and operational activities should be combined and compared to South Coast AQMD's regional air quality CEQA *operational* thresholds to determine the level of significance.

If the Proposed Project generates or attracts vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the Lead Agency perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("*Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*") can be found at: <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis>. An analysis of all toxic air contaminant impacts due to the use of equipment potentially generating such air pollutants should also be included.

### **Mitigation Measures**

If the Proposed Project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize or eliminate these impacts. Pursuant to CEQA Guidelines Section 15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed. Several resources are available to assist the Lead Agency with identifying possible mitigation measures for the Proposed Project, including:

- Chapter 11 "Mitigating the Impact of a Project" of South Coast AQMD's *CEQA Air Quality Handbook*
- South Coast AQMD's CEQA web pages available here: <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies>
- South Coast AQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook for controlling construction-related emissions and Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities
- California Air Pollution Control Officers Association's (CAPCOA) *Quantifying Greenhouse Gas Mitigation Measures* available here: <http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf>

### **Alternatives**

If the Proposed Project generates significant adverse air quality impacts, CEQA requires the consideration and discussion of alternatives to the project or its location which are capable of avoiding or substantially lessening any of the significant effects of the project. The discussion of a reasonable range of potentially feasible alternatives, including a "no project" alternative, is intended to foster informed decision-making and public participation. Pursuant to CEQA Guidelines Section 15126.6(d), the Program EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Proposed Project.

### **Permits**

If implementation of the Proposed Project requires a permit from South Coast AQMD, South Coast AQMD should be identified as a Responsible Agency for the Proposed Project in the EIR. For more information on permits, please visit South Coast AQMD's webpage at:

<http://www.aqmd.gov/home/permits>. Questions on permits can be directed to South Coast AQMD's Engineering and Permitting staff at (909) 396-3385.

**Data Sources**

South Coast AQMD rules and relevant air quality reports and data are available by calling the South Coast AQMD's Public Information Center at (909) 396-2001. Much of the information available through the Public Information Center is also available via the South Coast AQMD's webpage (<http://www.aqmd.gov>).

South Coast AQMD staff is available to work with the Lead Agency to ensure that project's air quality impacts are accurately evaluated and mitigated where feasible. Please contact me at [lsun@aqmd.gov](mailto:lsun@aqmd.gov), should you have any questions.

Sincerely,

*Lijin Sun*

Lijin Sun, J.D.

Draft Supervisor, CEQA IGR

Planning, Rule Development & Area Sources

LS

RVC200602-06

Control Number



JASON E. UHLEY  
General Manager-Chief Engineer



1995 MARKET STREET  
RIVERSIDE, CA 92501  
951.955.1200  
FAX 951.788.9965  
www.rcflood.org

## RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

June 4, 2020

Mr. Mohammed Ibrahim, PE, Senior Engineer  
City of Corona  
Public Works Department  
400 S. Vicentia Avenue, Suite 210  
Corona, CA 92882

Dear Mr. Ibrahim:

Re: Notice of Preparation of a Program  
Environmental Impact Report for the  
City of Corona 2018 Reclaimed Water  
Master Plan

This letter is written in response to the Notice of Preparation of a Program Environmental Impact Report (PEIR) for the City of Corona 2018 Reclaimed Water Master Plan, received by the Riverside County Flood Control and Water Conservation District (District). The City of Corona (City) proposes to implement 33 projects which would facilitate a new source of reclaimed water, improve reclaimed water distribution, and include new studies and data collection to inform the City for future project decisions. The City is the Lead Agency for this project under the California Environmental Quality Act (CEQA). The District is tasked with effectively managing flood hazards to protect life and property within Western Riverside County.

The District has reviewed the notice provided and has the following comments regarding this project:

1. Please be advised that the proposed project may be located within multiple District Master Drainage Plans (MDP). When fully implemented, these MDP facilities will provide adequate drainage and flood protection within the MDP area. The District's MDP facility maps can be viewed online at: <http://content.rcflood.org/MDPADP/>. The proposed project facilities should be designed and constructed in a manner to avoid conflicts with the MDP facilities. To obtain further information on the MDP and proposed facilities, please contact Mike Wong of the District's Planning Section at 951.955.1345.
2. The proposed project may impact existing District facilities and rights of way. Any work that involves District rights of way, easements, or facilities will require an encroachment permit from the District. Therefore, the District will likely be a CEQA Responsible Agency, and any potential impacts to District facilities should be considered in the PEIR. To obtain further information on District encroachment permits and to find an application form, please refer to: <https://rcflood.org/I-Want-To/Services/Obtain-Encroachment-or-Access-Permit> or contact the District at 951.955.1200 and speak with encroachment permit staff to help confirm permit requirements.



Mr. Mohammed Ibrahim

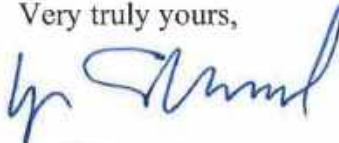
-2-

June 4, 2020

Re: Notice of Preparation of a Program  
Environmental Impact Report for the  
City of Corona 2018 Reclaimed Water  
Master Plan

Thank you for the opportunity to review this notice. If you have any questions or require additional information regarding the comments on this letter, please contact Sean Berriman at 951.955.1242 or me at 951.955.1306.

Very truly yours,

A handwritten signature in blue ink, appearing to read "Randy Sheppard", written in a cursive style.

RANDY SHEPPEARD  
Senior Flood Control Planner

cc: Mike Wong  
Alberto Martinez

SB:mcv  
P8\231551

DIRECTORS

DENIS R. BILODEAU, P.E.  
JORDAN BRANDMAN  
CATHY GREEN  
DINA L. NGUYEN, ESQ.  
KELLY E. ROWE, C.E.G., C.H.  
VICENTE SARMIENTO, ESQ.  
STEPHEN R. SHELDON  
TRI TA  
ROGER C. YOH, P.E.  
AHMAD ZAHRA



**ORANGE COUNTY WATER DISTRICT**  
ORANGE COUNTY'S GROUNDWATER AUTHORITY

OFFICERS

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First Vice President  
CATHY GREEN  
Second Vice President  
STEPHEN R. SHELDON  
General Manager  
MICHAEL R. MARKUS, P.E., D.WRE

June 8, 2020

Mr. Mohammed Ibrahim, P.E  
City of Corona, Public Works Department  
400 S. Vicentia Avenue, Suite 210  
Corona, Ca 92882

**Subject: OCWD Comments on Notice of Preparation of City of Corona Reclaimed Water Master Plan (SCH 2020050497)**

Dear Mr. Ibrahim,

The Orange County Water District (OCWD) appreciates the opportunity to comment on the Notice of Preparation for City of Corona Reclaimed Water Master Plan (RWMP) Program Environmental Impact Report (EIR) (SCH 2020050497).

OCWD is a special district formed in 1933 by an act of the California Legislature. The District manages the groundwater basin that underlies north and central Orange County. Water produced from the basin is the primary water supply for approximately 2.5 million residents living within the District's boundaries. OCWD also owns more than 2,000 acres of land in the Prado Basin in Riverside County and is keenly interested in projects that may affect the Prado Basin. Prado Basin contains the single largest forested wetland in coastal Southern California and supports an abundance and diversity of wildlife, including many listed and sensitive species.

The proposed project is to assist the city with meeting its goals for reclaimed water use by recommending the implementation of appropriate projects, programs, and additional studies.

The EIR for the proposed project should assess potential environmental impacts associated with decreased discharges to surface water tributary to the Santa Ana River and Prado Basin. Increases in reclaimed water usage could result in decreased rates of discharges to surface water in the Santa Ana River, tributaries to the Santa Ana River, and to Prado Basin. Decreased discharge could have negative impacts on native riparian habitat, which are dependent on surface water and shallow groundwater. If any

Mohammed Ibrahim, P.E

June 8, 2020

Page 2 of 2

projects are proposed in the City of Corona RWMP that could reduce the rate of discharge of treated water into Prado Basin, the Santa Ana River or tributaries to the Santa Ana River, the EIR should evaluate potential impacts to riparian habitat and threatened and endangered species in Prado Basin. Riparian habitat includes mulefat, willow trees and other plant species that are dependent on shallow groundwater or surface water for their health, recruitment of new plants, and survival.

Based on State Water Resources Control Board Division of Water Rights Wastewater Change Petition WW0056, the discharge to surface water from the City of Corona WRF-1 is required to be no less than 2.25 cubic feet per second with an annual discharge of no less than 1,625 acre feet. The EIR should reference this existing discharge requirement.

If you have any questions, please contact Kevin O'Toole at (714) 378-8248 or [kotoole@ocwd.com](mailto:kotoole@ocwd.com).

Sincerely,

A handwritten signature in blue ink, appearing to read 'M. Markus', is written over the word 'Sincerely,'.

Michael R. Markus, P.E., D.WRE, BCEE, F.ASCE  
General Manager



THE METROPOLITAN WATER DISTRICT  
OF SOUTHERN CALIFORNIA

Office of the General Manager

June 15, 2020

VIA EMAIL AND USPS

Mr. Mohammed Ibrahim  
City of Corona  
Public Works Department  
400 S. Vicentia Avenue, Suite 210  
Corona, CA 92882

Dear Mr. Ibrahim:

Notice of Preparation and Scoping Meeting for the  
City of Corona 2018 Reclaimed Water Master Plan Program Environmental Impact Project

The Metropolitan Water District of Southern California (Metropolitan) reviewed the Notice of Preparation (NOP) and Scoping Meeting for the Program Environmental Impact Report (Program EIR) for the City of Corona 2018 Reclaimed Water Master Plan (Project). The City of Corona is acting as the Lead Agency under the California Environmental Quality Act (CEQA) for the project. The project proposes to develop a long-term plan that will assist the City with meeting its goals for reclaimed water use by recommending the implementation of appropriate projects, programs, and additional studies.

Metropolitan reviewed the NOP as a potentially affected public agency, and offers the following comments for consideration and incorporation into the Draft Program EIR:

Section 1.2.4, Executive Summary, Financial Opportunities, page 1-5, states "*MWD offers an incentive for the conversion of potable water demand to reclaimed water demand at a rate of \$975 per acre-foot per year (AFY) converted. MWD has funded this incentive through the Onsite Retrofit Pilot Program since 2014.*"

Metropolitan may act as a responsible agency with respect to providing incentives for potable water demand conversions associated with our Local Resource Programs, and we therefore request to be included in the list of agencies that are expected to use the EIR in their decision-making, in accordance with CEQA Guidelines Section 15124. Additionally, the Draft Program EIR needs to include in the project description a brief statement on the proposed program incentives with Metropolitan, and discussed in the appropriate impact section (e.g., water supplies or utilities) so that Metropolitan can rely on the EIR for our own discretionary actions.

Mr. Mohammed Ibrahim

Page 2

June 15, 2020

We appreciate the opportunity to provide input to your planning process, and look forward to reviewing additional CEQA documentation for the proposed project. Please contact Ms. Brenda Marines at (213) 217-7902 or [bmarines@mwadh2o.com](mailto:bmarines@mwadh2o.com) if you require further assistance.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Sean Carlson', written in a cursive style.

Sean Carlson,  
Team Manager, Environmental Planning Section

BSM:bsm  
SharePoint\City of Corona 2018 Reclaimed Water Master Plan PEIR





State of California – Natural Resources Agency  
DEPARTMENT OF FISH AND WILDLIFE  
Inland Deserts Region  
3602 Inland Empire Blvd., Suite C-220  
Ontario, CA 91764  
[www.wildlife.ca.gov](http://www.wildlife.ca.gov)

*GAVIN NEWSOM, Governor*  
*CHARLTON H. BONHAM, Director*



June 19, 2020  
*Sent via email*

Mohammed Ibrahim  
City of Corona Public Works Department  
400 S. Vicentia Avenue, Suite 210  
Corona, California 92882  
[Mohammed.Ibrahim@CoronaCA.gov](mailto:Mohammed.Ibrahim@CoronaCA.gov)

Subject: Notice of Preparation of a Draft Environmental Impact Report  
City of Corona Reclaimed Water Master Plan Project  
State Clearinghouse No. 2020050497

Dear Mr. Ibrahim:

The California Department of Fish and Wildlife (CDFW) received a Notice of Preparation (NOP) of a Draft Programmatic Environmental Impact Report (PEIR) from the City of Corona (City) for the Reclaimed Water Master Plan (RWMP) Project (Project) pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines.<sup>1</sup>

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

## **CDFW ROLE**

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

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

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

## **PROJECT DESCRIPTION SUMMARY**

The PEIR will assist the City with meeting its goals for reclaimed water use by recommending the implementation of appropriate projects, programs, and additional studies. The City last prepared a Program Environmental Impact Report for the City's 2001 Reclaimed Water Master Plan in May 2001. The updated PEIR will include the latest available developments and modeling to assist the City to meet the goals for reclaimed water use and be consistent with the City of Corona 2004 General Plan, the City of Corona 2014–2019 Strategic Plan, Ordinance 2854 (Recycled Water Rules and Regulations), and the reclaimed water policy set forth by the City's Department of Water and Power.

## **COMMENTS AND RECOMMENDATIONS**

CDFW offers the comments and recommendations below to assist the City in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. The comments and recommendations are also offered to enable the CDFW to adequately review and comment on the proposed Project with respect to the Project's consistency with the Western Riverside County/Coachella Valley Multiple Species Habitat Conservation Plan (MSHCP).

CDFW recognizes that the PEIR need not be as detailed as CEQA documents prepared for specific projects that may follow (CEQA Guidelines § 15146). CDFW also recognizes that the level of detail should be reflective of the level contained in the plan or plan element being considered (Rio Vista Farm Bureau Center v. County of Solano (1992) 5 Cal.App.4<sup>th</sup> 351). However, please note that the City cannot defer the analysis of significant effects of the general plan to later-tiered CEQA documents (Stanislaus Natural Heritage Project v. County of Stanislaus (1996) 48 Cal.App.4<sup>th</sup> 182).

CDFW recommends that the forthcoming PEIR address the following:

### **Assessment of Biological Resources**

Section 15125(c) of the CEQA Guidelines states that knowledge of the regional setting of a project is critical to the assessment of environmental impacts and that special

emphasis should be placed on environmental resources that are rare or unique to the region. To enable CDFW staff to adequately review and comment on the project, the PEIR should include a complete assessment of the flora and fauna within and adjacent to the Project footprint, with particular emphasis on identifying rare, threatened, endangered, and other sensitive species and their associated habitats.

The CDFW recommends that the PEIR specifically include:

1. An assessment of the various habitat types located within the project footprint, and a map that identifies the location of each habitat type. CDFW recommends that floristic, alliance- and/or association-based mapping and assessment be completed following *The Manual of California Vegetation*, second edition (Sawyer et al. 2009). Adjoining habitat areas should also be included in this assessment where site activities could lead to direct or indirect impacts offsite. Habitat mapping at the alliance level will help establish baseline vegetation conditions.
2. A general biological inventory of the fish, amphibian, reptile, bird, and mammal species that are present or have the potential to be present within each habitat type onsite and within adjacent areas that could be affected by the project. CDFW's California Natural Diversity Database (CNDDDB) in Sacramento should be contacted at (916) 322-2493 or CNDDDB@wildlife.ca.gov to obtain current information on any previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code, in the vicinity of the proposed Project.

Please note that CDFW's CNDDDB is not exhaustive in terms of the data it houses, nor is it an absence database. CDFW recommends that it be used as a starting point in gathering information about the *potential presence* of species within the general area of the project site.

3. A complete, *recent* inventory of rare, threatened, endangered, and other sensitive species located within the Project footprint and within offsite areas with the potential to be affected, including California Species of Special Concern (CSSC) and California Fully Protected Species (Fish and Game Code § 3511). Species to be addressed should include all those which meet the CEQA definition (CEQA Guidelines § 15380). The inventory should address seasonal variations in use of the Project area and should not be limited to resident species. Focused species-specific/MSHCP surveys, completed by a MSHCP Acceptable Biologist/qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable, are required. Acceptable species-specific survey procedures should be developed in consultation with CDFW and the U.S. Fish and Wildlife Service, where necessary. Note that CDFW generally considers biological field assessments for wildlife to be valid for a one-year period, and assessments for rare plants may be considered valid for a period of up to three years. Some aspects of the proposed Project may warrant periodic updated surveys



for certain sensitive taxa, particularly if the Project is proposed to occur over a protracted time frame, or in phases, or if surveys are completed during periods of drought.

### Threatened/Endangered Avian Species

The proposed Project occurs within the range of least Bell's vireo (*Vireo bellii pusillus*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), and willow flycatchers (*Empidonax traillii*), state and federally-listed endangered species, as well as tricolored blackbird (*Agelaius tricolor*), a state threatened species. CDFW recommends that the City of Corona complete protocol level surveys, if available, over all areas (i.e., 100 percent coverage) proposed to be directly or indirectly affected by the Project (refer to <https://wildlife.ca.gov/Conservation/Survey-Protocols#377281284-birds>). CDFW recommends that if a survey protocol and/or guideline are not available, the City of Corona consult with CDFW to determine the best methodology for determining the presence or support for a negative finding for a particular species. A qualified biologist should also be retained to complete the species-specific surveys and his/her qualifications submitted to CDFW and the USFWS prior to initiation of surveys.

### **Analysis of Direct, Indirect, and Cumulative Impacts to Biological Resources**

The PEIR should provide a thorough discussion of the direct, indirect, and cumulative impacts expected to adversely affect biological resources as a result of the Project. To ensure that Project impacts to biological resources are fully analyzed, the following information should be included in the PEIR:

1. A discussion of potential impacts from Project-related changes on drainage patterns and water quality within, upstream, and downstream of the Project site, including: (a) a habitat-based stream needs assessment that incorporates habitat, species, and life history criteria; (b) quantification of the loss of biological resources that will occur as a result of the reduction of discharge and an evaluation of the impacts to resources based on the proposed amount of water flow that will be present in both streams as a result of the reduction of discharge; and (c) identification of minimum flows needed to maintain any existing aquatic habitat, fish, and wildlife resources.
2. A discussion of potential indirect Project impacts on biological resources, including resources in areas adjacent to the project footprint, such as nearby public lands (e.g. National Forests, State Parks, etc.), open space, adjacent natural habitats, riparian ecosystems, wildlife corridors, and any designated and/or proposed reserve or mitigation lands (e.g., preserved lands associated with a Natural Community Conservation Plan, or other conserved lands).
3. An evaluation of impacts to adjacent open space lands from both the construction of the Project and any long-term operational and maintenance needs.

4. A cumulative effects analysis developed as described under CEQA Guidelines section 15130. Please include all potential direct and indirect Project related impacts to riparian areas, wetlands, vernal pools, alluvial fan habitats, wildlife corridors or wildlife movement areas, aquatic habitats, sensitive species and other sensitive habitats, open lands, open space, and adjacent natural habitats in the cumulative effects analysis. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts on similar plant communities and wildlife habitats.

### **Alternatives Analysis**

CDFW recommends the PEIR describe and analyze a range of reasonable alternatives to the Project that are potentially feasible, would “feasibly attain most of the basic objectives of the Project,” and would avoid or substantially lessen any of the Project’s significant effects (CEQA Guidelines § 15126.6[a]). The alternatives analysis should also evaluate a “no project” alternative (CEQA Guidelines § 15126.6[e]).

### **Mitigation Measures for Project Impacts to Biological Resources**

The PEIR should identify mitigation measures and alternatives that are appropriate and adequate to avoid or minimize potential impacts, to the extent feasible. The City should assess all direct, indirect, and cumulative impacts that are expected to occur as a result of the implementation of the Project and its long-term operation and maintenance. When proposing measures to avoid, minimize, or mitigate impacts, CDFW recommends consideration of the following:

1. *Fully Protected Species*: Fully protected species may not be taken or possessed at any time. Project activities described in the PEIR should be designed to completely avoid any fully protected species that have the potential to be present within or adjacent to the Project area. A fully protected species that has the potential or has been documented to occur within or adjacent to the Project area includes the white-tailed kite (*Elanus leucurus*).
2. CDFW also recommends that the PEIR fully analyze potential adverse impacts to fully protected species due to habitat modification, loss of foraging habitat, and/or interruption of migratory and breeding behaviors. CDFW recommends that the City include in the analysis how appropriate avoidance, minimization, and mitigation measures will reduce indirect impacts to fully protected species.
3. *Sensitive Plant Communities*: CDFW considers sensitive plant communities to be imperiled habitats having both local and regional significance. Plant communities, alliances, and associations with a statewide ranking of S-1, S-2, S-3, and S-4 should be considered sensitive and declining at the local and regional level. These ranks can be obtained by querying the CNDDDB and are included in *The Manual of California Vegetation* (Sawyer et al. 2009). The PEIR should include measures to

fully avoid and otherwise protect sensitive plant communities from project-related direct and indirect impacts.

4. *California Species of Special Concern (CSSC)*: CSSC status applies to animals generally not listed under the federal Endangered Species Act or the CESA, but which nonetheless are declining at a rate that could result in listing, or historically occurred in low numbers and known threats to their persistence currently exist. CSSCs should be considered during the environmental review process. CSSC that have the potential or have been documented to occur within or adjacent to the project area, including, but not limited to: Cooper's hawk (*Accipiter cooperii*), loggerhead shrike (*Lanius ludovicianus*), sharp-shinned hawk (*Accipiter striatus*), Swainson's hawk (*Buteo swainsoni*), yellow warbler (*Dendroica petechia*), and yellow-breasted chat (*Icteria virens*). Aquatic habitat may support several sensitive species, including, but not limited to arroyo chub (*Gila orcutti*), Santa Ana sucker (*Catostomus santaanae*), and southwestern pond turtle (*Clemmys tigris multiscutatus*).
5. *Mitigation*: CDFW considers adverse project-related impacts to sensitive species and habitats to be significant to both local and regional ecosystems, and the PEIR should include mitigation measures for adverse project-related impacts to these resources. Mitigation measures should emphasize avoidance and reduction of project impacts. For unavoidable impacts, onsite habitat restoration and/or enhancement, and preservation should be evaluated and discussed in detail. Where habitat preservation is not available onsite, offsite land acquisition, management, and preservation should be evaluated and discussed in detail.

The PEIR should include measures to perpetually protect the targeted habitat values within mitigation areas from direct and indirect adverse impacts in order to meet mitigation objectives to offset project-induced qualitative and quantitative losses of biological values. Specific issues that should be addressed include restrictions on access, proposed land dedications, long-term monitoring and management programs, control of illegal dumping, water pollution, increased human intrusion, etc.

If sensitive species and/or their habitat may be impacted from the Project, CDFW recommends the inclusion of specific mitigation in the PEIR. CEQA Guidelines section 15126.4, subdivision (a)(1)(8) states that formulation of feasible mitigation measures should not be deferred until some future date. The Court of Appeal in *San Joaquin Raptor Rescue Center v. County of Merced* (2007) 149 Cal.App.4th 645 struck down mitigation measures which required formulating management plans developed in consultation with State and Federal wildlife agencies after Project approval. Courts have also repeatedly not supported conclusions that impacts are mitigable when essential studies, and therefore impact assessments, are incomplete (*Sundstrom v. County of Mendocino* (1988) 202 Cal. App. 3d. 296; *Gentry v. City of Murrieta* (1995) 36 Cal. App. 4th 1359; *Endangered Habitat League, Inc. v. County of Orange* (2005) 131 Cal. App. 4th 777).

CDFW recommends that the PEIR specify mitigation that is roughly proportional to the level of impacts, in accordance with the provisions of CEQA (CEQA Guidelines, §§ 15126.4(a)(4)(B), 15064, 15065, and 16355). The mitigation should provide long-term conservation value for the suite of species and habitat being impacted by the Project. Furthermore, in order for mitigation measures to be effective, they need to be specific, enforceable, and feasible actions that will improve environmental conditions.

6. *Habitat Revegetation/Restoration Plans*: Plans for restoration and revegetation should be prepared by persons with expertise in southern California ecosystems and native plant restoration techniques. Plans should identify the assumptions used to develop the proposed restoration strategy. Each plan should include, at a minimum: (a) the location of restoration sites and assessment of appropriate reference sites; (b) the plant species to be used, sources of local propagules, container sizes, and seeding rates; (c) a schematic depicting the mitigation area; (d) a local seed and cuttings and planting schedule; (e) a description of the irrigation methodology; (f) measures to control exotic vegetation on site; (g) specific success criteria; (h) a detailed monitoring program; (i) contingency measures should the success criteria not be met; and (j) identification of the party responsible for meeting the success criteria and providing for conservation of the mitigation site in perpetuity. Monitoring of restoration areas should extend across a sufficient time frame to ensure that the new habitat is established, self-sustaining, and capable of surviving drought.

CDFW recommends that local onsite propagules from the Project area and nearby vicinity be collected and used for restoration purposes. Onsite seed collection should be initiated in order to accumulate sufficient propagule material for subsequent use in future years. Onsite vegetation mapping at the alliance and/or association level should be used to develop appropriate restoration goals and local plant palettes. Reference areas should be identified to help guide restoration efforts. Specific restoration plans should be developed for various project components as appropriate.

Restoration objectives should include protecting special habitat elements or re-creating them in areas affected by the Project; examples could include retention of woody material, logs, snags, rocks, and brush piles.

7. *Nesting Birds and Migratory Bird Treaty Act*: Please note that it is the Project proponent's responsibility to comply with all applicable laws related to nesting birds and birds of prey. Fish and Game Code sections 3503, 3503.5, and 3513 afford protective measures as follows: Fish and Game Code section 3503 makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by Fish and Game Code or any regulation made pursuant thereto. Fish and Game Code section 3503.5 makes it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) to take,

possess, or destroy the nest or eggs of any such bird except as otherwise provided by Fish and Game Code or any regulation adopted pursuant thereto. Fish and Game Code section 3513 makes it unlawful to take or possess any migratory nongame bird except as provided by the rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. § 703 et seq.).

CDFW recommends that the PEIR include the results of avian surveys, as well as specific avoidance and minimization measures to ensure that impacts to nesting birds do not occur. Project-specific avoidance and minimization measures may include, but not be limited to: project phasing and timing, monitoring of project-related noise (where applicable), sound walls, and buffers, where appropriate. The PEIR should also include specific avoidance and minimization measures that will be implemented should a nest be located within the project site. If pre-construction surveys are proposed in the PEIR, the CDFW recommends that they be required no more than three (3) days prior to vegetation clearing or ground disturbance activities, as instances of nesting could be missed if surveys are conducted sooner.

8. *Moving out of Harm's Way*: To avoid direct mortality, CDFW recommends that the City condition the PEIR to require that a CDFW-approved qualified biologist be retained to be onsite prior to and during all ground- and habitat-disturbing activities to move out of harm's way special status species or other wildlife of low or limited mobility that would otherwise be injured or killed from project-related activities. Movement of wildlife out of harm's way should be limited to only those individuals that would otherwise be injured or killed, and individuals should be moved only as far as necessary to ensure their safety (i.e., CDFW does not recommend relocation to other areas). Furthermore, it should be noted that the temporary relocation of onsite wildlife does not constitute effective mitigation for the purposes of offsetting project impacts associated with habitat loss.
9. *Translocation of Species*: CDFW generally does not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species as studies have shown that these efforts are experimental in nature and largely unsuccessful.

### **California Endangered Species Act**

CDFW is responsible for ensuring appropriate conservation of fish and wildlife resources including threatened, endangered, and/or candidate plant and animal species, pursuant to CESA. CDFW recommends that a CESA Incidental Take Permit (ITP) be obtained if the Project has the potential to result in "take" (California Fish and Game Code Section 86 defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") of State-listed CESA species, either through construction or over the life of the project; unless this Project is proposed to be

a covered activity under the MSHCP. CESA ITPs are issued to conserve, protect, enhance, and restore State-listed CESA species and their habitats.

CDFW encourages early consultation, as significant modification to the proposed Project and avoidance, minimization, and mitigation measures may be necessary to obtain a CESA ITP. The California Fish and Game Code requires that CDFW comply with CEQA for issuance of a CESA ITP. CDFW therefore recommends that the PEIR addresses all Project impacts to listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of CESA.

### **Western Riverside County Multiple Species Habitat Conservation Plan**

Within the Inland Deserts Region, CDFW issued Natural Community Conservation Plan Approval and Take Authorization for the Western Riverside County MSHCP per Section 2800, *et seq.*, of the California Fish and Game Code on June 22, 2004. The MSHCP establishes a multiple species conservation program to minimize and mitigate habitat loss and provides for the incidental take of covered species in association with activities covered under the permit.

Compliance with approved habitat plans, such as the MSHCP, is discussed in CEQA. Specifically, Section 15125(d) of the CEQA Guidelines requires that the CEQA document discuss any inconsistencies between a proposed Project and applicable general plans and regional plans, including habitat conservation plans and natural community conservation plans. An assessment of the impacts to the MSHCP as a result of this Project is necessary to address CEQA requirements. To obtain additional information regarding the MSHCP please go to: <http://rctlma.org/epd/WR-MSHCP>.

The proposed Project occurs within the MSHCP area and is subject to the provisions and policies of the MSHCP. In order to be considered a covered activity, Permittees need to demonstrate that proposed actions are consistent with the MSHCP and its associated Implementing Agreement. The City of Corona is the Lead Agency and is signatory to the Implementing Agreement of the MSHCP.

Regardless of whether take of threatened and/or endangered species is obtained through the MSHCP or through a CESA ITP, the PEIR needs to address how the proposed Project will affect the policies and procedures of the MSHCP. Therefore, all surveys required by the MSHCP policies and procedures listed above to determine consistency with the MSHCP should be conducted and results included in the PEIR so that CDFW can adequately assess whether the Project will impact the MSHCP.

### **Lake and Streambed Alteration Program**

Fish and Game Code section 1602 requires an entity to notify CDFW prior to commencing any activity that may do one or more of the following: Substantially divert or obstruct the natural flow of any river, stream or lake; Substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or Deposit debris,

waste or other materials that could pass into any river, stream or lake. Please note that "any river, stream or lake" includes those that are episodic (i.e., those that are dry for periods of time) as well as those that are perennial (i.e., those that flow year-round). This includes ephemeral streams, desert washes, and watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water.

Upon receipt of a complete notification, CDFW determines if the proposed Project activities may substantially adversely affect existing fish and wildlife resources and whether a Lake and Streambed Alteration (LSA) Agreement is required. An LSA Agreement includes measures necessary to protect existing fish and wildlife resources. CDFW may suggest ways to modify your Project that would eliminate or reduce harmful impacts to fish and wildlife resources.

CDFW's issuance of an LSA Agreement is a "project" subject to CEQA (see Pub. Resources Code 21065). To facilitate issuance of an LSA Agreement, if necessary, the PEIR should fully identify the potential impacts to the lake, stream, or riparian resources, and provide adequate avoidance, mitigation, and monitoring and reporting commitments. Early consultation with CDFW is recommended, since modification of the proposed Project may be required to avoid or reduce impacts to fish and wildlife resources. To obtain a Lake or Streambed Alteration notification package, please go to <https://www.wildlife.ca.gov/Conservation/LSA/Forms>.

## **ENVIRONMENTAL DATA**

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

## **FILING FEES**

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

Mohammed Ibrahim, PE, Senior Engineer  
City of Corona Public Works Department  
June 19, 2020  
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## CONCLUSION

CDFW appreciates the opportunity to comment on the NOP of a PEIR for the City of Corona Reclaimed Water Master Plan Project (SCH No. 2020050497) and recommends that the City address the CDFW's comments and concerns in the forthcoming PEIR. If you should have any questions pertaining to the comments provided in this letter, please contact to Kimberly Romich, Senior Environmental Scientist at (909) 980-3818 or [Kimberly.Romich@wildlife.ca.gov](mailto:Kimberly.Romich@wildlife.ca.gov).

Sincerely,

DocuSigned by:  
  
8091B1A9242F49C...

Scott Wilson  
Environmental Program Manager

ec: HCPB CEQA Coordinator  
Habitat Conservation Planning Branch

Office of Planning and Research, State Clearinghouse, Sacramento  
[state.clearinghouse@opr.ca.gov](mailto:state.clearinghouse@opr.ca.gov)

Tricia Campbell (Western Riverside County Regional Conservation Authority)  
Director of Reserve Management and Monitoring  
[tcampbell@wrcra.org](mailto:tcampbell@wrcra.org)

## REFERENCES

Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. A manual of California Vegetation, 2<sup>nd</sup> ed. California Native Plant Society Press, Sacramento, California.  
<http://vegetation.cnps.org/>



## **Appendix B. Air Quality Impact Analysis**

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# TECHNICAL MEMORANDUM

**To:** Mohammed Ibrahim, PE, Senior Engineer, City of Corona, Department of Water and Power  
**From:** Sharon Toland, Project Manager, Harris & Associates  
**Subject:** City of Corona 2018 Reclaimed Water Master Plan – Air Quality Impact Analysis  
**Date:** July 15, 2020  
**CC:** Kristin Blackson, Senior Project Manager, Harris & Associates

Dear Mr. Ibrahim,

The following presents the results of Harris & Associates’ analysis of the potential impacts to air quality from implementation of the City of Corona 2018 Reclaimed Water Master Plan (2018 RWMP or project). The projects included in the 2018 RWMP include sources of supply projects and distribution pipeline projects as listed in Table 1. In total, 29 projects are to be completed over the next 10 years before the buildout year (2030); 7 short-term projects are scheduled within the next 5 years, and 22 long-term projects do not have a specified implementation year.

**Table 1. 2018 Reclaimed Water Master Plan Projects**

Project Name	Location	Description	Construction Time Frame
WRCRWA Booster Pump Station	WRCRWA	The booster pumping stations would pump WRCRWA supply to the 833 Subzone.	2021/22
WRCRWA Transmission Pipeline	Between WRCRWA and River FCS-833 Subzone	The transmission pipeline would connect the WRCRWA booster pumping station to the 833 Subzone.	2020/21
WRCRWA Flow Control Improvements	Between Butterfield and WRF1 Tank	These control stations would direct WRCRWA supply to the Lincoln-Cota Ponds and the WRF1 Tank.	2020/21
Rimpau California Pipeline	Between Central Park and Chase Park	This transmission pipeline would provide the additional capacity needed to move WRCRWA supply to demands south of the water service area between City Park and Chase Park.	Long-term
Chase Tank	Chase Park	The storage facility at Chase Park would be an operational component of the Rimpau California Pipeline.	Long-term
Chase Booster Pump Station	Chase Park	The booster pumping facility at Chase Park is an operational component of the Rimpau California Pipeline.	Long-term
Buena Vista Tenth Pipeline	Railroad Street and Rimpau Avenue via Buena Vista Avenue and Tenth Street	This pipeline would reinforce the primary loop between WRF1 at the 1380 Zone following construction of the Rimpau California Pipeline.	Long-term
Ontario Slipline	Compton Avenue and Lincoln Avenue	This sliplined pipeline would form a secondary loop along the length of the 1175 Subzone.	Long-term

**Table 1. 2018 Reclaimed Water Master Plan Projects**

Project Name	Location	Description	Construction Time Frame
Sampson Pipeline	Central Park and McKinley Street	This pipeline would form a secondary loop in the 1008.5 Zone to improve performance and eliminate the need for additional local storage.	Long-term
River Pipeline	River Rd. from Corydon Avenue through Main Street	This pipeline would expand the 833 Subzone north of Temescal Creek and west of Interstate 15.	Long-term
Old Temescal Pipeline	Fullerton Avenue and Interstate 15 Freeway	This pipeline would convert 15.1 gpm of potable water demand for irrigation to reclaimed water demand.	2021/22
Lincoln Foothill Pipeline	Lincoln Avenue between Highgrove Street and Foothill Parkway	This pipeline would convert 12.5 gpm of potable water demand for irrigation to reclaimed water demand at one church and six existing LMD meters.	Long-term
Avenida Del Vista Pipeline	Via Del Rio and MFR demands north of Via Santiago	This pipeline would convert 19.8 gpm of potable water demand for irrigation to reclaimed water demand at three MFR complexes.	Long-term
Border Pipeline	Brentwood Drive and MFR demands north of Tenth Street	This pipeline would convert 36.4 gpm of potable water demand for irrigation to reclaimed water demand at numerous MFR and CII complexes.	Long-term
Promenade Pipeline	McKinley Avenue and Cresta Verde Park	This pipeline would convert 26.9 gpm of potable water demand for irrigation to reclaimed water demand at 2 MFR complexes and 15 existing landscaping irrigation meters.	Long-term
Research Pipeline	CII demands west of Auto Center Drive	This pipeline would convert 9 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Smith Pipeline	Railroad Street and Pomona Road	This pipeline would convert 13.6 gpm of potable water demand for irrigation and car washing to reclaimed water demand.	Long-term
Via Pacifica Pipeline	MFR and LMD demand north of Ontario Avenue	This pipeline would convert 21.3 gpm of potable water demand for irrigation to reclaimed water demand at two LMD meters and one MFR complex.	Long-term
Tehachapi Pipeline	McKinley Avenue and Tehachapi Park	This pipeline would convert 6.2 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Jenks Pipeline	North and south of Railroad Street	The pipeline would convert 5.8 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Airport Circle Pipeline	South of Railroad Street	The pipeline would convert 4.1 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Helicopter Pipeline	South of Railroad Street	This pipeline would convert 3.9 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Glider Pipeline	South of Railroad Street	The pipeline would convert 1.3 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Citation Pipeline	South of Railroad Street	This pipeline would convert 1.2 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Klug Pipeline	North and south of Railroad Street	This pipeline would convert 3.9 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term

**Table 1. 2018 Reclaimed Water Master Plan Projects**

Project Name	Location	Description	Construction Time Frame
Monica Pipeline	North of Railroad Street	The pipeline would convert 3.2 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Chase Hudson Pipeline	LMD demands at Chase Drive and Hudson Avenue	This pipeline would convert 4.7 gpm at two LMD meters from potable water demand for irrigation to reclaimed water demand.	Long-term
Cessna Pipeline	North of Railroad Street	This pipeline would convert 3 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Main Citrus Pipeline	Main Street at Citrus Avenue and four CII customers at Main Street and Magnolia Avenue	This pipeline would convert 21.4 gpm of potable water demand for irrigation to reclaimed water demand for CII customers.	Long-term

**Notes:** CII = commercial, industrial, and institutional; gpm = gallons per minute; LMD = landscape maintenance district; MFR = multi-family residential; WRCRWA = Western Riverside County Regional Wastewater Authority; WRF = water reclamation facility

## Background

Air quality laws and regulations have historically divided air pollutants into two broad categories: criteria air pollutants and non-criteria pollutants, or toxic air contaminants (TACs). Criteria air pollutants are a group of common air pollutants regulated by the federal and state governments by means of ambient air standards based on criteria regarding health and environmental effects of pollution (USEPA 2018a). TACs are pollutants with potential to cause significant adverse health effects. In California, unlike the air quality standards for criteria pollutants to protect health and the environment, the California Air Resources Board identifies exposure thresholds for TACs that indicate levels below which no significant adverse health effects are anticipated from exposure to the identified substance. However, thresholds are not specified for TACs that have been found to have no safe exposure level or where insufficient data are available to identify and exposure threshold (CARB 2020a).

The criteria air pollutants pertinent to the analysis in this memorandum are carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), ozone (O<sub>3</sub>), particulate matter, and sulfur dioxide (SO<sub>2</sub>). The following describes the health effects of these criteria air pollutants.

### Carbon Monoxide (CO)

CO is a colorless, odorless, poisonous gas produced by combustion processes, primarily mobile sources. When CO gets into the body, it combines with chemicals in the blood and prevents blood from providing oxygen to cells, tissues, and organs. Because the body requires oxygen for energy, high-level exposure to CO can cause serious health effects, including death (USEPA 2016).

### Nitrogen Oxides (NO<sub>x</sub>)

NO<sub>x</sub> is a general term pertaining to compounds including nitric oxide (NO), nitrogen dioxide (NO<sub>2</sub>), and other oxides of nitrogen. NO<sub>x</sub> is produced from burning fuels, including gasoline, diesel, and coal. NO<sub>x</sub> reacts with volatile organic compounds (VOCs) to form ground-level O<sub>3</sub> (smog). NO<sub>x</sub> is linked to a number of adverse respiratory systems effects (USEPA 2019a).

### Ozone (O<sub>3</sub>)

Ground-level O<sub>3</sub> is not emitted directly into the air but is formed by chemical reactions of “precursor” pollutants (NO<sub>x</sub> and VOCs) in the presence of sunlight. Major emissions sources include NO<sub>x</sub> and VOC emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents. O<sub>3</sub> can trigger a variety of health problems, particularly for sensitive receptors, including children, older adults, and people of all ages who have lung diseases, such as asthma (USEPA 2018b).



## Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>)

Particulate matter includes dust, metals, organic compounds, and other tiny particles of solid materials that are released into and move around in the air. Particulates are produced by many sources, including the burning of diesel fuels by trucks and buses, industrial processes, and fires. Particulate pollution can cause nose and throat irritation and heart and lung problems. Particulate matter is measured in microns, which are 1 millionth of a meter in length (or 1 thousandth of a millimeter). PM<sub>10</sub> is small (i.e., respirable) particulate matter measuring no more than 10 microns in diameter, while PM<sub>2.5</sub> is fine particulate matter measuring no more than 2.5 microns in diameter (CARB 2020b).

## Sulfur Dioxide (SO<sub>2</sub>)

SO<sub>2</sub> is formed primarily by the combustion of sulfur-containing fossil fuels, especially at power plants and industrial facilities. SO<sub>2</sub> is linked to a number of adverse effects on the respiratory system (USEPA 2019b).

## Toxic Air Contaminants

TACs are generated by a number of sources, including stationary sources such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources such as automobiles; and area sources such as landfills. The two primary emissions of concern regarding health effects for land development projects are CO and diesel particulate matter (DPM). The health effects of CO are described previously. DPM is a mixture of many exhaust particles and gases that is produced when an engine burns diesel fuel. Compounds found in diesel exhaust are carcinogenic. Some short-term (acute) effects of diesel exhaust exposure include eye, nose, throat, and lung irritation and headaches and dizziness. Long-term exposure is linked to increased risk of cardiovascular, cardiopulmonary, and respiratory disease and lung cancer (OSHA 2013).

## Existing Ambient Air Quality

Existing ambient air quality, historical trends, and projections are best documented by measurements made by the South Coast Air Quality Management District (SCAQMD). The City of Corona (City) is in Source Receptor Area 22, Riverside Valley (Corona/Norco Area). The air quality monitoring station closest to the City is the Norco-Norconian Monitoring Station. The station only monitors PM<sub>10</sub>. Additional data for O<sub>3</sub>, NO<sub>2</sub>, and PM<sub>2.5</sub> are provided by the Riverside Rubidoux Monitoring Station. Data for CO and SO<sub>2</sub> are not available for recent years at nearby stations. The most current 2 years of data monitored at these stations are included in Table 2.

**Table 2. Ambient Air Quality Monitoring Summary**

Pollutant/Standard	Number of Days Threshold Were Exceeded and Maximum Levels During Such Violations	
	2017	2018
<b>O<sub>3</sub></b>		
State 1-Hour ≥ 0.09 ppm (days exceed threshold)	47	22
State 8-hour ≥ 0.07 ppm (days exceed threshold)	82	57
Federal 8-Hour > 0.07 ppm (days exceed threshold)	81	53
Max. 1-Hour Conc. (ppm)	0.145	0.123
Max. 8-Hour Conc. (ppm)	0.118	0.101
<b>NO<sub>2</sub></b>		
State 1-Hour ≥ 0.18 ppm (days exceed threshold)	0	0
Federal 1-Hour ≥ 0.100 ppm (days exceed threshold)	0	0
Max. 1-Hour Conc. (ppb)	0.0630	0.0554
<b>PM<sub>10</sub></b>		
State 24-Hour > 50 µg/m <sup>3</sup> (days exceed threshold)	8	3
Federal 24-Hour > 150 µg/m <sup>3</sup> (days exceed threshold)	0	0
Max. 24-Hour Conc. (µg/m <sup>3</sup> )	85.1	100.9

**Table 2. Ambient Air Quality Monitoring Summary**

Pollutant/Standard	Number of Days Threshold Were Exceeded and Maximum Levels During Such Violations	
	2017	2018
<b>PM<sub>2.5</sub></b>		
Federal 24-Hour > 35 µg/m <sup>3</sup> (days exceed threshold)	7	3
Max. 24-Hour Conc. (µg/m <sup>3</sup> ) <sup>1</sup>	50.3	66.3

Source: CARB 2020c.

Notes: µg/m<sup>3</sup> = microgram per liter; NO<sub>2</sub> = nitrogen dioxide; O<sub>3</sub> = ozone; PM<sub>10</sub> = respirable particulate matter; PM<sub>2.5</sub> = fine particulate matter; ppb = parts per billion; ppm = parts per million

<sup>1</sup> Data includes exceptional events, such as wildfires

## Regulatory Setting

The Clean Air Act (CAA) of 1970 requires the U.S. Environmental Protection Agency (USEPA) to establish National Ambient Air Quality Standards (NAAQS) while retaining the option for states to adopt more stringent standards or to include other specific pollutants. NAAQS were developed for six criteria pollutants: O<sub>3</sub>, NO<sub>2</sub>, CO, SO<sub>2</sub>, particulate matter, and lead. The 1990 CAA Amendments require that each state have an Air Pollution Control Plan called the State Implementation Plan (SIP). The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the CAA. The CAA Amendments dictate that states containing areas violating the NAAQS revise their SIPs to include extra control measures to reduce air pollution. The USEPA reviews the SIPs to determine whether the plans would conform to the 1990 CAA Amendments and achieve the air quality goals.

The USEPA has classified air basins (or portions thereof) as being in “attainment,” “nonattainment,” or “unclassified” for each criteria air pollutant based on whether or not the NAAQS have been achieved. If an area is designated unclassified, it is because inadequate air quality data were available as a basis for a nonattainment or attainment designation. Table 3 lists the attainment status of City in the South Coast Air Basin (SCAB) for the criteria pollutants. The USEPA classifies the SCAB as nonattainment for ozone (1-hour and 8-hour) and fine particulate matter (PM<sub>2.5</sub>) with respect to federal air quality standards.

The State of California, under the California Clean Air Act, has established standards for criteria pollutants that are generally stricter than federal standards. As shown in Table 3, the SCAB is currently in nonattainment status for respirable particulate matter (PM<sub>10</sub>), PM<sub>2.5</sub>, and ozone (1-hour and 8-hour).

**Table 3. South Coast Air Basin Attainment Status**

Pollutant	Averaging Time	California Standards	Federal Standards
O <sub>3</sub>	1-hour	Nonattainment	Nonattainment (extreme)
	8-hour		Nonattainment (extreme)
PM <sub>10</sub>	Annual arithmetic mean	Nonattainment	No Federal Standard
	24-hour		Attainment (Maintenance)
PM <sub>2.5</sub>	annual arithmetic mean	Nonattainment	Nonattainment (Serious)
	24-hour	No State Standard	
CO	8-hour	Attainment	Attainment (Maintenance)
	1-hour		
NO <sub>2</sub>	Annual arithmetic mean	No State Standard	Attainment (Maintenance)
	1-hour	Attainment	Unclassified <sup>1</sup> /Attainment
Lead	Calendar quarter	No State Standard	Attainment

**Table 3. South Coast Air Basin Attainment Status**

Pollutant	Averaging Time	California Standards	Federal Standards
	Rolling 3-month average	No State Standard	Attainment
SO <sub>2</sub>	Annual arithmetic mean	No State Standard	Attainment
	24-hour	Attainment	Unclassifiable/Attainment
	1-hour	Attainment	Designations Pending (expect Uncl./Attainment)
Sulfates	24-hour	Attainment	No Federal Standard
Hydrogen Sulfide	1-hour	Attainment	No Federal Standard

Source: SCAQMD 2017.

Notes: CO = carbon monoxide; NO<sub>2</sub> = nitrogen dioxide; O<sub>3</sub> = ozone; PM<sub>10</sub> = respirable particulate matter; PM<sub>2.5</sub> = fine particulate matter; SO<sub>2</sub> = sulfur dioxide

<sup>1</sup> Unclassified; indicates data are not sufficient for determining attainment or nonattainment.

## Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, older adults, people with acute illnesses, and people with chronic illnesses, especially those with cardiorespiratory diseases.

Residential areas are also considered sensitive to air pollution because residents tend to be home for extended periods of time, resulting in sustained exposure to any pollutants present. Other sensitive receptors include retirement facilities, hospitals, and schools. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. Industrial, commercial, and office areas are considered the least sensitive to air pollution. Exposure periods associated with these land use types are relatively short and intermittent because the majority of workers tend to stay indoors most of the time.

## Significance Thresholds

The project is in the SCAB, which is composed of the Counties of Los Angeles, Orange, Riverside, and San Bernardino, covering an area of approximately 12,000 square miles along the southern coast of California. The SCAQMD consists of the four counties in the SCAB; therefore, the City is within the jurisdiction of the SCAQMD. The SCAQMD significance criteria are used in this analysis to determine the project's impact on air quality based on the SCAQMD CEQA Air Quality Guidelines.

Emissions from construction activities represent temporary impacts that are typically short in duration, depending on the size, phasing, and type of project. The SCAQMD identifies quantitative thresholds for criteria pollutants as listed in Table 4. These threshold criteria are used into determine the significance of air quality impacts.

**Table 4. South Coast Air Quality Management District Air Quality Mass Daily Thresholds**

Pollutant	Construction Threshold (lbs/day)	Operational Threshold (lbs/day)
CO	550	550
NO <sub>x</sub>	100	55
PM <sub>10</sub>	150	150
PM <sub>2.5</sub>	55	55
SO <sub>x</sub>	150	150
VOC	75	55

Source: SCAQMD 2019.

Notes: CO = carbon monoxide; NO<sub>x</sub> = nitrogen oxides; PM<sub>10</sub> = respirable particulate matter; PM<sub>2.5</sub> = fine particulate matter; SO<sub>x</sub> = sulfur oxides; VOC = volatile organic compound

The SCAQMD also identifies localized significance thresholds (LSTs), as shown in Table 5, to determine if the impacts to air quality are significant based on localized exceedances of the federal and or state ambient air quality standards. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest sensitive receptor. LSTs are identified for NO<sub>2</sub>, CO, PM<sub>10</sub>, and PM<sub>2.5</sub> generated at a project site. Localized construction and operational emissions thresholds are determined as a function of the water service area (acres) and receptor distance (meters) from boundary of site. The LSTs applicable to the projects proposed in the 2018 RWMP are listed in Table 5.

**Table 5. Source Receptor Area Norco/Corona Localized Significance Thresholds**

Water Service Area/ Distance to Receptor	Air Pollutant (Relevant Ambient Air Quality Standards)	Allowable Emissions (lbs/day)	
		Construction	Operation
1 acre/25 meters	NO <sub>x</sub>	118	118
	CO	674	674
	PM <sub>10</sub>	4	1
	PM <sub>2.5</sub>	3	1
2 acres/25 meters	NO <sub>x</sub>	170	170
	CO	1,007	1,007
	PM <sub>10</sub>	6	2
	PM <sub>2.5</sub>	5	2

Source: SCAQMD 2009.

Notes: CO = carbon monoxide; NO<sub>x</sub> = nitrogen oxides; PM<sub>10</sub> = respirable particulate matter; PM<sub>2.5</sub> = fine particulate matter

## Construction Impact Analysis

Project construction emissions were estimated using the CalEEMod Model, version 2016.3.2, based on construction information provided by the City. In order to estimate maximum daily criteria pollutants from implementation of the project, Harris & Associates modeled a construction scenario that is intended to represent the maximum construction that may occur simultaneously and in a given 12-month period. Detailed assumptions and modeling data sheets are provided in Attachment 1. Construction is anticipated to begin as early as 2020. It was assumed that an average of three projects would occur in any given year based on the number of projects included in the 2018 RWMP and the time frame until buildout (29 projects in 10 years). The Sampson Pipeline Project was selected from the 2018 RWMP project list to represent the worst-case maximum daily emissions that could occur from any project. The Sampson Pipeline Project is calculated to require the greatest total amount of soil import and export, and the most material movement in the shortest amount of time. Approximately 3,482 truck trips would be required over a nine month construction period, for an maximum average of 20 one-way truck trips per day. Therefore, assuming simultaneous construction of three projects with the construction intensity of the Sampson Pipeline Project represents a conservative worst-case scenario. For comparison, cut quantities are anticipated to vary between 37

cubic yards and 24,200 cubic yards for the remaining projects proposed in the 2018 RWMP compared to 27,852 cubic yards for the Sampson Pipeline Project. Modeling assumes watering of excavated material twice daily for consistency with the best available control measures required by SCAQMD Rule 403. Table 6 provides the estimated disturbance area and import and export required for the Sampson Pipeline Project. It is assumed that import and export trips would be phased over the entire construction period.

**Table 6. Sampson Pipeline Project Construction Assumptions**

Project Name	Construction Schedule (months)	Disturbance Area (acres)	Material to Import (Cubic Yards)	Material to Export (Cubic Yards)
Sampson Pipeline	9	3.45	27,852	22,281

Maximum daily emissions levels associated with construction of the worst-case scenario projects are shown in Table 7. Maximum emissions are conservative because less intense construction is anticipated to occur simultaneously, and segments that would be completed in later years are anticipated to benefit from more stringent emissions standards. As shown in Table 7, the project would not exceed SCAQMD construction thresholds for any pollutant. Therefore, the project would not result in a significant impact related to criteria pollutant emissions during construction. Because emissions of criteria pollutants under the project would be below applicable thresholds, which are established to assist maintaining or achieving regional attainment in the SCAB, construction would not result in a cumulatively considerable contribution to regional acute and long-term health impacts related to nonattainment of the ambient air quality standards.

**Table 7. Estimated Construction Daily Maximum Air Pollutant Emissions (lbs/day)**

Project	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Individual Project (Sampson Pipeline)	3	31	19	<1	5	3
<b>Maximum from Simultaneous Construction<sup>1</sup></b>	<b>9</b>	<b>93</b>	<b>57</b>	<b>&lt;1</b>	<b>15</b>	<b>9</b>
SCAQMD Threshold	75	100	550	150	150	55
Significant Impact?	No	No	No	No	No	No

**Notes:** CO = carbon monoxide; NO<sub>x</sub> = oxides of nitrogen; PM<sub>10</sub> = particulate matter less than 10 microns; PM<sub>2.5</sub> = particulate matter less than 2.5 microns; SO<sub>x</sub> = oxides of sulfur; VOC = volatile organic compound

Emission quantities are rounded to the nearest whole number. Exact values are provided in Attachment 1.

<sup>1</sup> Assumes emissions equivalent to Sampson Pipeline would occur for three simultaneous projects

Because an LST analysis applies to exposure of receptors in the vicinity of construction, it applies to projects individually proposed in the 2018 RWMP. The analysis below represents the worst-case daily emissions for the project proposed in the 2018 RWMP that is anticipated to require the most intense daily construction (Sampson Pipeline Project). This project is used to screen for potential LST impacts from implementation of any 2018 RWMP project. Projects would be throughout the City in proximity to existing development; therefore, the most conservative thresholds for receptors at 25 meters are applied. Emissions are compared to the 1-acre and 2 acre thresholds because disturbance areas of individual projects in the 2018 RWMP range from 0 to 2.42. Construction equipment exhaust combined with fugitive particulate matter emissions have the potential to expose sensitive receptors to criteria air pollutant emissions because these emissions would occur in the water service area. Consistent with SCAQMD methods, off-site vehicle and truck trips that would be spread out over commute and haul routes are not included in the LST analysis (SCAQMD 2008). As shown in Table 8, project emissions would not exceed the LST thresholds. A project the size of Sampson Pipeline Project is projected to meet the 1-acre particulate matter thresholds; however, projects requiring this amount of material movement would have project areas larger than 2 acres. Projects proposed in the 2018 RWMP that would have a disturbance area of less than 2 acres would require less intense material movement; therefore, daily emissions would be reduced compared to



Sampson Pipeline Project and would not exceed the LST threshold. On-site construction associated with implementation of the 2018 RWMP would not result in a significant impact to sensitive receptors.

**Table 8. Estimated Construction Daily Maximum Air Pollutant Emissions (lbs/day) Relative to Localized Significance Thresholds**

Project	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Worst-Case Individual Project Emissions	2	26	18	<1	4	3
1-acre LST (allowable emissions)	—	118	674	—	4	3
2-acre LST (allowable emissions)	—	170	1,007	—	6	5
<i>Significant Impact?</i>	—	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>

**Notes:** CO = carbon monoxide; LST = localized significance threshold; NO<sub>x</sub> = nitrogen oxides; PM<sub>10</sub> = respirable particulate matter; PM<sub>2.5</sub> = fine particulate matter; SO<sub>x</sub> = sulfur oxide; VOC = volatile organic compound

Emission quantities are rounded to the nearest hundredth. Exact values are provided in Attachment 1.

In addition to the potential for localized impacts described previously, construction has the potential to result in emissions of DPM. DPM is a mixture of many exhaust particulates and gases that is produced when an engine burns diesel fuel. Compounds found in diesel exhaust are carcinogenic and may cause health impacts ranging from irritation, headache, and dizziness to increased risk of cardiovascular, cardiopulmonary, and respiratory disease and lung cancer, depending on the length of exposure. The project would result in a short-term addition of truck trips occurring over a few months per project. Projects would be spread out over the water service area; thus, haul routes would vary. Therefore, the length of individual receptor exposure would be limited, and as shown in Tables 7 and 8, maximum daily air pollutant emissions from on- and off-road vehicle emissions would not exceed applicable thresholds. Construction associated with implementation of the project would not result in a significant impact to sensitive receptors related to DPM.

Construction of the project could result in minor amounts of odor compounds associated with diesel heavy equipment exhaust. However, all diesel equipment would not be operating at once, and construction near individual receptors would be temporary and would vary by project. Additionally, SO<sub>x</sub> is the only criteria air pollutant with a strong, pungent odor (ATSDR 2015) As shown in Table 7, maximum construction emissions of SO<sub>x</sub> would be less than 1 pound per day, which is well below the SCAQMD long-term threshold of 150 pounds per day. Therefore, impacts associated with odors during construction would not result in nuisance odors that would result in a significant impact.

## Operation Impact Analysis

Most of the projects associated with the 2018 RWMP would be passive, new, or upgraded pipelines and storage facilities, which would not result in new sources of operational air pollution. Following construction, operation of the pipelines and storage tanks would be passive (not requiring electricity or fuel) and would not result in an increase in criteria pollutant emissions. A nominal increase in vehicle emissions is anticipated associated with maintenance of the projects identified in the 2018 RWMP. The new pump stations would have daily maintenance checks, and tanks would have weekly maintenance checks; however, maintenance for new and improved facilities would be incorporated into the existing maintenance schedule. Therefore, the net increase in new vehicle trips would be minimal and the vehicle emissions associated with project implementation would not be significant.

The two new pumps stations that would be installed as a result of project implementation would be electric rather than fuel consuming. None of the projects would require space heating, and no increase in natural gas demand would occur. Landscape equipment would occasionally be used for maintenance. However, once new drought tolerant landscaping is established, only periodic brush clearing, tree trimming, and weed abatement would be required. Night-time safety lighting installed at some project sites would require minimal additional electric energy consumption. Due to the limited amount of equipment and time required for maintenance at each facility, equipment use would not substantially increase compared to existing conditions.

As such, the net increase in air pollution emissions from the operation of projects identified in the 2018 RWMP is anticipated to be minimal and well below significance thresholds for all pollutants. Therefore, project operation would not result in a significant impact on air quality related to criteria pollutant emissions. As discussed previously for construction emissions, because emissions of criteria pollutants under the project would not exceed the applicable thresholds, which are established to assist maintaining or achieving regional attainment in the SCAB, operation would also not result in a cumulatively considerable contribution to regional acute and long-term health impacts related to nonattainment of the ambient air quality standards.

Regarding sensitive receptors, the California Air Resources Board recommends that a detailed health risk assessment be conducted for proposed sensitive receptors within 1,000 feet of a warehouse distribution center, 300 feet of a large gas station, 50 feet of typical gas dispensing facilities, or 300 feet of a dry cleaning facility that uses perchloroethylene, among other siting recommendations (CARB 2005). Additionally, the California Air Resources Board recommends that a health risk assessment be prepared for sensitive receptors proposed within 500 feet of a highway. The 2018 RWMP projects do not propose any facilities that would require a health risk assessment for sensitive receptors. The project would include new sources of TACs from construction and maintenance vehicles, but as discussed previously, criteria air pollutant emissions that occur from both construction and operation of the projects identified in the 2018 RWMP would not exceed significance thresholds. Additionally, because the project would result in a minor increase in vehicle trips associated with new facility management, implementation of the projects identified in the 2018 RWMP would not contribute to any CO hot spot. Therefore, impacts to sensitive receptors would be less than significant.

Typical sources of odor complaints include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations (CARB 2005). The 2018 RWMP includes distribution pipelines, storage facilities, and pump stations for treated reclaimed water. The project would not construct facility that would create new objectionable odors because facilities would primarily be passive infrastructure for storage and movement of reclaimed water.

## Summary

Implementation of the projects identified in the 2018 RWMP would not result in a significant air quality impact. No mitigation measures are necessary.

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**Attachment 1. CalEEMod Results**

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Sampson Pipeline - South Coast AQMD Air District, Winter

**Sampson Pipeline**  
**South Coast AQMD Air District, Winter**

**1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	3.45	Acre	3.45	150,282.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	31
<b>Climate Zone</b>	10			<b>Operational Year</b>	2022
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MW hr)</b>	702.44	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics -

Land Use -

Construction Phase - 8.7 months \*21 days

Off-road Equipment -

Grading -

Construction Off-road Equipment Mitigation -

## Sampson Pipeline - South Coast AQMD Air District, Winter

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	8.00	183.00
tblConstructionPhase	PhaseEndDate	2/17/2021	10/20/2021
tblGrading	MaterialExported	0.00	27,852.00
tblGrading	MaterialImported	0.00	22,281.00
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment

## 2.0 Emissions Summary

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Sampson Pipeline - South Coast AQMD Air District, Winter

**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	0.0647	0.0000	3.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.6000e-004	7.6000e-004	0.0000		8.0000e-004
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
<b>Total</b>	<b>0.0647</b>	<b>0.0000</b>	<b>3.5000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>7.6000e-004</b>	<b>7.6000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>8.0000e-004</b>

**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	0.0647	0.0000	3.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.6000e-004	7.6000e-004	0.0000		8.0000e-004
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
<b>Total</b>	<b>0.0647</b>	<b>0.0000</b>	<b>3.5000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>7.6000e-004</b>	<b>7.6000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>8.0000e-004</b>

Sampson Pipeline - South Coast AQMD Air District, Winter

	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
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	2/6/2021	10/20/2021	5	183	Includes piping, trenching and backfilling, asphalt restoration, striping

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 91.5

Acres of Paving: 3.45

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Paving Equipment	1	6.00	132	0.36
Grading	Excavators	1	8.00	158	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41

#### Trips and VMT

Sampson Pipeline - South Coast AQMD Air District, Winter

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	7	18.00	0.00	3,482.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Water Exposed Area

**3.2 Grading - 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					
Fugitive Dust					6.5833	0.0000	6.5833	3.3722	0.0000	3.3722			0.0000			0.0000
Off-Road	2.4324	26.1721	17.7376	0.0327		1.2308	1.2308		1.1323	1.1323		3,163.7436	3,163.7436	1.0232		3,189.3240
<b>Total</b>	<b>2.4324</b>	<b>26.1721</b>	<b>17.7376</b>	<b>0.0327</b>	<b>6.5833</b>	<b>1.2308</b>	<b>7.8141</b>	<b>3.3722</b>	<b>1.1323</b>	<b>4.5045</b>		<b>3,163.7436</b>	<b>3,163.7436</b>	<b>1.0232</b>		<b>3,189.3240</b>



Sampson Pipeline - South Coast AQMD Air District, Winter

**3.2 Grading - 2021**

**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	0.1420	4.8709	1.0939	0.0143	0.3325	0.0152	0.3476	0.0911	0.0145	0.1056		1,549.1957	1,549.1957	0.1098		1,551.9394
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	0.0830	0.0539	0.6094	1.8700e-003	0.2012	1.4800e-003	0.2027	0.0534	1.3600e-003	0.0547		186.4202	186.4202	5.0000e-003		186.5451
<b>Total</b>	<b>0.2250</b>	<b>4.9249</b>	<b>1.7032</b>	<b>0.0162</b>	<b>0.5337</b>	<b>0.0166</b>	<b>0.5503</b>	<b>0.1445</b>	<b>0.0159</b>	<b>0.1603</b>		<b>1,735.6159</b>	<b>1,735.6159</b>	<b>0.1148</b>		<b>1,738.4845</b>

**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					2.9625	0.0000	2.9625	1.5175	0.0000	1.5175			0.0000			0.0000
Off-Road	2.4324	26.1721	17.7376	0.0327		1.2308	1.2308		1.1323	1.1323	0.0000	3,163.7435	3,163.7435	1.0232		3,189.3240
<b>Total</b>	<b>2.4324</b>	<b>26.1721</b>	<b>17.7376</b>	<b>0.0327</b>	<b>2.9625</b>	<b>1.2308</b>	<b>4.1933</b>	<b>1.5175</b>	<b>1.1323</b>	<b>2.6498</b>	<b>0.0000</b>	<b>3,163.7435</b>	<b>3,163.7435</b>	<b>1.0232</b>		<b>3,189.3240</b>

Sampson Pipeline - South Coast AQMD Air District, Winter

**3.2 Grading - 2021**

**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	0.1420	4.8709	1.0939	0.0143	0.3325	0.0152	0.3476	0.0911	0.0145	0.1056		1,549.1957	1,549.1957	0.1098		1,551.9394
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	0.0830	0.0539	0.6094	1.8700e-003	0.2012	1.4800e-003	0.2027	0.0534	1.3600e-003	0.0547		186.4202	186.4202	5.0000e-003		186.5451
<b>Total</b>	<b>0.2250</b>	<b>4.9249</b>	<b>1.7032</b>	<b>0.0162</b>	<b>0.5337</b>	<b>0.0166</b>	<b>0.5503</b>	<b>0.1445</b>	<b>0.0159</b>	<b>0.1603</b>		<b>1,735.6159</b>	<b>1,735.6159</b>	<b>0.1148</b>		<b>1,738.4845</b>

**4.0 Operational Detail - Mobile**

---

**4.1 Mitigation Measures Mobile**

Sampson Pipeline - South Coast AQMD Air District, Winter

	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

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
Parking Lot	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
Parking Lot	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896

5.0 Energy Detail

Historical Energy Use: N

Sampson Pipeline - South Coast AQMD Air District, Winter

**5.1 Mitigation Measures Energy**

	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					
Parking Lot	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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

Sampson Pipeline - South Coast AQMD Air District, Winter

**5.2 Energy by Land Use - NaturalGas**

**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					
Parking Lot	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
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

	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	0.0647	0.0000	3.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.6000e-004	7.6000e-004	0.0000		8.0000e-004
Unmitigated	0.0647	0.0000	3.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.6000e-004	7.6000e-004	0.0000		8.0000e-004

Sampson Pipeline - South Coast AQMD Air District, Winter

**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	0.0115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0532					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.0000e-005	0.0000	3.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.6000e-004	7.6000e-004	0.0000		8.0000e-004
<b>Total</b>	<b>0.0647</b>	<b>0.0000</b>	<b>3.5000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>7.6000e-004</b>	<b>7.6000e-004</b>	<b>0.0000</b>		<b>8.0000e-004</b>

**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	0.0115					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0532					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.0000e-005	0.0000	3.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		7.6000e-004	7.6000e-004	0.0000		8.0000e-004
<b>Total</b>	<b>0.0647</b>	<b>0.0000</b>	<b>3.5000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>7.6000e-004</b>	<b>7.6000e-004</b>	<b>0.0000</b>		<b>8.0000e-004</b>

**7.0 Water Detail**



Sampson Pipeline - South Coast AQMD Air District, Winter

---

**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
----------------	--------	-----------	------------	-------------	-------------	-----------

**Boilers**

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

**User Defined Equipment**

Equipment Type	Number
----------------	--------

**11.0 Vegetation**

---



## **Appendix C. Biological Resources Technical Report**

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# Biological Resources Technical Report

## City of Corona 2018 Reclaimed Water Master Plan

September 2020

Prepared for:



City of Corona  
400 S. Vicentia Avenue, Suite 220  
Corona, California 92882  
Contact: Mohammed Ibrahim, PE, Senior Engineer

Prepared by:



Harris & Associates  
600 B Street, Suite 2000  
San Diego, California 92101  
Contact: Melissa Tu, Senior Biologist



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Melissa Tu, Senior Biologist

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Appendix A. Animal Species Observed

## ***Acronyms and Abbreviations***

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°F	degrees Fahrenheit
2016 Proposition 1 IS/MND	2016 Proposition 1 – Reclaimed Water Distribution System Initial Study/Mitigated Negative Declaration
BGEPA	Bald and Golden Eagle Protection Act
CCE	California candidate endangered species
CDFW	California Department of Fish and Wildlife
CE	California endangered
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFG	California Fish and Game
CFP	California fully protected
CII	commercial, industrial, and institutional
City	City of Corona
CNPS	California Native Plant Society
County	County of Riverside
CRPR	California Rare Plant Rank
CT	California threatened
CWA	Clean Water Act
EIR	Environmental Impact Report
FC	federal candidate for listing
FE	federally endangered
FESA	federal Endangered Species Act
FT	federally threatened
GIS	geographic information system
gpm	gallons per minute
Harris	Harris & Associates
HCP	Habitat Conservation Plan
IPaC	Information for Planning and Consultation
LMD	landscape maintenance district
MBTA	Migratory Bird Treaty Act
MFR	multi-family residential
MSHCP	Multiple Species Habitat Conservation Plan
NCCP	Natural Community Conservation Planning
NPDES	National Pollutant Discharge Elimination System
NWP	Nationwide Permit
PEIR	Program Environmental Impact Report
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
project	City of Corona 2018 Reclaimed Water Master Plan
RWMP	Reclaimed Water Master Plan
RWQCB	Regional Water Quality Control Board
SCADA	Supervisory Control and Data Acquisition
SSC	species of special concern
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

WL  
WRCRWA  
WRF

California Department of Fish and Wildlife watch list  
Western Riverside County Regional Wastewater Authority  
wastewater reclamation facility

## ***Executive Summary***

---

At the request of the City of Corona (City), Harris & Associates (Harris) has prepared this Biological Resources Technical Report for the City of Corona 2018 Reclaimed Water Master Plan Program Environmental Impact Report (2018 RWMP PEIR).

The 2018 Reclaimed Water Master Plan (2018 RWMP or project) is an update to the City's adopted Reclaimed Water Master Plan (2001), which provides guidance to create infrastructure to efficiently use treated effluent from its existing and future wastewater reclamation facilities (WRFs) supplemented by non-potable groundwater from the Bedford Basin to reduce dependence on imported water and potable groundwater. The project identifies the extent and types of reclaimed water development needed to achieve the City's physical, economic, and environmental goals.

This report provides an update of the biological resources baseline found in the water service area and presents a project-level analysis of impacts to sensitive biological resources from the 29 projects in the water service area that are to be implemented as part of the 2018 RWMP.

The analysis was prepared in accordance with the California Environmental Quality Act (CEQA) of 1970, the CEQA Guidelines (as amended). This report is a technical study in support of the 2018 RWMP PEIR.

A site visit and general habitat assessment occurred on April 14, 2020. Vegetation mapping is based on City geographic information system data updated with site data from April 2020.

Nine vegetation communities and two land use types were mapped within the water service area. The vegetation communities included four wetland vegetation communities and five upland vegetation communities. The wetland vegetation communities included freshwater marsh, open water, riparian scrub, and riparian forest. The five upland vegetation communities included chaparral, coastal sage scrub, non-native grassland, oak woodland, and Riversidian alluvial fan sage scrub. The two land use types include agriculture and disturbed/developed.

Five sensitive plant species and 45 sensitive animal species have been documented in the water service area. Critical habitat for four federally listed species occurs in the water service area.

Project implementation would result in potentially significant direct and indirect impacts to sensitive vegetation communities, sensitive plant and animal species, nesting birds, and jurisdictional aquatic resources.

Implementation of Mitigation Measures BIO-1, BIO-2, and BIO-3 would reduce potentially significant impacts to the non-native grassland sensitive vegetation community on the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites. Mitigation Measure BIO-1 would require habitat assessments, including vegetation mapping, to be conducted

before construction of the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline projects. Mitigation Measures BIO-2 and BIO-3 would implement mitigation and replacement ratios for permanent and temporary impacts to non-native grassland.

Implementation of Mitigation Measures BIO-2 through BIO-8 would reduce potentially significant direct and indirect impacts to sensitive plant species on the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites. These mitigation measures would require preconstruction sensitive plant species surveys, mitigation ratios for permanent and temporary impacts to non-native grassland that could support sensitive plant species, and prevention of the spread of invasive plant species during construction. General construction mitigation measures, including flagging and fencing, a contractor training program, and a biological monitor, shall be implemented for the projects to minimize potential impacts to sensitive plant species.

Implementation of Mitigation Measures BIO-9 through BIO-11 would reduce potentially significant impacts to sensitive animal species at the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites. General construction mitigation measures (Mitigation Measures BIO-6 through BIO-8), including flagging and fencing, a contractor training program, and a biological monitor, shall also be implemented for the projects to minimize potential impacts to sensitive animal species. Potentially significant impacts to non-native grassland that could support burrowing owl would be mitigated by requiring burrowing owl clearance surveys at the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites (Mitigation Measures BIO-9). Implementation of Mitigation Measure BIO-10 would reduce potentially significant impacts to nesting birds by conducting nesting bird surveys before construction of the projects if construction activities occur during the general bird nesting season (January 15 through September 15). Potentially significant impacts to sensitive animal species from nighttime lighting during construction would be minimized with Mitigation Measure BIO-11 on the project sites.

Implementation of Mitigation Measures BIO-12 and BIO-13 would reduce potentially significant impacts to jurisdictional aquatic resources, if identified on the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites during preconstruction habitat assessments (Mitigation Measure BIO-1). If jurisdictional aquatic resources are identified, aquatic resources delineations (Mitigation Measure BIO-12) and permitting (Mitigation Measure BIO-13) would be conducted before construction of the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline projects.



## **Section 1 Introduction**

---

This Biological Resources Technical Report for the City of Corona 2018 Reclaimed Water Master Plan (2018 RWMP or project) addresses the potential biological resources impacts associated with the construction, operation, and maintenance of the approved 2018 RWMP for the City of Corona (City).

### **1.1 Project Description**

The 2018 RWMP is an update to the City's 2001 adopted RWMP, which provides guidance to create infrastructure to efficiently use treated effluent from its existing and future wastewater reclamation facilities (WRFs) supplemented by non-potable groundwater from the Bedford Basin to reduce dependence on imported water and potable groundwater. The project identifies the extent and types of reclaimed water development needed to achieve the City's physical, economic, and environmental goals.

#### **1.1.1 Project Location**

The City is in the northwestern portion of the County of Riverside (County), near the convergence of the Counties of Los Angeles, Orange, and Riverside, 45 miles southeast of the City of Los Angeles, as shown on Figure 1, Regional Location. The City is in the Temescal Valley, which is framed by mountains and the Prado Flood Control Basin. The City is bordered by the City of Norco to the north, the City of Riverside to the east, unincorporated Riverside County to the west and south, the Cleveland National Forest to the south/southwest, and the Prado Flood Control Basin to the northeast.

The City is defined in the County by its transportation infrastructure. Two major freeways and one railroad transect the City. Riverside Freeway (State Route 91) runs east–west, connecting the economic center of the County of Orange to the Inland Empire, while Interstate 15 runs north–south. In addition, the Burlington Northern Santa Fe Railway transects the center of the City, running parallel to State Route 91.

The water service area boundary differs from the City's jurisdictional boundary. The water service area includes the unincorporated communities of El Cerrito and Coronita and parts of Temescal Canyon, as shown on Figure 2, Water Service Area. The City's water service area encompasses approximately 39 square miles and delineates the extent of the City's potable water and reclaimed water and wastewater services. The water service area includes the unincorporated communities of El Cerrito and Coronita and parts of Temescal Canyon, as shown on Figure 2.

The water service area is a jurisdictional boundary bordered by the neighboring water service areas for the Cities of Norco and Eastvale to the north, the City of Riverside to the northeast, the Home Gardens County Water District to the east, and the Temescal Valley Water District to the south. The southeastern portion of the water service area is generally bounded by unincorporated County

lands. The southwestern portion of the water service area is bounded by the Cleveland National Forest and other County lands (Figure 2).

### 1.1.2 2018 Reclaimed Water Master Plan Projects

This section describes the proposed infrastructure and improvements to the reclaimed water system identified in the 2018 RWMP. Future projects would be categorized as sources of supply, large distribution pipelines, medium distribution pipelines, small distribution pipelines, conversion of adjacent customers, data management, and additional studies. Table 1 provides a summary of the projects identified in the 2018 RWMP. Figures 3a through 3d show the locations of the projects identified in the 2018 RWMP in the water service area.

**Table 1. Summary of 2018 Reclaimed Water Master Plan Projects**

Number	Project	Location	Description
<b>Source of Supply Projects</b>			
1	WRCRWA Booster Pump Station <sup>1</sup>	WRCRWA	The booster pumping stations would pump WRCRWA supply to the 833 Subzone.
2	WRCRWA Transmission Pipeline <sup>1</sup>	Between WRCRWA and River FCS-833 Subzone	The transmission pipeline would connect the WRCRWA booster pumping station to the 833 Subzone.
3	WRCRWA Flow Control Improvements	Between Butterfield and WRF1 Tank	These control stations would direct WRCRWA supply to the Lincoln-Cota Ponds and the WRF1 Tank.
4	Rimpau California Pipeline	Between Central Park and Chase Park	This transmission pipeline would provide the additional capacity needed to move WRCRWA supply to demands south of the water service area between City Park and Chase Park.
5	Chase Booster Pump Station	Chase Park	The booster pump station at Chase Park would be an operational component of the Rimpau California Pipeline.
6	Chase Tank	Chase Park	The storage facility at Chase Park would be an operational component of the Rimpau California Pipeline.
<b>Large Distribution Pipelines</b>			
7	Buena Vista Tenth Pipeline	Railroad Street and Rimpau Avenue via Buena Vista Avenue and Tenth Street	This pipeline would reinforce the primary loop between WRF1 at the 1380 Zone following construction of the Rimpau California Pipeline.
8	Ontario Slipline	Compton Avenue and Lincoln Avenue	This slipline would form a secondary loop along the length of the 1175 Subzone.
9	River Pipeline	River Road from Corydon Avenue through Main Street	This pipeline would expand the 833 Subzone north of Temescal Creek and west of Interstate 15.
10	Sampson Pipeline	Central Park and McKinley Street	This pipeline would form a secondary loop in the 1008.5 Zone to improve performance and eliminate the need for additional local storage.

**Table 1. Summary of 2018 Reclaimed Water Master Plan Projects**

Number	Project	Location	Description
<b>Medium Distribution Pipelines</b>			
11	Old Temescal Pipeline <sup>1</sup>	Fullerton Avenue and Interstate 15	This pipeline would convert 15.1 gpm of potable water demand for irrigation to reclaimed water demand.
12	Lincoln Foothill Pipeline	Lincoln Avenue between Highgrove Street and Foothill Parkway	This pipeline would convert 12.5 gpm of potable water demand for irrigation to reclaimed water demand at one church and six existing LMD meters.
13	Avenida Del Vista Pipeline	Via Del Rio and MFR demands north of Via Santiago	This pipeline would convert 19.8 gpm of potable water demand for irrigation to reclaimed water demand at three MFR complexes.
14	Border Pipeline	Brentwood Drive and MFR demands north of Tenth Street	This pipeline would convert 36.4 gpm of potable water demand for irrigation to reclaimed water demand at numerous MFR and CII complexes.
15	Promenade Pipeline	McKinley Avenue and Cresta Verde Park	This pipeline would convert 26.9 gpm of potable water demand for irrigation to reclaimed water demand at 2 MFR complexes and 15 existing landscaping irrigation meters.
16	Research Pipeline	CII demands west of Auto Center Drive	This pipeline would convert 9 gpm of potable water demand for irrigation to reclaimed water demand.
17	Smith Pipeline	Railroad Street and Pomona Road	This pipeline would convert 13.6 gpm of potable water demand for irrigation and car washing to reclaimed water demand.
18	Via Pacifica Pipeline	MFR and LMD demand north of Ontario Avenue	This pipeline would convert 21.3 gpm of potable water demand for irrigation to reclaimed water demand at two LMD meters and one MFR complex.
19	Tehachapi Pipeline	McKinley Avenue and Tehachapi Park	This pipeline would convert 6.2 gpm of potable water demand for irrigation to reclaimed water demand.
<b>Small Distribution Pipelines</b>			
20	Jenks Pipeline	North and south of Railroad Street	The pipeline would convert 5.8 gpm of potable water demand for irrigation to reclaimed water demand.
21	Airport Circle Pipeline	South of Railroad Street	The pipeline would convert 4.1 gpm of potable water demand for irrigation to reclaimed water demand.
22	Helicopter Pipeline	South of Railroad Street	This pipeline would convert 3.9 gpm of potable water demand for irrigation to reclaimed water demand.
23	Glider Pipeline	South of Railroad Street	The pipeline would convert 1.3 gpm of potable water demand for irrigation to reclaimed water demand.
24	Citation Pipeline	South of Railroad Street	This pipeline would convert 1.2 gpm of potable water demand for irrigation to reclaimed water demand.
25	Klug Pipeline	North and south of Railroad Street	This pipeline would convert 3.9 gpm of potable water demand for irrigation to reclaimed water demand.
26	Monica Pipeline	North of Railroad Street	The pipeline would convert 3.2 gpm of potable water demand for irrigation to reclaimed water demand.
27	Chase Hudson Pipeline	LMD demands at Chase Drive and Hudson Avenue	This pipeline would convert 4.7 gpm at two LMD meters from potable water demand for irrigation to reclaimed water demand.

**Table 1. Summary of 2018 Reclaimed Water Master Plan Projects**

Number	Project	Location	Description
28	Cessna Pipeline	North of Railroad Street	This pipeline would convert 3 gpm of potable water demand for irrigation to reclaimed water demand.
29	Main Citrus Pipeline	Main Street at Citrus Avenue and four CII customers at Main Street and Magnolia Avenue	This pipeline would convert 21.4 gpm of potable water demand for irrigation to reclaimed water demand for CII customers.

**Sources:** City of Corona 2016, 2018.

**Notes:** CII = commercial, industrial, and institutional; gpm = gallons per minute; LMD = landscape maintenance district; MFR = multi-family residential; WRCRWA = Western Riverside County Regional Wastewater Authority; WRF = water reclamation facility

<sup>1</sup> Project is in process and is covered by the 2016 Proposition 1 – Reclaimed Water Distribution System Initial Study/Mitigated Negative Declaration

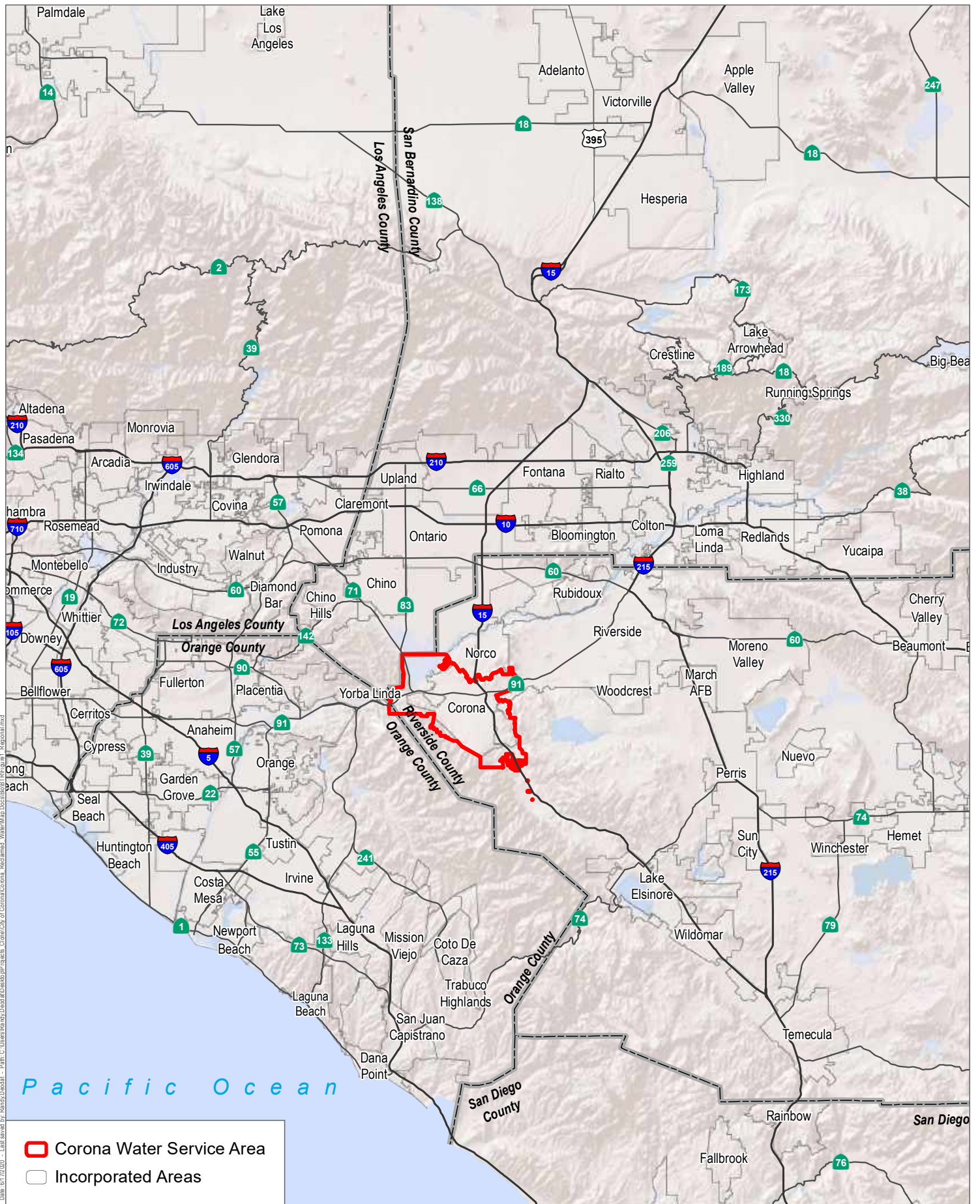
### 1.1.2.1 Sources of Supply

The 2018 RWMP includes the following six sources of supply projects that involve future supply from the Western Riverside County Regional Wastewater Authority (WRCRWA). The projects are necessary to accommodate the shift in supply from the existing WRF3 to WRCRWA and would assure adequate supply and transmission capacity related to reclaimed water from WRCRWA (see Figure 3a). The projects focus on transmission and system performance.

### 1.1.2.2 Distribution Pipelines

Approximately 27 miles of distribution pipelines is proposed to supply irrigation demands at schools, parks, City landscaping, and the industrial, commercial, and multi-family residential (MFR) sectors. The project proposes four large distribution pipelines to open previously unserved neighborhoods, commercial zones, and industrial zones to reclaimed water service as described below (Figure 3b). The project proposes nine new medium distribution pipelines to target large demand opportunities with a single feed pipe (Figure 3c). The project proposes 10 small distribution pipelines to target demand opportunities near existing pipelines as described below (Figure 3d).

For additional detail on individual projects, refer to Chapter 2, Project Description, of the 2018 RWMP PEIR.

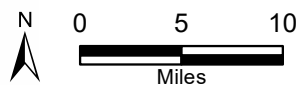


Source: ESRI 2020.

# Figure 1

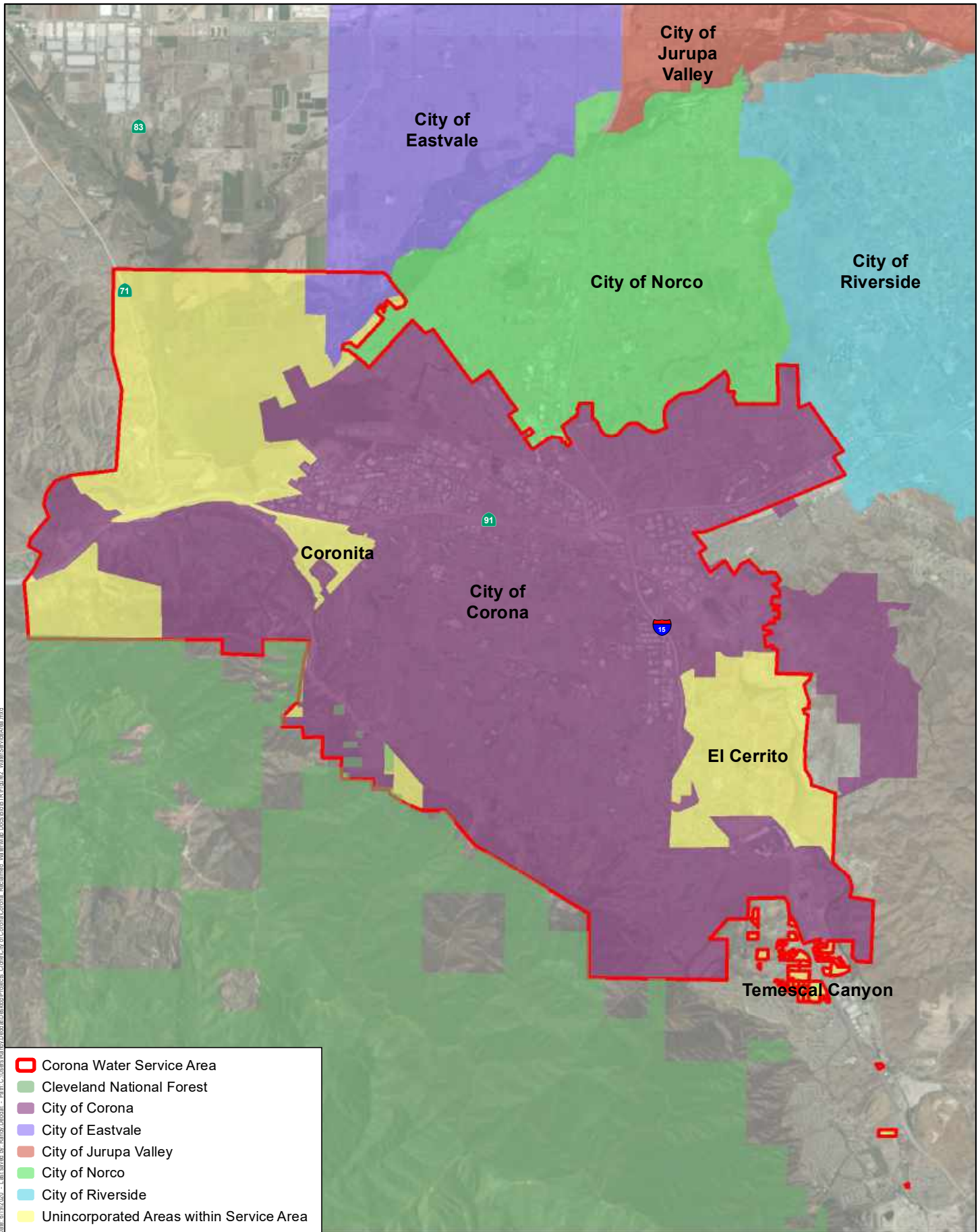
## Regional Location

City of Corona 2018 Reclaimed Water Master Plan



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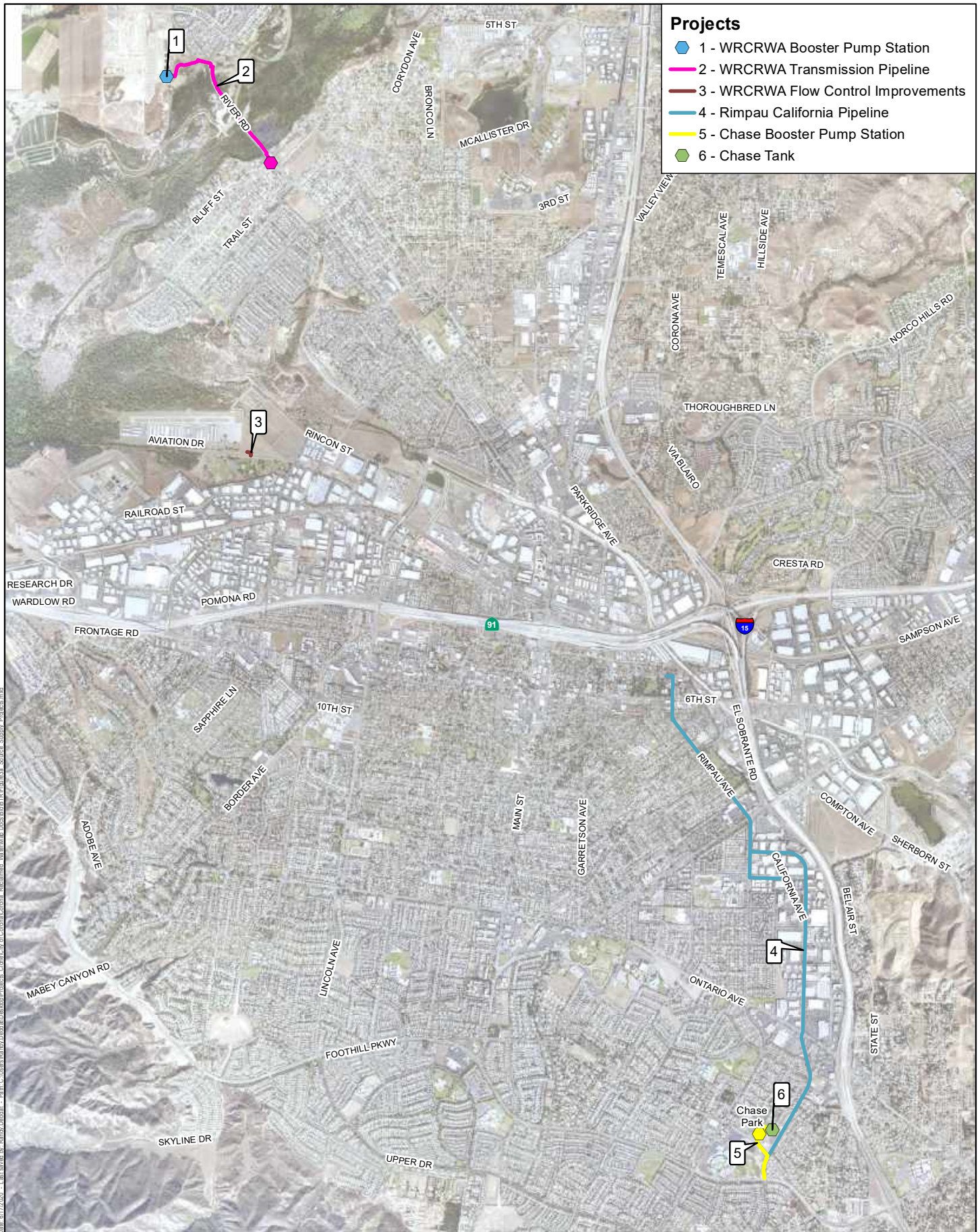




Source: City of Corona Imagery 2015.



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- Projects**
- 1 - WRCRWA Booster Pump Station
  - 2 - WRCRWA Transmission Pipeline
  - 3 - WRCRWA Flow Control Improvements
  - 4 - Rimpau California Pipeline
  - 5 - Chase Booster Pump Station
  - 6 - Chase Tank

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Source: County of Riverside Imagery 2016.

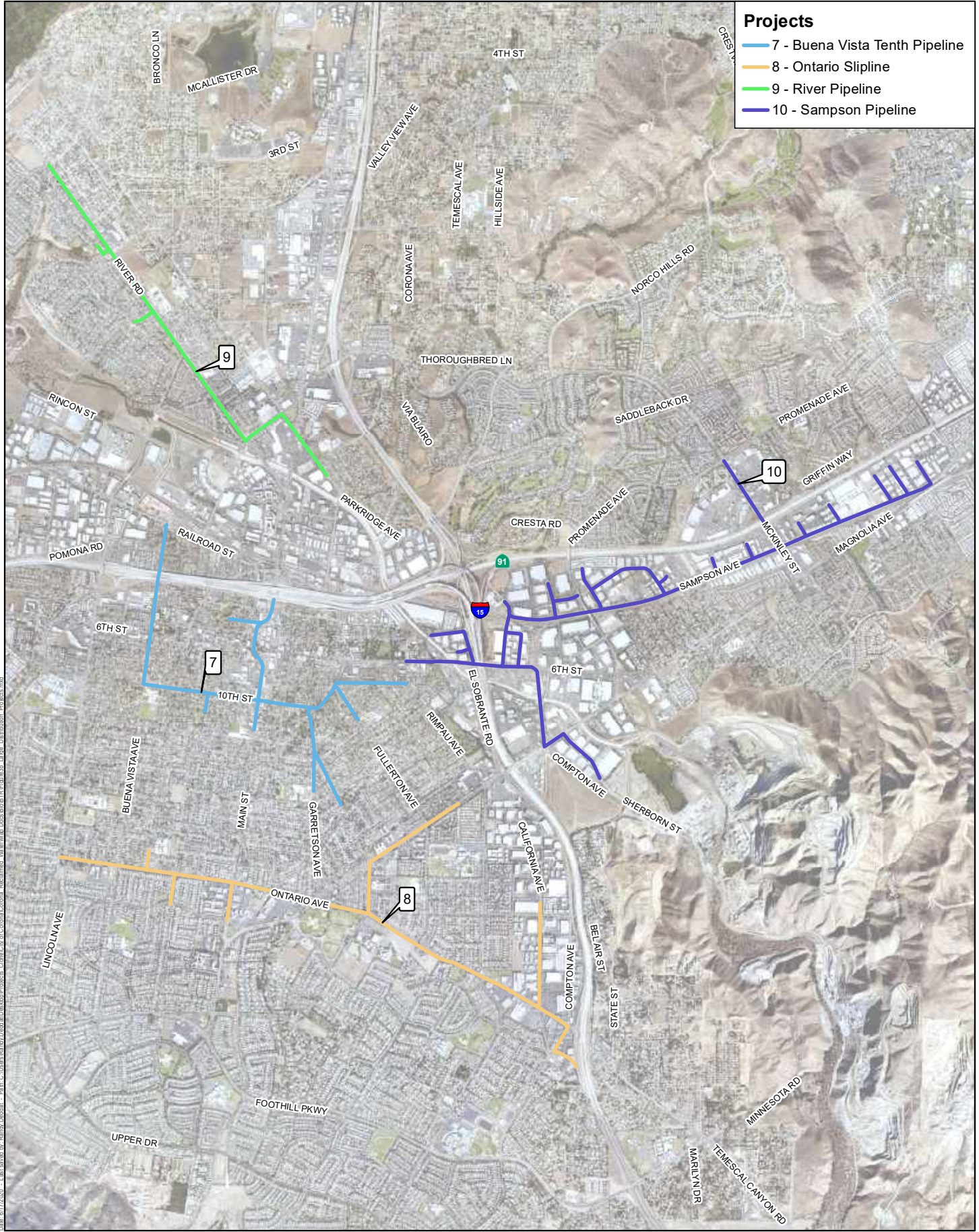


**Figure 3a**

Source of Supply Projects

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- Projects**
- 7 - Buena Vista Tenth Pipeline
  - 8 - Ontario Slipline
  - 9 - River Pipeline
  - 10 - Sampson Pipeline

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Source: County of Riverside Imagery 2016.

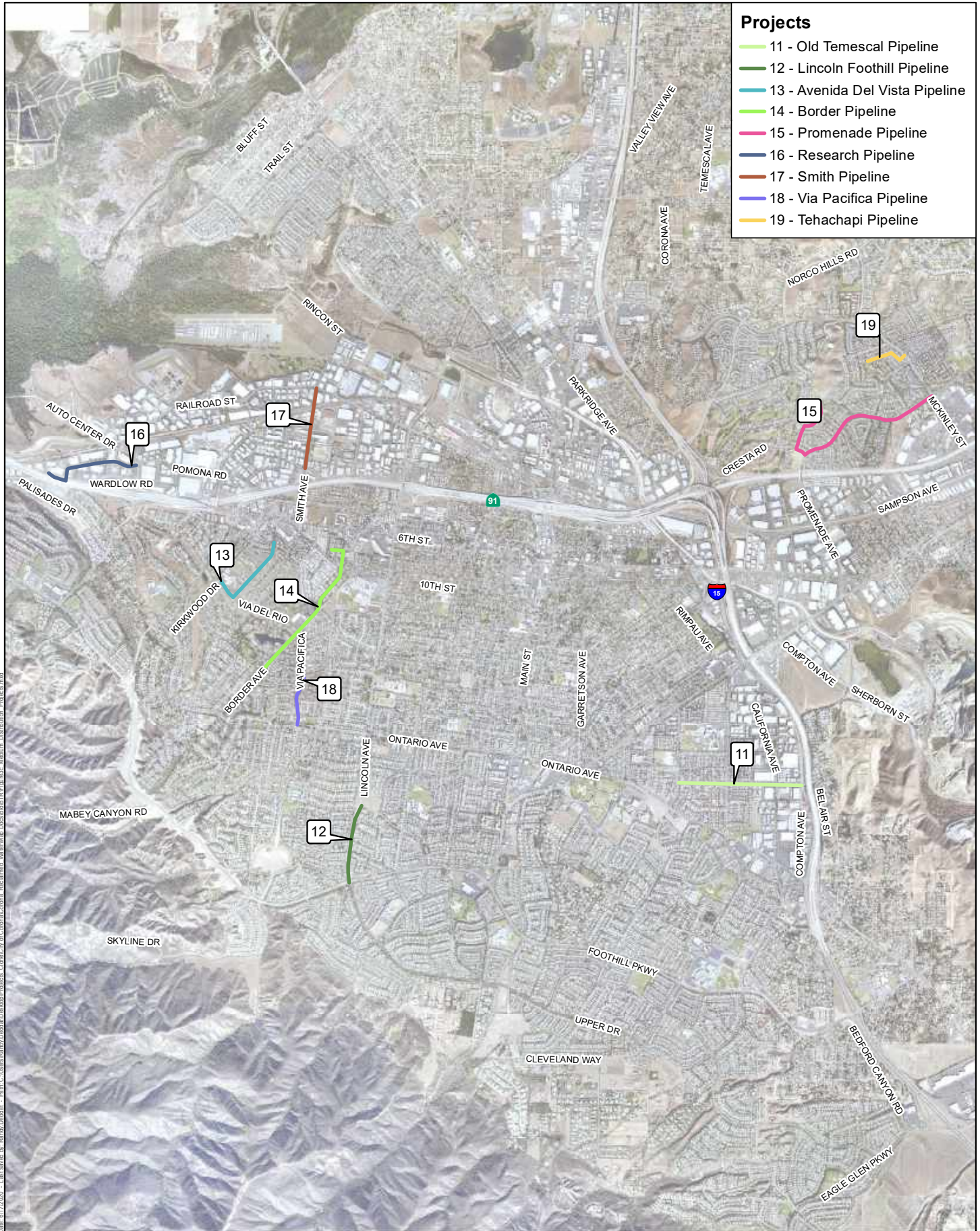


**Figure 3b**

Large Distribution Pipelines

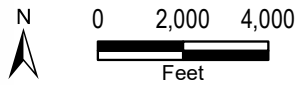
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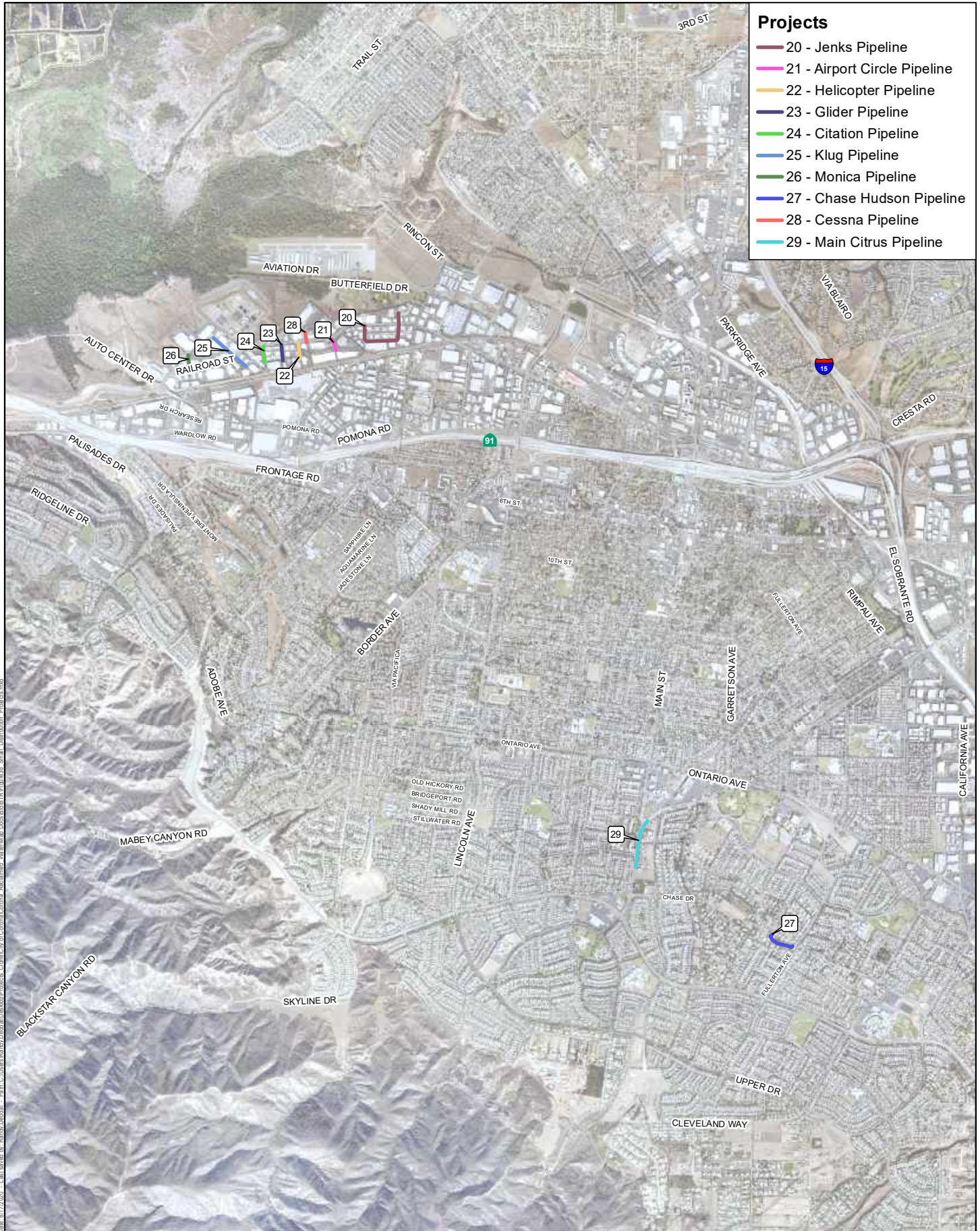
Source: County of Riverside Imagery 2016



**Figure 3c**  
 Medium Distribution Pipelines  
 City of Corona 2018 Reclaimed Water Master Plan

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- Projects**
- 20 - Jenks Pipeline
  - 21 - Airport Circle Pipeline
  - 22 - Helicopter Pipeline
  - 23 - Glider Pipeline
  - 24 - Citation Pipeline
  - 25 - Klug Pipeline
  - 26 - Monica Pipeline
  - 27 - Chase Hudson Pipeline
  - 28 - Cessna Pipeline
  - 29 - Main Citrus Pipeline

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Source: County of Riverside Imagery 2016.


**Harris & Associates**




**Figure 3d**  
 Small Distribution Pipelines  
 City of Corona 2018 Reclaimed Water Master Plan

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### **1.1.2.3 Conversion of Adjacent Customers**

Customers adjacent to existing pipelines should be converted to reclaimed water when possible. The adjacent demands for the City include commercial, institutional, MFR, and single-family residential.

The conversion would convert 139.9 gpm (225.7 AFY) of potable water demand for irrigation to reclaimed water demand by adding small irrigated areas one at a time throughout the system and would investigate the possibility of converting other CII demands (e.g., cooling water replenishment, industrial process water, industrial cleaning, dual plumbing). It would require the addition of new laterals and meters as necessary to capture irrigation demand adjacent to existing distribution pipelines.

### **1.1.2.4 Data Management Projects**

The City has an extensive automation system for its water facilities called Supervisory Control and Data Acquisition (SCADA). SCADA is used primarily for operational control and management of the City's water, wastewater, and reclaimed water assets. The following enhancements would expand the use of SCADA to resource management and demand management.

### **1.1.3 Construction Methods**

Following certification of the 2018 RWMP PEIR, the City would determine the implementation schedule for the construction of the improvements contemplated under the project. Once a project is selected for construction, the City would develop project-specific plans and specifications for each project, perform a project-level CEQA review, and file the appropriate documentation for the necessary permits and approvals in advance of awarding a construction contract. For the purposes of the 2018 RWMP PEIR, the City has applied a standard construction zone of impact for linear construction in addition to approximating the area of direct impact for staging areas or other temporary use areas. Typical construction methods for project components are described below.

Pipeline construction would require piping, trenching, backfilling, asphalt restoration, and striping. Trench dimensions for pipeline projects would be approximately 4 feet wide and 5 feet deep. Material removed would be replaced with import (sand bedding, aggregate base backfill, and asphalt concrete), and the spoils would be transported to an appropriate disposal facility.

Pump station construction would require piping, trenching, backfilling, foundation and grading, building construction, SCADA controls, and site restoration as needed.

Storage tanks would require piping, trenching, backfilling, foundation and grading, tank construction, SCADA controls, and site restoration as needed.

Table 2 provides an estimated time frame for construction for each project included in the 2018 RWMP.

**Table 2. 2018 Reclaimed Water Master Plan Project Construction Duration**

Number	Project	Duration in Years
<b>Source of Supply Projects</b>		
1	WRCRWA Booster Pump Station (in progress)	2
2	WRCRWA Transmission Pipeline (In progress)	2
3	WRCRWA Flow Control Improvements	2
4	Rimpau California Pipeline	4
5	Chase Booster Pump Station	3
6	Chase Tank	3
<b>Large Distribution Pipelines</b>		
7	Buena Vista Tenth Pipeline	4
8	Ontario Slipline	4
9	River Pipeline	3
10	Sampson Pipeline	4
<b>Medium Distribution Pipelines</b>		
11	Old Temescal Pipeline (in progress)	2
12	Lincoln Foothill Pipeline	2
13	Avenida Del Vista Pipeline	2
14	Border Pipeline	2
15	Promenade Pipeline	3
16	Research Pipeline	2
17	Smith Pipeline	2
18	Via Pacifica Pipeline	2
19	Tehachapi Pipeline	2
<b>Small Distribution Pipelines</b>		
20	Jenks Pipeline	2
21	Airport Circle Pipeline	1
22	Helicopter Pipeline	1
23	Glider Pipeline	1
24	Citation Pipeline	1
25	Klug Pipeline	2
26	Monica Pipeline	1
27	Chase Hudson Pipeline	2
28	Cessna Pipeline	1
29	Main Citrus Pipeline	1

Source: City of Corona 2018.

## 1.2 Purpose

At the request of the City, Harris has prepared this Biological Resources Technical Report for the project.

The project objectives are as follows:

- Expand and improve the City’s recycled water program in accordance with Ordinance 2854 (Recycled Water Rules and Regulations)
- Prioritize and implement system improvements pursuant to the City’s 2018 RWMP to maximize reclaimed water supply availability and reduce the use of potable water
- Improve water supply system performance by facilitating supply management and maximizing water resources
- Efficiently implement priority improvement projects to manage and distribute new sources of water supply as they become available

The term “biological resources” refers to plant species, animal species, and vegetation communities in the water service area. For the purposes of this Biological Resources Technical Report, sensitive biological resources are those defined as follows: (1) species designated as endangered, threatened, rare, protected, sensitive, or species of special concern according to the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), California Native Plant Society (CNPS), or applicable regional plans, policies, or regulations needs due to limited distribution, limited numbers, or significant population declines associated with natural or human-made causes; (2) species and habitat types recognized by local and regional resource agencies as special status; (3) habitats or vegetation communities that are unique, of relatively limited distribution, or of particular value to wildlife; (4) wildlife corridors and habitat linkages; or (5) biological resources that may or may not be considered special status but are regulated under local, state, or federal laws.

## 1.3 Environmental Setting

This section includes a description of the climate, surrounding land uses, topography and soils, and hydrology present in the water service area.

### 1.3.1 Climate

The County features a somewhat cooler version of a Mediterranean climate, or semi-arid climate, with warm, sunny, dry summers and cool, rainy, mild winters. Relative to other areas in Southern California, winters are colder, with frost and chilly to cold morning temperatures. Climatological data obtained from nearby weather stations indicate the annual precipitation averages 12 inches per year. Almost all precipitation in the form of rain occurs between October and April, with hardly any occurring between May and September. The wettest month is February, with a monthly average total precipitation of 2.54 inches. The average maximum and minimum temperatures for



the region are 80.6 and 47.2 degrees Fahrenheit (°F), respectively, with July and August (monthly average 98.1°F) being the hottest months and January (monthly average 36.4°F) being the coldest month. The temperature during the site visit was in the low-80s.

### **1.3.2 Surrounding Land Uses**

The water service area consists of a mosaic of land uses including industrial, commercial, residential, educational, and public works developments; flood control facilities; and vacant, undeveloped land. These land uses have heavily disturbed, if not completely eliminated, the majority of the natural vegetation within the City boundaries. However, the western boundary of the City borders the Santa Ana Mountains (Cleveland National Forest), and the northern portion of the City borders the Santa Ana River and Prado Basin.

### **1.3.3 Topography and Soils**

The water service area is bordered to the south and west by the Santa Ana Mountains, to the east by Temescal Creek and Bedford Canyon Wash, and to the north by the Santa Ana River Basin and Prado Dam. The water service area is in the Corona North, Corona South, Black Star Canyon, Lake Matthews, and Prado Dam USGS quadrangles. The relief in the water service area ranges from 420 feet above mean sea level in the Santa Ana River Basin to 4,400 feet above mean sea level on the peaks of the Santa Ana Mountains (Figure 4, USGS Topographic Map). The 2018 RWMP projects covered in the 2018 RWMP PEIR range in elevation from 520 to 1,520 feet above mean sea level.

The topography in the water service area ranges from gently sloping areas in the central portion of the City to steeper topography in the adjacent mountain areas, with over 50 percent of the water service area on a slope of 10 percent or less (Figure 4). The Santa Ana Mountains occur west of the water service area; therefore, the areas surrounding the western and southwestern edges of the water service area are characterized with slopes of 25 percent or greater (City of Corona 2020a).

The soil types present in the water service area include Garretson gravelly very fine sandy loam, Arbuckle gravelly loam, Perkins loam, Perkins gravelly loam, and Cortina gravelly coarse sandy loam; other small areas of clay and loam soils occur in the area (USDA 2020). The five soil types are described in detail below (USDA 1971):

Garretson gravelly very fine sandy loam: 2 to 8 percent slopes, consists of well-drained, very fine sandy loams that formed in alluvium derived from metasedimentary rock.

Arbuckle gravelly loam: 2 to 9 percent slopes, well-drained, gently to moderately sloping soils. They occur on alluvial fans derived from igneous, metamorphic, and sedimentary rock.

Perkins loam: 2 to 5 percent slopes, well-drained soils on alluvial fans and terraces. These soils developed in alluvium that was derived mainly from metasedimentary, fine-grained sandstone.

Perkins gravelly loam: 2 to 5 percent slopes, includes small areas of Arbuckle gravelly loam and Garretson gravelly very fine sandy loam. These soils have slow runoff and low erosion potential.

Cortina gravelly coarse sandy loam: 2 to 8 percent slopes, includes gently to moderately sloping soils, and is excessively drained soil on alluvial fans and in valley fills. These soils formed in alluvium from metasedimentary rock.

### **1.3.4 Hydrology**

The water service area is in the Santa Ana River watershed, a flood control zone monitored by the Santa Ana Regional Water Quality Control Board (RWQCB) that covers portions of the Counties of Riverside, Orange, and San Bernardino. In the County of Riverside, the Santa Ana River watershed is subdivided into the Santa Ana subwatershed (which the water service area is in) and the San Jacinto River subwatershed. The Santa Ana subwatershed consists of the Santa Ana River and its tributaries, and the San Jacinto River subwatershed includes the San Jacinto River and its tributaries that overflow into the Santa Ana River only in high-volume storm events.

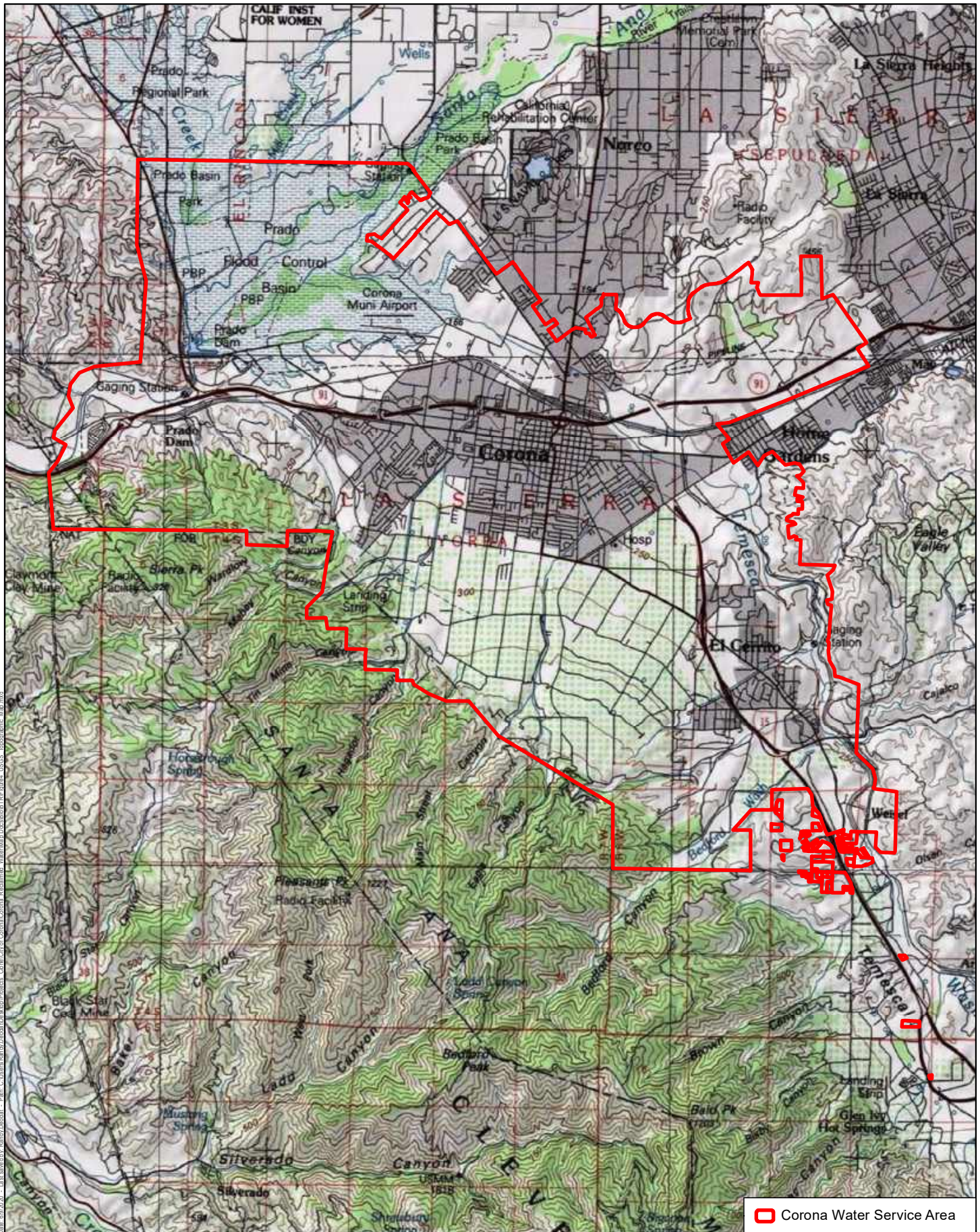
The Santa Ana subwatershed is also subdivided into smaller subwatersheds based on major tributary channels that feed into the Santa Ana River. The water service area is in two of these smaller subwatersheds: the Middle Santa Ana River subwatershed and the Temescal Wash subwatershed. The Middle Santa Ana River subwatershed is in the northwestern corner of the County and covers a total tributary area of 170 square miles that generally drains west toward the Santa Ana River. Tributaries to this subwatershed include Temescal Creek, Tequesquite Arroyo (Sycamore Creek), Day Creek, and San Sevaine Creek. The Temescal Wash subwatershed covers 250 square miles and is defined as the tributary area draining into the Temescal Wash, also known as Temescal Creek, that connects Lake Elsinore with the Santa Ana River.

Tributaries to the Temescal Wash include Wasson Canyon Wash, Arroyo Del Toro, Stovepipe Canyon Wash, Rice Canyon Wash, and Lee Lake. The majority of the City lies in this subwatershed, and the drainage channels that run through the City and tie into Temescal Wash include Arlington Channel, Main Street Channel, Oak Street Drain, Joseph Canyon Wash, and Bedford Wash.

The channels flow into the Santa Ana River, which continues downstream through the County of Orange and then empties into the Pacific Ocean. Figure 5, Hydrology, identifies the major water features in the water service area.

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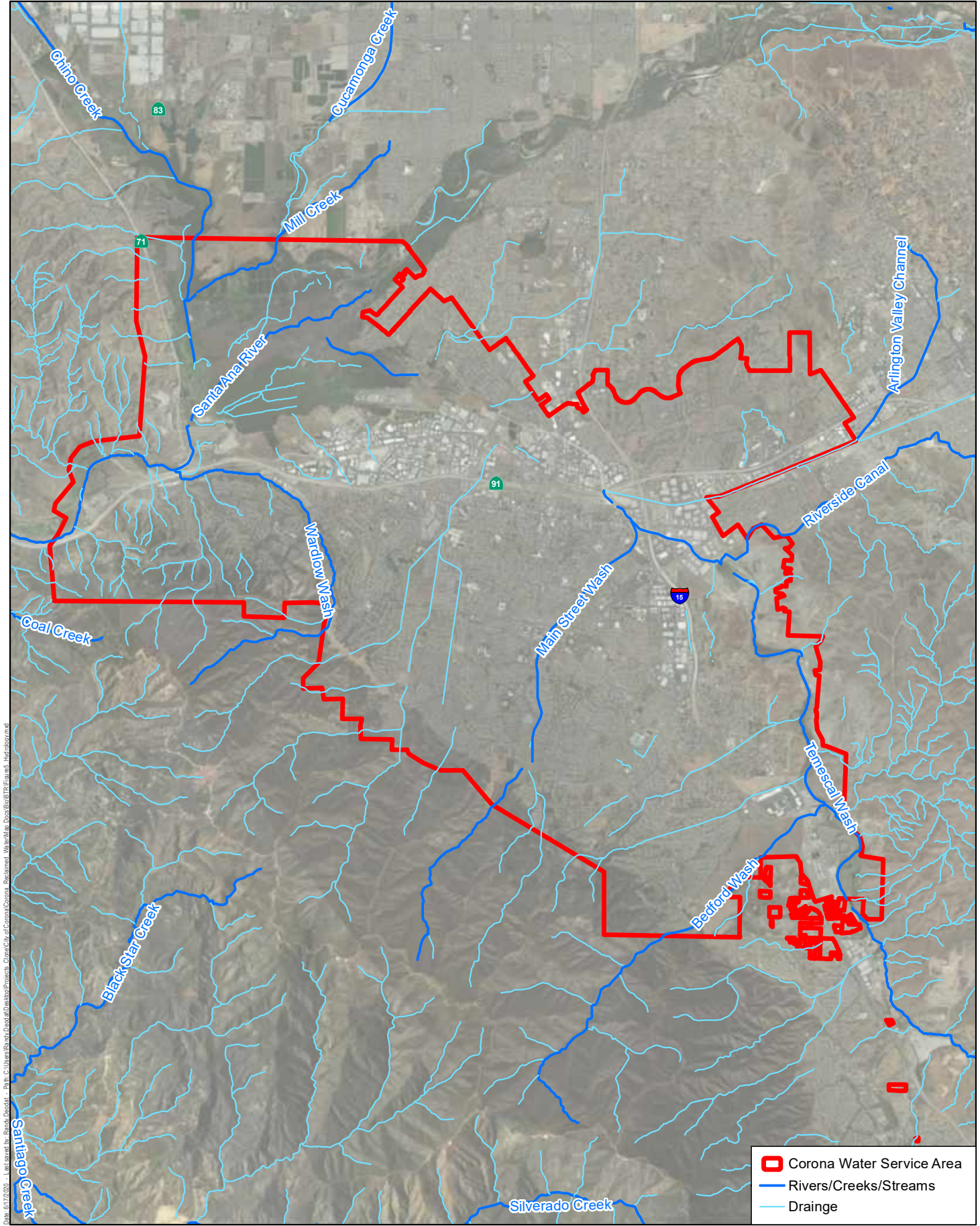


Corona Water Service Area

Source: USGS 1961, 1966, 1974, 1988.



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- ▭ Corona Water Service Area
- Rivers/Creeks/Streams
- Drainage

Source: USGS National Hydrologic Database 2020; City of Corona Imagery 2015.



**Figure 5**  
Hydrology

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## Section 2 Methods

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The methods used to document biological resources present in the water service area included a review of pertinent background data and one biological resources site visit.

### 2.1 Background Information

Before conducting the site visit to assess biological resources, Harris conducted a review of previous survey information. This included a review of aerial imagery and previous vegetation and sensitive resources mapping for the City including the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) (County of Riverside 2003), the City's General Plan Technical Update Final Environmental Impact Report (City of Corona 2020a), and the 2016 Proposition 1 IS/MND Environmental Assessment (City of Corona 2016). In addition, Harris conducted a search of online databases for information regarding sensitive species documented in the water service area. Online databases included the USFWS Information for Planning and Consultation (IPaC) species records (USFWS 2020a); the CDFW California Natural Diversity Database (CDFW 2020a); Calflora online plant species database (Calflora 2020); CNPS Rare and Endangered Plant Electronic Inventory (CNPS 2020); eBird, an online bird species database, (Cornell Lab of Ornithology 2020a); and iNaturalist, an online plant and animal species database (iNaturalist 2020). Plant and animals species sensitivity statuses are from the CNPS (2020), CDFW (2020b, 2020c), USFWS (2020a), and Western Riverside County MSHCP (County of Riverside 2003).

The USFWS IPaC report was created by drawing a perimeter around the water service area to create a list of potential endangered and threatened species known to be present near the water service area. The IPaC report also indicates whether critical habitat is present or not. The USFWS National Wetlands Inventory was also reviewed, and the data were downloaded to view the locations of potential aquatic resources in and downstream of the water service area (USFWS 2020b).

In addition to database review, topographic maps, soils maps (USDA 2020; Bowman 1973), and other maps of the water service area and its vicinity were acquired and reviewed to obtain updated information on the area's natural environment. A summary of the results of the database and document review is detailed in Section 3, Results.

### 2.2 Biological Survey

During the site visit on April 14, 2020, Harris biologists conducted a general biological reconnaissance survey by visually inspecting a number of projects in the water service area to determine the potential for sensitive plants and animals to occur.

Animal species observed or otherwise detected during the survey were recorded and are provided in Appendix A, Species Observed. Animal identifications were made in the field directly by visual

observation or indirectly by detection of calls, burrows, tracks, or scat. Binoculars were used to aid the identification of animal species. Nomenclature used for animals comes from CaliforniaHerps.com (2020) for amphibians and reptiles, American Ornithological Society (2019) and Cornell Lab of Ornithology (2020a) for birds, Checklist of Butterflies of San Diego County (San Diego Natural History Museum 2020a) for butterflies, San Diego Natural History Museum (2020b) for other insects, and Bradley et al. (2014) for mammals.

## **2.3 Vegetation Mapping**

Vegetation community boundaries for the project were provided in geographic information system (GIS) format by the City. Vegetation community types include the Holland vegetation classification code as modified for the Western Riverside County MSHCP (Holland 1986; County of Riverside 2003). Plant species nomenclature used in this report generally comes from Baldwin et al. (2012) and the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2014).

## Section 3 Results

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The following results provide information from City biological resources technical reports, online database searches, City GIS data, the Western Riverside County MSHCP (County of Riverside 2003), and the biological resources survey conducted in the water service area.

### 3.1 Vegetation Communities and Land Use Types

The water service area consists of nine sensitive vegetation communities and two land use types, as described below (County of Riverside 2003; City of Corona 2018; Holland 1986).

The following subsections describe the identified in the water service area. The sensitive vegetation communities were designated as sensitive because of the general scarcity of the community; because impacts to the habitat are often regulated by the USFWS, CDFW, U.S. Army Corps of Engineers (USACE), or Regional Water Quality Control Board (RWQCB); or because of the species the vegetation community supports and the functions that it provides. Figure 6, Vegetation Communities – Overview, presents the vegetation community and land use type boundaries, and Figures 7a through 7d show the vegetation communities and land use types.

#### 3.1.1 Chaparral

Chaparral is a shrub-dominated vegetation community composed largely of evergreen species that range from 3 to 12 feet in height. The most common and widespread species in chaparral is chamise (*Adenostoma fasciculatum*). Other common shrub species include manzanita (*Arctostaphylos* spp.), wild lilac (*Ceanothus* spp.), oak (*Quercus* spp.), redberry (*Rhamnus* spp.), laurel sumac (*Malosma laurina*), mountain mahogany (*Cercocarpus betuloides*), toyon (*Heteromeles arbutifolia*), and mission manzanita (*Xylococcus bicolor*). Soft-leaved subshrubs are less common in chaparral than in coastal sage scrub but occur in canopy gaps of mature stands (Holland 1986; Sawyer et al. 2009).

Chaparral occurs in the southwestern portion of the water service area at the eastern base of the Santa Ana Mountains (Figure 6).

#### 3.1.2 Coastal Sage Scrub (Diegan and Riversidian)

Coastal sage scrub in the water service area consists of Diegan coastal sage scrub and Riversidian coastal sage scrub.

Diegan coastal sage scrub is dominated by a characteristic suite of low-statured, aromatic, drought deciduous shrubs and subshrub species. Composition varies substantially depending on physical circumstances and the successional status of the vegetation community; however, characteristic species include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac, California encelia (*Encelia californica*), and several species of sage (e.g., *Salvia*

*mellifera*, *Salvia apiana*) (Holland 1986; Sawyer et al. 2009). Diegan coastal sage scrub occurs in the western portion of the water service area south of the Santa Ana River.

Riversidian sage scrub is dominated by brittlebush (*Encelia farinosa*) with patches of California buckwheat and California sagebrush. Riversidian coastal sage scrub occurs in the southeastern portion of the water service area (Figure 6).

### **3.1.3 Freshwater Marsh (Coastal and Valley)**

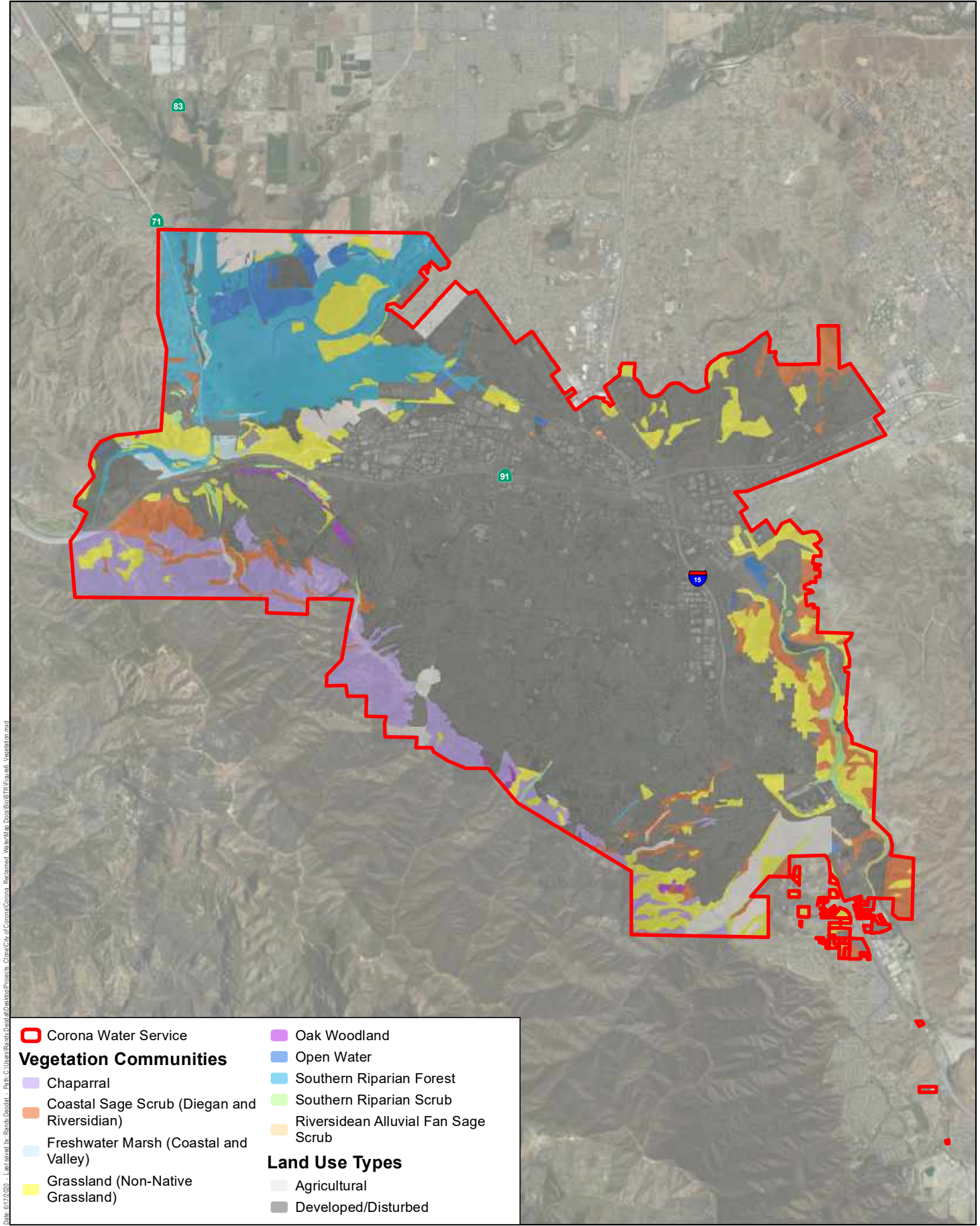
Freshwater marsh in the water service area consists of coastal and valley freshwater marsh. Coastal and valley freshwater marsh is dominated by freshwater emergent monocots often forming closed canopies. Dominant species include cattails (*Typha* spp.) and tules (*Schoenoplectus* spp.) (Holland 1986).

In the water service area, coastal and valley freshwater marsh occurs in small pockets along the Santa Ana River north of the Corona Municipal Airport (Figure 6).













### **3.1.4 Grassland (Non-Native)**

Non-native grassland is a dense to sparse cover of annual grasses sometimes associated with numerous species of native annual forbs. This association occurs on gradual slopes with deep, fine-textured, usually clay soils. Characteristic species include oat (*Avena* sp.), red brome (*Bromus madritensis* ssp. *rubens*), ripgut brome (*Bromus diandrus*), barley (*Hordeum* sp.), and mustard (*Brassica* sp.). The majority of species and biomass in the non-native grassland community originated from the Mediterranean region, an area with a history of agriculture and a climate similar to California (Holland 1986).

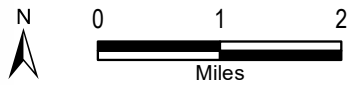




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	Corona Water Service		Oak Woodland
<b>Vegetation Communities</b>			Open Water
	Chaparral		Southern Riparian Forest
	Coastal Sage Scrub (Diegan and Riversidian)		Southern Riparian Scrub
	Freshwater Marsh (Coastal and Valley)		Riversidean Alluvial Fan Sage Scrub
	Grassland (Non-Native Grassland)	<b>Land Use Types</b>	
			Agricultural
			Developed/Disturbed

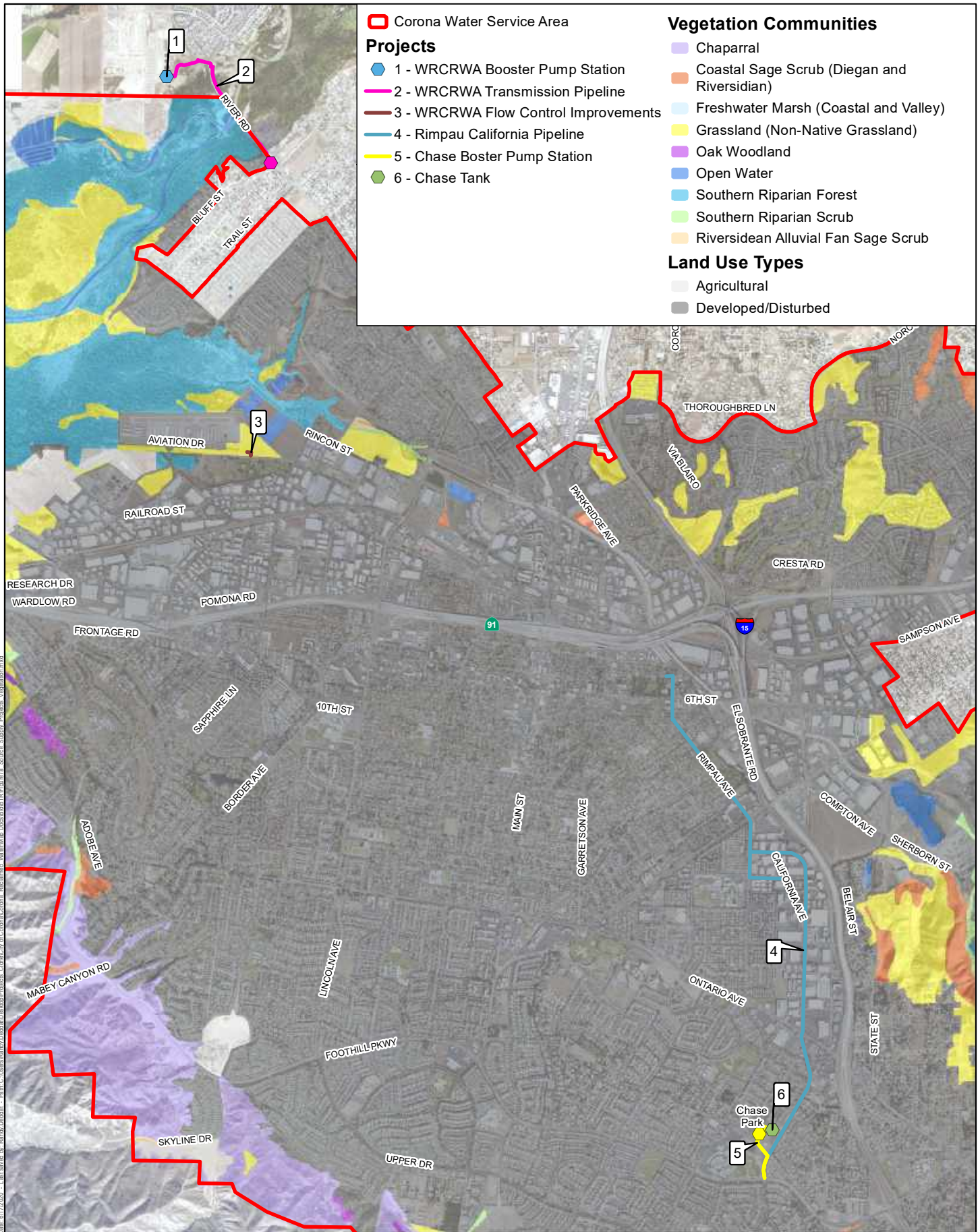
Source: City of Corona Imagery 2015.



**Figure 6**  
 Vegetation Communities - Overview  
 City of Corona 2018 Reclaimed Water Master Plan

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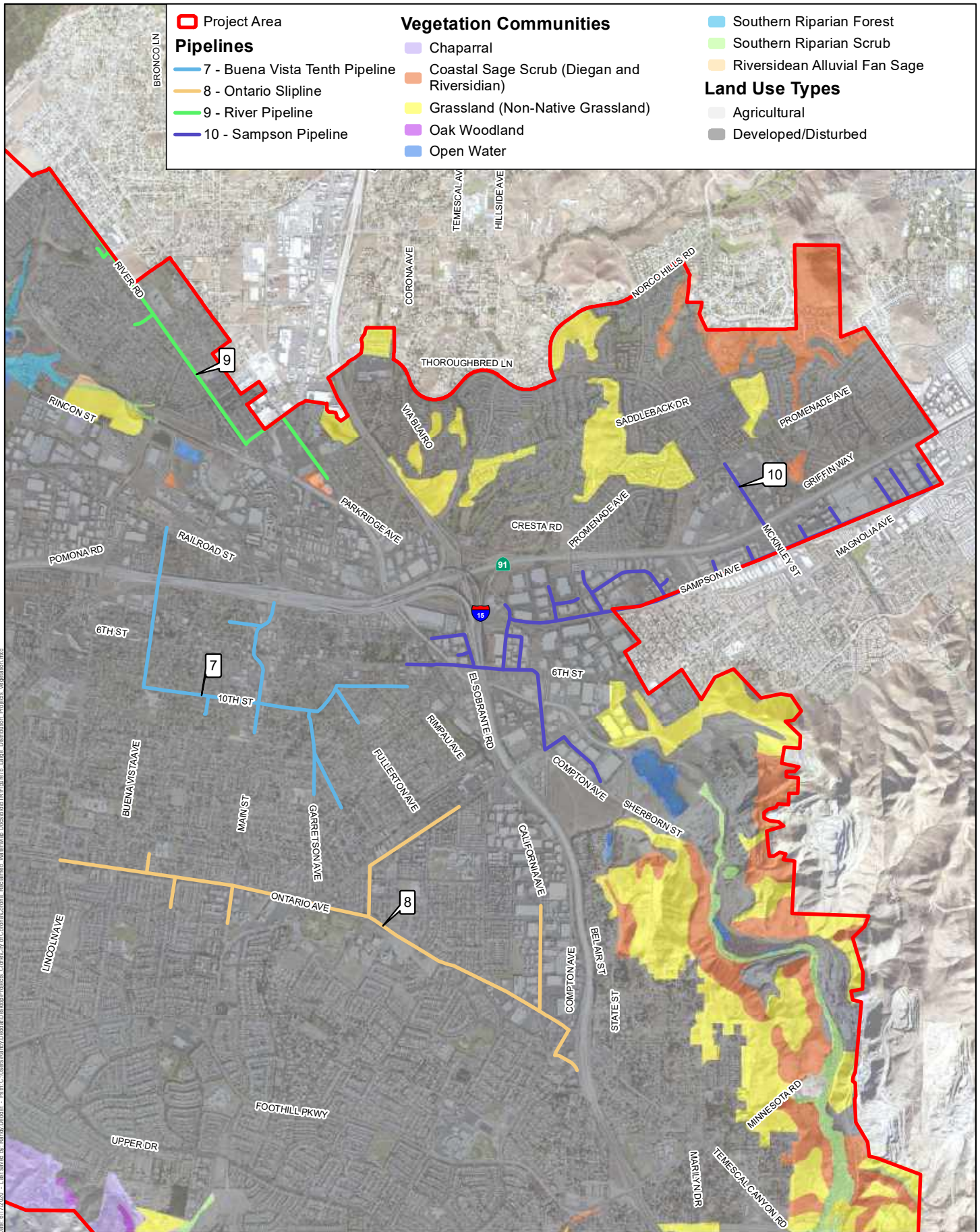




Source: County of Riverside Imagery 2016.

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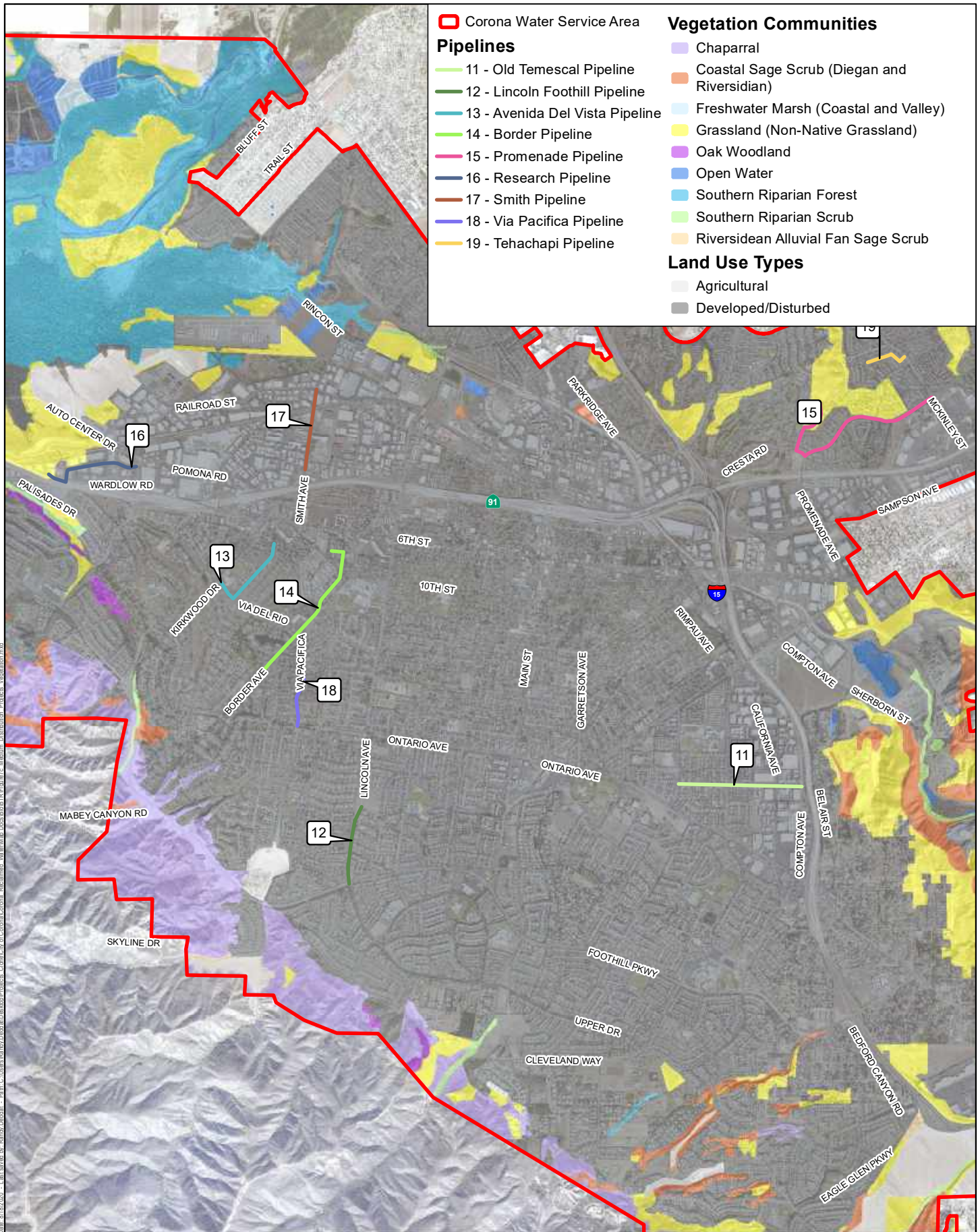


Source: County of Riverside Imagery 2016.

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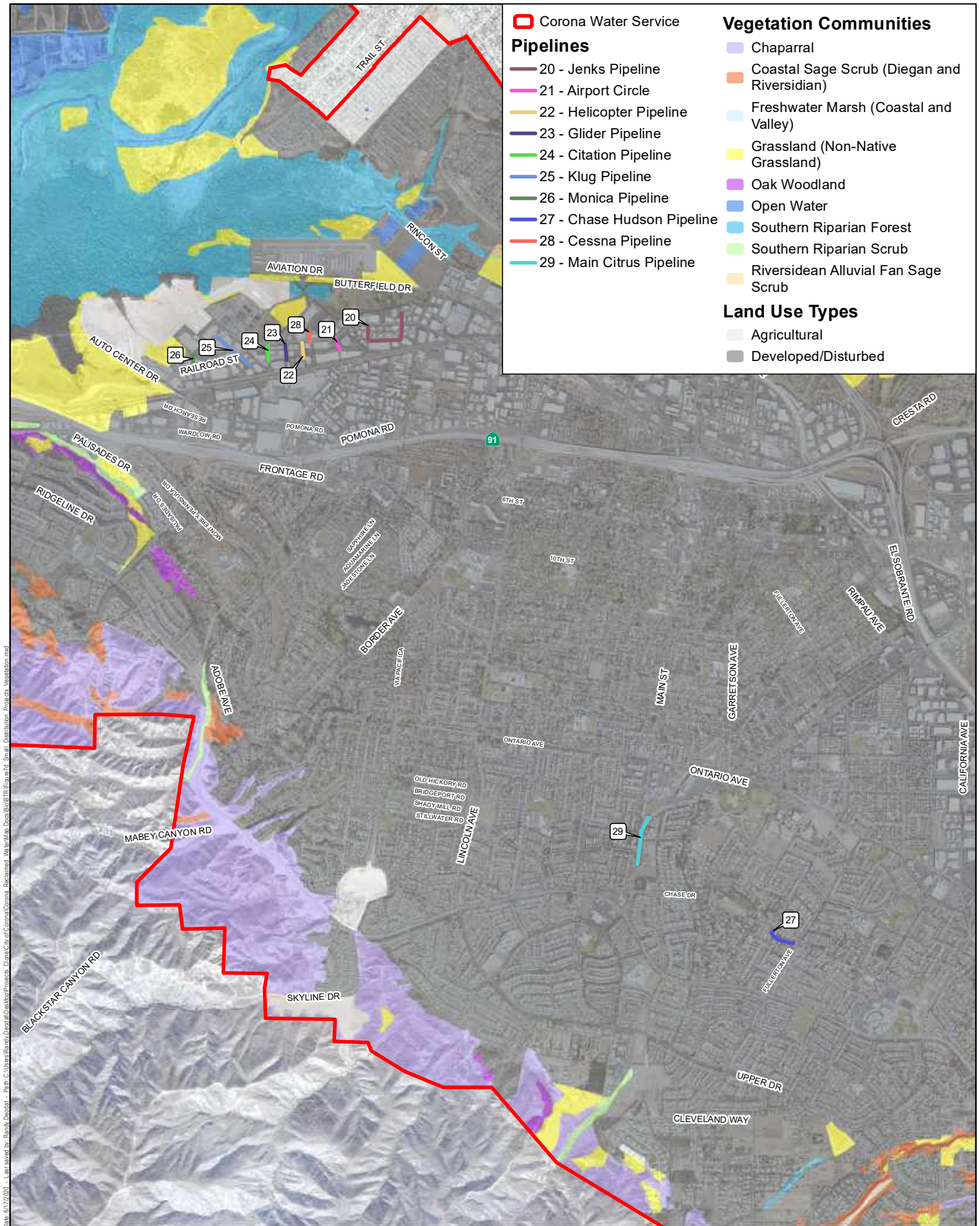


Source: County of Riverside Imagery 2016.

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Source: Vegetation Around County of Riverside Imagery 2016.

 **Harris & Associates**

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**Figure 7d**  
Vegetation Communities, Small Distribution Pipelines  
City of Corona 2018 Reclaimed Water Master Plan

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Directly and indirectly, non-native grasslands provide foraging habitat for raptors and may be succeeded naturally by coastal sage scrub or other native habitats over time. For these reasons, non-native grassland is considered sensitive by the CDFW.

Plant species in the water service area that are documented in this vegetation community include ripgut brome, cheatgrass (*Bromus tectorum*), red brome, wild oat (*Avena fatua*), Mediterranean grass (*Schismus barbatus*), shortpod mustard (*Hirschfeldia incana*), Russian thistle (*Salsola tragus*), and common sunflower (*Helianthus annuus*).

Three projects, Western Riverside County Regional Wastewater Authority (WRCRWA) Flood Control Improvements; Promenade Pipeline; and Research Pipeline, are in or adjacent to undeveloped non-native grassland (Figures 7a and 7c).

### **3.1.5 Oak Woodland**

Oak woodland is dominated by Engelmann oak (*Quercus engelmannii*), coast live oak (*Quercus agrifolia*), canyon live oak (*Quercus chrysolepis*), interior live oak (*Quercus wislizenii*), and black oak (*Quercus kelloggii*) in the canopy, which may be continuous to intermittent or savannah-like.

Oak woodland in the water service area is dominated by coast live oak woodland and occurs in the southwestern portion of the water service area on the eastern side of the Santa Ana Mountains (Figure 6).

### **3.1.6 Open Water**

Open water in the water service area consists of the Prado Flood Control Basin, Santa Ana River, and other drainages and includes non-vegetated channel and ponds (Holland 1986). Non-vegetated channel consists of predominantly unvegetated sandy, gravelly, or rocky channels. Variable water lines inhibit the growth of vegetation, although some weedy species of grass may grow along the outer edges of the channel. Vegetation may exist here but is usually less than 10 percent total cover.

The majority of open water occurs in the northern portion of the water service area (Figure 6).

### **3.1.7 Riversidian Alluvial Fan Sage Scrub**

Riversidian alluvial fan sage scrub grows on well-drained, sandy, and rocky alluvial soils deposited by streams that experience periodic flooding along the base of the San Gabriel, San Bernardino, and San Jacinto Mountains. This community is typically dominated by scale-broom (*Lepidospartum squamatum*), which is considered an indicator species. Species in this community consist of a mix of riparian species including drought deciduous subshrubs and large, evergreen, woody shrubs that adapted to intense, periodic flooding events. Due to periodic flooding and erosion, pioneer, intermediate, and mature stages of alluvial fan sage scrub vegetation communities are often distinguished. These stages vary from sparse vegetation and low-diversity to dense

subshrubs and evergreen woody shrubs. Species associated with this community include California buckwheat, coastal sagebrush, brittlebush (*Encelia farinosa*), white sage, California sycamore (*Platanus racemosa*), deerweed (*Acmispon glaber*), and mulefat (*Baccharis salicifolia*).

Riversidian alluvial fan sage scrub occurs in the northern and southwestern portions of the water service area at the edges of the Santa Ana River and Temescal Wash riparian corridors (Figures 6, 7a, and 7c).

### **3.1.8 Southern Riparian Forest**

Southern riparian forest is a general vegetation description in the Holland vegetation classification code that includes three elements: southern coast live oak riparian forest, southern arroyo willow riparian forest, and southern cottonwood-willow riparian forest. Southern riparian forest occurs along streams in canyons and valleys. Species that dominate each community vary but are typically coast live oak, willows, or a combination of cottonwoods and willows.

In the water service area, riparian forest consists primarily of native southern cottonwood-willow riparian forest with patches of giant reed (*Arundo donax*).

Southern cottonwood-willow riparian forest is a tall, open, broad-leaved, winter-deciduous riparian forest found along perennial wet streams. This community is dominated by Fremont cottonwood (*Populus fremontii*), black cottonwood (*Populus trichocarpa*), and several tree willow species (*Salix* spp.) and contains an understory of shrubby willows. This community is primarily found in subirrigated and frequently overflowed lands, which provide the moist, bare mineral soils required for the germination and establishment of the dominant species. Other plant species associated with this community include California mugwort (*Artemisia douglasiana*), mulefat, California sycamore, Goodding's black willow (*Salix gooddingii*), sandbar willow (*Salix exigua* var. *hindsiana*), Pacific willow (*Salix lasiandra*), arroyo willow (*Salix lasiolepis*), and stinging nettle (*Urtica dioica*).

Southern riparian forest occurs in the northern portion of the water service area in the Santa Ana River floodplain. As described in the 2016 Proposition 1 IS/MND prepared for the WRCRWA Transmission Pipeline, the source of supply project would be constructed in River Road and surrounded upstream and downstream by southern cottonwood-willow riparian forest along the Santa Ana River (Figure 7a). The source of supply project completed separate California Environmental Quality Act (CEQA) review and obtained site-specific permits and is not discussed further in this report.

### **3.1.9 Southern Riparian Scrub**

Southern riparian scrub is a dense riparian community found along major river systems where flood scour occurs and can also be found in smaller drainages influenced by urban and agricultural

runoff. This community is characterized by small trees or shrubs, such as willows, but lacks taller riparian trees. Species typically associated with southern riparian scrub include arroyo willow and other willow species and desert broom (*Baccharis sarothroides*). The riparian scrub in the water service area consists of mulefat scrub and southern willow scrub.

This community requires repeated flooding events to prevent succession to southern riparian forest. Species associated with this community include sandbar willow, black willow, red willow (*Salix laevigata*), arroyo willow, and mulefat.

Southern riparian scrub is considered sensitive and declining by the USFWS and CDFW. Southern riparian scrub may be regulated by the CDFW pursuant to Sections 1600 et seq. of the California Fish and Game (CFG) Code, the RWQCB pursuant to Section 401 of the Clean Water Act (CWA) or the Porter-Cologne Water Quality Control Act (Porter-Cologne Act), or the USACE pursuant to Section 404 of the CWA (33 USC 1344) if adjacent to waters of the state or United States.

In Southern California, southern riparian scrub has been impacted by filling, draining, clearing of vegetation, water diversion projects, impoundment projects, channelization, increased sediment loading, lowering of water tables, human recreational activities, gravel mining, proliferation of exotic species, grazing, and urban development (Bowler 1990).

Southern riparian scrub occurs along streams in the western and southeastern portions of the water service area (Figure 6).

### **3.1.10 Agricultural and Developed/Disturbed Land Uses**

#### **3.1.10.1 Agricultural Land**

Agricultural land includes areas occupied by dairies and livestock feed yards or areas that have been tilled for use as croplands or groves and orchards. Agricultural land in the water service area occurs primarily in the southwestern portion of the City, and grazing land occurs east of Interstate 15 in the southeastern portion of the water service area.

#### **3.1.10.2 Developed/Disturbed Land**

Developed/disturbed land includes areas of existing residential, commercial, and industrial development (locations of existing manufactured structures), roadways, parking lots, pedestrian paths, horticultural open spaces, landscape buffers and courtyards, plazas, gardens, recreation fields, and areas dominated by non-native (exotic) vegetation. Developed/disturbed land occupies the majority of the water service area and is not considered sensitive. The majority of the projects would be in developed/disturbed land (Figures 6 and 7a through 7c; Table 3).



**Table 3. 2018 Reclaimed Water Master Plan Project Vegetation Communities and Land Use Types**

Number	Project	Vegetation Community/Land Use Type
<b>Source of Supply Projects</b>		
1	WRCRWA Booster Pump Station	Developed/disturbed
<b>2</b>	<b>WRCRWA Transmission Pipeline</b>	<b>Southern cottonwood-willow riparian forest; developed/disturbed</b>
<b>3</b>	<b>WRCRWA Flow Control Improvements</b>	<b>Non-native grassland</b>
4	Rimpau California Pipeline	Developed/disturbed
5	Chase Booster Pump Station	Developed/disturbed
6	Chase Tank	Developed/disturbed
<b>Large Distribution Pipelines</b>		
7	Buena Vista Tenth Pipeline	Developed/disturbed
8	Ontario Slipline	Developed/disturbed
9	River Pipeline	Developed/disturbed
10	Sampson Pipeline	Developed/disturbed
<b>Medium Distribution Pipelines</b>		
11	Old Temescal Pipeline	Developed/disturbed
12	Lincoln Foothill Pipeline	Developed/disturbed
13	Avenida Del Vista Pipeline	Developed/disturbed
14	Border Pipeline	Developed/disturbed
<b>15</b>	<b>Promenade Pipeline</b>	<b>Non-native grassland; developed/disturbed</b>
<b>16</b>	<b>Research Pipeline</b>	<b>Non-native grassland; developed/disturbed</b>
17	Smith Pipeline	Developed/disturbed
18	Via Pacifica Pipeline	Developed/disturbed
19	Tehachapi Pipeline	Developed/disturbed
<b>Small Distribution Pipelines</b>		
20	Jenks Pipeline	Developed/disturbed
21	Airport Circle Pipeline	Developed/disturbed
22	Helicopter Pipeline	Developed/disturbed
23	Glider Pipeline	Developed/disturbed
24	Citation Pipeline	Developed/disturbed
25	Klug Pipeline	Developed/disturbed
26	Monica Pipeline	Developed/disturbed
27	Chase Hudson Pipeline	Developed/disturbed
28	Cessna Pipeline	Developed/disturbed
29	Main Citrus Pipeline	Developed/disturbed

**Notes:** WRCRWA = Western Riverside County Regional Wastewater Authority

**Bold** = 2018 RWMP projects that contain sensitive vegetation communities

### 3.2 Jurisdictional Wetlands and Waters

Aquatic resources jurisdictional delineations were not conducted as part of the site visit. However, wetlands and waters potentially subject to the regulatory jurisdiction of the USACE pursuant to Section 404 of the CWA (33 USC 1344), RWQCB pursuant to Section 401 of the CWA or the Porter-Cologne Act, and the CDFW pursuant to Sections 1600 et seq. of the CFG Code occur in the water service area. Wetland vegetation communities (i.e., freshwater marsh, open water, southern riparian forest, and southern riparian scrub) occur in the water service area and may fall under the regulatory jurisdiction of the USACE, RWQCB, or CDFW (Figure 6).

Non-wetland waters including non-vegetated stream channels, erosional features, gullies, and concrete-lined channels occur in the water service area (Figure 6). These features may fall under the regulatory jurisdiction of the USACE, RWQCB, or CDFW.

As described in the 2016 Proposition 1 IS/MND prepared for the WRCRWA Transmission Pipeline, the project would be constructed in River Road but would be surrounded upstream and downstream by southern cottonwood-willow riparian forest and the Santa Ana River (Figure 7a). This project has completed separate CEQA review and obtained site-specific permits and is not discussed further in this report.

### 3.3 Plant Species

The 25 projects in developed/disturbed land are primarily surrounded by landscaping (non-native ornamental vegetation) and roadside vegetation dominated by non-native annual herbs and non-native grasses. The WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline projects are proposed in undeveloped, non-native grassland vegetation. Dominant non-native grass species in the water service area consist of ripgut brome and red brome. Landscaped areas and non-native roadside vegetation consist of tree, scrubs, and grasses that could support nesting bird species.

### 3.4 Animal Species

In total, 48 animal species were observed during the site visit (2 invertebrate/insect, 2 reptile, 40 bird, and 4 mammal). Appendix A presents the list of animal species observed. Common bird species including American crow (*Corvus brachyrhynchos*), Anna's hummingbird (*Calypte anna*), house finch (*Haemorhous mexicanus*), and mourning dove (*Zenaida macroura*) were observed in the developed/disturbed land during the site visit. Raptor species observed include red-tailed hawk (*Buteo jamaicensis*) and American kestrel (*Falco sparverius*). Four common mammal species, California ground squirrel (*Spermophilus beecheyi*), coyote (*Canis latrans*), desert cottontail (*Sylvilagus audubonii*), and mule deer (*Odocoileus hemionus*), and two common reptile species, western fence lizard (*Sceloporus occidentalis*), and western side-blotched lizard (*Uta stansburiana elegans*), were observed.

## 3.5 Sensitive Plant and Animal Species

This section includes sensitive plant and animal species, including critical habitat and nesting birds, as defined by the CDFW, City, California Native Plant Society (CNPS), USFWS, and Western Riverside County MSHCP (CDFW 2020a, 2020b, 2020c; City of Corona 2018; CNPS 2020; USFWS 2020a, 2020c; County of Riverside 2003).

### 3.5.1 Sensitive Plant Species

Sensitive plant species are considered uncommon or limited in that they (1) are endemic to Western Riverside County, (2) are a local representative of a species or association of species not otherwise found in the region, or (3) are severely depleted within their ranges or in the region. High-interest plants include those that are listed as threatened or endangered by the USFWS or CDFW and those afforded a California Rare Plant Rank (CRPR) designation of 1 or 2 by the CNPS, although species with lower CRPR ranks (i.e., CRPR 3 and 4 species) were also identified. CRPR 4 species are considered CDFW watch list (WL) species (CDFW 2020a, 2020b, 2020c; CNPS 2020) and are not afforded special status or recognition by the USFWS or CDFW but may be considered sensitive by local jurisdictions. Consistent with the CDFW, the City does not consider CRPR 3 or 4 species to be sensitive.

Status codes in Section 3.5.1.1 are defined by the CNPS CRPR system and described below (CNPS 2020):

- CRPR 1A plants are presumed extirpated in California and either rare or extinct elsewhere.
- CRPR 1B plants are rare, threatened, or endangered in California and elsewhere.
- CRPR 2A plants are presumed extirpated in California but common elsewhere.
- CRPR 2B plants are rare, threatened, or endangered in California but more common elsewhere.
- CRPR 3 plants lack the necessary information needed to assign them to one of the other ranks or to reject them.
- CRPR 4 plants are of limited distribution or infrequent throughout a broader area in California, and their status requires more regular monitoring.

The CNPS ranks at each level also include a threat rank and are determined as follows:

- **0.1:** Seriously threatened in California (over 80 percent of occurrences threatened/high degree and immediacy of threat)
- **0.2:** Moderately threatened in California (20–80 percent occurrences threatened/moderate degree and immediacy of threat)
- **0.3:** Not very threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known)

### 3.5.1.1 Sensitive Plant Species Documented in the Water Service Area

Table 4 presents the three sensitive plant species documented in the water service area.

**Table 4. Sensitive Plant Species Documented in the Water Service Area**

Scientific Name	Common Name	Status Regional/CRPR
<i>Abronia villosa</i> var. <i>aurita</i> <sup>1</sup>	Chaparral sand-verbena	MSHCP/1B.1
<i>Calochortus weedii</i> var. <i>intermedius</i>	Intermediate mariposa lily	MSHCP/1B.2
<i>Dudleya multicaulis</i>	Many-stemmed dudleya	MSHCP/1B.2

**Sources:** Calflora 2020; CDFW 2020a, 2020c; City of Corona 2018; CNPS 2020.

**Notes:** CRPR = California Rare Plant Rank; MSHCP = Multiple Species Habitat Conservation Plan

CRPR: 1B = rare, threatened, or endangered in California and elsewhere; 1 = seriously threatened in California (over 80 percent of occurrences threatened/high degree and immediacy of threat); 2 = moderately threatened in California (20–80 percent occurrences threatened/moderate degree and immediacy of threat)

<sup>1</sup> Last observed in the water service area in 1934 (occurs in the Santa Ana River floodplain east and west of the water service area).

These three sensitive plant species are discussed in more detail below.

#### California Rare Plant Rank 1 Plant Species

Three CRPR 1 plant species were documented in the water service area. The three species are described below.

##### ***Chaparral Sand-Verbena (Abronia villosa var. aurita)***

- **Status:**<sup>1</sup> MSHCP/List 1B.1
- **Distribution:** Southern California, Arizona, and Baja California, Mexico
- **Habitat:** Chaparral, coastal sage scrub, and desert dunes
- **Occurrence in Water Service Area:** Documented in the City before it was developed; likely extirpated
- **Year Documented:** 1934

##### ***Intermediate Mariposa Lily (Calochortus weedii var. intermedius)***

- **Status:** MSHCP/List 1B.2
- **Distribution:** Southern California
- **Habitat:** Chaparral, coastal sage scrub, and grasslands
- **Occurrence in Water Service Area:** Riparian habitat adjacent to the Santa Ana River in the northwestern portion of the water service area
- **Year Documented:** 2019

##### ***Multi-Stemmed Dudleya (Dudleya multicaulis)***

- **Status:** MSHCP/List 1B.2
- **Distribution:** Southern California
- **Habitat:** Chaparral, coastal sage scrub, and grasslands

<sup>1</sup> Regional/CRPR

- **Occurrence in Water Service Area:** Riparian habitat adjacent to the Santa Ana River in the northwestern portion of the water service area
- **Year Documented:** 2019

### 3.5.2 Sensitive Animal Species

Sensitive animal species include those that have been afforded special status or recognition by the USFWS, CDFW, or Western Riverside County MSHCP. In general, the principle reason an individual taxon (species or subspecies) is given such recognition is the documented or perceived decline or limitations of its population size or geographical extent or distribution resulting in most cases from habitat loss.

#### 3.5.2.1 Sensitive Animal Species Documented in the Water Service Area

In total, 45 sensitive animal species (2 invertebrate, 1 amphibian, 6 reptile, 2 fish, 28 bird, and 6 mammal) have been documented in the water service area (Table 5). Four sensitive bird species, California horned lark (*Eremophila alpestris actia*), least Bell’s vireo (*Vireo belli pusillus*), turkey vulture (*Cathartes aura*), and yellow-breasted chat (*Icteria virens*), were observed during the site visit. Coyote tracks were observed during the site visit.

**Table 5. Sensitive Animal Species Documented in the Water Service Area**

Species		Status <sup>1</sup>
Common Name	Scientific Name	Regional/State/Federal
<b>Invertebrates</b>		
Crotch bumble bee	<i>Bombus crotchii</i>	None/CCE/None
Monarch butterfly	<i>Danaus plexippus</i>	None/None/FC
<b>Fish</b>		
Arroyo chub	<i>Gila orcuttii</i>	MSHCP/SSC/None
Santa Ana sucker	<i>Catostomus santaanae</i>	MSHCP/SSC/FT
<b>Amphibian</b>		
Coast range newt	<i>Taricha torosa</i>	MSHCP/SSC/None
<b>Reptiles</b>		
American peregrine falcon	<i>Falco peregrinus anatum</i>	MSHCP/CFP/Delisted
Bald eagle	<i>Haliaeetus leucocephalus</i>	MSHCP/CFP/BGEPA
Belding’s orange-throated whiptail	<i>Cnemidophorus hyperythrus beldingi</i>	MSHCP/WL/None
Bell’s sage sparrow	<i>Artemisospiza belli belli</i>	MSHCP/WL/None
Black-crowned night-heron	<i>Nycticorax nycticorax</i>	MSHCP/None/None
Blainville’s (coast) horned lizard	<i>Phrynosoma blainvillii</i>	MSHCP/SSC/None
Burrowing owl	<i>Athene cucularia</i>	MSHCP/SSC/None
California horned lark	<i>Eremophila alpestris actia</i>	MSHCP/WL/None
California red-sided garter snake	<i>Thamnophis sirtalis infernalis</i>	MSHCP/SSC/None
Coastal California gnatcatcher	<i>Polioptila californica</i>	MSHCP/SSC/FT

**Table 5. Sensitive Animal Species Documented in the Water Service Area**

Species		Status1
Common Name	Scientific Name	Regional/State/Federal
Coastal western whiptail	<i>Aspidoscelis tigris stejnegeri</i>	MSHCP/SSC/None
Cooper's hawk	<i>Accipiter cooperii</i>	MSHCP/None/None
Double-crested cormorant	<i>Phalacrocorax auritus</i>	MSHCP/WL/None
Golden eagle	<i>Aquila chrysaetos</i>	MSHCP/SSC/BGEPA
Great blue heron	<i>Ardea herodias</i>	MSHCP/None/None
Least Bell's vireo	<i>Vireo belli pusillus</i>	MSHCP/CE/FE
Least bittern	<i>Ixobrychus exilis</i>	None/SSC/None
Loggerhead shrike	<i>Lanius ludovicianus</i>	MSHCP/SSC/None
Merlin	<i>Falco columbarius</i>	MSHCP/WL/None
Northern harrier	<i>Circus cyaneus</i>	MSHCP/SSC/None
Osprey	<i>Pandion haliaetus</i>	MSHCP/None/None
Red-diamond rattlesnake	<i>Crotalus ruber</i>	MSHCP/SSC/None
Sharp-shinned hawk	<i>Accipiter striatus</i>	MSHCP/None/None
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	MSHCP/CE/FE
Swainson's hawk	<i>Buteo swainsoni</i>	MSHCP/CT/None
Tree swallow	<i>Tachycineta bicolor</i>	MSHCP/None/None
Tricolored blackbird	<i>Agelaius tricolor</i>	MSHCP/CT/None
Turkey vulture	<i>Cathartes aura</i>	MSHCP/None/None
Western pond turtle	<i>Clemmys [marmorata] pallida</i>	MSHCP/SSC/None
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	MSHCP/CE/FT
White-faced ibis	<i>Plegadis chihi</i>	MSHCP/SSC/None
White-tailed kite	<i>Elanus leucurus</i>	MSHCP/SSC/None
Yellow warbler	<i>Setophaga petechia</i>	MSHCP/SSC/None
Yellow-breasted chat	<i>Icteria virens</i>	MSHCP/SSC/None
<b>Mammals</b>		
Bobcat	<i>Lynx rufus</i>	MSHCP/None/None
Coyote	<i>Canis latrans</i>	MSHCP/None/None
Northwestern San Diego pocket mouse	<i>Chaetodipus fallax fallax</i>	MSHCP/SSC/None
Pocket free-tailed bat	<i>Nyctinomops femorosaccus</i>	None/SSC/None
Stephens' kangaroo rat	<i>Dipodomys stephensi</i>	MSHCP/CT/FE
Western yellow bat	<i>Lasiurus xanthinus</i>	None/SSC/None

**Sources:** CaliforniaHerps.com 2020; CDFW 2020a, 2020b; City of Corona 2018; Cornell Lab of Ornithology 2020a, 2020b; iNaturalist 2020.

**Notes:** BGEPA = Bald and Golden Eagle Protection Act; CCE = California candidate endangered; CE = California endangered; CFP= California fully protected; CT = California threatened; FC = federal candidate for listing; FE = federally endangered; FT= federally threatened; MSHCP = Western Riverside Multiple Species Habitat Conservation Plan; SSC = CDFW species of special concern; WL = CDFW watch list



## Invertebrates/Insects

### ***Crotch's Bumble Bee (Bombus crotchii)***

- **Status:**<sup>2</sup> MSHCP/California candidate endangered species (CCE)/None
- **Distribution:** California, Nevada, and Baja California, Mexico
- **Habitat:** Chaparral, grassland, and sage scrub
- **Occurrence in Water Service Area:** Historic record in the developed portion of the City
- **Year Documented:** 1933

### ***Monarch (Danaus plexippus)***

- **Status:** MSHCP/None/Candidate
- **Distribution:** Southern Canada, United States, Mexico, Central American, northern South America, parts of Australia, and western Europe
- **Habitat:** Host plant is milkweed (*Asclepias* spp.)
- **Occurrence in Water Service Area:** Forages and nectars on ornamental flowers throughout the water service area
- **Year Documented:** 2020

## Fish

### ***Arroyo Chub (Gila orcuttii)***

- **Status:** MSHCP/California fully protected (CFP)/None
- **Distribution:** Coastal Southern California
- **Habitat:** Streams and rivers
- **Occurrence in Water Service Area:** Santa Ana River in the northern portion of the water service area
- **Year Documented:** 2013

### ***Santa Ana Sucker (Catostomus santaanae)***

- **Status:** MSHCP/CFP/FT
- **Distribution:** Southern California
- **Habitat:** Streams and rivers
- **Occurrence in Water Service Area:** Santa Ana River in the northern portion of the water service area
- **Year Documented:** 2017

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<sup>2</sup> Status for sensitive animal species is organized as follows: regional/state/federal.

## Amphibians

### ***Coast Range Newt (Taricha torosa)***

- **Status:** MSHCP/Species of special concern (SSC)/None
- **Distribution:** California
- **Habitat:** Aquatic habitats
- **Occurrence in Water Service Area:** Riparian forest, riparian scrub, and non-vegetated channel associated with the Santa Ana River in the northern portion of the water service area
- **Year Documented:** 1999

## Reptiles

### ***Belding's Orange-Throated Whiptail (Aspidoscelis hyperythra beldingi)***

- **Status:** MSHCP/SSC/None
- **Distribution:** Southern California and Baja California, Mexico
- **Habitat:** Chaparral, grassland, riparian scrub, and sage scrub
- **Occurrence in Water Service Area:** Undeveloped scrub areas on the edges of the Santa Ana River riparian corridor in the northern portion of the water service area
- **Year Documented:** 2015

### ***Blainville's (Coast) Horned Lizard (Phrynosoma blainvillii)***

- **Status:** MSHCP/SSC/None
- **Distribution:** California and Baja California, Mexico
- **Habitat:** Chaparral, grassland, riparian scrub, and sage scrub
- **Occurrence in Water Service Area:** Riparian scrub southeastern portion of the water service area
- **Year Documented:** 1990

### ***California Red-Sided Garter Snake (Thamnophis sirtalis infernalis)***

- **Status:** MSHCP/SSC/None
- **Distribution:** Southern California and Baja California, Mexico
- **Habitat:** Chaparral, grassland, riparian scrub, and sage scrub
- **Occurrence in Water Service Area:** Documented in the Prado wetlands in the northwestern portion of the water service area
- **Year Documented:** 2016

### ***Coastal Western Whiptail (Aspidoscelis tigris stejnegeri)***

- **Status:** MSHCP/SSC/None
- **Distribution:** Southern California and Baja California, Mexico

- **Habitat:** Chaparral, grassland, woodland, riparian scrub, and sage scrub
- **Occurrence in Water Service Area:** Undeveloped scrub areas on the edges of the Santa Ana River riparian corridor in the northern portion of the water service area
- **Year Documented:** 2018

***Red-Diamond Rattlesnake (Crotalus ruber)***

- **Status:** MSHCP/SSC/None
- **Distribution:** Southern California and Baja California, Mexico
- **Habitat:** Chaparral, grassland, riparian scrub, and sage scrub
- **Occurrence in Water Service Area:** Three miles west of Lake Mathews in the southeastern portion of the water service area
- **Year Documented:** 1992

***Western Pond Turtle (Clemmys [marmorata] pallida)***

- **Status:** MSHCP/SSC/None
- **Distribution:** California and Baja California, Mexico
- **Habitat:** Surface water surrounded by vegetation
- **Occurrence in Water Service Area:** Santa Ana River corridor in the northern portion of the water service area
- **Year Documented:** 2011

**Birds**

***American Peregrine Falcon (Falco peregrinus anatum)***

- **Status:** MSHCP/CFP/None
- **Distribution:** North America
- **Habitat:** Large undeveloped areas near cliffs or tall buildings for nesting
- **Occurrence in Water Service Area:** Documented north of the Santa Ana River in the northwestern portion of the water service area
- **Year Documented:** 2014

***Bald Eagle (Haliaeetus leucocephalus)***

- **Status:** MSHCP/CFP/Bald and Golden Eagle Protection Act (BGEPA)
- **Distribution:** North America
- **Habitat:** Forests near surface water
- **Occurrence in Water Service Area:** Documented flying over the Santa Ana River at River Road in the northwestern portion of the water service area
- **Year Documented:** 2018

***Bell's Sage Sparrow (Artemisiospiza belli belli)***

- **Status:** MSHCP/WL/None
- **Distribution:** Southwestern United States, and northern Mexico
- **Habitat:** Sage scrub
- **Occurrence in Water Service Area:** Documented in a residential neighborhood in the eastern portion of the water service area
- **Year Documented:** 2019

***Black-Crowned Night-Heron (Nycticorax nycticorax)***

- **Status:** MSHCP/None/None
- **Distribution:** North America, South American, Asia, Africa, and Europe
- **Habitat:** Riparian
- **Occurrence in Water Service Area:** Documented in the Santa Ana River corridor in the northwestern portion of the water service area
- **Year Documented:** 2016

***Burrowing Owl (Athene cunicularia)***

- **Status:** MSHCP/SSC/None
- **Distribution:** Throughout the United States, Mexico, Central America, South America, and southern Canada
- **Habitat:** Grasslands
- **Occurrence in Water Service Area:** Documented at Naval Weapons Station Seal Beach – Detention Norco in the central portion of the water service area
- **Year Documented:** 2012

***California Horned Lark (Eremophila alpestris actia)***

- **Status:** MSHCP/SSC/None
- **Distribution:** California
- **Habitat:** Agriculture, grassland, and opening in sage scrub
- **Occurrence in Water Service Area:** Documented on an undeveloped lot in the southern portion of the water service area
- **Year Documented:** 2020

***Coastal California Gnatcatcher (Polioptila californica californica)***

- **Status:** MSHCP/SSC/FT
- **Distribution:** Southern California and Baja California, Mexico
- **Habitat:** Coastal sage scrub

- **Occurrence in Water Service Area:** Documented in the northeastern portion of the water service area, east of River Road in sage scrub adjacent to the Santa Ana River riparian corridor
- **Year Documented:** 2012

***Cooper's Hawk (Accipiter cooperii)***

- **Status:** MSHCP/WL/None
- **Distribution:** Throughout the United States, Mexico, Central America, and southern Canada
- **Habitat:** Riparian and wooded habitat
- **Occurrence in Water Service Area:** Riparian and wooded habitat associated with the Santa Ana River floodplain
- **Year Documented:** 2020

***Double-Crested Cormorant (Phalacrocorax auritus)***

- **Status:** MSHCP/WL/None
- **Distribution:** North America
- **Habitat:** Open water
- **Occurrence in Water Service Area:** Riparian forest habitat in the Santa Ana River corridor in the northwestern portion of the water service area
- **Year Documented:** 2020

***Great Blue Heron (Audea herodias)***

- **Status:** MSHCP/None/None
- **Distribution:** North America
- **Habitat:** Riparian forest near surface water
- **Occurrence in Water Service Area:** Riparian forest habitat in the Santa Ana River corridor in the northwestern portion of the water service area
- **Year Documented:** 2020

***Golden Eagle (Athene cunicularia)***

- **Status:** MSHCP/None/BGEPA
- **Distribution:** Throughout the United States, Mexico, Canada, Europe, and parts of Asia
- **Habitat:** Forests, grasslands, and shrublands; needs large undeveloped area for foraging and cliffs for nesting
- **Occurrence in Water Service Area:** Flying over the Santa Ana River in the northwestern portion of the water service area
- **Year Documented:** 2015

***Least Bell's Vireo (Vireo belli pusillus)***

- **Status:** MSHCP/California endangered (CE)/FE
- **Distribution:** Nesting – California and northern Baja California, Mexico; wintering – southern Baja California, Mexico
- **Habitat:** Riparian forest and riparian scrub
- **Occurrence in Water Service Area:** Riparian habitat adjacent to the Santa Ana River; documented in riparian forest on the northern side of the Santa Ana River west of River Road in the northwestern portion of the water service area
- **Year Documented:** 2020

***Least Bittern (Ixobrychus exilis)***

- **Status:** MSHCP/SSC/None
- **Distribution:** Throughout the United States, Mexico, Central America, northern South America, and southern Canada
- **Habitat:** Freshwater marsh
- **Occurrence in Water Service Area:** Coastal and valley freshwater marsh in the Santa Ana River floodplain in the northwestern portion of the water service area
- **Year Documented:** 2020

***Loggerhead Shrike (Lanius ludovicianus)***

- **Status:** None/SSC/None
- **Distribution:** Throughout the United States, Mexico, and southern Canada
- **Habitat:** Grasslands and open scrub habitat
- **Occurrence in Water Service Area:** Southwest of the Corona Municipal Airport in the western portion of the water service area
- **Year Documented:** 2019

***Merlin (Falco columbarius)***

- **Status:** MSHCP/WL/None
- **Distribution:** Throughout North America, Europe, and northern South America and sporadic in Asia
- **Habitat:** Grasslands and open scrub habitat
- **Occurrence in Water Service Area:** Documented in the northern portion of the water service area
- **Year Documented:** 2019

***Northern Harrier (Circus cyaneus)***

- **Status:** MSHCP/SSC/None
- **Distribution:** Throughout North America



- **Habitat:** Uplands; forages over grasslands and open areas and nests on ledges
- **Occurrence in Water Service Area:** Documented in the southeastern portion of the water service area
- **Year Documented:** 2018

***Osprey (Pandion haliaetus)***

- **Status:** MSHCP/WL/None
- **Distribution:** North America, South American, Asia, Africa, Australia, and Europe
- **Habitat:** Trees near surface water
- **Occurrence in Water Service Area:** Riparian forest habitat in the Santa Ana River corridor in the northwestern portion of the water service area
- **Year Documented:** 2019

***Sharp-Shinned Hawk (Accipiter striatus)***

- **Status:** MSHCP/WL/None
- **Distribution:** Nesting – North America and South America
- **Habitat:** Forests and woodlands
- **Occurrence in Water Service Area:** Flying over a developed area in the central portion of the water service area
- **Year Documented:** 2019

***Southwestern Willow Flycatcher (Empidonax traillii extimus)***

- **Status:** MSHCP/CE/FE
- **Distribution:** Nesting – Southwestern United States; wintering – Central American and northern South America
- **Habitat:** Riparian forest near surface water
- **Occurrence in Water Service Area:** Riparian forest habitat in the Santa Ana River corridor in the northwestern portion of the water service area
- **Year Documented:** 2015

***Swainson's Hawk (Buteo swainsoni)***

- **Status:** MSHCP/CT/None
- **Distribution:** Western North America and portions of South America
- **Habitat:** Agriculture and grasslands
- **Occurrence in Water Service Area:** Documented flying over the Santa Ana River corridor in the northern portion of the water service area
- **Year Documented:** 2018

***Tree Swallow (Tachycineta bicolor)***

- **Status:** MSHCP/None/None
- **Distribution:** North America
- **Habitat:** Trees near surface water
- **Occurrence in Water Service Area:** Documented in the Santa Ana River corridor in the northwestern portion of the water service area
- **Year Documented:** 2020

***Tricolored Blackbird (Agelaius tricolor)***

- **Status:** MSHCP/CT/None
- **Distribution:** Western United States and Baja California, Mexico
- **Habitat:** Freshwater marsh
- **Occurrence in Water Service Area:** Documented in the Santa Ana River corridor in the northern portion of the water service area
- **Year Documented:** 2015

***Turkey Vulture (Cathartes aura)***

- **Status:** MSHCP/None/None
- **Distribution:** North America and South America
- **Habitat:** Riparian, scrub, grasslands, agriculture, and disturbed
- **Occurrence in Water Service Area:** Soaring over the water service area
- **Year Documented:** 2020

***Western Yellow-Billed Cuckoo (Coccyzus americanus occidentalis)***

- **Status:** MSHCP/CE/FT
- **Distribution:** California
- **Habitat:** Riparian forest
- **Occurrence in Water Service Area:** Riparian forest habitat in the Santa Ana River corridor in the northwestern portion of the water service area
- **Year Documented:** 2011

***White-Faced Ibis (Plegadis chihi)***

- **Status:** MSHCP/WL/None
- **Distribution:** United States, southern Canada, Mexico, Central American, and South America
- **Habitat:** Freshwater wetlands and marshes
- **Occurrence in Water Service Area:** Marsh and wetland habitat in the Santa Ana River corridor in the northwestern portion of the water service area
- **Year Documented:** 2019

### ***White-Tailed Kite (Elanus leucurus)***

- **Status:** MSHCP/CFP/None
- **Distribution:** United States, Mexico, Central American, and South America
- **Habitat:** Nesting – woodlands; foraging – grasslands and agriculture land
- **Occurrence in Water Service Area:** Documented in the Santa Ana River corridor in the northern portion of the water service area and flying over developed areas
- **Year Documented:** 2019

### ***Yellow-Breasted Chat (Icteria virens)***

- **Status:** MSHCP/SSC/None
- **Distribution:** Throughout the United States, Mexico, Central America, and southern Canada
- **Habitat:** Riparian forest and riparian scrub
- **Occurrence in Water Service Area:** Riparian forest habitat north of the Santa Ana River and west of River Road in the northern portion of the water service area
- **Year Documented:** 2020

### ***Yellow Warbler (Setophaga petechia)***

- **Status:** MSHCP/SSC/None
- **Distribution:** Breeding – United States and Canada; winter: Mexico, Central, and South America
- **Habitat:** Riparian forest, riparian scrub, and montane scrub
- **Occurrence in Water Service Area:** Riparian habitat adjacent to the Santa Ana River in the northern portion of the water service area
- **Year Documented:** 2019

## **Mammals**

### ***Bobcat (Lynx rufus)***

- **Status:** MSHCP/None/None
- **Distribution:** United States, northern Mexico, and southern Canada
- **Habitat:** Chaparral, forest, grassland, riparian, and sage scrub
- **Occurrence in Water Service Area:** Riparian and disturbed habitat north of the Santa Ana River and west of River Road in the northern portion of the water service area
- **Year Documented:** 2017

### ***Coyote (Canis latrans)***

- **Status:** MSHCP/None/None
- **Distribution:** United States, Mexico, and Canada
- **Habitat:** Riparian, chaparral, grassland, and sage scrub

- **Occurrence in Water Service Area:** Riparian habitat in the northwestern portion of the water service area
- **Year Documented:** 2020

***Northwestern San Diego Pocket Mouse (Chaetodipus fallax fallax)***

- **Status:** MSHCP/SSC/None
- **Distribution:** Southern California and Mexico
- **Habitat:** Chaparral, desert scrub, grassland, forests, riparian scrub, and sage scrub; requires low-growing vegetation or rocky outcroppings and sandy soils for burrowing
- **Occurrence in Water Service Area:** Northern portion of the water service area
- **Year Documented:** 2001

***Pocket Free-Tailed Bat (Lasiurus xanthinus)***

- **Status:** MSHCP/SSC/None
- **Distribution:** Southern California, southern Arizona, southern New Mexico, southwestern Texas, and western Mexico
- **Habitat:** Desert scrub, desert wash, Joshua tree scrub, riparian forest, riparian scrub, palm oasis, and pinyon-juniper woodlands
- **Occurrence in Water Service Area:** City of Corona
- **Year Documented:** 1986

***Stephens' Kangaroo Rat (Dipodomys stephensi)***

- **Status:** MSHCP/ST/FE
- **Distribution:** Southern California
- **Habitat:** Open chaparral, open grassland, and open sage scrub; prefers open habitats with less than 50 percent vegetative cover; requires soft, well-drained substrate for building burrows and is typically found in areas with sandy soil
- **Occurrence in Water Service Area:** City of Corona
- **Year Documented:** 1993

***Western Yellow Bat (Lasiurus xanthinus)***

- **Status:** MSHCP/SSC/None
- **Distribution:** California
- **Habitat:** Desert wash, palm oasis, and riparian; needs access to water for foraging
- **Occurrence in Water Service Area:** Riparian habitat adjacent to the Santa Ana River in the northern portion of the water service area
- **Year Documented:** 1999

### 3.5.3 Critical Habitat

The USFWS designates critical habitat for listed endangered or threatened species of plants and animals. Critical habitat is defined in the federal Endangered Species Act (FESA) as habitat deemed essential to the survival of a federally listed species.

Four animal species designated as federally endangered (FE) or federally threatened (FT) have designated critical habitat mapped in the water service area (Figure 8, Critical Habitat) (USFWS 2020c). The four species are listed below:

- Bird species
  - Coastal California gnatcatcher (*Polioptila californica californica*) (FT)
  - Least Bell’s vireo (FE)
  - Southwestern willow flycatcher (*Empidonax traillii extimus*) (FE)
- Fish species
  - Santa Ana sucker (*Catostomus santaanae*) (FT)

### 3.5.4 Nesting Birds

The water service area contains nesting habitat for several bird species, including raptors, protected under the CFG Code and Migratory Bird Treaty Act (MBTA). The highest quality habitat for nesting birds in the water service area is the Santa Ana River riparian corridor in the northern portion of the area. The projects proposed in developed/disturbed land and the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline projects proposed in undeveloped, non-native grassland vegetation are adjacent to trees and shrubs that provide potential nesting habitat.

## 3.6 Wildlife Corridors and Linkages

Wildlife corridors and linkages are defined by the CDFW as areas that connect suitable animal habitat areas in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance (CDFW 2014). Natural features such as canyon drainages, ridgelines, or undeveloped areas with vegetation can provide corridors for animals. Wildlife corridors are important because they provide access to food, water, and mates; allow dispersal of individuals away from high population densities; and facilitate the exchange of genetic material between populations.

The Santa Ana River and surrounding riparian vegetation is an important wildlife corridor in the Counties of Riverside and Orange. The Santa Ana Mountains on the western side of the water service area are also an important wildlife corridor (County of Riverside 2003).

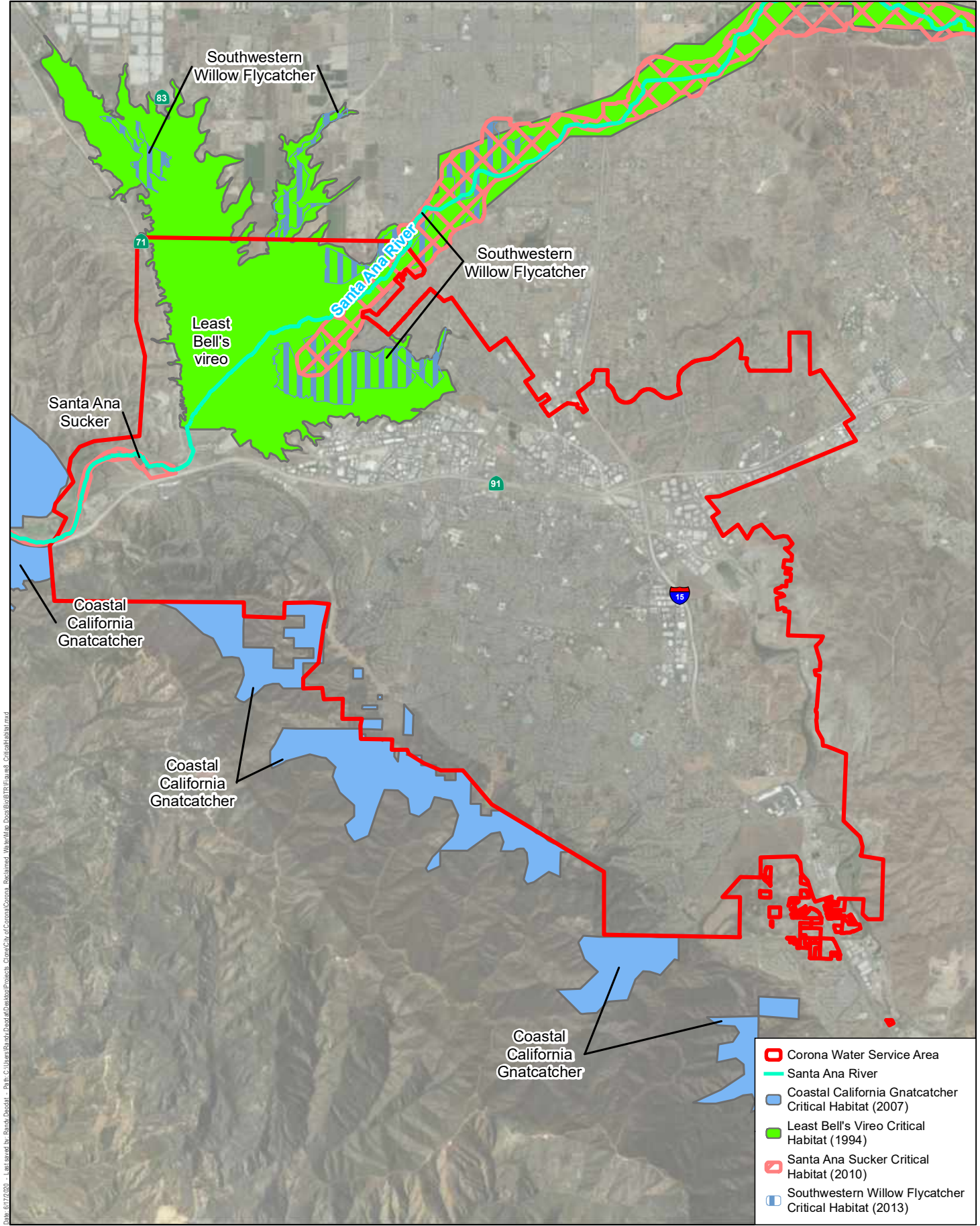
During the site visit, the biologists assessed areas identified in the Western Riverside County MSHCP in the water service area for potential wildlife corridor functions. Potential wildlife

corridors can include streams, riparian areas, and culverts under roadways. Habitat characteristics considered included topography, habitat quality, and adjacent land uses. In addition to reviewing the water service area for presence of continuous corridors, biologists also reviewed the water service area where critical habitat has been identified for potential dispersal corridors for coastal California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher based on habitat type and quality, size of habitat patches, and distance separating habitat patches (Figure 8). The Santa Ana River and associated floodplain occupy the land in the northern portion of the water service area. The Santa Ana River functions to facilitate amphibian, bird, and large mammal movement in the local area. The river provides habitat for both common and sensitive species, including least Bell's vireo and southwestern willow flycatcher.

The northern portion of the water service area is likely to be used as a wildlife corridor because of its proximity to the Santa Ana River and associated riparian corridor and open hills and mountains to the southwest and the presence of native vegetation communities. Although the presence of dense urban development throughout the water service area is likely to impede animal movement outside of the Santa Ana River corridor, the northern portion of the water service area has been designated as an important habitat connectivity area along the Santa Ana River.



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- ▭ Corona Water Service Area
- ▭ Santa Ana River
- ▭ Coastal California Gnatcatcher Critical Habitat (2007)
- ▭ Least Bell's Vireo Critical Habitat (1994)
- ▭ Santa Ana Sucker Critical Habitat (2010)
- ▭ Southwestern Willow Flycatcher Critical Habitat (2013)

Source: USFWS 1994, 2007, 2010, 2013; City of Corona Imagery 2015.



**Figure 8**  
Critical Habitat

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## **Section 4 Regional Context and Applicable Regulations**

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Biological resources in the water service area are subject to regulatory administration by the federal government and State of California. The federal government administers nonmarine plant- and animal-related issues through the USFWS, while waters of the United States issues are administered by the USACE. California law relating to wetland, water-related, and animal issues is administered by the CDFW. Under CEQA, impacts associated with a proposed project or program are assessed with regard to significance criteria determined by the CEQA lead agency, which, for the project, is the City, pursuant to CEQA Guidelines. Biological resources-related laws and regulations that apply to the project include FESA, the MBTA, the CWA, CEQA, the California Endangered Species Act (CESA), and the CFG Code.

### **4.1 Federal Regulations**

#### **4.1.1 Federal Clean Water Act (U.S. Code, Title 33, Sections 1251 through 1376)**

The CWA provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 401 requires a project operator to obtain a federal license or permit that allows activities resulting in a discharge to waters of the United States to obtain state certification, thereby ensuring that the discharge will comply with provisions of the CWA. The RWQCB administers the certification program in California. Section 402 establishes a permitting system for the discharge of any pollutant (except dredged or fill material) into waters of the United States. Section 404 establishes a permit program administered by the USACE that regulates the discharge of dredged or fill material into waters of the United States, including wetlands. The USACE implementing regulations are found at the Code of Federal Regulations, Title 33, Parts 320 and 330. Guidelines for implementation are referred to as the "Section 404(b)(1) Guidelines," which were developed by the U.S. Environmental Protection Agency in conjunction with the USACE (40 CFR 230). These guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

#### **4.1.2 Federal Endangered Species Act (U.S. Code, Title 16, Sections 1531 through 1543)**

FESA and subsequent amendments provide guidance for the conservation of endangered and threatened species and the ecosystems on which they depend. In addition, FESA defines species as threatened or endangered and provides regulatory protection for listed species. FESA also provides a program for the conservation and recovery of threatened and endangered species and the conservation of designated critical habitat that the USFWS determines to be required for the survival and recovery of these listed species.

Section 7 of FESA requires federal agencies, in consultation with the Secretary of the Interior or the Secretary of Commerce, to ensure that actions the federal agencies authorize, fund, or carry

out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. The USFWS and National Marine Fisheries Service share responsibilities for administering FESA. Regulations governing interagency cooperation under Section 7 are found in California Code of Regulations, Title 50, Part 402. The opinion issued at the conclusion of consultation will include a statement authorizing “take” (e.g., to harass, harm, pursue, hunt, wound, kill) that may occur incidentally to an otherwise legal activity.

Section 9 lists those actions that are prohibited under FESA. Although take of a listed species is prohibited, it is allowed when it is incidental to an otherwise legal activity. Section 9 prohibits take of listed species of fish, wildlife, and plants without special exemption. The definition of “harm” includes significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns related to breeding, feeding, or shelter. “Harass” is defined as actions that create the likelihood of injury to listed species by significantly disrupting normal behavioral patterns related to breeding, feeding, and shelter.

Section 10 provides a means whereby a nonfederal action with the potential to result in take of a listed species can be allowed under an incidental take permit. Application procedures are found in the Code of Federal Regulations, Title 50, Parts 13 and 17, for species under the jurisdiction of the USFWS and the Code of Federal Regulations, Title 50, Parts 217, 220, and 222, for species under the jurisdiction of the National Marine Fisheries Service.

#### **4.1.3 Migratory Bird Treaty Act (U.S. Code, Title 16, Sections 703 through 711)**

The MBTA is the domestic law that affirms or implements a commitment by the United States to four international conventions (with Canada, Mexico, Japan, and Russia) for the protection of a shared migratory bird resource. The MBTA makes it unlawful at any time, by any means, or in any manner to pursue, hunt, take, capture, or kill migratory birds. The act also applies to the removal of nests occupied by migratory birds during the nesting season. The MBTA makes it unlawful to take, pursue, molest, or disturb these species, their nests, or their eggs anywhere in the United States.

#### **4.1.4 Wetlands and Other Waters of the United States**

Aquatic resources, including riparian areas, wetlands, and certain aquatic vegetation communities, are considered sensitive biological resources and can fall under the jurisdiction of several regulatory agencies. The USACE exerts jurisdiction over waters of the United States, including waters that are subject to the ebb and flow of the tide; wetlands and other waters such as lakes, rivers, streams (including intermittent or ephemeral streams), mudflats, sandflats, sloughs, prairie potholes, vernal pools, wet meadows, playa lakes, or natural ponds; and tributaries of the previously mentioned features. The extent of waters of the United States is generally defined as

the portion that falls within the limits of the ordinary high water mark. Typically, the ordinary high water mark corresponds to the 5- to 7-year flood event.

Wetlands, including swamps, bogs, seasonal wetlands, seeps, marshes, and similar areas, are defined by the USACE as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3[b]; 40 CFR 230.3[t]). Indicators of three wetland parameters (i.e., hydric soils, hydrophytic vegetation, and wetlands hydrology), as determined by field investigation, must be present for a site to be classified as a wetland by the USACE (USACE 1987).

## **4.2 State of California Regulations**

### **4.2.1 California Endangered Species Act (California Fish and Game Code, Sections 2050 et seq.)**

CESA establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates that state agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. There are no state agency consultation procedures under CESA. For projects that would affect a listed species under both CESA and FESA, compliance with FESA would satisfy CESA if the CDFW determines that the federal incidental take authorization is consistent with CESA under CFG Code, Section 2080.1. For projects that would result in take of a species only listed under CESA, the project operator would need to apply for a take permit under Section 2081(b).

### **4.2.2 California Environmental Quality Act Guidelines, Section 15380**

Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines, Section 15380(b), provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition in FESA and Sections 2050 through 2059.26 of the CFG Code dealing with rare or endangered plants or animals. This section was included in CEQA primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on, for example, a candidate species that has not been listed by either the USFWS or CDFW. Thus, CEQA provides an agency with the ability to protect a species from the potential impacts of a project until the respective government agencies have an opportunity to designate the species as protected, if warranted. CEQA also calls for the protection of other locally or regionally significant resources, including natural communities. Although natural communities do not currently have legal protection of any kind, CEQA calls for an assessment of whether any such resources would be affected and requires findings of significance if there would be substantial losses. Natural communities listed as sensitive by the

California Natural Diversity Database are considered by the CDFW to be significant resources and fall under the CEQA Guidelines to address impacts. Local planning documents, such as General Plans, often identify these resources as well.

#### **4.2.3 California Fish and Game Code, Section 1602**

Under this section of the California Fish and Game Code, the project operator is required to notify the CDFW before the start of any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. Pursuant to the code, a “stream” is defined as a body of water that flows at least periodically, or intermittently, through a bed or channel that has banks and supports fish or other aquatic life. Based on this definition, a watercourse with surface or subsurface flows that supports or has supported riparian vegetation is a stream and is subject to CDFW jurisdiction. Altered or artificial watercourses valuable to fish and animals are subject to CDFW jurisdiction. The CDFW also has jurisdiction over dry washes that carry water during storm events.

Preliminary notification and project review generally occur during the environmental process. When an existing fish or animal resource may be substantially adversely affected, the CDFW is required to propose reasonable project changes to protect the resource. These modifications are formalized in a streambed alteration agreement, which becomes part of the plans, specifications, and bid documents for the project.

#### **4.2.4 California Fish and Game Code, Sections 2080 and 2081**

Section 2080 of the CFG Code states that “no person shall import into this state [California], export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the Commission [California Fish and Game Commission] determines to be an endangered species or threatened species, or attempt any of those acts, except as otherwise provided in this chapter, or the Native Plant Protection Act, or the California Desert Native Plants Act.” Pursuant to Section 2081 of the code, the CDFW may authorize individuals or public agencies to import, export, take, or possess state-listed endangered, threatened, or candidate species. These otherwise prohibited acts may be authorized through permits or memoranda of understanding if the take is incidental to an otherwise lawful activity, impacts of the authorized take are minimized and fully mitigated, the permit is consistent with any regulations adopted pursuant to any recovery plan for the species, and the project operator ensures adequate funding to implement the measures required by the CDFW. The CDFW makes this determination based on available scientific information and considers the ability of the species to survive and reproduce.

#### **4.2.5 California Fish and Game Code, Sections 3503, 3503.5, 3513, and 3800**

Section 3503 of the CFG Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 specifically states that it is unlawful to take, possess, or destroy any raptor (i.e., species in the orders Falconiformes and Strigiformes), including nests or



eggs. Typical violations of this code include destruction of active nests resulting from removal of vegetation in which the nests are located. Violation of Section 3503.5 could also include failure of active raptor nests resulting from disturbance of nesting pairs by nearby project construction. This statute does not provide for the issuance of any type of incidental take permit.

Section 3513 of the CFG Code upholds the MBTA by prohibiting any take or possession of birds that are designated by the MBTA as migratory nongame birds except as allowed by federal rules and regulations promulgated pursuant to the MBTA.

Section 3800 of the CFG Code affords protection to nongame birds, which are birds occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds.

#### **4.2.6 California Fish and Game Code, Sections 3511, 4700, 5050, and 5515**

California fully protected species are described in Sections 3511, 4700, 5050, and 5515 of the CFG Code. These statutes prohibit take or possession of fully protected species. The CDFW is unable to authorize incidental take of fully protected species when activities are proposed in areas inhabited by these species.

#### **4.2.7 California Wetland Definition**

Unlike the federal government, California has adopted the Cowardin et al. (1992) definition of “wetlands.” For this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes (at least 50 percent of the aerial vegetative cover); (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and saturated with water or covered by shallow water at some time during the growing season of each year.

Under normal circumstances, the federal definition of wetlands requires all three wetland identification parameters to be met, whereas the Cowardin et al. (1992) definition requires the presence of at least one of these parameters. For this reason, identification of wetlands by state agencies consists of the union of all areas that are periodically inundated or saturated or in which at least seasonal dominance by hydrophytes may be documented or in which hydric soils are present.

#### **4.2.8 Native Plant Protection Act (California Fish and Game Code, Sections 1900 through 1913)**

California’s Native Plant Protection Act requires state agencies to use their authority to carry out programs to conserve endangered and rare native plants. Provisions of the act prohibit the take of listed plants from the wild and require notification to the CDFW at least 10 days in advance of any change in land use. This allows the CDFW to salvage listed plant species that would otherwise be destroyed. The project operator is required to conduct botanical inventories and consult with the

CDFW during project planning to comply with the provisions of this act and sections of CEQA that apply to rare or endangered plants.

#### **4.2.9 Natural Community Conservation Planning Act**

The Natural Community Conservation Planning (NCCP) program is a cooperative effort to protect habitats and species. It began under the state’s NCCP Act of 1991, legislation that is broader in its orientation and objectives than CESA or FESA. These laws are designed to identify and protect individual species that have already declined significantly in number. The act and the associated Southern California Coastal Sage Scrub NCCP Process Guidelines (1993), Southern California Coastal Sage Scrub NCCP Conservation Guidelines (1993), and NCCP General Process Guidelines (1998) have been superseded by the NCCP Act of 2003, which was subsequently amended in 2003, 2011, 2012, and 2016.

The primary objective of the NCCP program is to conserve natural communities at the ecosystem level while accommodating compatible land use. The program seeks to anticipate and prevent the controversies and gridlock caused by species' listings by focusing on the long-term stability of animal and vegetation communities and including key interests in the process.

This voluntary program allows the state to enter into planning agreements with landowners, local governments, and other stakeholders to prepare plans that identify the most important areas for a threatened or endangered species, and the areas that may be less important. These NCCP plans may become the basis for a state permit to take threatened and endangered species in exchange for conserving their habitat. The CDFW and USFWS worked to combine the NCCP program with the federal Habitat Conservation Plan (HCP) process to provide take permits for state and federally listed species. Under the NCCP Act, local governments, such as the City, can take the lead in developing these NCCP plans and become the recipients of state and federal take permits.

#### **4.2.10 Porter-Cologne Water Quality Control Act**

The State Water Resources Control Board works in coordination with the nine RWQCBs to preserve, protect, enhance, and restore water quality. Each RWQCB makes decisions related to water quality for its region and may approve, with or without conditions, or deny projects that could affect waters of the state. Their authority comes from the CWA and the state’s Porter-Cologne Act. The Porter-Cologne Act broadly defines waters of the state as “any surface water or groundwater, including saline waters, within the boundaries of the state” (California Water Code, Section 13050[e]). Because the Porter-Cologne Act applies to any water, whereas the CWA applies only to certain waters, California’s jurisdictional reach overlaps and may exceed the boundaries of waters of the United States. For example, Water Quality Order No. 2004-0004-DWQ states that “shallow” waters of the state include headwaters, wetlands, and riparian areas. Moreover, in practice, the RWQCBs claim jurisdiction over riparian areas. Where riparian habitat is not present, which may be the case in headwaters, jurisdiction is taken to the top of bank.

Under the Porter-Cologne Act, the State Water Resources Control Board and the nine RWQCBs also have the responsibility of granting CWA National Pollutant Discharge Elimination System permits and waste discharge requirements for certain point-source and nonpoint-source discharges to waters. These regulations limit impacts on aquatic and riparian habitats from a variety of urban sources.

## **4.3 Local Regulations**

### **4.3.1 City of Corona 2020–2040 General Plan**

The following goals and policies in the City of Corona 2020–2040 General Plan (City of Corona 2020b) as it relates to biological resources.

#### **Environmental Resources Element**

**Goal ER-4.** Proper management of floodplain and riparian areas for their importance to wildlife habitat, unique and sensitive plant life, water recharge, and public health and safety.

**Policy ER-4.1.** Require urban uses to have a sufficient distance from a floodway boundary to ensure adequate protection of life, property, and habitat values.

**Policy ER-4.2.** Avoid altering floodways or channelization wherever possible; however, limit alterations to those that meet the following criteria:

- Alterations necessary for the protection of public health and safety only after all other options are exhausted
- Alterations essential to public service projects where no other feasible construction method or alternative project location exists
- Projects where the primary function is the improvement of fish and wildlife habitats

**Policy ER-4.3.** Design alterations and improvements to floodways so that they avoid adverse environmental effects to the maximum extent feasible, considering the following environmental factors:

- Stream scour
- Erosion protection and sedimentation
- Wildlife habitat and linkages
- Groundwater recharge capability
- Adjacent property
- Natural designs (e.g., soft riparian bottoms and gentle bank slopes, and landscaping with native plants)

**Policy ER-4.4.** Preserve and enhance existing native riparian habitat and prevent obstruction of natural watercourses to the extent feasible in new private and public developments or implement on-site replacement as mitigation.

**Policy ER-4.5.** Allow variances from city development standards on land area restricted from development due to its retention as a natural floodway, floodplain, or watercourse to encourage the preservation of natural watercourses without creating undue hardship on property owners.

**Goal ER-5.** Preservation and protection of natural and man-made wetlands from development impacts for their importance to wildlife habitat, unique and sensitive plant life, water recharge, and scenic value.

**Policy ER-5.1.** Prohibit encroachment of development into wetlands; provide buffer zones, setbacks, or other effective techniques in project siting and design to minimize direct and indirect effects to wetland habitats.

**Policy ER-5.2.** During the development review process, ensure compliance with the Clean Water Act's Section 404 in terms of wetlands mitigation policies and policies concerning fill material in jurisdictional wetlands.

**Policy ER-5.3.** Ensure compliance with habitat mitigation plans accepted by the applicable state and federal regulatory agencies that meet established ratios for wetland enhancement/restoration and on-/off-site compensation for the loss of wetland functions and values.

**Policy ER-5.4.** Consider wetlands for use as natural water treatment areas that will result in improvement of water quality.

**Policy ER-5.5.** Prohibit the planting of invasive, nonnative species in areas that would encroach and affect watercourses, their banks, and riparian areas.

**Goal ER-6.** Protection, enhancement, and sustaining of significant plant and wildlife species and habitat that exists in Corona and its Planning Area, for the long-term benefit of the natural environment and Corona residents and visitors.

**Policy ER-6.1.** Support the rehabilitation and enhancement the biological diversity and integrity of the City's natural resources through such means as vegetation restoration, control of alien plants and animals, landscape buffering, and natural watercourse channel restoration.

**Policy ER-6.2.** Preserve the wildlife and plant species and habitats listed in Tables 4-12 and 4-13 of the Technical Background Report for the General Plan and EIR [Environmental Impact Report] and those that may be considered by the City of Corona in the future.

**Policy ER-6.3.** Ensure that new developments and circulation improvements demonstrate compliance with state and federal regulations concerning the status, location, and condition of significant and sensitive biological species and habitats and riparian and riverine corridors. Biological surveys, as required and defined by the Western Riverside County Multiple Species

Habitat Conservation Plan, should identify potential impacts on biological resources and include mitigation measures to protect/replace resources in like kind.

**Policy ER-6.4.** Ensure that new developments through the development review process adhere to the Western Riverside County Multiple Species Habitat Conservation Plan, the Stephens' Kangaroo Rat Habitat Conservation Plan, and other habitat plans as appropriate to conserve biological diversity through protection of natural communities.

**Policy ER-6.5.** Preserve wildlife habitat of significant natural open space areas, including expanding habitat ranges, movement corridors, and nesting sites by adhering to and implementing the core biological linkages identified in the MSHCP for parts of the Temescal Canyon Area Plan in the City. Any proposed recreational use of those areas such as trails shall be designed to not interfere with the preservation efforts established in the MSHCP.

**Goal ER-7.** Adequate protection of biological resources and increased public awareness of their value to the community.

**Policy ER-7.1.** Require that public and private construction activities be conducted in a manner to minimize adverse impacts on natural resources and biological resources in proximity to MSHCP conservation areas and adhere to the MSHCP Guidelines pertaining to Urban/Wildlife Interface for drainage, toxics, lighting, noise, invasive barriers and grading [MSHCP Section 6.1.4].

**Policy ER-7.2.** Allow for publicly accessible sites that facilitate observation of natural resources in Corona and its sphere without compromising environmental quality.

**Policy ER-7.3.** Promote education programs and materials prepared by the Western Riverside County Regional Conservation Authority, Riverside-Corona Resource Conservation District, and other entities that promote awareness of biological resources conservation.

**Goal ER-8.** Protection of forest and vegetation resources in the City of Corona.

**Policy ER-8.1.** Cooperate with federal and state agencies to achieve the sustainable conservation of forest lands as a means of providing open space and protecting natural resources and MSHCP habitat.

**Policy ER-8.2.** Support conservation programs to reforest privately held forest lands.

**Policy ER-8.3.** Work with Riverside County to update the Vegetation Map for Corona and the SOI [sphere of influence] areas in cooperation with the California Department of Fish and Wildlife, the Natural Diversity Data Base, the United States Forest Service, and other knowledgeable agencies.

**Policy ER-8.4.** Maintain and conserve superior examples of native trees (including oak trees), natural vegetation, stands of established trees, and other features for aesthetic and water conservation purposes.

**Policy ER-8.5.** Conserve the oak tree resources in the City to the extent feasible.

**Goal ER-9.** Protection of regional washes and waterways and their use for recreational and open space purposes such as trails, habitat preservation, and groundwater recharge.

**Policy ER-9.1.** Protect sensitive biological resources in the Temescal Canyon Area Plan through adherence to policies in the Western Riverside County MSHCP.

**Policy ER-9.2.** Conserve existing wetlands and wetland functions and values in the Temescal Canyon Wash, Prado Basin, and the Santa Ana River with a focus on conservation of existing riparian, woodland, coastal sage scrub, alluvial fan scrub, and open water habitats.

**Policy ER-9.3.** Conserve existing known populations of least Bell's vireo and southwestern willow flycatcher within the Temescal Canyon Area Plan including locations at Prado Basin, Santa Ana River, and Temescal Wash. Maintain existing breeding habitat for these species at Prado Basin, Santa Ana River, and Temescal Wash where applicable to a particular project and location.

**Policy ER-9.4.** Conserve and manage suitable habitat for species known to exist in the Temescal Canyon Area Plan of Western Riverside County's Multiple Species Habitat Conservation Plan.

**Policy ER-9.5.** Conserve clay soils supporting sensitive plant species known to occur in the Temescal Canyon area, including Munz's onion, Palmer's grappling hook, small-flowered morning glory, long-spined spineflower, thread-leaved brodiaea, small-flowered microseris, and many-stemmed dudleya.

**Policy ER-9.6.** Conserve sandy soils co-occurring with chaparral supporting Palomar monkeyflower, known to occur in the Temescal Canyon area.

**Policy ER-9.7.** Conserve locations supporting California muhly, heart-lived pitcher sage, Hall's monardella, and other sensitive plant species that may occur in a wide variety of habitat types within the Temescal Canyon Area Plan.

**Policy ER-9.8.** Provide for and maintain connection(s) from the Cleveland National Forest to Prado Basin and the Santa Ana River within Temescal Canyon, providing opportunities for offsite connections to Chino Hills State Park.

**Policy ER-9.9.** Conserve upland habitat adjacent to Temescal Wash to augment existing upland habitat conservation in the Lake Matthews/Estelle Mountain Reserve areas and provide for contiguous connection of upland habitat blocks from the existing reserve to Temescal Wash.

Habitat conservation should focus on blocks of existing upland habitat east of Temescal Wash connecting to Lake Matthews/Estelle Mountain Reserve.

**Policy ER-9.10.** Conserve floodplain areas supporting sensitive plant species known to occur in Temescal Canyon, including Parry’s spineflower, peninsular spineflower, and smooth tarplant, and Coulter’s matilija poppy.

**Policy ER-9.11.** Conserve rocky soils co-occurring with coastal sage scrub, peninsular jumper, or chaparral supporting Payson’s jewelflower, known to occur in the Temescal Canyon area.

**Policy ER-9.12.** Provide for and maintain a continuous linkage along Temescal Wash from the southern boundary of the Temescal Canyon area to the Santa Ana River.

#### **4.3.2 Western Riverside County Multiple Species Habitat Conservation Plan**

The Western Riverside County MSHCP is a comprehensive, multi-jurisdictional plan that addresses biological and ecological diversity by conserving species and associated habitats while allowing approval of development in Western Riverside County (County of Riverside 2003). It is administered by the Western Riverside County Regional Conservation Authority.

The MSHCP functions as an HCP pursuant to Section 10(a)(1)(B) of FESA and as an NCCP pursuant to California’s NCCP Act. The MSHCP provides a framework for the USFWS and CDFW to grant take authorization (i.e., Incidental Take Permits) for species covered by the MSHCP that are FESA or CESA listed as threatened or endangered; take of these species without a permit would be unlawful.

The MSHCP covers 146 species, not all of which are FESA or CESA listed. However, mitigation for impacts to listed and non-listed species may be required pursuant to CEQA or other regulatory processes, and the MSHCP Conservation Area provides an avenue for this mitigation. Furthermore, should any of the non-listed covered species be subsequently FESA or CESA listed, take authorization may be granted through the MSHCP framework.

The MSHCP was approved and permits were issued by the USFWS and CDFW in 2004. The MSHCP Plan Area encompasses approximately 1.26 million acres (approximately 1,967 square miles) in Western Riverside County and addresses 146 sensitive plant and animal species and the vegetation communities on which they depend. In total, 14 animal species and 11 plant species are designated by the USFWS as federally listed under FESA. Several of these species also have federally designated critical habitat within the MSHCP jurisdiction (USFWS 2020c). The MSHCP encompasses the City and many other city, county, and state entities. It should be noted that the listing status of plants and animals may change over time, with species added or removed from listing. This Biological Resources Technical Report prepared for the project describes the species used to define the original planning subunits.



The MSHCP originally set a target Conservation Area of 500,000 acres for Western Riverside County that included the following: (1) conservation of existing publicly owned lands; (2) voluntary acquisition of privately held lands by the cities, the County, or other involved agencies; (3) voluntary acquisition of privately held lands by state or federal agencies; and (4) contribution from public and private development. The Implementing Agreement for the MSHCP between the City and other appropriate implementing agencies outlined a strategy for assembling the 500,000-acre MSHCP Conservation Area. Local implementing agencies would be responsible for contributing approximately 97,000 acres of Additional Reserve Lands through the development review process. If it is determined that all or a portion of a property is needed for inclusion as Additional Reserve Lands, various incentives may be available to the property owner in lieu of, or in addition to, monetary compensation in exchange for conveyance of property interest, such as development rights.

Approval of the MSHCP and execution of the Implementing Agreement by the USFWS and CDFW allows the agencies to issue take authorizations, including the City. Issue of take authorization to the City would allow implementation of land use decisions consistent with the MSHCP without project-by-project review and permitting by the USFWS and CDFW

## Section 5    **Thresholds of Significance**

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According to Appendix G of the CEQA Guidelines, a significant impact related to would occur if the project would (CEQA Guidelines, Section 15000 et seq.):

1. Have a substantial adverse effect, either directly or through habitat modifications, on any plant 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
2. Have a substantial adverse effect, either directly or through habitat modifications, on any animal 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
3. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service
4. 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
5. 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
6. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
7. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

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## Section 6 Impacts

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This section evaluates potential impacts to biological resources from implementation of the projects identified in the 2018 RWMP. As discussed in Section 1.1, Project Description, the analysis of impacts to biological resources are addressed by project. The proposed improvements and 2018 RWMP projects are presented on Figures 3a through 3d and described in Section 1.1.

### 6.1 Direct Impacts

Direct impacts to biological resources include temporary and permanent impacts to upland vegetation, wetlands, and non-vegetated channels. Potential direct impacts include temporary and permanent impacts to vegetation that could support sensitive plant species, sensitive animal species, nesting birds, and wildlife corridors and linkages. Potential direct impacts include impacts to water quality. Potential direct impacts also include impacts to local policies and ordinances and regional conservation planning. Direct impacts are presented in the following subsections.

Implementation of the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline could impact sensitive vegetation.

#### 6.1.1 Riparian Habitat or Other Sensitive Vegetation Community

The WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline are proposed in undeveloped non-native grassland vegetation. The WRCRWA Transmission Pipeline is proposed adjacent to undeveloped land, riparian forest, and the Santa Ana River. The WRCRWA Transmission Pipeline was previously evaluated under CEQA in the 2016 Proposition 1 IS/MND (City of Corona 2016). No further analysis of this project is required or provided in this report.

Potentially significant impacts to one sensitive vegetation community, non-native grassland, could result during the implementation of the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites.

Impacts to non-native grassland totaling less than 0.10 acre per construction phase would not be considered significant and would not require mitigation under CEQA because the small size of the impact would not be considered a substantial adverse effect. Exceptions to the previously described thresholds would be for projects impacting habitat occupied by federally or state-listed endangered or threatened species, which would be considered significant regardless of the acreage impacted.

No other direct impacts to sensitive vegetation communities would result from implementation of the remaining projects.

### **6.1.2 Sensitive Plant Species**

Sensitive plant species have been documented in the water service area. Implementation of the projects located in developed/disturbed land would not impact sensitive plant species. Although the likelihood is low, implementation of some projects in undeveloped areas have the potential to impact sensitive plant species. The WRCRWA Booster Pump Station, WRCRWA Transmission Pipeline, WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline projects are proposed on undeveloped sites that may contain sensitive plant species. The WRCRWA Booster Pump Station and WRCRWA Transmission Pipeline projects were previously evaluated under CEQA in the 2016 Proposition 1 IS/MND (City of Corona 2016). No further analysis of these projects is required or provided in this report.

The WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites contain non-native grassland habitat that could support sensitive plant species. Impacts to non-native grassland habitat that could support sensitive plant species on the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites would be potentially significant.

### **6.1.3 Sensitive Animal Species**

In total, 45 sensitive animal species have been documented in the water service area. Sensitive animal species have been documented in undeveloped areas near the WRCRWA Transmission Pipeline, WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites. The undeveloped areas on these project sites may contain sensitive animal species. The majority of sensitive animal species, including least Bell's vireo and tricolored blackbird (*Agelaius tricolor*), occur in the Santa Ana River floodplain adjacent to the WRCRWA Transmission Pipeline, which was previously evaluated under CEQA in the 2016 Proposition 1 IS/MND (City of Corona 2016). No further analysis of this project is required or provided in this report. None of the other projects identified in the 2018 RWMP have the potential to impact least Bell's vireo or tricolored blackbird. Therefore, impacts would not occur to these species as a result of project implementation.

Non-native grassland vegetation on the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites has the potential to support sensitive animal species. A query requested in the Riverside County Integrated Project Conservation Summary Report Generator found that the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites contain potentially suitable habitat for burrowing owl. Based on habitat requirements and the availability and quality of the habitats on site, it was determined that the burrowing owl is presumed to have a low likelihood of occurring due to the lack of suitable habitat and existing development and disturbance. The conservation goals of the Western Riverside County MSHCP require that burrowing owl remain absent from the project sites. If burrowing owl were found on the

WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites, a potential impact would occur.

#### **6.1.3.1 Nesting Birds**

Federal- and state-protected nesting birds have the potential to occur on or adjacent to the projects, including projects in developed/disturbed land. Implementation of the projects would have the potential to impact nesting birds (including raptors) through direct removal of nesting habitat and through disturbance to nesting birds from substantial sources of noise generated at the start of new construction during the nesting season. Construction activities that begin during the raptor nesting season and general bird nesting season (January 15 through September 15) would have the potential to significantly impact nesting birds protected under the MBTA and CFG Code.

#### **6.1.3.2 Critical Habitat**

Critical habitat for least Bell's vireo, southwestern willow flycatcher, and Santa Ana sucker primarily occurs in the Santa Ana River floodplain adjacent to the WRCRWA Transmission Pipeline, which was previously evaluated under CEQA in the 2016 Proposition 1 IS/MND (City of Corona 2016) (Figure 8). No further analysis of this project is required or provided in this report. No other projects identified in the 2018 RWMP have the potential to impact critical habitat for least Bell's vireo, southwestern willow flycatcher, or Santa Ana sucker. The majority of the critical habitat for coastal California gnatcatcher occurs outside of the water service area and would not be impacted by implementation of the projects (Figure 8). Therefore, impacts would not occur to these species as a result of project implementation.

#### **6.1.4 Jurisdictional Resources**

Implementation of the projects is not expected to impact jurisdictional aquatic resources. The WRCRWA Transmission Pipeline is adjacent to the Santa Ana River and has been designed to avoid riparian habitat and jurisdictional aquatic resources (City of Corona 2016). The WRCRWA Transmission Pipeline was previously evaluated under CEQA in the 2016 Proposition 1 IS/MND (City of Corona 2016). No further analysis of this project is required or provided in this report.

The WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline are proposed on undeveloped land that could support jurisdictional aquatic resources, although unlikely. If the potential for jurisdictional aquatic resources to occur on the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites is identified, impacts to state or federally protected jurisdictional aquatic resources could occur through direct removal, filling, hydrological interruption, or other means. Impacts to jurisdictional aquatic resources could be considered significant under CEQA depending on the type of aquatic resource and the extent of the proposed impact.

### **6.1.5 Wildlife Corridors and Linkages**

As discussed in Section 3.6, Wildlife Corridors and Linkages, important wildlife corridors occur in the northern and western portions the water service area. The Santa Ana Mountains are an important north–south wildlife corridor; however, no projects identified in the 2018 RWMP are proposed in the Santa Ana Mountains. The Santa Ana River floodplain is an important east–west wildlife corridor. The WRCRWA Transmission Pipeline crosses the Santa Ana River, which is a regional wildlife movement corridor; however, the pipeline would be installed in the existing paved road right-of-way and would not impact the Santa Ana River. The WRCRWA Transmission Pipeline was previously evaluated under CEQA in the 2016 Proposition 1 IS/MND (City of Corona 2016). No further analysis of this project is required or provided in this report. No other projects identified in the 2018 RWMP are proposed in the Santa Ana River floodplain.

### **6.1.6 Local Policies and Ordinances**

The project would comply with local policies and ordinances protecting biological resources in the City of Corona 2020–2040 General Plan (City of Corona 2020b). Section 4.3, Local Regulations, outlines the City of Corona 2020–2040 General Plan goals and policies related to biological resources and implementation of the projects.

As discussed in Section 6.1.4, the projects would avoid, or if avoidance is not feasible, fully mitigate potential impacts to jurisdictional aquatic resources, thereby complying with the City of Corona 2020–2040 General Plan Goal ER-4, Policies ER-4.1 through ER-4.5, Goal ER-5, and Policies ER-5.1 through ER-5.5.

As discussed in Sections 6.1.1 through Sections 6.1.3 and 6.3, the projects’ potential impacts to sensitive plant animal species, sensitive vegetation communities, and jurisdictional aquatic resources would be potentially significant before incorporation of mitigation. Therefore, with implementation of mitigation measures fully mitigating impacts to sensitive plant animal species, sensitive vegetation communities, and jurisdictional aquatic resources discussed in Section 6.3, Mitigation Measures, the projects would not conflict with the City of Corona 2020–2040 General Plan Goal ER-6 and Policies ER-6.1 through ER-6.5 regarding protection of plant and animal species and sensitive vegetation communities in the City and its Planning Area.

The projects would be consistent with the conservation goals outlined in the Western Riverside County MSHCP. The 2018 RWMP would result in less than significant impacts to biological resources with mitigation incorporated and is therefore compliant with the Western Riverside County MSHCP conservation planning goals and the City of Corona 2020–2040 General Plan Goal ER-7 and Policies ER-7.1 through ER-7.3.

No oak trees were identified on the project sites that would be impacted by implementation of the projects. Therefore, the project is not in conflict with the City of Corona 2020–2040 General Plan



Goal ER-8 and Policies ER-8.1 through ER-8.5 or the Riverside County Oak Tree Management Guidelines (City of Corona 2020; County of Riverside 1993).

The projects do not propose development in the Temescal Canyon Plan Area, in the Santa Ana River, or other regional washes. Therefore, the projects would not conflict with the City of Corona 2020–2040 General Plan Goal ER-9 and Policies ER-9.1 through ER-9.12.

Implementation of the project would not result in conflicts with any local policies or ordinances protecting biological resources.

### **6.1.7 Regional Conservation Planning**

As discussed in Section 4.3, the Western Riverside County MSHCP functions as a comprehensive, multi-jurisdictional plan that addresses biological and ecological diversity by conserving species and associated habitats while allowing approval of development within the County. It is the City’s policy to comply with the Western Riverside County MSHCP in its consideration and approval of development projects, including the projects identified in the 2018 RWMP. Further, the City of Corona 2020–2040 General Plan incorporates compliance with the Western Riverside County MSHCP in the goals and policies used to guide development in the City and its Planning Area (City of Corona 2020b). The projects’ compliance with the City of Corona 2020–2040 General Plan natural resources goals and policies was previously discussed in Section 6.1.6.

The avoidance, minimization, and mitigation measures proposed in Sections 6.1.1 through 6.1.4 would reduce potentially significant impacts to sensitive plant and animal species, sensitive vegetation communities, and jurisdictional aquatic resources to a less than significant level. Because the projects would not contribute to the loss of sensitive vegetation or sensitive species, the project would comply with the Western Riverside County MSHCP. Therefore, before implementation of mitigation, potentially significant impacts would occur from conflicts with regional conservation plans and mitigation would be required.

## **6.2 Indirect Impacts**

Indirect impacts may occur during the construction of the 2018 RWMP projects and post-construction operations. Potential indirect impacts from implementation of the project includes decreased water quality (e.g., through sedimentation, contaminants, or fuel release), fugitive dust, colonization of invasive plant species, noise, and lighting. The majority (25 of 29) of the projects anticipated in the project would be situated in currently developed (non-sensitive) areas of the water service area. However, the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline projects are planned on non-native grassland habitat that may support sensitive plant species. These three projects have the potential to result in indirect impacts on sensitive vegetation communities and sensitive plants and animals, and such impacts are further discussed below.

### **6.2.1 Water Quality**

Indirect impacts may occur during the construction of the projects and post-construction operations. Potential indirect impacts to sensitive vegetation communities from implementation of the project includes decreased water quality (e.g., through sedimentation, contaminants, or fuel release). The majority (25 of 29) of the projects anticipated in the project would be situated in currently developed (non-sensitive) areas of the water service area. However, the WRCRWA Booster Pump Station, WRCRWA Transmission Pipeline, WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline projects are planned in non-native grassland habitat. As previously discussed, the WRCRWA Booster Pump Station and WRCRWA Transmission Pipeline projects were previously evaluated under CEQA in the 2016 Proposition 1 IS/MND (City of Corona 2016). No further analysis of these projects is required or provided in this report.

Section 3.10, Hydrology and Water Quality, in the 2018 RWMP PEIR analyzes potential water quality impacts from implementation of projects, and concludes that impacts would be less than significant because they would comply with the applicable policies and regulations pertaining to water quality. Therefore, water quality impacts to sensitive vegetation communities would be less than significant.

### **6.2.2 Fugitive Dust**

Fugitive dust produced during construction may disperse onto sensitive vegetation adjacent to the project sites that could support sensitive plant species. The resulting dust cover may reduce native plant productivity, displacing native vegetation, reducing diversity, and affecting animals dependent on the vegetation.

Air quality impacts during construction, including fugitive dust, are analyzed in Section 3.3, Air Quality, in the 2018 RWMP PEIR. The analysis concluded that no significant impacts would result from implementation of the projects. The project would avoid indirect impacts to sensitive plants and animals from fugitive dust by implementing standard air quality control measures and National Pollutant Discharge Elimination System regulations required by construction specifications to effectively reduce fugitive dust during construction. The control measures may include but are not limited to the application of soil stabilizers (water) to disturbed areas, termination of soil disturbance during high wind events, and covering of material stockpiles. Applicable construction best management practices would also be implemented. Therefore, fugitive dust impacts would be less than significant, and no mitigation is required.

### **6.2.3 Invasive Plant Species**

Non-native plants may colonize sites disturbed by demolition and construction and may spread into adjacent native vegetation communities. Some non-native plants are highly invasive and can

disrupt native habitats by reducing native and sensitive species diversity, potentially increase flammability and fire frequency, change ground and surface water levels, and potentially adversely affect native animals that are dependent on native plant species.

Colonization by non-native plant species in the vegetated areas that may support sensitive plant species on the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites would be a potentially significant impact.

#### **6.2.4 Noise**

Construction-related noise from clearing, grubbing, and grading may impact sensitive animals. Breeding birds and mammals may temporarily or permanently leave their territories to avoid direct impacts from construction activities, which may lead to reduced reproductive success and increased mortality. Indirect noise impacts would be considered significant for state- or federally listed species and for nesting raptors and birds protected by the CFG Code and MBTA. Nesting raptors may also be affected by noise from construction activity. Construction activity that commences during the nesting season within 500 feet of an active raptor nest would result in a significant impact to sensitive animal species and nesting birds. A Construction Noise Management Plan would be implemented in the projects with Mitigation Measure NOI-1, detailed in Section 3.13, Noise, in the 2018 RWMP PEIR. Implementation of Mitigation Measure NOI-1 would incorporate best management practices into project construction so that noise levels would not be an excessive nuisance to humans and animals. Therefore, indirect noise impacts to sensitive animal species would be less than significant.

#### **6.2.5 Lighting**

Nighttime lighting during construction has the potential to spill into native vegetation communities, exposing animal species to an unnatural light regime and potentially altering their behavior patterns, which can result in lower reproductive success, reducing species diversity. In addition, nighttime lighting may provide nocturnal predators with an unnatural advantage over their prey. This may cause an increased loss in native animals that may be significant, especially for sensitive species that may occur. Temporary construction lighting that spills into undeveloped areas would be potentially significant where these areas are not currently affected by lighting. Therefore, indirect impacts from nighttime lighting would have the potential to result in a significant impact to sensitive animal species.

### **6.3 Mitigation Measures**

This section includes mitigation measures necessary to avoid and reduce significant direct and indirect impacts to sensitive vegetation communities, sensitive plant and animal species, nesting birds, and jurisdictional aquatic resources including waters and wetlands.

For reference, Table 6 provides a crosswalk for mitigation measures between this report and Section 3, Biological Resources, in the 2018 RWMP PEIR.

**Table 6. Biological Resources Mitigation Measure Equivalency Table for the 2018 Reclaimed Water Master Plan Project**

Biological Resources Technical Report	PEIR Section 3.4: Biological Resources
BIO-1: Biological Resources Survey/Habitat Assessment	BIO-11
BIO-2: Permanent Impacts to Non-native Grassland	BIO-2
BIO-3: Temporary Impacts to Non-native Grassland	BIO-3
BIO-4: Sensitive Plant Species Surveys	BIO-1
BIO-5: Invasive Plant Species Prevention	BIO-4
BIO-6: Flagging and Fencing	BIO-5
BIO-7: Contractor Training Program	BIO-6
BIO-8: Biological Monitor	BIO-7
BIO-9: Burrowing Owl Surveys	BIO-8
BIO-10: Preconstruction Nesting Bird Surveys	BIO-9
BIO-11: Night Lighting	BIO-10
BIO-12: Aquatic Resources Delineation	BIO-12
BIO-13: Aquatic Resources Permitting	BIO-13

**Notes:** PEIR = Program Environmental Impact Report

### 6.3.1 Sensitive Vegetation Communities

#### 6.3.1.1 Survey Requirements

Implementation of Mitigation Measure BIO-1 would reduce permanent impacts to non-native grassland that could support sensitive plant species on the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites.

**BIO-1: Biological Resources Survey/Habitat Assessment.** For projects proposed in the City of Corona 2018 Reclaimed Water Master Plan on undeveloped land, including the Western Riverside County Regional Wastewater Authority Flow Control Improvements, Promenade Pipeline, and Research Pipeline, a site-specific biological resources survey shall be conducted during the project design phase. The biological resources survey shall be conducted by a qualified biologist and shall include, but not be limited to, the following:

An analysis of available literature and biological databases, such as the California Natural Diversity Database, to determine sensitive biological resources that have been reported historically from the proposed project vicinity.

- A review of current land use and land ownership within the project vicinity.
- An assessment and mapping of vegetation communities present within the proposed project vicinity. If vegetation community mapping has not been conducted on the

site in the previous 3 years, updated vegetation mapping shall be conducted by a qualified biologist as part of the project planning and environmental review process. Vegetation communities shall be mapped according to the Manual of California Vegetation at the alliance level and a crosswalk table with Holland vegetation communities shall be provided.

- A general assessment of the potential for aquatic resources, including wetlands and riparian habitats, to occur onsite.
- An evaluation of potential local and regional wildlife movement corridors.
- If the project sites support vegetation communities that may provide habitat for plant or animal species, a focused habitat assessment conducted by a qualified biologist to determine the potential for sensitive plant or animal species to occur on or adjacent to the project sites.

The results of the biological survey shall be presented in a biological survey letter report.

### **6.3.1.2 Habitat Mitigation Requirements**

#### **Permanent Impacts**

Implementation of Mitigation Measure BIO-2, a mitigation ratio of 0.5:1, would be applied following the accepted ratios established by the Western Riverside County MSHCP to reduce potentially significant impacts to sensitive vegetation communities to less than significant. Mitigation Measure BIO-2 would reduce permanent impacts to non-native grassland to a less than significant level.

**BIO-2: Permanent Impacts to Non-Native Grassland.** Permanent impacts to sensitive non-native grassland shall be mitigated through the preservation of habitat, habitat creation, or enhancement, or combination thereof, in the City of Corona or off site through habitat acquisition and preservation or purchase of credits from an approved conservation bank. Mitigation for impacts to non-native grassland shall be in-kind using native grasses. Permanent impacts to sensitive non-native grassland shall be mitigated at a ratio of 0.5:1.

For on-site mitigation, a detailed mitigation plan shall be prepared before the start of construction (not applicable to mitigation met through the purchase of credits from an approved wetland mitigation bank). The Mitigation Plan shall include at a minimum the proposed location of the mitigation areas, site preparation, a plant palette, installation procedures, success criteria, fencing and signage, monitoring requirements, and other details of the habitat restoration effort and shall be prepared by a qualified biologist.

## Temporary Impacts

With implementation of Mitigation Measure BIO-3, following the accepted ratios established by the Western Riverside County MSHCP to reduce potentially significant impacts to sensitive vegetation communities to less than significant, temporary impacts to non-native grassland would be restored in place or elsewhere on the project site at a mitigation ratio of 1:1, as described in Mitigation Measure BIO-3. Mitigation Measure BIO-3 would reduce temporary impacts to non-native grassland to a less than significant level.

**BIO-3: Temporary Impacts to Non-Native Grassland.** Temporary impacts to non-native grassland shall be restored in place or elsewhere on the project site at a 1:1 replacement ratio using native grass species.

A Revegetation Plan shall be prepared. The Revegetation Plan shall include site preparation specifications, a plant palette, installation procedures, development of reasonable success criteria, appropriate monitoring and reporting protocols, implementation timelines, and contingency measures in the event of restoration failure. The City of Corona shall provide guidance for and oversight of the Revegetation Plan and implementation.

In the event that non-native grassland vegetation cannot be restored in place or elsewhere on the project site after construction, these impacts would be considered permanent and Mitigation Measure BIO-2 would be implemented.

The 0.5:1 permanent impacts and 1:1 temporary impacts mitigation ratios for the project would follow the accepted ratios established by the Western Riverside County MSHCP to reduce potentially significant impacts to sensitive vegetation communities to less than significant.

### 6.3.2 Sensitive Plant Species

#### 6.3.2.1 Survey Requirements

Implementation of Mitigation Measure BIO-4 would require sensitive plant species surveys at the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites.

**BIO-4: Sensitive Plant Species Surveys.** If one or more sensitive plant species has the potential to occur on the Western Riverside County Regional Wastewater Authority Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites, focused species surveys shall be conducted before construction to determine the presence and absence of these species to adequately evaluate potential direct or indirect impacts to these species.

Sensitive plant species surveys shall be conducted by a qualified biologist retained by the City of Corona during the appropriate season for to detect species as part of the project design phase. Surveys shall be floristic in nature and include lists of the plants identified in the survey area. Surveys shall be conducted on foot, employing a level of effort sufficient to provide comprehensive coverage. The locations and prevalence (estimated total numbers and percent cover, as applicable) of sensitive plants shall be recorded. The sensitive plant species surveys shall be valid for 3 years.

If site-specific surveys are not required because a survey was conducted within the last 3 years, impact assessment and minimization and mitigation requirements shall be based on the most recent available survey. These requirements shall also include an analysis of the potential for sensitive plant species to occur on site based on existing site conditions and shall be consistent with the most recent U.S. Fish and Wildlife Service and California Department of Fish and Wildlife survey protocols.

If sensitive plant species are observed, they shall be avoided if possible. If species cannot be avoided, impacts shall be mitigated through conservation of habitat that supports the impacted species in accordance with Mitigation Measures BIO-2 and BIO-3.

## **Construction**

The following mitigation measures would minimize construction impacts to sensitive plant species, including the spread of invasive non-native plant species, during the implementation of the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline projects.

**BIO-5: Invasive Plant Species Prevention.** During construction of the Western Riverside County Regional Wastewater Authority Flow Control Improvements, Promenade Pipeline, and Research Pipeline projects, the following measures shall be implemented to minimize the spread of invasive plant species:

- Construction equipment shall be cleaned before coming to the project sites.
- Weed-free straw wattles shall be used for erosion control.

**BIO-6: Flagging and Fencing.** If sensitive biological resources are identified on or adjacent to the Western Riverside County Regional Wastewater Authority Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites, the construction limits shall be clearly identified on construction drawings and flagged on the project site to ensure impacts to sensitive biological resources are avoided or minimized to the extent feasible. Before implementing construction activities, a qualified biologist shall verify that the flagging clearly delineates the construction limits and sensitive resources to be avoided.



**BIO-7: Contractor Training Program.** If sensitive biological resources are known to occur on or adjacent to the Western Riverside County Regional Wastewater Authority Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites, a project-specific contractor training program shall be developed and implemented to educate project contractors on the sensitive biological resources on and adjacent to the project sites and measures being implemented to avoid or minimize impacts to these species. A qualified biologist shall develop and implement the contractor training program.

**BIO-8: Biological Monitor.** If sensitive biological resources are present on or adjacent to the Western Riverside County Regional Wastewater Authority Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites and impacts may occur from implementation of construction activities, a qualified biological monitor may be required during all or a portion of the construction activities to ensure impacts to the sensitive biological resources are avoided or minimized to the extent feasible. The specific biological monitoring requirements shall be evaluated on a project-by-project basis. The qualified biological monitor shall be approved by the City of Corona based on applicable experience with the sensitive biological resources that may be impacted.

### **6.3.3 Sensitive Animal Species**

#### **6.3.3.1 Burrowing Owl**

Implementation of Mitigation Measure BIO-9 would require burrowing owl clearance surveys on the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites to reduce potential impacts to burrowing owl to less than significant.

**BIO-9: Burrowing Owl Surveys.** A burrowing owl clearance survey shall be conducted before any ground-disturbing activities in accordance with the California Department of Fish and Wildlife 2012 Staff Report on Burrowing Owl Mitigation. Two preconstruction clearance surveys shall be conducted 14–30 days and 24 hours before ground-disturbing activities to document the continued absence of burrowing owl from the project sites. The burrowing owl surveys shall be valid for 1 year.

#### **6.3.3.2 Nesting Birds**

Implementation of Mitigation Measure BIO-10 would reduce potential impacts to nesting birds protected by the CFG Code and MBTA to less than significant.

**BIO-10: Preconstruction Nesting Bird Surveys.** To the extent feasible, grubbing, trimming, or clearing of vegetation from project sites shall not occur during the general bird nesting

season (January 15 through September 15). If grubbing, trimming, or clearing of vegetation cannot feasibly occur outside of the general bird nesting season, a qualified biologist shall perform a preconstruction nesting bird survey at project sites with vegetation supporting nesting birds. Nesting bird surveys shall occur within 10 days before to the start of vegetation clearing or grubbing to determine if active bird nests are present. If no active bird nests are identified on the project site or within a 300-foot buffer of the project site, no further mitigation is necessary. If active nests of bird species covered by the Migratory Bird Treaty Act are detected on the project site during the 10-day preconstruction survey, construction activities should stay outside of a 300-foot buffer around the active nest. For raptor species, this buffer is expanded to 500 feet. It is recommended that a biological monitor be present to delineate the boundaries of the buffer area and to monitor the active nest to ensure that nesting behavior is not adversely affected by the construction activity. Once the young have fledged, and a qualified biologist has determined the nest is inactive, normal construction activities can occur.

#### **6.3.3.3 Construction Lighting**

Construction is expected to occur primarily during the daylight hours. However, if night work is needed near sensitive biological resources, implementation of Mitigation Measure BIO-11 shall be implemented at the project sites to reduce potential nighttime lighting impacts to sensitive animal species to less than significant.

**BIO-11: Night Lighting.** If temporary night lighting is necessary during construction adjacent to sensitive vegetation communities, construction contractors shall ensure lights are directed away from sensitive vegetation communities and shielded to minimize temporary lighting of the surrounding habitat and should be of the lowest illumination necessary for human safety.

#### **6.3.4 Jurisdictional Aquatic Resources**

In the event that state- or federally protected jurisdictional aquatic resources are identified during implementation of Mitigation Measure BIO-1, the Mitigation Measures BIO-12 and BIO-13 shall be implemented.

**BIO-12: Aquatic Resources Delineation.** If sensitive aquatic resources are identified on the Western Riverside County Regional Wastewater Authority Flow Control Improvements, Promenade Pipeline, and Research Pipeline project sites, a qualified biologist shall conduct an aquatic resources delineation following the methods outlined in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the U.S. Army Corps of Engineers Wetland Delineation Manual: Arid West Region to map the extent of wetlands and non-wetland waters,

determine jurisdiction, and assess potential impacts. The results of the delineation shall be presented in an aquatic resources delineation report and shall be incorporated into the California Environmental Quality Act documents required for approval and permitting of the proposed project.

**BIO-13: Aquatic Resources Permitting.** If the Western Riverside County Regional Wastewater Authority Flow Control Improvements, Promenade Pipeline, and Research Pipeline projects would impact sensitive aquatic resources, permits and authorizations shall be obtained from the U.S. Army Corps Engineers, California Department of Fish and Wildlife, or Regional Water Quality Control Board. The regulatory agency authorizations would include impact avoidance and minimization measures and mitigation measures for unavoidable impacts. Specific avoidance, minimization, and mitigation measures for impacts to jurisdictional resources shall be determined through discussions with the regulatory agencies during the proposed project permitting process and may include monetary contributions to a mitigation bank or habitat creation, restoration, or enhancement.

## **6.4 Level of Significance After Mitigation**

Project implementation would result in potentially significant direct and indirect impacts to sensitive vegetation communities, sensitive plant and animal species, nesting birds, and jurisdictional aquatic resources.

With implementation of Mitigation Measures BIO-1 through BIO-3, impacts to the sensitive vegetation community, non-native grassland, from implementation of the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline projects would be reduced to a less than significant level.

With implementation of Mitigation Measures BIO-2 through BIO-8, impacts to sensitive plant species identified as candidate, sensitive, or special-status species by the CDFW or USFWS from implementation of the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline projects would be reduced to a less than significant level.

With implementation of Mitigation Measures BIO-9 through BIO-11, direct and indirect impacts to sensitive animal species identified as candidate, sensitive, or special-status species by the CDFW or USFWS from implementation of the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline projects would be reduced to a less than significant level.

With implementation of Mitigation Measures BIO-1, BIO-12, and BIO-13, impacts to state or federally protected aquatic resources through direct removal, filling, hydrological interruption, or

other means from implementation of the WRCRWA Flow Control Improvements, Promenade Pipeline, and Research Pipeline projects would be reduced to a less than significant level.

With implementation of Mitigation Measures BIO-1 through BIO-13, impacts from conflicts with the Western Riverside County MSHCP or other regional conservation plans would be less than significant.

With implementation of Mitigation Measures BIO-1 through BIO-13, direct and indirect impacts to sensitive biological resources from implementation of the projects would be less than significant.

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## **Section 7 Cumulative Impacts and Mitigation**

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The cumulative impact analysis for biological resources considers RWMP 2018 project development in conjunction with other development projects in the water service area as well as projects covered by the Western Riverside County MSHCP.

### **7.1 Riparian Habitat or Other Sensitive Natural Community**

The geographic context for the analysis of cumulative impacts to riparian habitat or other sensitive natural communities is the area covered by the Western Riverside County MSHCP. A significant cumulative impact would occur if, in combination, cumulative projects would have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the CDFW or USFWS. All projects, including the 2018 RWMP, approved within the City's jurisdiction are required to be consistent with the City of Corona 2020–2040 General Plan natural resources goals and policies (City of Corona 2020b) and the Western Riverside County MSHCP and to provide mitigation for impacts to riparian habitat and sensitive vegetation communities, as appropriate. The 2018 RWMP, as with other cumulative projects, would be required to meet or exceed the Western Riverside County MSHCP regional conservation requirements. As analyzed in Section 6.3.1, potentially significant project-level impacts to non-native grassland habitat would be reduced to a less than significant level with implementation of Mitigation Measures BIO-1 through BIO-3. Therefore, the project's contribution would not be cumulatively considerable.

### **7.2 Sensitive Plant Species**

The geographic context for the analysis of cumulative impacts to sensitive plant species is the area covered by the Western Riverside County MSHCP. A significant cumulative impact would occur if, in combination, cumulative projects would result in a substantial adverse impact on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the CDFW or USFWS. All projects, including the 2018 RWMP, approved in the City's jurisdiction are required to be consistent with the City of Corona 2020–2040 General Plan natural resources goals and policies (City of Corona 2020b) and the Western Riverside County MSHCP and to provide mitigation for impacts to sensitive plant species, as appropriate. As analyzed in Section 6.3.2, potentially significant project-level impacts to sensitive plant species would be reduced to a less than significant level with implementation of Mitigation Measures BIO-2 through BIO-8. Since cumulative projects and the 2018 RWMP would be required to meet or exceed the Western Riverside County MSHCP regional conservation requirements, and project-specific mitigation measures would be implemented to reduce the project's impacts to sensitive plant species to below a level of significance, the project's contribution would not be cumulatively considerable.

### **7.3 Sensitive Animal Species**

The geographic context for the analysis of cumulative impacts to sensitive animal species is the area covered by the Western Riverside County MSHCP. A significant cumulative impact would occur if, in combination, cumulative projects would result in a substantial adverse impact on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the CDFW or USFWS. All projects, including the 2018 RWMP, approved within the City's jurisdiction are required to be consistent with the City of Corona 2020–2040 General Plan natural resources goals and policies (City of Corona 2020b) and the Western Riverside County MSHCP and to provide mitigation for impacts to sensitive animal species, as appropriate. The 2018 RWMP, as with other cumulative projects, would be required to meet or exceed the Western Riverside County MSHCP regional conservation requirements. As analyzed in Section 6.3.3, potentially significant project-level impacts to burrowing owl and nesting birds would be reduced to a less than significant level with implementation of Mitigation Measures BIO-9 through BIO-11. Therefore, the project's contribution would not be cumulatively considerable.

### **7.4 Jurisdictional Aquatic Resources**

The geographic context for the analysis of cumulative impacts to jurisdictional aquatic resources is the area covered by the Western Riverside County MSHCP. A significant cumulative impact would occur if, in combination, cumulative projects would have a substantial adverse impact on a state or federally protected wetland through direct removal, filling, hydrological interruption, or other means. All projects, including the 2018 RWMP, approved within the City's jurisdiction are required to be consistent with the City of Corona 2020–2040 General Plan natural resources goals and policies (City of Corona 2020b) and the Western Riverside County MSHCP and to provide mitigation for impacts to jurisdictional aquatic resources, as appropriate. The 2018 RWMP, as with other cumulative projects, would be required to meet or exceed the Western Riverside County MSHCP regional conservation requirements, and implement project-specific mitigation measures to reduce significant impacts. As analyzed in Section 6.3.4, potentially significant project-level impacts to jurisdictional aquatic resources would be reduced to a less than significant level with implementation of Mitigation Measures BIO-1, BIO-12, and BIO-13. Therefore, the project's contribution would not be cumulatively considerable.

### **7.5 Wildlife Corridors and Linkages**

The geographic context for the analysis of cumulative impacts to wildlife corridors and linkages is the area covered by the Western Riverside County MSHCP. A significant cumulative impact would occur if, in combination, cumulative projects would interfere substantially with the movement of any native resident or migratory fish or animal species or with established native resident or migratory wildlife corridors, or impede the use of native animal nursery sites. All projects, including the 2018 RWMP, approved within the City's jurisdiction are required to be



consistent with the City of Corona 2020–2040 General Plan natural resources goals and policies (City of Corona 2020b), the Western Riverside County MSHCP and to provide mitigation for impacts to wildlife corridors and linkages, as appropriate. The 2018 RWMP, as with other cumulative projects, would be required to meet or exceed the Western Riverside County MSHCP regional conservation requirements and implement project-specific mitigation measures to reduce significant impacts. As analyzed in Section 6.1.5, the project would have a less than significant impact to wildlife corridors and linkages, and no mitigation is required. Therefore, the project’s contribution would not be cumulatively considerable.

## **7.6 Local Policies and Ordinances**

The geographic context for the analysis of cumulative impacts to local policies and ordinances is the City. A significant cumulative impact would occur if, in combination, cumulative projects would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. All projects, including the 2018 RWMP, approved within the City’s jurisdiction are required to be consistent with the City of Corona 2020–2040 General Plan natural resources goals and policies (City of Corona 2020b), and the Western Riverside County MSHCP and to provide mitigation for conflicts with local policies and ordinances, as appropriate. As analyzed in Section 6.1.6, with implementation of Mitigation Measures BIO-1 through BIO-13, the 2018 RWMP would have a less than significant impact from conflicts with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance. Therefore, the project’s contribution would not be cumulatively considerable.

## **7.7 Regional Conservation Planning**

The geographic context for the analysis of cumulative impacts to regional conservation planning is the area covered by the Western Riverside County MSHCP. A significant cumulative impact would occur if, in combination, cumulative projects would conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state HCP.

In 1991, the State of California passed the NCCP Act, providing for the long-term, regional conservation of natural vegetation and animal diversity. The biological conservation offered by the Western Riverside County MSHCP provides sufficient habitat area, diversity, and linkages to allow the participating local jurisdictions to directly impact or “take” up to 146 sensitive plant and animal species in the region. These “covered species” identified in the MSHCP consist of species listed as endangered or threatened by the federal or state Endangered Species Acts and other regional rare but currently unlisted sensitive species.

The 2018 RWMP, as with other cumulative projects, would be required to meet or exceed Western Riverside County MSHCP regional conservation requirements and provide mitigation for

significant impacts, as appropriate. Consistency with regional conservation plans and mitigation measures, as appropriate, must be demonstrated in order for the project and other cumulative projects to be approved. Mitigation Measures BIO-1 through BIO-13 would reduce project-level direct and indirect impacts on sensitive plants and animals, nesting birds, sensitive vegetation communities, and jurisdictional aquatic resources. Implementation of these mitigation measures would reduce project-level impacts and ensure the project would not contribute to cumulatively significant impacts from conflicts with regional conservation planning. The project would comply with the Western Riverside County MSHCP and would not contribute to loss of sensitive vegetation communities or sensitive species. Therefore, the project's contribution would not be cumulatively considerable.

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## **Appendix A. Animal Species Observed**



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## Animal Species Observed in the Water Service Area

Family	Common Name	Scientific Name
<b>Birds</b>		
<b>Accipitriformes (Hawks, Kites, Eagles, and Allies)</b>		
<b>Accipitridae</b> Hawks, Eagles, Kites, and Allies	Red-tailed hawk	<i>Buteo jamaicensis</i>
<b>Cathartidae</b> New World Vultures	Turkey vulture <sup>1</sup>	<i>Cathartes aura</i>
<b>Anseriformes (Ducks, Geese, and Swans)</b>		
<b>Anatidae</b> Ducks, Geese, and Swans	Mallard	<i>Anas platyrhynchos</i>
<b>Falconiformes (Falcons)</b>		
<b>Falconidae</b> Falcons	American kestrel	<i>Falco sparverius</i>
<b>Caprimulgiformes (Nightjars)</b>		
<b>Apodidae</b> Swifts	White-throated swift	<i>Aeronautes saxatalis</i>
<b>Trochilidae</b> Hummingbirds	Anna's hummingbird	<i>Calypte anna</i>
	Allen's hummingbird	<i>Selasphorus sasin</i>
<b>Passeriformes (Perching Birds)</b>		
<b>Aegithalidae</b> Bushtits	Bushtit	<i>Psaltriparus minimus</i>
<b>Alaudidae</b> Larks	California horned lark <sup>2</sup>	<i>Eremophila alpestris actia</i>
<b>Cardinalidae</b> Cardinals	Black-headed grosbeak	<i>Passerina melanocephalus</i>
<b>Columbiformidae</b> Doves	Mourning dove	<i>Zenaid macroura</i>
	Rock pigeon <sup>3</sup>	<i>Columba livia</i>
<b>Corvidae</b> Jays, Magpies, and Crows	American crow	<i>Corvus brachyrhynchos</i>
<b>Fringillidae</b> Finches	House finch	<i>Haemorhous mexicanus</i>
	Lawrence's goldfinch	<i>Spinus lawrencei</i>
	Lesser goldfinch	<i>Spinus psaltria</i>
<b>Icteridae</b> Orioles	Bullock's oriole	<i>Icterus bullockii</i>
	Hooded oriole	<i>Icterus cucullatus</i>
	Yellow-breasted chat <sup>1,4</sup>	<i>Icteria virens</i>
	Western meadowlark	<i>Sturnella neglecta</i>
<b>Mimidae</b> Mockingbirds	Northern mockingbird	<i>Mimus polyglottos</i>

### Animal Species Observed in the Water Service Area

Family	Common Name	Scientific Name
<b>Passerellidae</b> Passerines	California towhee	<i>Melospiza crissalis</i>
	Song sparrow	<i>Melospiza melodia</i>
	Spotted towhee	<i>Pipilo maculatus</i>
	White-crowned sparrow	<i>Zonotrichia leucophrys</i>
<b>Parulidae</b> Wood Warblers	Yellow-rumped warbler	<i>Setophaga coronata</i>
<b>Turdidae</b> Songbirds	Western bluebird	<i>Sialia mexicana</i>
<b>Sturnidae</b> Starlings	European starling <sup>3</sup>	<i>Sturnus vulgaris</i>
<b>Sylviidae</b> Sylviid Warblers	Wren	<i>Chamaea fasciata</i>
<b>Troglodytidae</b> Wrens	Bewick's wren	<i>Thryomanes bewickii</i>
	House wren	<i>Troglodytes aedon</i>
<b>Tyrannidae</b> Tyrant Flycatchers	Ash-throated flycatcher	<i>Myiarchus cinerascens</i>
	Black phoebe	<i>Sayornis nigricans</i>
	Cassin's kingbird	<i>Tyrannus vociferans</i>
	Say's phoebe	<i>Sayornis saya</i>
<b>Hirundinidae</b> Swallows, Martins, and Saw-Wings	Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>
<b>Vireonidae</b> Vireos	Least Bell's vireo <sup>1, 4, 4</sup>	<i>Vireo bellii pusillus</i>
<b>Galliformes (Fowls)</b>		
<b>Odontophoridae</b> New World Quails	California quail	<i>Callipepla californica</i>
<b>Piciformes (Woodpeckers)</b>		
<b>Picidae</b> Woodpeckers	Acorn woodpecker	<i>Melanerpes formicivorus</i>
	Nuttall's woodpecker	<i>Dryobates nuttallii</i>
<b>Mammals</b>		
<b>Artiodactyla (Cloven-hoofed Mammals)</b>		
<b>Cervidae</b> Deer and Elk	Mule deer	<i>Odocoileus hemionus</i>
<b>Carnivora (Carnivores)</b>		
<b>Canidae</b> Foxes, Wolves, and Relatives	Coyote <sup>1</sup>	<i>Canis latrans</i>
<b>Rodentia (Rodents)</b>		
<b>Sciuridae</b> Squirrels, Chipmunks, and Marmots	California ground squirrel	<i>Spermophilus beecheyi</i>

### Animal Species Observed in the Water Service Area

Family	Common Name	Scientific Name
<b>Lagomorpha (Rabbits, Hares, and Pika)</b>		
<b>Leporidae</b> Rabbits and Hares	Desert cottontail rabbit	<i>Sylvilagus audubonii</i>
<b>Invertebrates</b>		
<b>Lepidoptera (Butterflies)</b>		
<b>Nymphalidae</b> Brush-Footed Butterflies	Painted lady	<i>Vanessa cardui</i>
	Lorquin's admiral	<i>Limenitis lorquini</i>
<b>Reptiles</b>		
<b>Squamata (Lizards and Snakes)</b>		
<b>Iguanidae</b> American Arboreal Lizards, Chuckwallas, and Iguanas	Western fence lizard	<i>Sceloporus occidentalis</i>
<b>Phrynosomatidae</b> North American Spiny Lizards	Western side-blotched lizard	<i>Uta stansburiana elegans</i>

**Notes:**

- <sup>1</sup> Western Riverside County Multiple Species Habitat Conservation Plan
- <sup>2</sup> California Department of Fish and Wildlife Watch List species
- <sup>3</sup> Non-native
- <sup>4</sup> California Department of Fish and Wildlife Species of Special Concern

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**Appendix D. Cultural and Tribal Cultural Resources Technical Report**

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# Cultural and Tribal Cultural Resources Technical Report for the City of Corona 2018 Reclaimed Water Master Plan, Corona, California

***Submitted to:***

City of Corona  
Public Works Department

***Prepared for:***

Kristin Blackson  
Harris & Associates  
600 B Street, Suite 2000  
San Diego, CA 92101

***Prepared by:***

Shelby Gunderman Castells, M.A., RPA  
Director of Archaeology  
Spencer Bietz  
Senior Archaeologist  
Red Tail Environmental  
1529 Simpson Way  
Escondido, CA 92029  
(760) 294-3100

June 2020

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## NATIONAL ARCHAEOLOGICAL DATABASE INFORMATION

**Authors:** Shelby Castells, M.A., RPA, and Spencer Bietz

**Firm:** Red Tail Environmental

**Client:** Harris and Associates

**Submitted to:** City of Corona

**Report Date:** June 2020

**Report Title:** Cultural and Tribal Cultural Resources Technical Report for the City of Corona 2018 Reclaimed Water Master Plan, Corona, California

**Type of Study:** Record Search Summary and Constraints and Resources Sensitivity Analysis

**New Sites:** N/A

**Updated Sites:** N/A

**USGS Quads:** Prado Dam, Corona North, Black Star Canyon, Corona South, Corona, and Lake Mathews 7.5' Quadrangles

**Acreage:** Approximately 24,930 acres (39 square miles)

**Key Words:** City of Corona Reclaimed Water Master Plan, Constraints Analyses, prehistoric archaeology, historic archaeology

## **ACRONYMS AND ABBREVIATIONS**

AB 52	California State Assembly Bill 42
AMSL	above mean sea level
APE	Area of Potential Effects
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
City	City of Corona
Corona Register	Corona Register of Historic Resources
CRHR	California Register of Historical Resources
EIC	Eastern Information Center
PEIR	Program Environmental Impact Report
NAHC	Native American Heritage Commission
OHP	Office of Historic Preservation
OPR	Office of Planning and Research
PRC	Public Resources Code
Red Tail	Red Tail Environmental
RWMP	City of Corona 2018 Reclaimed Water Master Plan
SB 18	California State Senate Bill 18
USGS	U.S. Geological Survey

## EXECUTIVE SUMMARY

Red Tail Environmental (Red Tail) was contracted by Harris and Associates to conduct a cultural resources and Tribal Cultural Resources study in support of the Program Environmental Impact Report (PEIR) in order to evaluate if the City of Corona 2018 Reclaimed Water Master Plan (RWMP) Project will cause an adverse effect on significant historical resources or Tribal Cultural Resources; to identify areas which may be sensitive for cultural resources; make recommendations for program-wide mitigation measures for future specific projects within the RWMP project area; and make recommendations for future archaeological work that may be required in compliance with the California Environmental Quality Act (CEQA) and the Corona Historic Resources Ordinance—Chapter 17.63 of the Corona Municipal Code. The City of Corona 2018 Reclaimed Water Master Plan Project is located within the City of Corona Water Service area, which includes the City of Corona’s jurisdictional boundary and portions of the unincorporated communities of El Cerrito and Coronita and Tesmescal Canyon. The City of Corona is the lead agency.

The following cultural resources constraints analysis and sensitivity study includes a review of relevant site records and reports on file with the Eastern Information Center (EIC) of the California Historical Resources Information System (CHRIS), a review of the Sacred Lands File (SLF) held by the Native American Heritage Commission (NAHC), Native American outreach, and archival research.

The record search of the CHRIS held at the EIC, is currently not available as the EIC is temporarily closed due to COVID-19, therefore the record search results provided for the *City of Corona General Plan Update: Cultural Resources Technical Report* (SWCA 2018) were utilized, as this report area largely overlaps with the City of Corona Water Service area. Only the northwest section of the City of Corona Water Service area is not included in the 2018 record search, no Project Components are located within this area, and this information can be added to subsequent draft of the report, if it becomes available. The record search identified 172 previously conducted cultural resources studies that have been conducted within the City of Corona Water Service area. The record search identified that 96 cultural resources have been previously recorded within the City of Corona water service area. Of these resources, 28 are prehistoric archaeological sites, 66 are historic archaeological sites, and two are multicomponent resources. Thirty previously recorded built environment resources have been identified within the City of Corona water service area. Thirteen of the previously recorded cultural resources are located within 100 feet of Project Component and an additional three previously recorded resources are intersected by a Project Component.

A search of the SLF held by the NAHC was positive, indicating that sacred lands have been identified within the RWMP project area. The NAHC provided a list of 37 tribal organizations and individuals to contact for additional information. Red Tail sent information request letters to the 37 tribal organizations and individuals. To date, three responses have been received.

In order to assess the cultural resources sensitivity of the RWMP project area Red Tail combined the results of the record searches, environmental factors, impacts of modern development and archival research to identify areas of the RWMP as high, medium, and low for cultural resources sensitivity. Due to the identification of numerous cultural resources, the geographic features of the project area being located within an alluvial area and bisected by the Santa Ana River and multiple drainages, and development of portions of the project area prior to the start of environmental laws which required archaeological studies in the mid-1970s, much of the City of Corona Water Service area was identified as moderate to high sensitivity for cultural resources, which could include prehistoric and/or historic archaeological resources. Areas with steep slopes on the western side of the project area and a disturbed mining area located on the eastern edge of the project area was identified as having a low sensitivity for cultural resources.

Prior to any future projects within the RWMP that could directly affect cultural resources, steps should be taken to determine the presence of cultural resources and the appropriate mitigation for any significant resources that may be impacted. CEQA requires that before approving discretionary projects the Lead Agency must identify and examine the significant adverse environmental impacts which may result from that project. A project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment (Sections 15064.5(b) and 21084). A substantial adverse change is defined as demolition, destruction, relocation, or alteration activities which would impair historical significance (Sections 15064.5(b)(1) and 5020.1). Any historical resource listed in or eligible to be listed in the California Register of Historical Resources and/or the Corona Register of Historic Resources, is considered to be historically or culturally significant. Resources which are listed in a local historic register or deemed significant in a historical resource survey as provided under Section 5024.1(g) are presumed historically or culturally significant unless "the preponderance of evidence" demonstrates they are not. Finally, a resource that is not listed in, or determined to be eligible for listing in, the California Register of Historic Resources, not included in a local register of historic resources, or not deemed significant in a historical resource survey may nonetheless be historically significant, pursuant to Section 21084.1.

The report includes an impact analysis to identify if implementation of the RWMP will adversely impact cultural and/or Tribal Cultural Resources. Construction of the Project Components of the RWMP could result in temporary vibration-related effects, which could potentially be significant, in the immediate vicinity of the construction of a built environment historical resource. Development in accordance with the proposed project could adversely impact known or previously unrecorded cultural resources that may be eligible to the CRHR or Corona Register and/or Tribal Cultural Resources. In addition, there is a potential to identify unexpected human remains during implementation of the RWMP. Four mitigation measures are recommended to mitigate potential adverse effects. The recommended mitigation measures include: construction related vibration; project specific archaeological surveys; the creation of an archaeological and Native American monitoring program; and the identification and treatment of Human Remains.

# 1. INTRODUCTION

## 1.1 PURPOSE OF STUDY

Red Tail Environmental (Red Tail) was contracted by Harris and Associates to conduct a cultural resources and Tribal Cultural Resources study in support of the Program Environmental Impact Report (PEIR) in order to evaluate if the City of Corona 2018 Reclaimed Water Master Plan Project (RWMP project) will cause adverse effects on significant historical resources or Tribal Cultural Resources, to identify areas which may be sensitive for cultural resources; makes recommendations for program-wide mitigation measures for future specific projects within the RWMP project area, and recommendations for future archaeological work that may be required in compliance with the California Environmental Quality Act (CEQA) and/or the Corona Historic Resources Ordinance—Chapter 17.63 of the Corona Municipal Code. The City of Corona (City) is the lead agency for the RWMP Project and the PEIR.

## 1.2 REGULATORY FRAMEWORK

### 1.2.1 CEQA and California Register of Historical Resources

CEQA requires that all private and public activities not specifically exempted be evaluated against the potential for environmental damage, including effects to historical resources. Historical resources are recognized as part of the environment under CEQA. The act defines historical resources as “any object, building, structure, site, area, or place that is historically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California” (Division I, Public Resources Code, Section 5021.1[b]).

Lead agencies have a responsibility to evaluate historical resources against the California Register of Historical Resources (CRHR) criteria prior to making a finding as to a proposed project’s impacts to historical resources. Mitigation of adverse impacts is required if the proposed project will cause substantial adverse change. Substantial adverse change includes demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired. While demolition and destruction are fairly obvious significant impacts, it is more difficult to assess when change, alteration, or relocation crosses the threshold of substantial adverse change. The CEQA Guidelines provide that a project that demolishes or alters those physical characteristics of a historical resource that convey its historical significance (i.e., its character-defining features) is considered to materially impair the resource’s significance. The CRHR is used in the consideration of historical resources relative to significance for purposes of CEQA. The CRHR includes resources listed in, or formally determined eligible for listing in, the NRHP and some California State Landmarks and Points of Historical Interest. 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 CRHR and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise.

Generally, a resource shall be considered by the lead agency to be “historically significant” if the resource meets the criteria for listing on the CRHR (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852), which consist of the following:

- Criteria 1: it is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; or
- Criteria 2: it is associated with the lives of persons important to local, California, or national history; or



- Criteria 3: it embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values; or
- Criteria 4: it has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

### **1.2.2 California State Assembly Bill 52**

California State Assembly Bill No. 52 (AB 52) amends CEQA by creating a new category of cultural resources, Tribal Cultural Resources, and new requirements for consultation with Native American Tribes. AB 52 came into effect July 1, 2015. Lead agencies are required to offer Native American tribes with an interest in tribal cultural resources located within its jurisdiction the opportunity to consult on CEQA documents. The procedures under AB 52 offer the tribes an opportunity to take an active role in the CEQA process in order to protect tribal cultural resources. If the tribe requests consultation within 30 days upon receipt of the notice, the lead agency must consult with the tribe.

A Tribal Cultural Resource is defined as 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 may be considered significant if it is (1) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources; or (2) 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 §5024.1.

### **1.2.3 California State Senate Bill 18**

California State Senate Bill 18 (SB 18) requires local city and county governments to consult with California Native American tribes to aid in the protection of traditional tribal cultural places ("cultural places") through local land use planning. SB 18 also requires the Governor's Office of Planning and Research (OPR) to include in the General Plan Guidelines advice to local governments for how to conduct these consultations.

The intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting, or mitigating impacts to, cultural places. The purpose of involving tribes at these early planning stages is to allow consideration of cultural places in the context of broad local land use policy, before individual site-specific, project-level land use decisions are made by a local government.

SB 18 refers to Public Resources Code §5097.9 and 5097.995 to define cultural places:

Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine (Public Resources Code §5097.9).

Native American historic, cultural, or sacred site, that is listed or may be eligible for listing in the California Register of Historic Resources pursuant to Section 5024.1, including any historic or prehistoric ruins, any burial ground, any archaeological or historic site (Public Resources Code §5097.995)

### **1.2.4 California Public Resource Code Section 5097.98**

In the fall of 2006, AB 2641 was signed into law by Governor Schwarzenegger. This bill amended PRC 5097.98 to revise the process for the discovery of Native American remains during land development. The purposes of the revisions are to encourage culturally sensitive treatment of Native American remains and

## 1. Introduction

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to require meaningful discussions and agreements concerning treatment of the remains at the earliest possible time. The intent is to foster the preservation and avoidance of human remains during development. The law now requires that the following process be followed if human remains are discovered.

- A. Whenever the Native American Heritage Commission receives notification of a discovery of Native American human remains from a county coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery of the Native American remains and may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The descendants shall complete their inspection and make their recommendation within 48 hours of their notification by the Native American Heritage Commission. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials.
- B. Upon the discovery of the Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in this section, with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.
  1. The descendant's preferences for treatment may include the following:
    - a. The nondestructive removal and analysis of human remains and items associated with Native American human remains.
    - b. Preservation of Native American human remains and associated items in place.
    - c. Relinquishment of Native American human remains and associated items to the descendants for treatment.
    - d. Other culturally appropriate treatment.
  2. The parties may also mutually agree to extend discussions, taking into account the possibility that additional or multiple Native American human remains, as defined in this section, are located in the project area providing a basis for additional treatment measures.
- C. For the purposes of this section, "conferral" or "discuss and confer" means the meaningful and timely discussion and careful consideration of the views of each party, in a manner that is cognizant of all parties' cultural values, and where feasible, seeking agreement. Each party shall recognize the other's needs and concerns for confidentiality of information provided to the other.
- D.
  1. Human remains of a Native American may be an inhumation or cremation, and in any state of decomposition or skeletal completeness.
  2. Any items associated with human remains that are placed or buried with Native American human remains are to be treated in the same manner as the remains, but do not by themselves constitute human remains.
- E. Whenever the commission is unable to identify a descendant, or the descendants identified fail to make a recommendation, or the landowner or his or her authorized representative rejects the recommendation of the descendants and the mediation provided for in subdivision (k) of section 5097.94. if invoked, fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall inter the human remains and items associated with Native American human remains with appropriate dignity on the property in a location not subject to further and future subsurface disturbance. To protect these sites, that landowner shall do one or more of the following:
  1. Record the site with the commission or the appropriate Information Center.
  2. Utilize an open-space or conservation zoning designation or easement.

3. Record a document with the county in which the property is located.
- F. Upon the discovery of multiple Native American human remains during a ground disturbing land development activity, the landowner may agree that additional conferral with descendants is necessary to consider culturally appropriate treatment of multiple Native American human remains. Culturally appropriate treatment of such a discovery may be ascertained from review of the site utilizing cultural and archaeological standards. Where the parties are unable to agree on the appropriate treatment measures the human remains and buried with Native American human remains shall be reinterred with appropriate dignity, pursuant to subdivision (e).
- G. Notwithstanding the provisions of Section 5097.9, this section, including those actions taken by the landowner or his or her authorized representative to implement this section and any action taken to implement an agreement developed pursuant to subdivision (1) of Section 5097.94 shall be exempt from the California Environmental Quality Act (Division 13 (commencing with Section 21000)).
- H. Notwithstanding the provisions of Section 30244, this section, includes those actions taken by the landowner or his or her authorized representative to implement this section, and any action taken to implement an agreement developed pursuant to subdivision (1) of Section 5097.94 shall be exempt from the requirements of the California Coastal Act of 1976 (Division 20 (commencing with Section 30000)).

### **1.2.5 California Health and Safety Code Section 7050.5**

California Health and Safety Code §7050.5 states that, in the event of the discovery of human remains outside of a dedicated cemetery, all ground disturbance must cease and the county coroner must be notified. If the remains are found to be Native American then the County Coroner must contact the Native American Heritage Commission within 24-hours.

### **1.2.6 Corona Historic Resources Ordinance**

The Corona Historic Resources Ordinance is described within Chapter 17.63 of the Corona Municipal Code. The Corona Historic Resources Ordinance was established to promote the recognition, preservation, and continued viability of historic resources in Corona in the interest of prosperity, social and cultural enrichment, and the general welfare of the people of Corona. The Corona Historic Resources Ordinance is based on the following principles:

- A. Encouraging knowledge and civic pride in the character of Corona's heritage and its many historic resources, in accordance with the declaration of intent and purpose in the city's General Plan;
- B. Providing a process and register for the public identification and official recognition of Corona's many historic resources;
- C. Establishing processes for the thoughtful review of plans for future projects and developments that could affect the management and preservation of Corona's historic resources;
- D. Encouraging and assisting Corona's private property owners with the management and preservation of their own historic resources and properties;
- E. Promoting the management and preservation of Corona's historic resources, including historic districts, that reflect the city's diverse cultural, social, artistic, economic, engineering, political and architectural heritage;
- F. Enhancing Corona's cultural heritage as a general attraction to residents, tourists, businesses, industries and development enterprises, thereby strengthening Corona's general economy around its core heritage areas; and
- G. Promoting the use of Corona's historic resources and districts for the education, enjoyment and welfare of the people of the city.

The Corona Historic Resources Ordinance also provided for the establishment of the Corona Register of Historical Resources and Corona Heritage Inventory. It also authorized the property preservation/tax

reduction program, historic markers program, and historic design guidelines, which set the standards by which buildings are evaluated for the Corona Register of Historic Resources and Heritage Inventory.

### **1.2.7 Corona Register of Historic Resources (Corona Register)**

As a Certified Local Government (CLG) in the Federal Historic Preservation Program, the City pledged its commitment to historic preservation. The Corona Register of Historic Resources (Corona Register) includes landmarks, historic markers, and historic districts and the contributing historic resources within such historic districts. Sites, improvements and natural features within the city's boundaries that are listed on the California Register or National Register shall automatically be deemed listed on the Corona Register. The Corona Register has separate criteria for landmarks, historic districts and historic markers.

Landmarks are those physical elements of Corona's historical development that provide the community with its own unique civic identity and character. A site, improvement or natural feature shall be eligible for listing on the Corona Register as a landmark if the City Council finds that all of the following criteria are satisfied:

1. It has been in existence for a period of at least 50 years, or if less than 50 years old, is of exceptional importance to the community;
2. It has significant historic, cultural or architectural value and its designation as a landmark is reasonable, appropriate and necessary to promote, preserve and further the purposes and intent of this chapter;
3. It exhibits one or more of the following characteristics:
  - a. It is associated with events that have made a significant contribution to the history of Corona, the region, the state or the nation;
  - b. It is associated with the lives of persons significant in Corona's past;
  - c. It embodies distinctive characteristics of a style, type, period or method of construction or a valuable example of the use of materials or craftsmanship;
  - d. It exemplifies or reflects special elements of the city's cultural, social, economic, political, aesthetic, engineering, architectural or natural history;
  - e. It is representative of the work of a notable builder, designer or architect;
  - f. It exemplifies one of the best remaining architectural styles or types in a neighborhood or contains outstanding elements of architectural design, detail, materials or craftsmanship of a particular historic period;
  - g. It is in a unique location or contains physical characteristics representing an established and familiar visual feature of a neighborhood;
  - h. It is a potential source of archeological or paleontological interest;
  - i. It is or contains a natural setting or feature that strongly contributes to the well being of the people of the city;
4. It has integrity of location, design, setting, materials, workmanship, feeling and association:
  - a. Integrity is the authenticity of an historic resource's physical identity, as evidenced by the survival of characteristics that existed during the historic resource's period of significance, to be recognizable and to convey the reasons for its significance;
  - b. A site, improvement or natural feature that has diminished historic character or appearance may still have sufficient integrity for the Corona Register if it retains the potential to yield significant scientific or historical information or specific data or retains sufficient character to convey the reasons for its significance. Thus, it is possible that a site, improvement or natural feature may not retain sufficient integrity to meet the criteria for listing on the California Register or National Register, but it may still be eligible for listing on the Corona Register;
  - c. Integrity shall be judged with reference to the particular criterion or criteria which provide its eligibility. An improvement removed from its original location shall be eligible if it is

significant primarily for its architectural value or it is the surviving structure most importantly associated with an historic person or event.

A Historic District is a geographically defined area possessing a concentration of contributing historic resources that relate to each other and are unified by physical development or historical context. A defined area shall be eligible for listing on the Corona Register as an historic district if the City Council finds that all the following criteria are satisfied:

1. The defined area is a unified geographical area with precisely defined boundaries;
2. The defined area contains a significant concentration of individually recognized contributing historic resources united in character by an historic plan, physical development, cultural heritage, past events, an historic period or prehistory era, aesthetics design or architectural traditions;
3. At least 75% of the contributing historic resources in the defined area are 50 years of age or older and retain their original architectural character;
4. The civic and historic value of the contributing historic resources is greater as a collective whole than as individual historic resources;
5. The defined area has significant historic, cultural or architectural value and its designation as an historic district promotes, preserves and furthers the purposes and intent of this chapter.

Upon the listing of an historic district on the Corona Register, all identified contributing historic resources in the historic district shall be individually listed on the Corona Register, along with notation of the historic district's noncontributing resources.

A Historic Marker, is defined as a sign, plaque, monument, or other symbol which may be listed on the Corona Register by resolution of the City Council or placed by the City of Corona Historic Preservation Society for the purpose of recognizing one or more of the following:

1. Events that have made a significant contribution to the history of Corona, the region, the state or the nation;
2. Persons significant in Corona's past;
3. Examples of distinctive characteristics of a style, type, period or method of construction or a valuable example of the use of materials or craftsmanship;
4. Special elements of the city's cultural, social, economic, political, aesthetic, engineering, architectural or natural history;
5. The work of a notable builder, designer or architect;
6. Outstanding elements of architectural design, detail, materials or craftsmanship of a particular historic period;
7. A unique location or physical characteristic representing an established and familiar visual feature of a neighborhood;
8. An archeological or paleontological site; or
9. A natural setting or feature that strongly contributes to the wellbeing of the people of the city. The actual site, improvement or natural feature that is designated by the historic marker may or may not be listed, or may or may not be eligible for listing, on the Corona Register or the Corona Heritage Inventory.

### **1.2.8 Corona Heritage Inventory**

The Corona Heritage Inventory includes only heritage properties listed by the Planning Commission. Heritage properties listed on the Corona Heritage Inventory may or may not be eligible for listing on the Corona Register. To be listed on the Corona Heritage Inventory a site, improvement, or natural feature must satisfy all of the following criteria:

- A. An official survey describing the features, merits and quality of the site, improvement or natural feature has been prepared;

- B. The site, improvement or natural feature is identified as a potential resource to be conserved because of its age, and either its context in the neighborhood, its association with a historic event or period or its significance to the architectural, engineering, scientific, economic, agricultural, educational, cultural, social, artistic, political or military history of Corona.

## **1.3 PROJECT DESCRIPTION**

The proposed City of Corona 2018 Reclaimed Water Master Plan is an update to the City of Corona's adopted Reclaimed Water Master Plan (2001), which provides guidance to create infrastructure to efficiently use treated effluent from its existing and future wastewater reclamation facilities (WRFs) to reduce dependence on imported water and groundwater. The project identifies the extent and types of reclaimed water development needed to achieve the City's physical, economic, and environmental goals.

### **1.3.1 Project Purpose**

The primary purpose of the project is to assist the City with meeting its goals for reclaimed water use through implementation of appropriate projects, programs, and additional studies.

### **1.3.2 Project Objectives**

The project objectives are as follows:

1. Expand and improve the City's recycled water program in accordance with Ordinance 2854 (Recycled Water Rules and Regulations)
2. Prioritize and implement system improvements pursuant to the City of Corona 2018 Reclaimed Water Master Plan to maximize reclaimed water supply availability and significantly reduce the use of potable water
3. Improve water supply system performance by facilitating supply management and maximizing water resources
4. Efficiently implement priority improvement projects to manage and distribute new sources of water supply as they become available

### **1.3.3 Project Components**

Future Project Components are categorized as sources of supply, large distribution pipelines, medium distribution pipelines, and small distribution pipelines. In total, 29 Project Components are included in the RWMP. These include: six sources of supply; four large distribution pipelines; nine medium distribution pipelines; and ten small distribution pipelines.

## **1.4 PROJECT LOCATION**

### **1.4.1 Regional Location**

The City is in the northwestern portion of the County of Riverside (County), near the convergence of the Counties of Los Angeles, Orange, and Riverside, 45 miles southeast of the City of Los Angeles, as shown on Figure 1. The City is in a valley framed by mountains and the Prado Flood Control Basin. The City is bordered by the City of Norco to the north, the City of Riverside to the east, the County to the west and south, the Cleveland National Forest to the south/southwest, and the Prado Flood Control Basin to the northeast.

The City is defined in the County by its transportation infrastructure. Two major freeways and one railroad transect the City. Riverside Freeway (State Route 91) runs east-west directly north of the City's transportation routes to the economic center of the County of Orange from the Inland Empire, while

Interstate 15 runs north–south. In addition, the Burlington Northern Santa Fe Railway transects the center of the City, running parallel to State Route 91.

### **1.4.2 Water Service Area**

The City’s water service area encompasses approximately 39 square miles and provides potable and reclaimed water infrastructure. The water service area boundary differs slightly from the City’s jurisdictional boundary because it also includes the unincorporated communities of El Cerrito and Coronita and parts of Tesmesca Canyon, as shown on Figure 2. The water service area is bordered by the neighboring Cities of Norco and Eastvale to the north and the City of Riverside to the northeast. The eastern portion of the water service area is generally bounded by unincorporated County lands, including the unincorporated community of Home Gardens. The southern and western portions of the water service area are bounded by the Cleveland National Forest and other County lands. The Prado Flood Control Basin is adjacent to the City’s northwestern corner.

The following study considered direct impacts within the RWMP project area only, shown on Figure 2. As the project consists of a master plan which will be used to guide future projects there are no anticipated indirect or cumulative impacts that would necessitate a larger impact area outside of the direct RWMP project area.

The RWMP project area is shown on five USGS 7.5’ Quad Maps (Figures 3-9). Specifically, on the *Prado Dam* Quad Map within Township 3 South, Range 7 West, Section 30; Township 3 South, Range 8 West Section 25; and unsectioned portions of the La Sierra Yorba Land Grant. *Black Star Canyon* Quad Map within Township 3 South, Range 7 West, Sections 32 and 33; Township 3 South, Range 8 West, Section 36, Township 4 South, Range 7 West, Section 5; and unsectioned portions of the La Sierra Yorba Land Grant. *Corona South* Quad Map within Township 3 South, Range 7 West, Section 33, Township 4 South, Range 6 West, Sections 5, 8, 16, 17, 18, 19, 20, 21, and 22; Township 4 South, Range 7 West, Sections 5, 9, and 10; unsectioned portions of the La Sierra Yorba Land Grant; unsectioned portions of the Sobrante De San Jacinto Land Grant. *Lake Matthews* Quad Map within Township 4 South, Range 6 West, Section 22; unsectioned portions of the Sobrante De San Jacinto Land Grant. *Corona North* Quad Map within unsectioned portions of the La Sierra Yorba Land Grant and unsectioned portions of the Sobrante De San Jacinto Land Grant.

## **1.5 PROJECT PERSONNEL**

Red Tail Principal Investigator Shelby Castells, M.A., RPA served as the primary author of this report, and managed the study. Red Tail Senior Archaeologist Spencer Bietz contributed to the report and prepared the report figures. Resumes of key personnel are included in Appendix A.

1. Introduction



Figure 1. Project Vicinity Map.



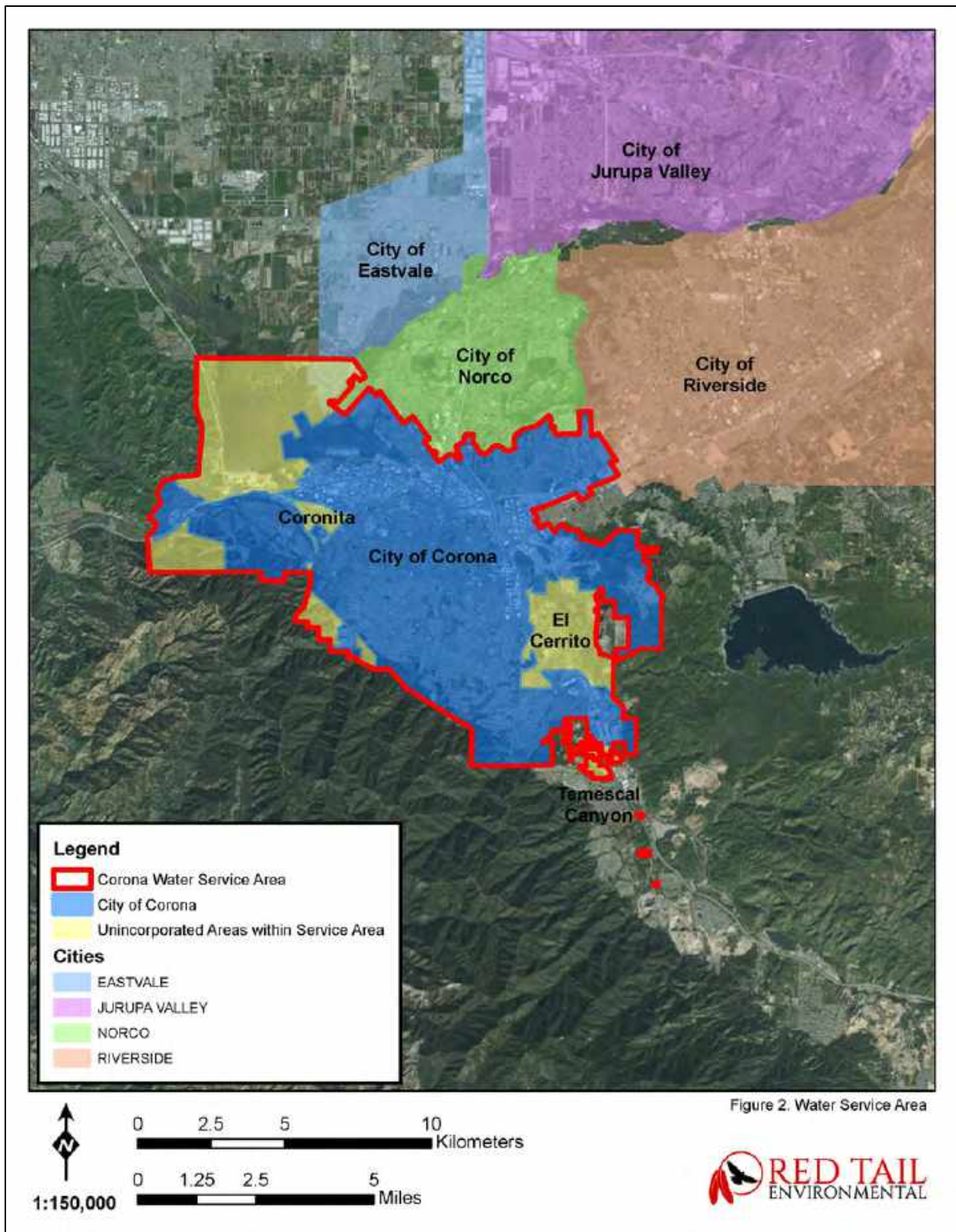


Figure 2. Project Area shown on an aerial photograph.



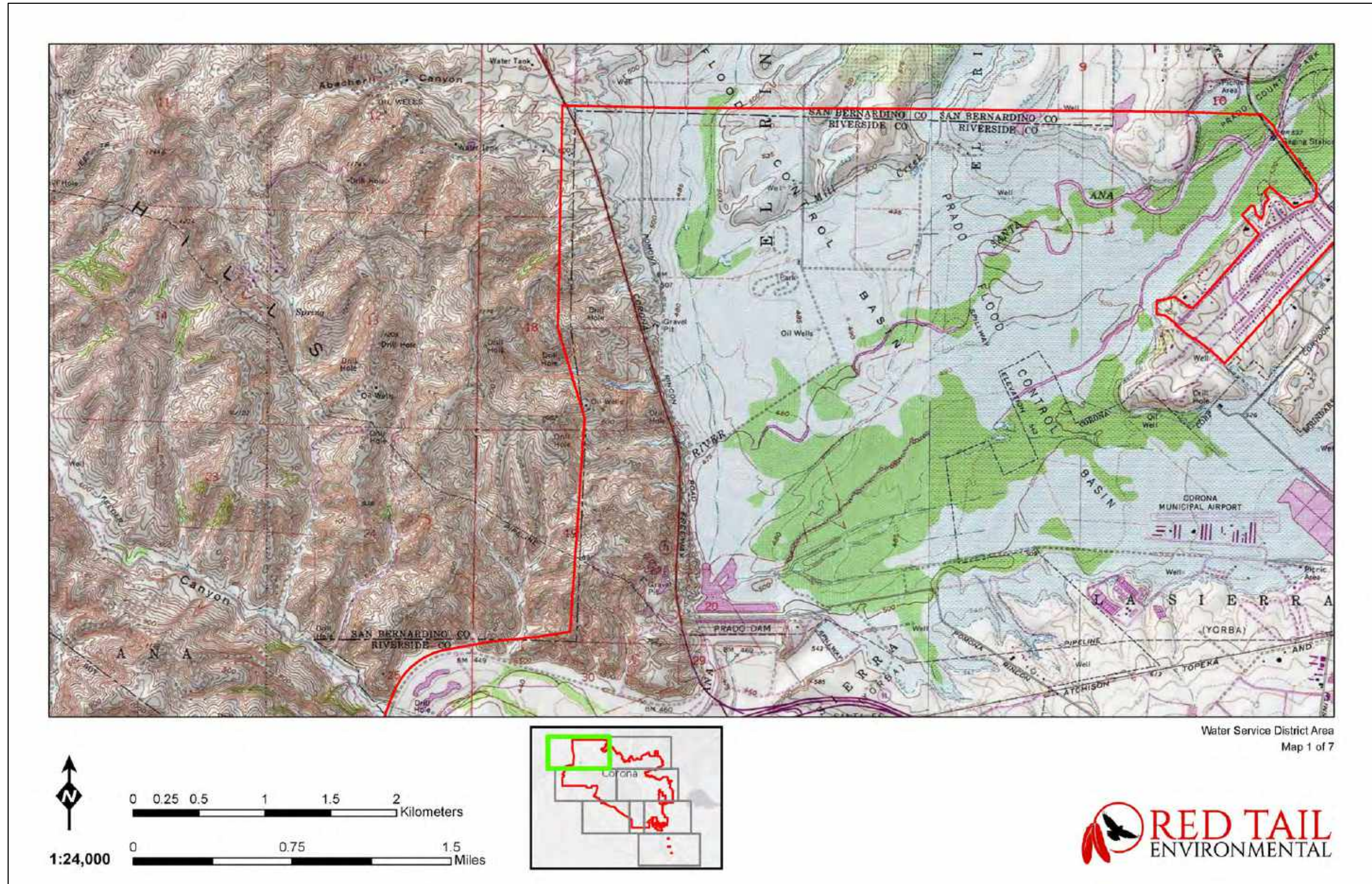


Figure 3. Project area shown on the USGS 7.5' Topographic Quadrangle (Map 1 of 7).



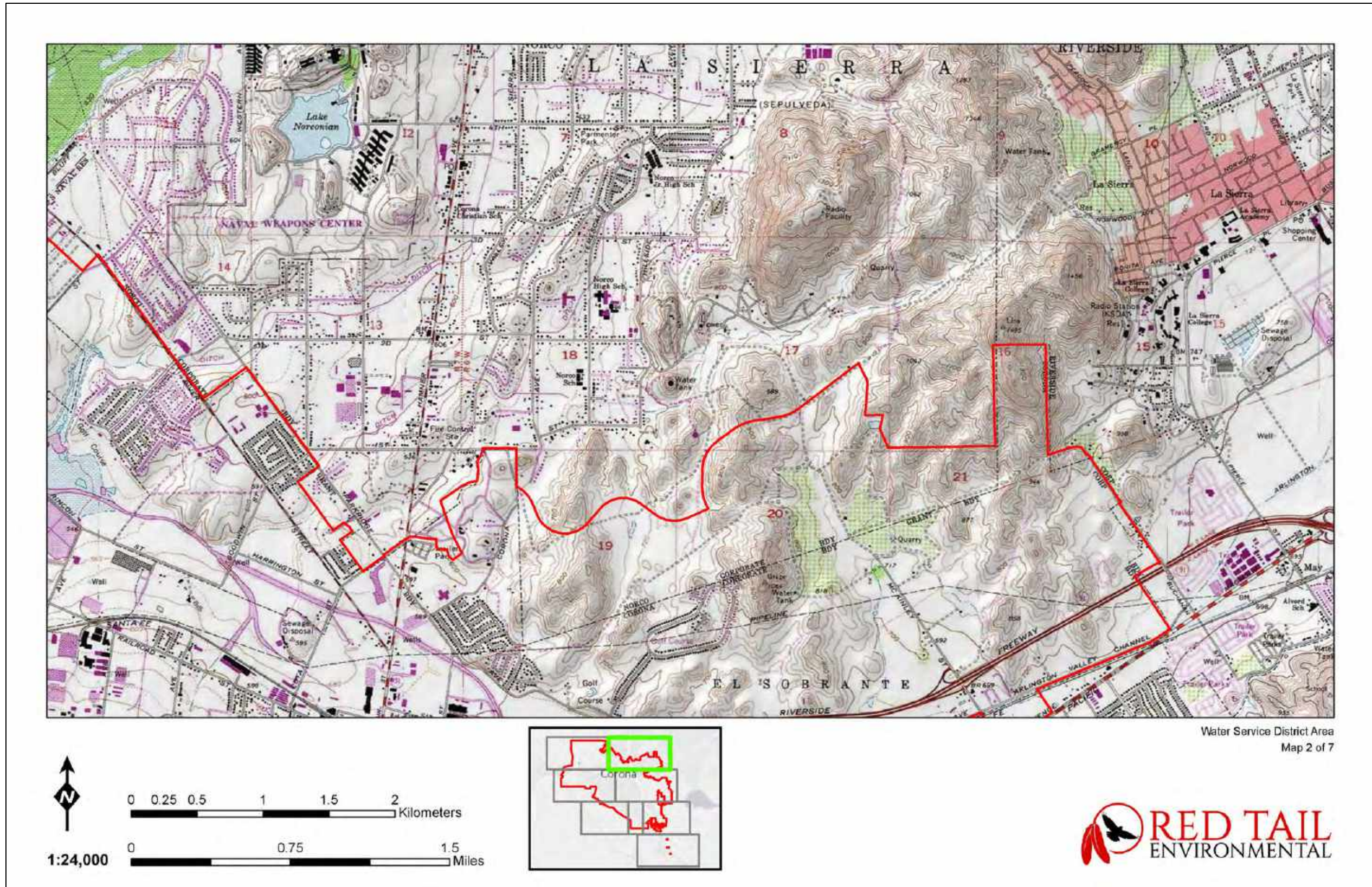


Figure 4. Project area shown on the USGS 7.5' Topographic Quadrangle (Map 2 of 7).



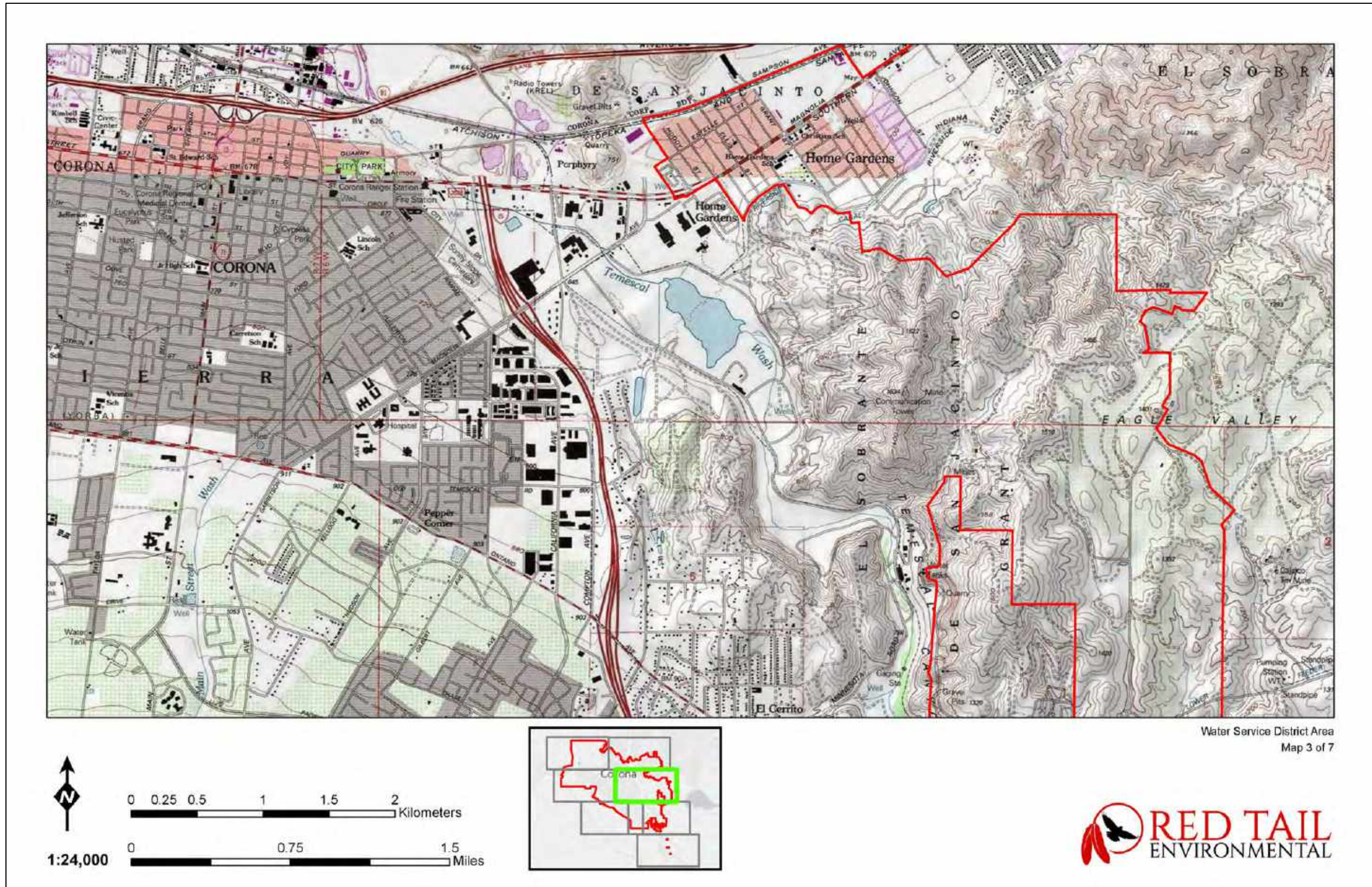


Figure 5. Project area shown on the USGS 7.5' Topographic Quadrangle (Map 3 of 7).



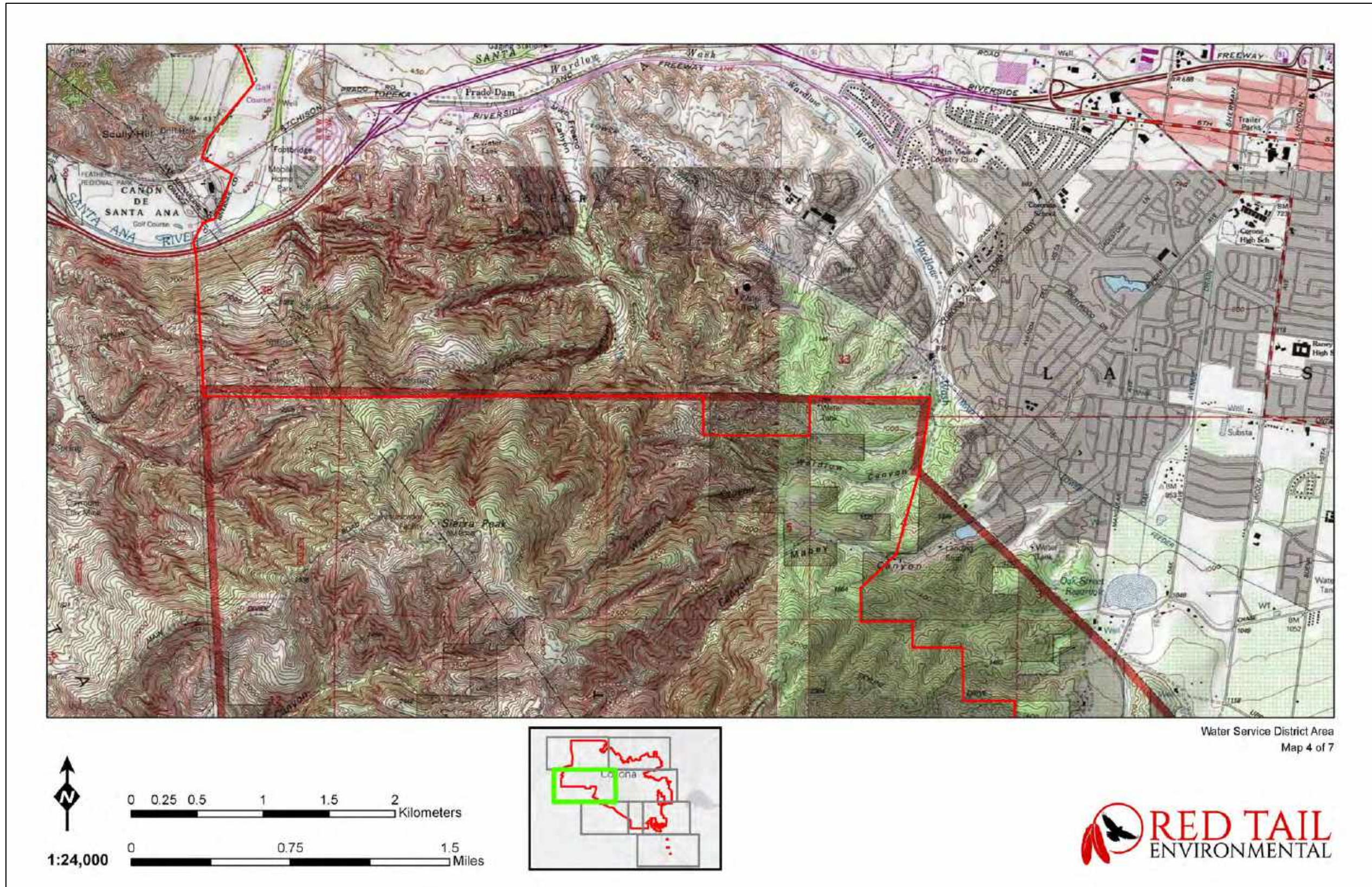


Figure 6. Project area shown on the USGS 7.5' Topographic Quadrangle (Map 4 of 7).



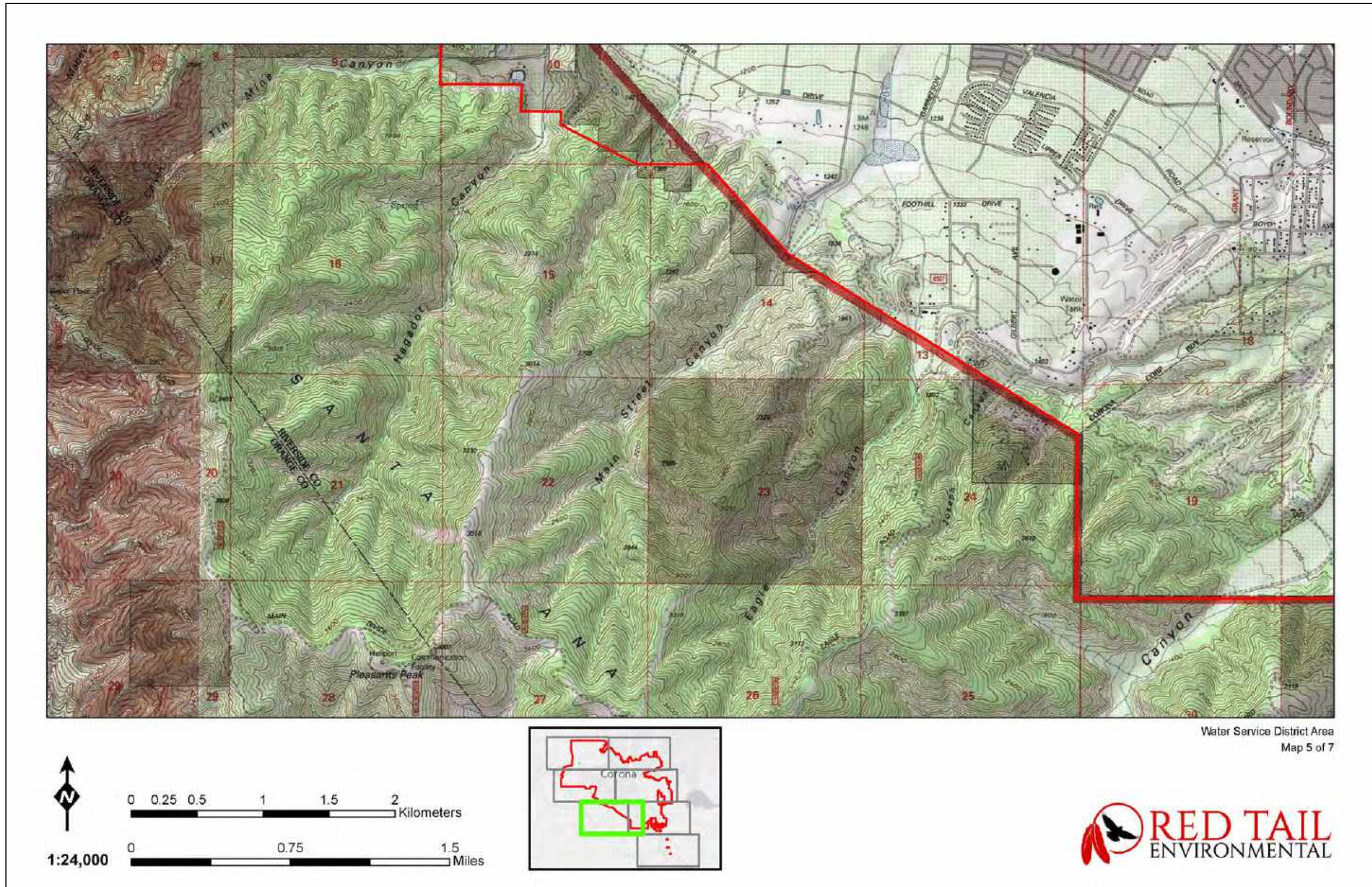


Figure 7. Project area shown on the USGS 7.5' Topographic Quadrangle (Map 5 of 7).



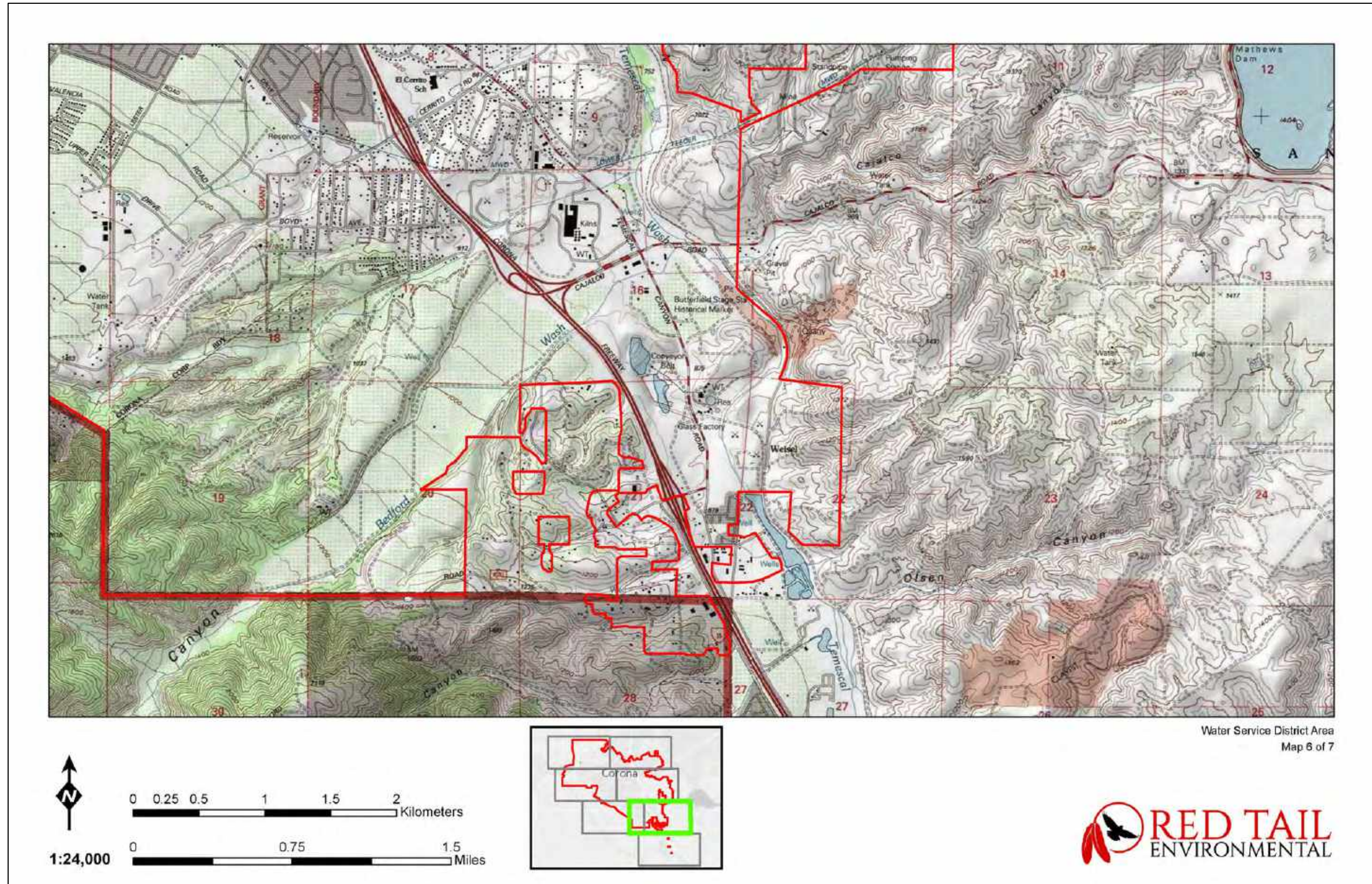


Figure 8. Project area shown on the USGS 7.5' Topographic Quadrangle (Map 6 of 7).



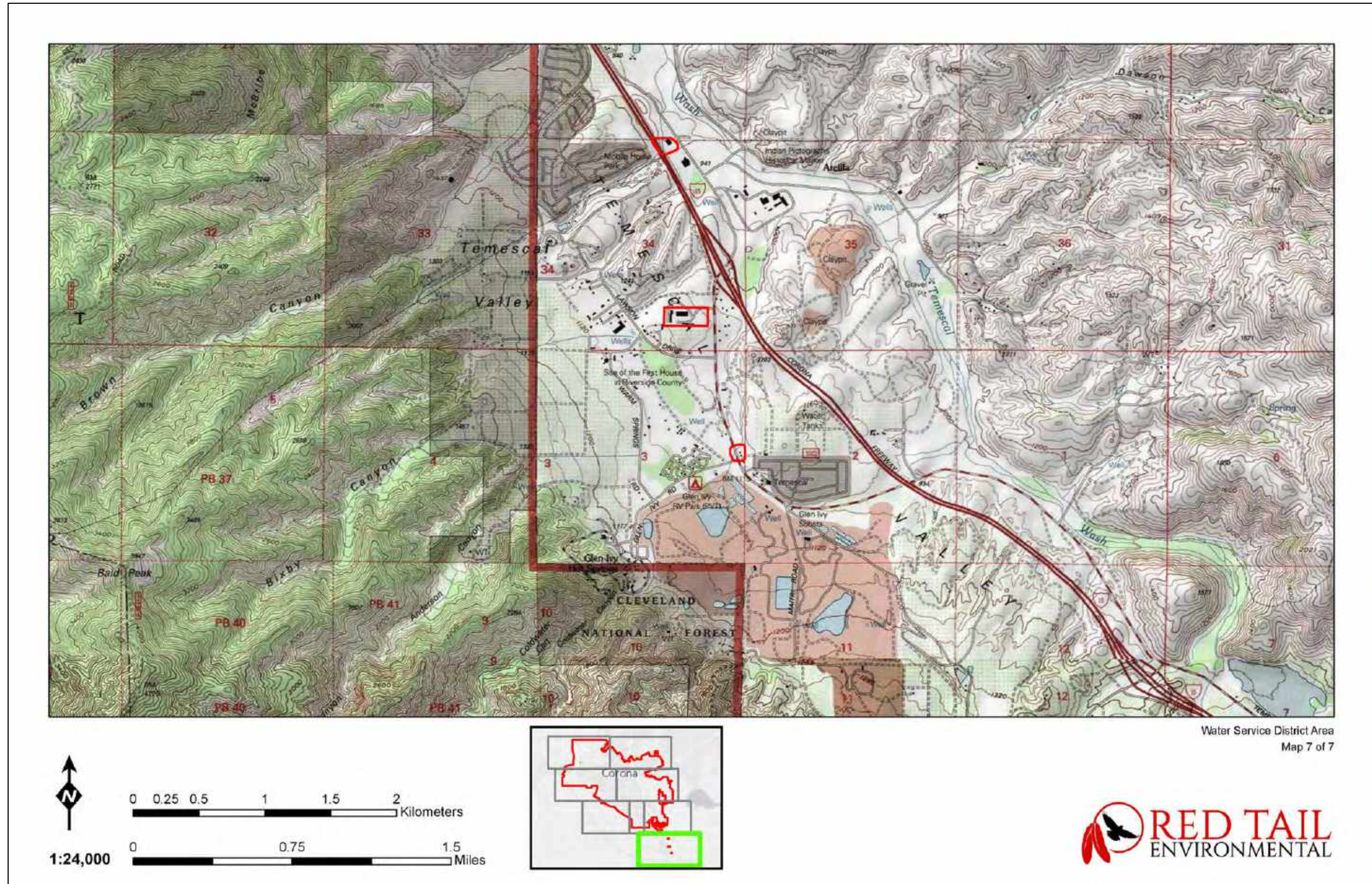


Figure 9. Project area shown on the USGS 7.5' Topographic Quadrangle (Map 7 of 7).



## 2. SETTING

### 2.1 NATURAL SETTING

Geologically, the RWMP project area is located within the Peninsular Ranges Province in Southern California. Much of the project area lies within the Perris block, which is located between the Elsinore and San Jacinto fault zones. The southern portion of the project area also encompasses the Chino fault zone (Gray et al. 2002a). The portion of the Peninsular Ranges beneath the project area is composed primarily of a variety of Cretaceous plutonic rocks, primarily monzogranite and granodiorite, but also including micropegmatite granite and gabbros, amongst others. Monzogranites of the Cajalco pluton, a large composite intrusion that extends south and east of the project area, are the most widespread of the group (Gray et al. 2002a). The southern portions of the project area border the base of the Santa Ana Mountains, whose basement rocks are composed primarily of Bedford Canyon Formation, a fossiliferous limestone containing faunal remains that suggest the Formation was formed in black smoker environments (Gray et al. 2002b). Santiago Peak Volcanics unconformably overly and intrude the Bedford Canyon Formation, and consist of Cretaceous age basaltic andesite, andesite, dacite, rhyolite, breccia, and volcaniclastic rocks. Volcanic activity occurring during the same time the Santiago Peak Volcanics were formed also hydrothermally altered the rocks, and minor serpentine and associated silica-carbonate rock occur in association (Gray et al. 2002b).

The Santa Ana River is the largest drainage within the project area and is fed by several tributaries including Temescal Wash and Chino Creek. Distal parts of alluvial fans at the base of the San Gabriel Mountains dominate the alluvial deposits north of the Santa Ana River. Older alluvial fan deposits resting on remnants of early Quaternary to late Tertiary nonmarine sediments comprise the majority of alluvial deposits south of the Santa Ana River, especially within areas between the Santa Ana and Temescal Wash (Gray et al. 2002a). The underlying Quaternary and late Tertiary sediments were initially deposited by an ancestral Santa Ana River, and several non-contiguous remnants of late Tertiary marine sandstone including some conglomerate lenses are present between Norco and Temescal Wash (Gray et al. 2002a). This late Tertiary (Pliocene) sandstone was deposited in paleoenvironmental conditions similar to present-day shorelines of Monterey, California, with much of the deposits accumulating a rocky shoreline developed in the granitic rocks. South of Temescal Wash, Pleistocene and Holocene alluvial fan deposits accumulate from erosion of the Santa Ana Mountains (Gray et al. 2002b).

The study area encompasses the northern end of the Elsinore Fault zone, a major active right-lateral strike-slip fault zone of the San Andreas Fault system (Gray et al. 2002b). The Elsinore fault serves as the dividing line between the Santa Ana Mountains (west of the fault) and the Perris block (east of the fault). Sedimentary rocks of the late Cretaceous and Paleogene along with some Neogene rocks are present within the Elsinore Fault Zone. Middle Miocene Topanga Formation marine sandstones are present within the fault zone southeast of the study area and are underlain by nonmarine undivided Sespe and Vaqueros Formations, both composed predominately of sandstone. Much of the fault zone contains Silverado Formation, a mix of sandstone, siltstone, and conglomerate of the marine and nonmarine Paleocene era (Gray et al. 2002b).

The majority of the project area can be characterized as an alluvial basin that gently lowers in elevation as it proceeds north to the Santa Ana River. The west and southwestern portions of the project area are bordered by the Santa Ana Mountains, containing steep undeveloped slopes. Elevations within these areas range between 850 feet above mean sea level (AMSL) to upwards of 2,275 feet AMSL. The east and southeastern portions of the project area are bordered by the Temescal Mountains, ranging between 750 feet and 1,580 feet AMSL. The north and northeastern portions of the project area consist of a north-trending alluvial basin proceeding towards the Santa Ana River, with the northern limit of the project area

## 2. Setting

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bordered by Prado Regional Park and the Prado Regional Control Dam. The lowest elevation within the project area (425 feet AMSL) is located in the northwestern limits as the river begins its westward journey out of Riverside County towards Orange County and the cities of Yorba Linda, Anaheim, and Orange, finally ending at the Pacific Ocean.

The vast majority of the project area contains urban development, with undeveloped areas primarily being located along the foothills and steep slopes of the Santa Ana Mountains and Temescal Mountains. Within developed areas, isolated areas contain native vegetation, mostly within associated riparian drainages. Undeveloped areas along the Santa Ana Mountain slopes contain a mix of riparian drainages and canyon slopes, with vegetation communities including chaparral and riparian forest and scrub. Undeveloped areas along the slopes of the Temescal Mountains also contain a mix of riparian drainages and canyon slopes, with native vegetation communities including coastal sage scrub, chaparral, riparian woodland, and valley grassland.

The City of Corona project area contains a Mediterranean climate with hot dry summers and cooler wetter winters. Mean annual precipitation for the City is 13.5 inches of rainfall a year, with an average of 65 degrees Fahrenheit with average highs 79 degrees Fahrenheit and lows of 51 degrees Fahrenheit (USDA 2020).

## 2.2 CULTURAL SETTING

### 2.2.1 Prehistoric Period

While no single chronology is agreed upon, archaeologists generally concur that human occupation within Southern California spans at least the last 14,000 years. It was believed that people first came to North and South America over the Bering Land Bridge, however recent studies have identified that this ice-free corridor was not passable until 13,000 years ago and an alternate coastal route has been proposed. The Pacific Northwest coast was deglaciated by approximately 14,000 B.C. and travel along the Pacific Coast in boats would have been possible during this period. A widespread kelp forest could have created a “kelp highway” with enough resources to support people entering North America (Erlandson et al. 2007, Masters and Aiello 2007, Gallegos 2017). Erlandson (2007:56) contends that “it seems most likely that the peopling of the Americas included both coastal and interior migrations of peoples from northeastern Asia and Beringia, with an earlier migration possibly following the northern Pacific coast”.

In Riverside County and the surrounding area, there is no consensus on times or terms in which human occupation started. It is unknown if the first people arrived in Riverside County via the coast or from the pluvial lakes within the Great Basin to the east, as both locations contain archaeological sites with early dates (Gallegos 2017). In addition, the inland valleys of Southern California, have been less intensively studied than the desert and coastal regions and therefore a variety of cultural periods have been suggested but generally researchers have not reached a consensus on the start or phases of prehistoric occupation of the area (Horne and McDougall 2007). Overall, three general cultural periods are recognized: the Paleo-Indian Period, the Archaic Period and the Late Prehistoric Period.

#### **Paleo-Indian Period / San Dieguito Period (ca. 12,000 to 8,000 YBP)**

As in most of North America, the Paleo-Indian Period is the earliest recognized period of California prehistory and coincides with the end of the late Pleistocene, circa 11,000 to 13,000 YBP (years before present). The environment was cool and moist, with deep pluvial lakes in the desert and basin lands (Moratto 1984). However, by the end of the late Pleistocene, the climate became warmer, causing glaciers to melt and sea levels to rise. Inland lakes began to recede and evaporate and there was a great deal of

## 2. Setting

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erosion in the coastal areas. The warmer climate also resulted in major vegetation changes and the extinction of Pleistocene megafauna (Moratto 1984, Martin 1967, Martin 1973, Fagan 1991).

Paleo-Indian sites have been identified across most of North America, often referred to as the Clovis Complex. The Clovis Complex is defined by the use of large fluted projectile points and other large bifacial stone tools. Within Southern California and the Colorado Desert the Clovis Complex is referred to as the Western Stemmed Point Tradition (WSPT) and was characterized by leaf shaped and large stemmed projectile points, scrapers and other stone tools. Archaeological evidence of the WSPT has been found across the western interior of North America with small regional variations (Gallegos 2017, Sutton 2016, Warren 1968). Similar archaeological remains are also known as the Lake Mohave Complex (Warren 1968). Overall, ground stone use was infrequent in San Dieguito archaeological remains, leading to the belief that the San Dieguito were highly mobile groups and their subsistence practices focused on the hunting of large game.

Several isolated fluted points have been recorded in Southern California, but none have been recorded near the project area in association with radiocarbon dates or in association with Pleistocene fauna (Rondeau et al. 2007). In Riverside County, only one isolated fluted point has been identified on the surface of a site in the Pinto Basin in the central part of the county (Campbell and Campbell 1935, Dillon 2002:113). Fluted points have been dated outside of California to 13,500 years before the present. The earliest known archaeological sites near the Project area, with reliable dates, are from the Channel Islands. The Arlington Springs site on Santa Rosa Island dates to 13,300 years ago, and the Daisy Cave site on San Miguel Island dates to 12,300-11,120 years ago (Lightfoot and Parrish 2009). Daisy Cave mentioned above, is one of the largest, early Holocene archaeological deposits that has been excavated. The study identified over 18 types of fish, multiple shellfish, marine mammals, and birds remains, showing that people relied on a wide assortment of marine resources as early as 8000 B.C., rather than subsisting on large mammal hunting (Erlandson, et al., 2007). Over 25 shell midden sites that date to between 12,000 and 8,000 years ago have been recorded on the Channel Islands. On the mainland, a site near San Luis Obispo dates to 10,300-9,650 years ago and a several sites on Cedros Island in Baja California date to 12,000 years ago (Lightfoot and Parrish 2009). Other early sites in the vicinity of the Project area consist of the C.W. Harris Site (SDI-149), in San Diego County, with radiocarbon dates ranging from 9,030 YBP to 8,540 YBP (Byrd and Raab 2007, Gallegos 2017) and within Orange County, there are sites dating from 9,000 to 10,000 years ago (Macko 1998a:4, Mason and Peterson 1994:55-57) and the Elsinore site (CA-RIV-2798-B), has deposits dating as early as 8,580 YBP (Grenda 1997:260). As, no archaeological sites dating to the Paleoindian Period have been identified within the vicinity of the Project Area. It is unknown if the lack of Paleoindian Period sites relates to a lack of archaeological data or is evidence that the vicinity of the Project Area was a less sustainable area than the interior desert or the coastal regions. During this period the desert interior may have been more suitable to prehistoric occupation than the interior valleys of southern California and it is more likely that Paleoindian populations in southern California were centered on the coastal or interior desert regions or around the few large, reliable, drought-resistant water sources present within the inland valley areas (Horne and McDougall 2007).

When Paleo megafauna began to become extinct, Paleo-Indian peoples had to focus on different subsistence strategies (Erlandson et al., 2007). Recent studies along the Southern California coast have focused on the diversity of subsistence strategies during this period, acknowledging the use of smaller animals and plant foods as staples, with limited evidence for big game hunting. Byrd and Raab argue that an environmental change from 10,000 to 8,000 cal. B.C. caused warming and drying conditions which shrunk the interior lakes and streams in Southern California's deserts and spurred the change from a reliance on large game hunting to a focus on a variety of subsistence strategies (Byrd and Raab 2007). Archaeological research across Southern California has shown the use of shellfish, marine mammals, and fish declined proportionately with distance from the coast. Less is known about plant use in interior sites aside from the

## 2. Setting

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fact that an increase of milling tools is present suggesting that plant resources were heavily relied upon during this early period (Erlandson et al., 2007).

### **Archaic Period / Millingstone Horizon (ca. 9500/8000 to 1500 YBP)**

The Archaic Period within the vicinity of the Project area was defined by a lengthy time period with little change within the archaeological record. In contrast to the Paleoindian Period the archaeological record within the Archaic Period consisted of a tool kit that focused on collection and processing of small plant seeds and hunting of a variety of medium and small game animals (Byrd and Raab 2007, Hale 2009, Rogers 1945, Warren 1968). Across Southern California this period is often referred to as the Millingstone Horizon, and is often divided into the Early, Middle, and Late Archaic Period. In addition to the Early, Middle, and Late Archaic Period, it was also referred to as the Encinitas Tradition by Warren (1968), the La Jolla Tradition, in San Diego County, and the Greven Knoll Pattern (SWCA 2018, Sutton 2010, Sutton 2011). Sutton created the Greven Knoll Pattern nomenclature as a redefined interpretation of the Encinitas Tradition, and used it to refer to all expressions of the inland Milling Stone Horizon in Southern California north of San Diego County (Sutton 2010).

There is a discrepancy on the start of the Millingstone Horizon, while Lightfoot and Parrish (2009) argues that early milling stone assemblages show that by 9,000 years ago milling tools were in use and that seeds and nuts must have been a dominate food source, other archaeologists argue that the Millingstone Horizon is generally attribute to the Middle to Late Holocene Period and has been identified across much of central and southern California by ca. 8,000 to 7,000 YBP (Byrd and Raab 2007, Hale 2009, Moratto 1984).

Interior archaeological sites from this period were thought to have been left by seasonally mobile groups with small settlements, based on the availability of food resources. There is little archaeological evidence for group size and type and use of habitation structures within Riverside County for the middle Holocene. The Millingstone Horizon or Archaic Period tool kit at inland sites focused on collection and processing of small plant seeds and hunting of a variety of medium and small game animals; while along the coast there was a reliance on marine resources (Byrd and Raab 2007, Hale 2009, Rogers 1945, Warren 1968). Artifacts from this period consist of grinding implements (manos and metates), atlatl or dart projectile points, quarry-based tools, as well as lithic choppers and scrapers that indicate the focus was on collection and processing of small plant seeds and hunting of a variety of medium and small game animals (Byrd & Raab 2007, Hale 2009, Rogers 1945, Warren 1968).

Mortuary practices consist of flexed inhumations which are often accompanied by grave goods of milling stones and other artifacts. This seems to represent a more sedentary lifestyle with a subsistence economy based upon the use of a broad variety of terrestrial resources than identified during the Paleoindian Period. Research indicates that residential bases or camps were moved in a seasonal round (de Barros 1996, Mason 1997, Koerper 2002), with some sites occupied year-round, with portions of the village population leaving at certain times of the year to exploit seasonally available resources.

During this lengthy period very little technological changes are identified within the archaeological record until approximately 5,000 years ago when there was an increase in sedimentation along the coast. This transformed the estuaries into shallow wetlands, closed several of the lagoons, transformed the coastal areas into sand and mudflats, and limited the kelp forests, causing the coastal region to have a lower level of subsistence resources than in the past. During this time the deserts became more arid, and there was an increase in use of the inland valleys within the vicinity of the Project Area (Byrd and Raab 2007, Gallegos 2007, Masters and Aiello 2007).

### **Early Archaic Period (ca. 9500/8000 to 7000 YBP)**

Horne and McDougall (2007) report that there is little archaeological evidence within Riverside County during this period. However, several sites within the region date to the Early Archaic Period. The first consists of a single human burial dating to  $7380 \pm 300$  B.P., which was capped by several large highly shaped metates. The second was a small temporary camp dated by obsidian hydration data and stratigraphic information to the Early Archaic Period (Horne and McDougall 2007:19). An additional site within Riverside County, SDI-6069, within the San Jacinto Valley area was identified in an alluvial fan just above the floor of the San Jacinto Valley. The site contains several different cultural occupations, and the lowest level contained radiocarbon dates from 7940 to 8370 B.P., while radiocarbon from the upper component of the site dated to 2230 B.P., within the Late Archaic Period (Horne and McDougall 2007:19). An additional site, SDI-2798/H, known as the Lake Elsinore site, contained one radiocarbon date from  $8400 \pm 60$  B.P. Additional radiocarbon dates show habitation of the site during the Middle Archaic Period as well (Horne and McDougall 2007:19).

Artifacts associated with these Early Archaic Period sites include flaked stone tools and ground stone tools. Data recovery excavation within SDI-6069 identified a larger variety of artifact types including an extensive variety of flaked and ground stone tools, marine and terrestrial faunal remains, and bone and shell tools and ornaments. Crescents have also been found sparsely during this period.

Overall evidence of Early Archaic Period habitations in the vicinity of the Project area are scarce, identifying that during this period the region around the Project area was likely too arid to support sedentary residential occupation, and the few sites dating to this time period with evidence of a larger habitation area were found near large inland water sources (Horne and McDougall 2007:19).

### **Middle Archaic Period (ca. 7000 to 4000 YBP)**

During the Middle Archaic Period environmental conditions changed as the deserts became more arid and the coastal estuaries became less productive for shellfish and other food sources, causing a depopulation along the coastal zone, and settlements shifted to inland river valleys with an intensification of terrestrial game and plant resources (Byrd and Raab 2007, Gallegos 2007, Masters and Aiello 2007). Gallegos states that during this period to adapt to the changing environmental condition people changed their settlement patterns by increasing their use of plant and terrestrial animal use, which is evidence in the archaeological record through an increase in habitation areas near oak and grassland resources and away from the coastal zone (Gallegos 2007). Therefore, the inland valleys of western Riverside County became a more hospitable environment and there is a significantly larger number of archaeological sites dating to this period within the vicinity of the Project area (Horne and McDougall 2007).

The archaeological record dating to the Middle Archaic Period has identified several intensively used residential bases, and numerous temporary camps. Diagnostic artifacts include Pinto and Silver Lake projectile points and other large leaf-shaped projectile points, choppers, crescents, large drills, manos and metates inhumations, and a variety of flaked and groundstone tools. Additional non-utilitarian items include beads, pendants, charmstones, discoidals, spherical stones, and cogged stones (Horne and McDougall 2007). During this period, it is largely unknown if occupations of inland and coastal sites represent seasonal movement by the same groups of people, or if coastal sites represent a more permanent occupation, while inland groups followed a more mobile subsistence round.

### **Late Archaic Period (ca. 4000 to 1500 YBP)**

The Late Archaic Period corresponds to a period of increased moisture in Southern California, followed by another dry period. This period is also referred to as the Intermediate Period by Wallace (1955) and the Campbell Tradition (Warren 1968). Horne and McDougall (2007) report that archaeological site types during this period range from residential bases with large diverse artifact assemblages, abundant faunal

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remains and cultural features to temporary bases, camps and task specific activity areas. More intensely used archaeological sites from the Late Archaic Period are often found adjacent to permanent water sources while smaller or temporary sites are found on upland benches or adjacent to alluvial fans (2007:23). In contrast to the Early and Middle Archaic Periods, archaeological sites from the Late Archaic Period show a longer and more frequent reuse suggesting an increase in sedentism. Generally, the artifact assemblage is similar to the Early and Middle Archaic Period, focusing on large projectile points, used for spears and atlatls, and ground stone items. However, projectile points became more refined, such as notched points, points with concave bases, and small stemmed points. Greater use of the mortar and pestle suggest that acorns became a more important food source. There was also an increase in broad leaf-shaped blades, bone and antler tools and use of asphaltum and steatite (Horne and McDougall 2007:24). In general, through the Archaic Period the archaeological evidence and artifact assemblages remain similar, but become more elaborate over time, possibly implying an increase in sedentism, an increase in subsistence efficiency, and/or an increase in sociopolitical complexity (Horne and McDougall 2007:24).

Little is known about the transition from the Archaic Period to the Late Prehistoric Period. Laylander reports that there is a relative scarcity of dates within archaeological sites from the period between 1300 B.C. to A.D. 200, but it is unknown if this represents a decline in population during the end of the Archaic Period, or a bias in research data (Laylander 2014a).

During the end of the Late Archaic Period several researchers have identified an intermediate period, however it is largely unknown if this period is representative of the cultural change between the Milling Stone Period and the Late Prehistoric Period over time, adaptation to changing environmental conditions, or a distinct culture (Horne and McDougall 2007, SWCA 2018). This intermediate period roughly corresponds to the Medieval Warm Period which caused drought and warmer temperatures across the western United States. Archaeological evidence during this period supports a greater reliance on acorns as a food staple. Other changes include an influx of archaeological sites at reliable water sources such as the Colorado River and Lake Cahuilla.

### **Late Holocene Period /Late Prehistoric Period (1500 to 150 YBP)**

There are differing opinions between researchers as to whether the shift to the Late Prehistoric Period was caused by new technologies developed by people already living in the area, spurred by changing environmental conditions, or if it was brought in by a migration of people into Southern California. Archaeological and anthropological evidence suggests that at approximately 1500 to 1,350 YBP, Takic speaking (speakers of Uto-Aztecan languages) groups from the Great Basin region moved into Riverside County, marking the transition to the Late Prehistoric Period, known as the Shoshonean Wedge (Byrd and Raab 2007, Gallegos 2017). An analysis of the Takic expansion by Sutton (2009) indicates that inland southern California was occupied by “proto-Yuman” populations before 1,000 YBP. The comprehensive, multi-phase model offered by Sutton (2009) uses linguistic, ethnographic, archaeological, and biological data to propose that Takic speaking groups moved south and east from the Los Angeles Basin. They then diffused south into Orange County and northern San Diego County, inland up the San Luis Rey River into the Palomar Mountain area and north into interior southern California around 1,250 YBP. In addition, during this period Lake Cahuilla began to recede, and the large populations of people living along the lake shores transitioned into the Colorado River basin to the east or the inland valleys to the west. The Late Prehistoric Period is identified as a continuation of the cultural practices that were present during the initial Euro-American exploration of Southern California and that were recorded during the Ethno-Historic Period (Byrd and Raab 2007).

The Late Prehistoric Period is defined by the introduction of the bow and arrow after approximately A.D. 500 and by A.D. 1000 ceramic vessels begin to appear at some sites (Meighan 1954, Warren 1961). Also,



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during this time mortuary practices changed from inhumations to cremations. It is thought that this practice came from the north or east, and it is unknown if the transition from inhumations to cremations was adopted for religious or population reasons, or to control the spread of disease (Byrd and Raab 2007, Lightfoot and Parrish 2009, Gallegos 2017). Other hallmarks of the Late Prehistoric Period include an increase in the reliance on plant food sources, small projectile points, increase use of mortars and pestles, the use of obsidian from the Obsidian Butte source and overall an increase in the complexity and diversity of material cultural (SWCA 2018).

Many of the Late Prehistoric Period archaeological sites are located inland and contain bedrock milling features, thought to relate to acorn or other seed processing. People lived in larger coastal and lower valley villages, that were located near permanent water sources. These villages acted as ceremonial and political centers, and may have been occupied, at least partially, year-round. Smaller villages and residential areas were inhabited seasonally and were located near subsistence resources or were used for specialized activities, especially in inland areas (Byrd and Raab 2007, Lightfoot and Parrish 2009). This may have led to an increase in community size, longer stays at the major residences and different societal organization.

Archaeological remains have identified over four dozen plant types were used in Southern California during this period (Byrd and Raab 2007). Grass seeds had the highest frequencies of use with a gradual increase in acorn usage (Hale 2009). Little is known about plant cultivation during the Late Holocene. There is evidence that a high number of plants that follow fires were used, but no major research projects have focused on proto-agriculture. Early Spanish accounts identify that the Native Americans were practicing cultivation of certain plants through burning and water diversion (Gallegos 2017). Agriculture was in use along the Colorado River, east of the Project Area as early as A.D. 700 (Schaefer and Laylander 2007).

Changes in lithic artifacts show a greater number of small, finely chipped projectile points, usually stemless with convex or concave bases, suggesting an increased utilization of the bow and arrow rather than the atlatl and dart for hunting. Common lithic materials for formed tools, primarily projectile points include chert, jasper, agate, silicified wood, rhyolite, wonderstone, quartz, obsidian from Obsidian Butte, and Santiago Peak metavolcanics (Shackley 2004, Lightfoot and Parrish 2009). Other items include steatite cooking vessels and containers, the increased presence of smaller bone and shell circular fishhooks, perforated stones, arrow shaft straighteners made of steatite, a variety of bone tools, and personal ornaments made from shell, bone, and stone. There is also an increased use of asphalt for waterproofing and as an adhesive (SWCA 2018).

During the Late Prehistoric Period villages acted as ceremonial and political centers, and may have been occupied, at least partially, year-round. Smaller residential areas were inhabited seasonally and were located near subsistence resources or were used for specialized activities, especially in inland areas (Byrd and Raab 2007, Lightfoot 2009). This may have led to an increase in community size, longer stays at the major residences and different societal organization. Most of the rock art in Riverside County, as in the rest of Southern California has been attributed to the Late Prehistoric Period. Ceramic use included a variety of vessel types as well as clay smoking pipes. While ceramic use is present in the Lake Cahuilla region as early as 800 YBP and there were at least five ceramic types present in the desert (Shackley 2004), it is not present in the vicinity of the Project area until circa 350 YBP (Horne and McDougall 2007, Schaefer and Laylander 2007). Ceramic types consisted of brownwares, graywares, and buffwares.

### 2.2.2 Ethnohistoric Period

The Late Prehistoric period essentially ended with the Spanish colonization and establishment of the missions. Disease and forced relocation, which reduced the populations considerably among the coastal settlements, did much to destroy the cultural pattern established at that period (Bean and Shipek 1978). The Late Prehistoric culture pattern appears to have lasted longer among the inland groups. Even after the

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missions were secularized in 1834, some inland groups were able to maintain most of their traditional orientation until the arrival of the settlers from 1859-1879, when most of the groups were displaced or dispersed (Bean and Shipek 1978).

During the Ethnohistoric period, the region that today is known as Riverside County was a shared-use area and home to three closely related Takic-speaking groups: the Cahuilla, the Gabrielino, and the Luiseño/Juaneño. Settlement patterns for all three groups were essentially very similar with settlements typically located within valley bottoms, along streams, or along coastal strands near mountain ranges. Villages were often located in sheltered areas near good water supplies, in a defensive location, or on the side of warm thermal zone slopes.

Within the region, the diverse ecological zones provided a wide array of subsistence products. Principal game animals included deer, rabbit, jackrabbit, woodrat, mice, ground squirrels, antelope, valley and mountain quail, doves, ducks, and other birds. Coastal game included sea mammals, fish, mollusks, and crustaceans. Fresh-water game included trout and other local fish (Bean and Shipek 1978, Kroeber 1925). Of high importance were acorns, and village locations were typically located near water sources for use in acorn leeching. Grass seeds were the next most ample resource, in addition to manzanita, sunflower, chia, sage, lemonade berry, prickly pear, and pine nuts. Fire was used as a crop management technique as well as for community rabbit drives. Tools for the acquisition, storage, or preparation of food were highly varied and constructed from locally derived materials, with a few items acquired via trade from specific localities (Bean 1978). Hunting activities used either individual or group participation, using bows and arrows for larger game or curved throwing sticks, slings, traps, or pit type deadfalls for smaller animals. Cremations were used in each group rather than inhumations. While culturally the groups shared similarities with many parts of their culture the Cahuilla differed from the Luiseño/Juaneño and Gabrielino in that their religion was more like the Mohave tribes of the eastern deserts than the Chingichngish cult of the Luiseño and Gabrielino. Overall, the archaeological record between the three groups is very similar.

### **Cahuilla**

The Cahuilla traditional use area included the San Bernardino Mountains, Orocopia Mountains, and the Chocolate Mountains to the east, the Salton Sea and Borrego Springs to the south, the eastern slopes of Palomar Mountain and Lake Mathews to the west, and the Santa Ana River to the north (Bean 1978, Kroeber 1908). The Cahuilla traditionally inhabited areas from the desert and valley floors to the mountain areas, which included drastically different environmental areas and resources. The Project area is located along the western boundary of what would have been the Cahuilla traditional use area. Living inland, the Cahuilla had minimal contact with the Spaniards and were not as influenced to the extent that the coastal groups were, although the Asistencia at San Bernardino in 1819 did have several Cahuilla within their register.

Subsistence practices were similar to the Luiseño and Gabrielino, with a focus on hunting medium and small game, such as rabbits, with bow and arrow. At least six kinds of acorns, mesquite, screw beans, piñon nuts, cacti, variety of seeds, wild fruits and berries and succulents were collected. Granaries were used to store items such as acorns and mesquite beans. Additional plants were used for medicine and construction materials. Within the desert region the Cahuilla practiced proto-agriculture with the cultivation of corn, beans, squashes, and melons (Bean 1978).

Baskets were used for a variety of purposes and forms primarily for food production and storage. Ceramic pottery, was generally a redware with five main vessel types: small mouthed jars, cooking pots, open bowls, dishes, and pipes (Bean 1978).

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The Cahuilla were organized into two major groups of patrilineal, totemic clans: the Wildcats and the Coyotes (Bean 1978, Gifford 1918). Within the clans, either an entire clan, or family groups had ownership over important resources, such as mesquite or agave areas. Members of the clan could split into smaller family groups during certain times of the year and come together for resource collection or defense. The acorn collecting season caused the most dispersal outside of villages and family groups left for several weeks to collect at various acorn groves (Bean 1978). Within Cahuilla villages structures ranged from brush shelters to dome shaped and rectangular houses.

In the mid-1800s the Cahuilla began to be more directly affected by European-American migrants moving into the area in response to the California Gold Rush. In addition, a smallpox epidemic in 1863 took a large toll on the native population (Hooper 1920:340).

### **Gabrielino**

The largest, most powerful group in Southern California were the Gabrielino. Their traditional use area was centered in what is now the Los Angeles Basin and encompassed the Los Angeles, San Gabriel, and Santa Ana watersheds. Their range extended as far east as present-day San Bernardino, west to the Santa Monica Mountains, south to Aliso Creek and as far north as the San Fernando Valley. This group also occupied several Channel Islands, including Santa Barbara Island, Santa Catalina Island, San Nicholas Island, and San Clemente Island. The Gabrielino had access to important resources, including a steatite source from Santa Catalina Island and controlled the trade of materials and resources as far north as the San Joaquin Valley, east to the Colorado River, and even as far south as Baja California (Bean and Smith 1978; Kroeber 1925). The Gabrielino came under the influence of two Spanish missions, Mission San Gabriel and Mission San Fernando, and most of the natives from the coastal areas and inland valleys were removed to these missions (Bean and Smith 1978). According to the archaeological record, the Gabrielino were not the first inhabitants of the Los Angeles basin but arrived in the area around 500 B.C. as part of the “Shoshonean (Takic) wedge” (Bean and Smith 1978, Kroeber 1925).

The study area is located within the south eastern boundary of the Gabrielino territory (Bean and Smith 1978:538, Kroeber 1925:Plate 57). The name Gabrielino, which can also be spelled Gabrieleno or Gabrieleño, describes the people who were governed by the Spanish from the Mission San Gabriel. In the post-Contact period, Mission San Gabriel included natives of the greater Los Angeles area, as well as members of surrounding groups such as Kitanemuk, Serrano, and Cahuilla.

Little evidence exists that suggest that the people we call Gabrielino had a broad denotation for their group. According to Dakin (1978:222), the Gabrielino identified themselves as inhabitants of a specific community through the use of locational suffixes, similar to how residents of present-day communities identify themselves with their location (e.g. San Franciscan, San Diegan, California, etc.). However, there are Native words that have been suggested as labels for broader groups of Native Americans in the Los Angeles region. These labels include Tongva (or Tong-v) and Kizh (Kij or Kichereno). Heizer noted that evidence existed that these Native terms originally referred to local places or smaller groups of people within the larger group that we now call Gabrielino (Heizer 1968). The term Gabrielino, which combines the most commonly used group names, is used in the remainder of this study to designate native people of the Los Angeles Basin and their descendants.

The Gabrielino language is a member of the Takic branch of the Uto-Aztecan language family, which also includes the languages of the neighboring Juaneño/Luiseño, Tataviam/Alliklik, and Serrano tribes. According to Mithun, the Uto-Aztecan language family can be traced back to the Great Basin area (2004). Linguistic analysis suggests that Takic-speaking immigrants from the Great Basin area began moving into southern California around 500 B.C. (Kroeber 1925:579).

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The Uto-Aztecan family's origin differs greatly from that of the Chumash to the north and the Kumeyaay to the south. The language shared by the Kumeyaay is derived from the California-Delta branch of the Yuman-Cochimi language family, originating in the American Southwest (Mithun 2004:577). In contrast, the Chumash language may represent a unique language family with a lineage unlike both the Yuman-Cochimi and Uto-Aztecan families (Mithun 2004:390). Linguistic analysis suggests that Takic-speaking immigrants from the Great Basin area began moving into southern California around 500 B.C. (Kroeber 1925:579). Linguistic analysis suggests that Chumashan- and Yuman-speaking populations predated the arrival of Takic-speaking groups. The introduction of Takic-speaking groups to the region may have displaced both Chumashan- and Yuman-speaking peoples, however the timing and extent of their impact on indigenous peoples is not well understood.

Gabrielino society was organized along patrilineal non-localized clans, a characteristic Takic pattern, with each clan containing several lineages and their own ceremonial leader. One or two clans generally made up the population of a village. The chief, or *tómyaar*, always came from the primary lineage of the clan/village. There were two general classes of individuals in the forms of elites and commoners, although the Gabrielino did not have a distinctly stratified society. The elites consisted of primary lineage members, other lineage leaders (who maintained a separate ceremonial language), the wealthy, and the elite families of the various villages who commonly married among themselves. The commoner class contained those from "fairly well-to-do and long-established lineages" (Bean and Smith 1978:543). Slaves taken in war and individuals who drifted into the village and were unrelated to the local inhabitants made up a third class, lower than both the commoners and elites.

The Gabrielino lived in large, permanent villages that typically bordered rivers and streams or in sheltered areas along the coast. Gabrielino territory stretched from the foothills of the San Gabriel Mountains to the Pacific Ocean. Houses constructed by the Gabrielino were large, circular domed structures constructed of willow poles thatched with tule (Bean and Smith 1978), with capacities of up to 50 people per structure. Other structures constructed by the Gabrielino included sweathouses, menstrual huts, ceremonial enclosures, and communal granaries. The subsistence economy of Gabrielinos was centered on gathering and hunting. The surrounding environment was rich and varied, and the tribe exploited resources from mountain, foothill, valley, and desert environments in addition to riparian, estuarine, and open and rocky coastal eco-niches. Acorns were the staple food, and by the time of the early Intermediate period the gathering of acorns had become an established industry. Acorns were supplemented by the roots, leaves, seeds, and fruits of a wide variety of flora. Protein sources including fresh and saltwater fish, shellfish, birds, reptiles, large and small mammals, and insects were also consumed (Bean and Smith 1978:546; Kroeber 1925:631–632; McCawley 1996:119–123, 128–131).

A wide variety of tools and implements were used by the Gabrielino for the collection of food resources. Typical tools such as the bow and arrow, traps, nets, blinds, throwing sticks and slings, spears, harpoons, and hooks were used. Many plant foods were collected with woven seed beaters, several forms of burden baskets, carrying nets, and sharpened digging sticks which were occasionally fitted with stone weights. A variety of tools were used to process acorns, including portable and bedrock mortars, pestles, basket hopper mortars, manos and metates, hammerstones and anvils, woven strainers and winnowers, leaching baskets and bowls, woven parching trays, knives, bone saws, and wooden drying racks. The ground meal and unprocessed hard seeds were stored in large, finely woven baskets, and the unprocessed acorns were stored in large granaries woven of willow branches and raised off the ground on platforms. Santa Catalina Island steatite was used to make comals, ollas, and cooking vessels that would not crack after repeated firings. Food was consumed from a number of woven and carved wood vessels (Blackburn 1963; Kroeber 1925:631-639; McCawley 1996:129-138).

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There is well-documented interaction between the Gabrielino and many of their neighbors in the form of intermarriage and trade. The Gabrielino participated in an extensive exchange network, trading coastal goods for inland resources. They exported Santa Catalina Island steatite products, roots, seal and otter skins, fish and shellfish, red ochre, and lead ore to neighboring tribes, as well as people as far away as the Colorado River. These exports were exchanged for ceramic goods, deer skin shirts, obsidian, acorns, and other items. This burgeoning trade was facilitated by the use of craft specialists, a standard medium of exchange (Olivella bead currency), and the regular destruction of valuables in ceremonies that maintained a high demand for these goods (McCawley 1996:112-115). Several Gabrielino villages appear to have served as trade centers, due in large part to their centralized geographic position in relation to the southern Channel Islands and to other tribes. These villages maintained particularly large populations and hosted annual trade fairs that would bring their population to 1,000 or more for the duration of the event (McCawley 1996:113-114).

At the time of Spanish contact, the basis of Gabrielino religious life was the Chinigchinich cult, which centered on the last of a series of heroic mythological figures. Chinigchinich gave instruction on laws and institutions, and also taught the people how to dance, the primary religious act for this society. He later withdrew into heaven, where he rewarded the faithful and punished those who disobeyed his laws (Kroeber 1925:637-638). The Chinigchinich religion seems to have been relatively new when the Spanish arrived and was spreading south into the Southern Takic groups even as Christian missions were being built. According to McCawley, the Chinigchinich religion also may have represented a mixture of native and Christian belief and practices (1996:143-144).

Gabrielino rituals and beliefs regarding death varied within their occupied territories. Deceased Gabrielino were either buried or cremated, with cremation practices being the dominant form within interior areas and portions of the coast line. Inhumations were reportedly more common on the Channel Islands and the neighboring mainland coast areas (Harrington 1942; McCawley 1996:157). Cremation ashes have been found in subsurface archaeological contexts within stone bowls and in shell dishes (Ashby and Winterbourne 1966), as well as contexts suggesting the scattering of ashes amongst broken ground stone implements (Altschul et al. 2007; Cleland et al. 2007). Gravegoods associated with burials/cremations included projectile points, beads, steatite objects, and asphaltum, and varied in quantity and content (Fraizer 2000:175). These archaeological contexts correspond with ethnographic descriptions of an elaborate mourning ceremony that included a wide variety of offerings, including seeds, stone grinding tools, otter skins, baskets, wood tools, shell beads, bone and shell ornaments, and projectile points and knives (Boscana 1846:314). Cremation practices essentially ceased during the post-Contact period (McCawley 1996:157).

### **Luiseno/Juaneño**

The traditional use area of the Luiseno encompassed about 1,500 square miles and extended in a north-northeasterly direction from Agua Hedondia Lagoon, to Aliso Creek and, to the east, included what are today known as Oceanside, Vista, San Marcos, Escondido, Palomar Mountain, the Gujieto, a portion of Valle de San Jose, north to Soboba and Temescal (Bean and Shipek 1978, Sparkman 1908, White 1962). The Luiseno was designated based on their associate with the Mission San Luis Rey, while the Juaneño are associated with the Mission San Juan Capistrano, however Bean and Shipek (1978) state that the Luiseno and Juaneño are ethnologically and linguistically similar and that the distinction is based on the influence of the mission system. The Project area is adjacent to the northern boundary of the Luiseno/Juaneño traditional territory.

While the Luiseno along with the Cahuilla and Gabrielino were all Takic-speaking, and had similar social structures Bean and Shipek (1978) argue that the Luiseno social structure was more rigid due to their greater population density. The Luiseno lived in sedentary and autonomous villages located near reliable water sources and high resource areas. Each village contained named places associated with food products, raw materials, or sacred beings (Bean and Shipek 1978) Named places were owned by either an individual, a

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family, a chief, or the collective group. Group economic activities were restricted to areas owned by the village, whereas familial gatherings were limited to family-owned areas, unless given express permission to hold such gatherings in areas other than their own (Bean and Shipek 1978). The concept of private property was important, and trespassing upon private areas was punished severely. A Luiseño ritual and ceremonial specialist maintained the knowledge of the various ceremonies and passed on the knowledge to only one heir. Such ceremonies included funerals and clothes burning ceremonies. The decimation of the population after European contact, without doubt, caused the loss of some spiritual specialists. Additionally, the reservation system interrupted the social organization and settlement patterns (Bean and Shipek 1978, Shipek 1986).

Settlements were typically located within valley bottoms, along streams, or along coastal strands near mountain ranges. Villages were often located in sheltered areas near good water supplies, in a defensive location, or on the side of warm thermal zone slopes. Each village contained named places associated with food products, raw materials, or sacred beings (Bean and Shipek 1978). Named places were owned by either an individual, a family, a chief, or the collective group. Group economic activities were restricted to areas owned by the village as a whole, whereas familial gatherings were limited to family-owned areas, unless given express permission to hold such gatherings in areas other than their own (Bean and Shipek 1978). The concept of private property was important to the Luiseño, and trespassing upon private areas was punished severely. Private property also included houses, capital equipment, treasure goods and ritual equipment, trade and ceremonial beads, eagle nests, songs, and other nonmaterial possessions. Privately owned property was either inherited patrilineally or transferred to another owner (Sparkman 1908, Bean and Shipek 1978).

The diverse ecological zones within the Luiseño territory provided a wide array of subsistence products. Principal game animals included deer, rabbit, jackrabbit, woodrat, mice, ground squirrels, antelope, valley and mountain quail, doves, ducks, and other birds. (Gifford 1918, Sparkman 1908, Bean and Shipek 1978). The most important gathered resource were acorns, and village locations were typically located near water sources for use in acorn leeching. Grass seeds were the next most abundant resource, in addition to manzanita, sunflower, chia, sage, lemonade berry, prickly pear, and pine nuts. Fire was used as a crop management technique as well as for community rabbit drives. Tools for the acquisition, storage, or preparation of food were highly varied and constructed from locally derived materials, with a few items acquired via trade from specific localities (steatite bowls from Santa Catalina Island, obsidian blanks or tools from either eastern or northern neighbors) (Bean and Shipek 1978). Hunting activities used either individual or group participation, using bows and arrows for larger game or curved throwing sticks, slings, traps, or pit type deadfalls for smaller animals.

### 2.2.3 Historic Period

The first part of the next section provides a brief history of post-contact California up to the American period, followed by more detailed information regarding the history of Corona. Post-Contact history for the state of California is generally divided into three specific periods: the Spanish period (1769–1821), the Mexican period (1821–1848), and the American period (1848–present).

#### **Spanish Period (1769-1821)**

Along the coast of California, Spanish explorers began making expeditions between the mid-1500s and 1700s. Juan Rodríguez Cabrillo, a Portuguese in Spanish service, explored Catalina Island, San Pedro and Santa Monica bays and also stopped in 1542 at present-day San Diego Bay (Sparkman 1908). Sebastián Vizcaíno, a Spanish naval officer spent much of the late 1500's mapping the coast of California north into Oregon. Like Cabrillo, Vizcaíno's crew also landed on Santa Catalina Island and at San Pedro and Santa Monica Bays, naming each location. The Spanish crown laid claim to California based on the surveys



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conducted by Cabrillo and Vizcaíno (Bancroft 1886). While none of these expeditions may have had direct contact with the vicinity of the Project area it is likely that Old World diseases and other indirect impacts reached the Native Americans living in the Project area.

In 1769, the King of Spain directed the Franciscan Order to direct religious and colonization matters in assigned territories of the Americas. Captain Gaspar de Portolá, 64 soldiers, missionaries, Baja (lower) California Native Americans, and Mexican civilians, established the Presidio of San Diego, a fortified military outpost, as the first Spanish settlement in Alta California. In July of 1769, while Portolá was exploring southern California, Franciscan Fr. Junípero Serra founded Mission San Diego de Alcalá at Presidio Hill, the first of the 21 missions that would be established in Alta California by the Spanish and the Franciscan Order between 1769 and 1823. In 1771 the Mission San Gabriel Archangel was established and in 1776 Mission San Juan Capistrano was established. The mission of San Luis Rey de Francia was established in 1798 four miles up the San Luis Rey river from the coast and in 1816, an outpost of San Luis Rey was established at Pala, 20 miles upriver. An additional outpost, the San Bernardino estancia was established in 1819. Mission San Gabriel would have had the greatest impact on the Native Americans within the vicinity of the Project area.

A Spanish expedition led by Pedro Fages in 1772 was the first European group to travel in the vicinity of the Project area. Looking for deserters from the military post in San Diego, Fages crossed into the San Bernardino Valley from the southeast, crossing the Santa Ana River, then heading north through the Cajon Pass and into the Mojave Desert (Hampson et al. 1988). In 1774, Juan Bautista de Anza led an expedition into California and traversed the San Jacinto Valley, camping in the San Jacinto River Valley for water, and then heading west away from the river through Bernasconi Pass near present-day Lakeview. He went on through Moreno Valley near March Air Reserve Base, then headed into the Santa Ana River Valley near the present site of the City of Riverside. His expedition opened an overland travel route from Sonora in the Mexican interior to Monterey in California. Following his first expedition, Anza returned to the region in 1775 leading a group of settlers to establish a mission and presidio in San Francisco (Brown and Boyd 1922, Rawls and Bean 2003).

### **Mexican Period (1821-1846)**

After years of sporadic rebellion and warfare, New Spain (Mexico and the California territory) won independence from Spain in 1821 marking the beginning of the Mexican Period. As the ports in California were opened to foreign ships the population near the coast grew. However, the inland valleys remained largely vacant of European settlers except for use as grazing lands for cattle. During the Mexican Period the cattle industry grew in importance to become the leading industry in the region and the central focus of the Californio culture. The Mexican Government continued the land grant system first began by Spain and granted several land grants as part of the ranch system within the vicinity of the project area. Land grants within the vicinity of the project area include: the La Sierra Yorba, La Sierra Sepulveda, Sobrante de San Jacinto, Jurupa-Stearns, and El Rincon land grants.

The Mexican government secularized the California missions in 1833, and much of the mission lands were included in the land grants. The Native Americans which had been captured as part of the mission system became eligible for Mexican citizenship, however this period continued the physical and cultural decline of the Native American population (Heizer 1978). At their peak, the 21 California missions controlled approximately 74,000 neophytes (Bolton 1917). By 1834, the year before secularization took the institution from the missionaries, only 17,000 natives remained within their domain (Heizer 1978, Monroy 1990).

### **American Period (1848-Present)**

The signing of the Treaty of Guadalupe Hidalgo in 1848, ended the Mexican American War and marks the beginning of the American period, when California became a territory of the United States. California

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became the 31st state in 1850 and within three years the population of California had increased to more than 300,000.

Cattle continued to dominate the southern California economy through the 1850s as a source of hides but for the more than 90,000 new residents lured to California by the Gold Rush beginning in 1848, cattle were now an important source of meat and other supplies. Cattle were at first driven along major trails or roads such as the Gila Trail or Southern Overland Trail, then were transported by trains where available. The cattle boom ended for southern California as neighbor states and territories drove herds to northern California at reduced prices (Cleland 2005).

In Southern California, the floods of 1861-1862 followed by drought in 1863 and 1864 decimated the cattle industry and the large rancho owners who were “land rich and cash poor” began to sell off portions of their grants to satisfy debts (Guinn 1907). It was at this time that the new residents, mainly farmers, began experimental plantings to determine what their newly acquired land was best suited for within the vicinity of the Project area. In 1866 California Legislature passed an act that authorized payment of 250 for every 5000 mulberry trees that were at least two years old and 300 for every 100,000 cocoons produced. Tens of millions mulberry trees were planted, and the State treasury went almost bankrupt paying the incentives. By the end of the 1860’s, the silk craze had waned and the State canceled the payments for tree planting and cocoons (Guinn 1907). After several other agricultural experiments, it was found that oranges were the most suitable crop for the area. Although the first orange trees in Riverside County were planted in 1871, the citrus industry really took off two years later when Eliza Tibbets received two Brazilian navel orange trees sent to her by a friend at the Department of Agriculture in Washington. The trees thrived in the Southern California climate and the navel orange industry grew rapidly. The citrus industry expanded in the region and spurred irrigation projects further expanding usable land and encouraging additional development.

On March 11, 1893, Riverside County was formed from an approximately 6,500 square miles of San Diego County and 560 square miles of San Bernardino County (Holmes 1912). Riverside County was formed primarily over political and tax issues between residents in San Bernardino and Riverside, and the displeasure of residents in the Temecula Valley area being too great a distance from the County seat in San Diego.

### **City of Corona Project Area History**

First called “South Riverside”, Corona was founded in 1886 by the South Riverside Land and Water Company at the height of the Southern California citrus boom (Holmes 1912). In 1886, developer Robert Taylor and his partners, Adolph Rimpau, George L. Joy, A. S. Garretson, a Sioux City banker, and ex-governor of Iowa, Samuel Merrill formed the South Riverside Land and Water Company. Together they raised approximately \$110,000 to purchase approximately 12,000 acres of agricultural land that had formerly been part of the Rancho La Sierra, and Rancho Temescal land grants. Anaheim engineer H. C. Kellogg was hired and the colony of South Riverside was laid out encircled by Grand Boulevard, 100 feet wide and three miles round that had plantings of shade trees along each side of the road. Another bonus was that the “colony” was located on the San Diego branch of the Santa Fe Railroad. To the north along the railroad tracks were the manufacturing plants and packing houses. The southern end of town was mostly occupied by the citrus industry. In 1889, the Temescal Water Company was incorporated to supply water for the new colony (Corkhill 2013). This company purchased all the water-bearing lands in the Temescal valley and began drilling artesian wells. Taylor and his partners realized the importance of water for the soon to be developed community, and additional funds were used to ensure that sufficient water rights were obtained. They also secured the water rights to Temescal Creek, its tributaries and Lee Lake. Dams and pipelines were built to carry the water to the colony. After an initial flurry of expansion, water supplied from Temescal Canyon was not enough for the growing population and increasing agriculture. In 1899 the

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Corona Irrigation Company purchased 160 acres near Perris that had artesian waters. They constructed a 21-mile cement ditch to bring water to the area.

By 1893 the town boasted a large air-drying lumber yard, a clay and pipe works owned by the Pacific Clay Manufacturing Company, shipments of clay, gypsum, hay grain and honey were being shipped out. Hundreds of acres of were planted in orange, lemon and deciduous trees. There were three churches, Baptist, Methodist and Congregational, in addition, an Episcopalian group had purchased lots in town and were in the process of building their house of worship. There was a large two-story brick school, a bank, and a three-story hotel. In addition, there was a drug store, a newspaper, two bakeries, and a general merchandise store (Bynon 1893:4, Holmes 1912).

In addition to agricultural pursuits, mining also influence the early development of Corona. A tin mine had been discovered in 1857 in the nearby San Jacinto Hills. However, mining in the area did not gain traction until 1888, as Corona was the closest town to the mines and contained the most convenient rail depot, both supplies and workers arriving for the mines flowed through Corona. While the actual tin mines only remained open for a short time, they brough additional development and residents to Corona (Homes 1912).

Corona became known as the lemon capital of the world. Additional agricultural pursuits included other fruits and alfalfa (City of Corona n.d.). By the 1910s approximately  $\frac{1}{4}$  of the residents Corona were involved in the citrus industry. The lemon production spurred the creation of the Exchange By-Products Company the processed lemons which were not used for food into citric acid, lemon oil, and other products. In addition to being known for their lemon production the City of Corona began auto racing in 1913 at the Corona Road Races on Grand Boulevard, however the auto race proved to be too dangerous and was stopped after several years (City of Corona nd). Agriculture remained the main economic activity for decades.

World War II prompted a change in the development of Corona away from agriculture, as military bases within the region raised the population and created additional industries outside of agriculture. The Prado Dam, located immediately to the west of the Project area was completed in May 1941. The Prado Dam was constructed by the U.S. Army Corps of Engineers, Los Angeles District, along the lower Santa Ana River. The dam was constructed as a flood risk management measure, along with recreation and water conservation purposes (USACE 2020).

Post-World War II housing needs increase development in the area and by 1962 the Riverside Freeway (State Highway 91) was constructed through Corona. Interstate 15 was constructed, to the east of Corona in 1989. By the 1980s Corona developed into a residential community and the population grew exponentially.

## **3. METHODS**

Methods used to assess the cultural resources sensitivity of the RWMP project area include record searches from local repositories and archival research. No archaeological field survey was conducted for this study.

### **3.1 RECORD SEARCHES**

#### **3.1.1 Eastern Information Center**

A record search of the CHRIS held by the EIC for the RWMP project area and a one-quarter mile record search radius was requested on April 1, 2020. However, the EIC is temporarily closed due to COVID-19, and it is unknown when the record search results will be available. Therefore, record search results from the *City of Corona General Plan Update: Cultural Resources Technical Report* (SWCA 2018) were summarized for this report. Most of the City of Corona General Plan Update and the RWMP project areas overlap. The record search area utilized for the *City of Corona General Plan Update: Cultural Resources Technical Report* is shown in Figure 10, and includes the Corona city boundaries and the City's Sphere of Influence (SOI). The record search information was not available for the north west corner of the Project area within the Prado Flood Control Basin. However, no Project Components of the RWMP are located within this area. If available, an updated record search at the EIC will be requested and can be added to a subsequent draft of this report.

#### **3.1.2 Native American Heritage Commission**

A record search of the SLF held by the NAHC was requested on March 30, 2020. The NAHC responded on April 2, 2020 that the results were positive and provided a list of 37 tribal organizations and individuals to contact for additional information. Red Tail sent information request letters to the 37 tribal organizations and individuals on April 6, 2020. All correspondence pertaining to the NAHC is included in Appendix B.

### **3.2 ARCHIVAL RESEARCH**

Historic aerial photographs and maps, provided by [historicaerials.com](http://historicaerials.com) and USGS Historical Topographic Map Explorer, of the RWMP project area were examined. In addition, Red Tail conducted a search of the General Land Office (GLO) maps and records provided by the Bureau of Land Management (BLM) including land patents, survey plats and field notes, land status records and other historic documents. In order to assess previous ground disturbance and cultural resource sensitivity the *City of Corona General Plan Update: Cultural Resources Technical Report* (SWCA 2018) provided building record data per decade for properties within the project area.

### **3.3 TRIBAL CULTURAL RESOURCES**

Per AB-52 and SB-18 consultation with Native American Tribes and the City is ongoing.

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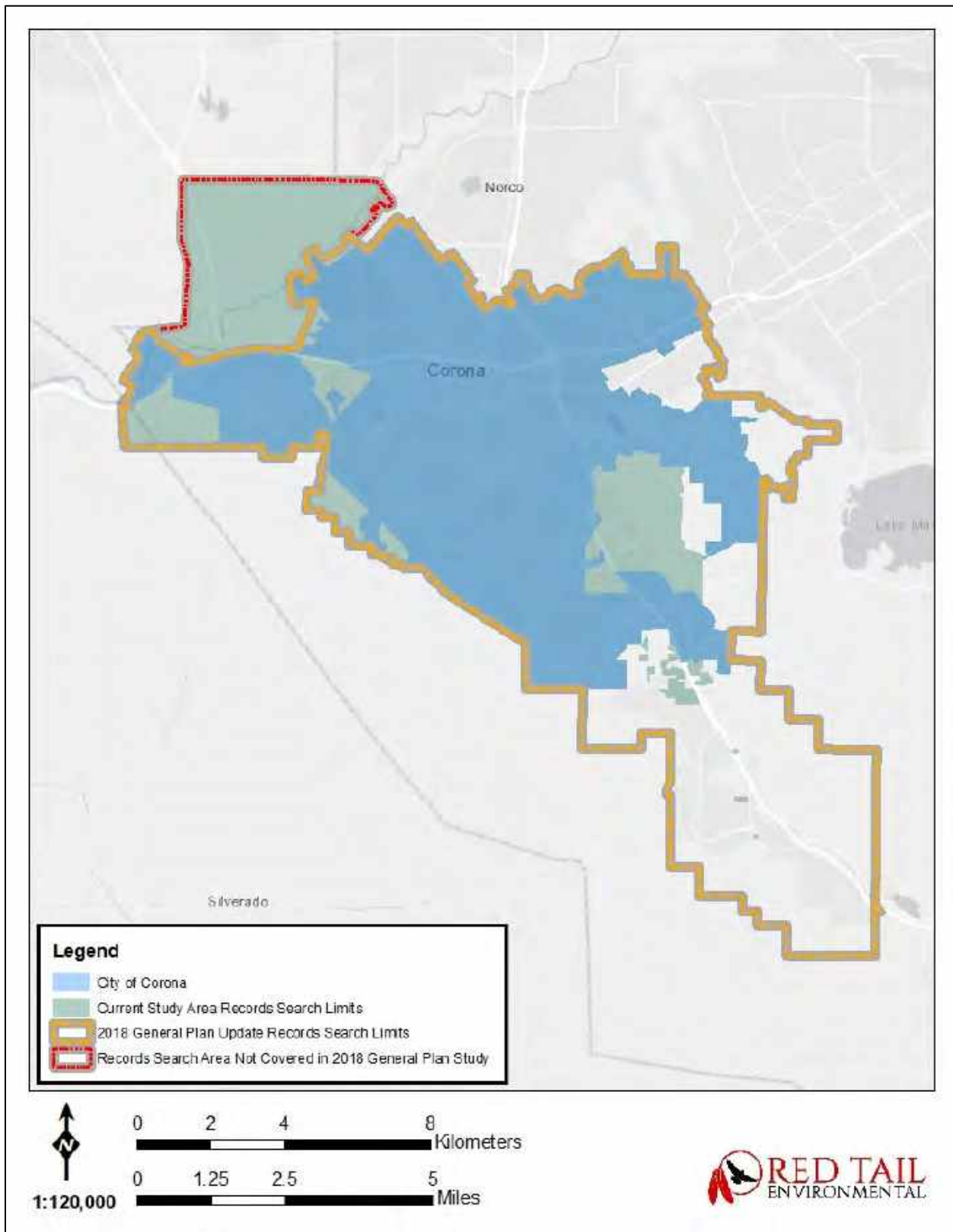


Figure 10. Record Search Area for the RWMP Project and the City of Corona General Plan Update Project.

## 4. RESULTS

### 4.1 RECORD SEARCH RESULTS

#### 4.1.1 EIC Record Search Results

The *City of Corona General Plan Update: Cultural Resources Technical Report* (SWCA 2018) identified a total of 172 previously conducted cultural resources studies within the City of Corona and the City's Sphere of Influence (SOI) (Table 1). The majority of the City of Corona and the SOI overlaps with the RWMP Project area.

Table 1. Previously Conducted Cultural Resources Studies within the City of Corona and the SOI

Report	Author	Year	Title	Quad
RI-00062	RONALD C. TOBEY, TERRY D. SUSS, AND LARRY BURGESS	1977	HISTORICAL RESOURCE SURVEY OF THE PRADO FLOOD CONTROL BASIN	CORONA NORTH, PRADO DAM
RI-00064	JEAN TADLOCK	1977	ARCHAEOLOGICAL ELEMENT OF AN ENVIRONMENTAL IMPACT REPORT WESTERN VILLAGE PROJECT, RIVERSIDE COUNTY, CALIFORNIA, LEIGHTON PROJECT 77201-1	BLACK STAR CANYON, PRADO DAM
RI-00078	MICHAEL C. GARDNER	1973	MAIN STREET WASH FLOOD CONTROL PROJECT: EXPECTED IMPACT TO ARCHAEOLOGICAL RESOURCES.	CORONA NORTH, CORONA SOUTH
RI-00080	MICHAEL C. GARNDER	1973	LINCOLN STREET CHANNEL STAGE II FLOOD CONTROL PROJECT: EXPECTED IMPACT TO ARCHAEOLOGICAL RESOURCES.	CORONA NORTH, RIVERSIDE WEST
RI-00169	PATRICIA MARTZ AND RICHARD A. WEAVER	1975	ENVIRONMENTAL EVALUATION: ARCHAEOLOGY OF THE PROPOSED ALIGNMENTS OF THE SANTA ANA REGIONAL INTERCEPTOR, RIVERSIDE, SAN BERNARDINO, AND ORANGE COUNTIES, CALIFORNIA	PRADO DAM
RI-00188	MARY A. BROWN	1976	LETTER REPORT: CULTURAL RESOURCES EVALUATION FOR PROPOSED WATER SUPPLY FACILITIES FOR THE CITY OF CORONA AND SURROUNDING COMMUNITIES (PHASE II).	CORONA SOUTH, LAKE MATHEWS
RI-00188	MARY A. BROWN	1976	LETTER REPORT: CULTURAL RESOURCES EVALUATION FOR PROPOSED WATER SUPPLY FACILITIES FOR THE CITY OF CORONA AND SURROUNDING COMMUNITIES (PHASE II).	CORONA SOUTH, LAKE MATHEWS
RI-00261	DONALD LIPP	1977	ENVIRONMENTAL IMPACT ASSESSMENT: ARCHAEOLOGICAL SURVEY OF SHARER RANCH, RIVERSIDE COUNTY, CALIFORNIA	BLACK STAR CANYON, PRADO DAM
RI-00336	CHRISTINA BREWER	1978	AN ARCHAEOLOGICAL SURVEY OF PARCEL NOS. 1, 2, AND 3 ON PARCEL MAP 11561, COUNTY OF RIVERSIDE, CALIFORNIA	LAKE MATHEWS
RI-00337	JANE ROSENTHAL	1996	ARCHAEOLOGICAL ASSESSMENT FOR CORONA CLAY PARCELS 1, 2, AND 3 TEMESCAL CANYON VICINITY, RIVERSIDE COUNTY, CALIFORNIA	LAKE MATHEWS
RI-00384	CHRISTOPHER E. DOVER	1978	ENVIRONMENTAL IMPACT EVALUATION: ARCHAEOLOGICAL ASSESSMENT OF TENTATIVE PARCEL MAP 11899, NEAR LAKE MATHEWS, RIVERSIDE COUNTY, CALIFORNIA	LAKE MATHEWS
RI-00410	JACK ZAHNISEC	1980	ARCHAEOLOGICAL ASSESSMENT FORM: RIVERSIDE COUNTY PLANNING DEPARTMENT, SMP NO. 133	ALBERHILL, LAKE MATHEWS
RI-00465	BRUCE LOVE AND BAI "TOM" TANG	1999	HISTORIC BUILDING EVALUATION, FORMER B&R SERVICE BUILDING, 1390 EAST CHASE DRIVE, CITY OF CORONA, RIVERSIDE COUNTY, CALIFORNIA	CORONA SOUTH
RI-00608	BETH PADON	1982	ARCHAEOLOGICAL ASSESSMENT OF WOODLAKE VILLAGES GENERAL PLAN AMENDMENT	CORONA NORTH
RI-00609	THOMAS HOLCOMB, JAMES D. SWENSON, AND PHILIP J. WILKE	1979	RESULTS OF TEST EXCAVATIONS AT CA-RIV-1443, NORCO HILLS, RIVERSIDE COUNTY, CALIFORNIA	CORONA NORTH
RI-00610	CHRISTOPHER E. DROVER	1979	AN ARCHAEOLOGICAL ASSESSMENT OF THE NORCO HILLS PROPOSED SUBDIVISION NEAR NORCO, CALIFORNIA	CORONA NORTH
RI-00748	M.D. CHAMBERS	1979	LETTER REPORT: ARCHAEOLOGICAL SURVEY OF TENTATIVE PARCEL NO. 13062	ALBERHILL, LAKE MATHEWS



#### 4. Results

Report	Author	Year	Title	Quad
RI-00755	MARIE COTTREL	1980	ARCHAEOLOGICAL RESOURCES CONDUCTED FOR THE CORONA ASSESSMENT DISTRICT ENVIRONMENTAL IMPACT REPORT	CORONA NORTH
RI-00757	JAMES E. BALDWIN	1980	CULTURAL RESOURCE IMPACT EVALUATION: ARCHAEOLOGICAL INSPECTION OF TENTATIVE PARCEL MAP NO. 15490, PORTION OF DAWSON CANYON, CORONA, RIVERSIDE COUNTY	LAKE MATHEWS
RI-00848	CHRISTOPHER E. DROVER	1980	ENVIRONMENTAL IMPACT EVALUATION: ARCHAEOLOGICAL ASSESSMENT OF A PROPOSED SUBDIVISION ON THE NORTHWEST CORNER OF TEMESCAL CANYON AND GLEN IVY ROADS NEAR CORONA, CALIFORNIA	LAKE MATHEWS
RI-01035	GEORGE R. MOMYER	1937	INDIAN PICTURE WRITING IN SOUTHERN CALIFORNIA (COPY)	-
RI-01076	JEAN A. SALPAS	1980	AN ARCHAEOLOGICAL ASSESSMENT OF 10 ACRES IN THE TEMESCAL VALLEY (LOT IN THE TEMESCAL VALLEY)	LAKE MATHEWS
RI-01077	JEAN A. SALPAS	1980	AN ARCHAEOLOGICAL ASSESSMENT OF 7.92 ACRES IN THE TEMESCAL VALLEY (PORTION OF PARCEL 2, PARCEL MAP 7239)	LAKE MATHEWS
RI-01112	STEVEN SCHWARTZ	1981	CULTURAL RESOURCES SURVEY, PRADO FIX	CORONA NORTH, PRADO DAM
RI-01169	ROGER J. DESAUTELS	1979	ARCHAEOLOGICAL SURVEY REPORT ON A 1700 + ACRE PARCEL OF LAND DESIGNATED THE "CAMPEAU PROJECT" LOCATED IN THE LAKE MATTHEWS AREA OF RIVERSIDE COUNTY	CORONA NORTH, CORONA SOUTH, LAKE MATHEWS, RIVERSIDE WEST
RI-01237	ROBERT J. WLODARSKI AND JOHN M. FOSTER	1980	CULTURAL RESOURCE OVERVIEW FOR THE DEVERS SUBSTATION TO SERRANO SUBSTATION TRANSMISSION ROUTE ALTERNATIVES CORRIDOR RIGHT-OF-WAY	ALBERHILL, BEAUMONT, BLACK STAR CANYON, CABAZON, CORONA SOUTH, EL CASCO, LAKE ELSINORE, LAKE MATHEWS, LAKEVIEW, PERRIS, ROMOLAND
RI-01237	ROBERT J. WLODARSKI AND JOHN M. FOSTER	1980	CULTURAL RESOURCE OVERVIEW FOR THE DEVERS SUBSTATION TO SERRANO SUBSTATION TRANSMISSION ROUTE ALTERNATIVES CORRIDOR RIGHT-OF-WAY	ALBERHILL, BEAUMONT, BLACK STAR CANYON, CABAZON, CORONA SOUTH, EL CASCO, LAKE ELSINORE, LAKE MATHEWS, LAKEVIEW, PERRIS, ROMOLAND
RI-01238	DANIEL F. MCCARTHY	1986	ENVIRONMENTAL EVALUATION: A ARCHAEOLOGICAL ASSESSMENT OF A 9.9 ACRE PARCEL OF LAND IN TEMESCAL CANYON, RIVERSIDE COUNTY, CALIFORNIA.	LAKE MATHEWS
RI-01242	STEPHEN R. HAMMOND	1980	FIRST ADDENDUM TO ARCHAEOLOGICAL SURVEY REPORT FOR THE PROPOSED ROUTE 15 TRANSPORTATION FACILITY BETWEEN MAGNOLIA AVENUE IN THE CITY OF CORONA AND THE ROUTE 60 FREEWAY, RIVERSIDE AND SAN BERNARDINO COUNTIES	CORONA NORTH
RI-01268	STEPHEN R. HAMMOND	1981	ARCHAEOLOGICAL SURVEY REPORT FOR THE PROPOSED GLEN IVY SAFETY ROADSIDE REST FACILITIES (P.M. 31.3/31.9)	LAKE MATHEWS
RI-01307	ANN S. PEAK	1975	CULTURAL RESOURCE ASSESSMENT OF SEWAGE TREATMENT FACILITIES EXPANSION PROJECT, CITY OF CORONA, RIVERSIDE COUNTY, CALIFORNIA	CORONA NORTH
RI-01338	CHRISTINA BREWER	1979	AN ARCHAEOLOGICAL SURVEY OF TRACK 14684, COUNTY OF RIVERSIDE, CALIFORNIA	ALBERHILL, LAKE MATHEWS
RI-01354	WILLIAM BREECE AND BETH PADON	1982	ARCHAEOLOGICAL TESTING AT CA-RIV-1801, GREEN RIVER MEADOW PROJECT, RIVERSIDE COUNTY, CALIFORNIA	PRADO DAM
RI-01355	ROGER J. DESAUTELS	1979	ARCHAEOLOGICAL SURVEY REPORT ON: AN 85 ACRE SEGMENT OF THE CADILLAC FAIRVIEW'S " GREEN RIVER" PROJECT. LOCATED IN SANTA ANA CANYON, RIVERSIDE COUNTY, CALIFORNIA	PRADO DAM
RI-01420	LSA, INC.	1982	ARCHAEOLOGICAL RECORDS SEARCH AND RECONNAISSANCE WESTERN MUNICIPAL WATER DISTRICT PROPOSED WATER TREATMENT PLANT, RIVERSIDE COUNTY, CALIFORNIA	PRADO DAM
RI-01479	SCHROTH, ADELLA	1982	ARCHAEOLOGICAL ASSESSMENT OF THE TEMESCAL VALLEY PROJECT, COUNTY OF RIVERSIDE, CALIFORNIA	ALBERHILL, CORONA SOUTH, LAKE MATHEWS

#### 4. Results

Report	Author	Year	Title	Quad
RI-01517	BOWLES, LARRY L.	1982	ARCHAEOLOGICAL ASSESSMENT FOR TPM 18721	BLACK STAR CANYON, CORONA NORTH, CORONA SOUTH
RI-01665	WIRTH ASSOCIATES	1983	DEVERS-SERRANO-VILLA PARK TRANSMISSION SYSTEM SUPPLEMENT TO THE CULTURAL RESOURCES TECHNICAL REPORT - PUBLIC REVIEW DOCUMENT AND CONFIDENTIAL APPENDICES	ALBERHILL, BEAUMONT, CABAZON, CORONA NORTH, CORONA SOUTH, EL CASCO, LAKE FULMOR, LAKE MATHEWS, LAKEVIEW, PERRIS, REDLANDS, SAN BERNARDINO SOUTH, SAN JACINTO, SANTIAGO PEAK, SUNNYMEAD
RI-01724	RECTOR, CAROL	1983	AN ARCHAEOLOGICAL ASSESSMENT OF TRACT 17634, CITY OF CORONA, RIVERSIDE COUNTY, CALIFORNIA	CORONA SOUTH
RI-01735	MCCARTHY, DANIEL F.	1983	AN ARCHAEOLOGICAL ASSESSMENT OF SKY ISLAND ESTATES, SANTA ANA CANYON AREA OF ORANGE AND RIVERSIDE COUNTIES, CALIFORNIA	BLACK STAR CANYON, PRADO DAM
RI-01736	PINK, W.J., M.A. BROWN AND NANCY EVANS	1983	CULTURAL AND PALEONTOLOGICAL RESOURCES ASSESSMENT OF THE GREENWAY FARMS, A PROPOSED SUBDIVISION, RIVERSIDE COUNTY, CALIFORNIA	CORONA NORTH, CORONA SOUTH, LAKE MATHEWS, RIVERSIDE WEST
RI-01873	COTTRELL, MARIE	1984	A CULTURAL RESOURCES ASSESSMENT CONDUCTED FOR TT 20060, CITY OF CORONA, RIVERSIDE COUNTY, CALIFORNIA	CORONA NORTH
RI-01913	MCCARTHY, DANIEL F.	1985	AN ARCHAEOLOGICAL ASSESSMENT OF A PORTION OF A PROPOSED INTERCEPTOR SEWER PIPELINE RIGHT-OF-WAY IN THE NORCO- CORONA AREA, RIVERSIDE COUNTY, CALIFORNIA	CORONA NORTH
RI-01914	GALLEGOS, DENNIS AND RICHARD CARRICO	1985	CULTURAL RESOURCES SURVEY FOR THE PROPOSED SIERA DEL ORO PROJECT, CORONA, CALIFORNIA	BLACK STAR CANYON, CORONA NORTH, CORONA SOUTH, PRADO DAM
RI-01914	GALLEGOS, DENNIS AND RICHARD CARRICO	1985	CULTURAL RESOURCES SURVEY FOR THE PROPOSED SIERA DEL ORO PROJECT, CORONA, CALIFORNIA	BLACK STAR CANYON, CORONA NORTH, CORONA SOUTH, PRADO DAM
RI-01949	BOUSCAREN, STEPHEN	1985	FINAL REPORT: AN ARCHAEOLOGICAL ASSESSMENT OF THE PROPOSED VALLEY-SERRANO 500 KV TRANSMISSION LINE CORRIDOR, ORANGE AND RIVERSIDE COUNTIES	ALBERHILL, CORONA SOUTH, LAKE ELSINORE, LAKE MATHEWS, ROMOLAND
RI-01954	E. JANE ROSENTHAL AND STEVEN J. SCHWARZ	1981	A CULTURAL RESOURCE SURVEY OF THE PROPOSED SANTA ANA RIVER HIKING/BIKING TRAIL IN THE PRADO FLOOD CONTROL BASIN	BLACK STAR CANYON, CORONA NORTH, PRADO DAM
RI-01976	HAMMOND, STEPHEN R.	1985	ARCHAEOLOGICAL SURVEY REPORT FOR THE PROPOSED WIDENING OF INTERSTATE ROUTE 15 BETWEEN GLEN IVY UNDERCROSSING AND 0.4 MILE SOUTH OF ONTARIO AVENUE 08- RIV-15, P.M.33.3/38.3	CORONA SOUTH, LAKE MATHEWS
RI-02072	SWOPE, KAREN K.	1987	AN ARCHAEOLOGICAL ASSESSMENT OF TT 21268, CORONA AREA OF RIVERSIDE COUNTY, CALIFORNIA	CORONA SOUTH
RI-02267	SCHNEIDER, JOAN S.	1988	AN ARCHAEOLOGICAL ASSESSMENT OF TT 21355 LOCATED IN THE CITY OF CORONA, WESTERN RIVERSIDE COUNTY, CALIFORNIA	CORONA NORTH
RI-02270	DROVER, C.E.	1988	AN ARCHAEOLOGICAL ASSESSMENT OF THE PROPOSED TEMSCAL WASH SAND AND GRAVEL MINING OPERATION, TEMSCAL CANYON, RIVERSIDE COUNTY, CALIFORNIA	LAKE MATHEWS
RI-02308	PARR, ROBERT E.	1988	AN ARCHAEOLOGICAL ASSESSMENT OF TP 22782, LOCATED IN THE CORONA AREA OF RIVERSIDE COUNTY, CALIFORNIA	CORONA SOUTH
RI-02379	LSA, INC.	1989	CHASE RANCH SPECIFIC PLAN - ARCHAEOLOGICAL ASSESSMENT	CORONA SOUTH
RI-02381	SCIENTIFIC RESOURCE SURVEYS, INC.	1988	ARCHAEOLOGICAL ASSESSMENT - TP 23959	LAKE MATHEWS
RI-02396	DROVER, C.E.	1989	AN ARCHAEOLOGICAL ASSESSMENT OF THE INDIAN TRAILS PROJECT, TEMESCAL VALLEY, EAST OF CORONA, CALIFORNIA.	ALBERHILL, LAKE MATHEWS
RI-02396	DROVER, C.E.	1989	AN ARCHAEOLOGICAL ASSESSMENT OF THE INDIAN TRAILS PROJECT, TEMESCAL VALLEY, EAST OF CORONA, CALIFORNIA.	ALBERHILL, LAKE MATHEWS
RI-02429	STICKEL, E. GARY AND TERENCE D'ALTROY	1980	SANTA ANA RIVER AND SANTIAGO CREEK: A CULTURAL RESOURCE SURVEY	CORONA NORTH, EL CASCO, PRADO DAM

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Report	Author	Year	Title	Quad
RI-02515	BROWN, JOAN C.	1989	CULTURAL RESOURCES RECONNAISSANCE OF THE 1,100 ACRE EAGLE VALLEY PROJECT, RIVERSIDE, CALIFORNIA.	CORONA SOUTH, LAKE MATHEWS
RI-02516	MORGAN, MARILYN	1989	ADDENDUM TO CULTURAL RESOURCES RECONNAISSANCE OF EAGLE VALLEY PROJECT, DATED 17 AND 20 JULY 1989, RIVERSIDE COUNTY, CALIFORNIA	CORONA SOUTH, LAKE MATHEWS
RI-02521	DIBBLE, STEPHEN D.	1987	AN ARCHAEOLOGICAL ASSESSMENT OF THE WARM SPRINGS GREEN DEVELOPMENT, RIVERSIDE COUNTY, CALIFORNIA.	LAKE MATHEWS
RI-02535	KELLER, JEAN S.	1989	AN ARCHAEOLOGICAL ASSESSMENT OF CHANGE OF ZONE 5328/PLOT PLAN 10,893 RIVERSIDE COUNTY, CALIFORNIA.	WILDOMAR
RI-02650	BERGIN, KATHLEEN A. AND RANDAL P. PRESTON	1989	TECHNICAL REPORT 3: ARCHAEOLOGICAL RESEARCH REPORT FOR THE TEMESCAL CANYON COMPOSTING FACILITY EIR RIVERSIDE COUNTY, CALIFORNIA. SCH 88100318	LAKE MATHEWS
RI-02651	LOVE, BRUCE	1991	LETTER REPORT: CULTURAL RESOURCES MONITORING: TEMESCAL CANYON COMPOSTING PROJECT	LAKE MATHEWS
RI-02660	SCIENTIFIC RESOURCE SURVEYS	1989	CULTURAL AND PALEONTOLOGICAL RESOURCES INVESTIGATION OF LEE LAKE WATER DISTRICT REACH F EXTENSION RIVERSIDE COUNTY, CALIFORNIA.	LAKE MATHEWS
RI-02743	MCCARTHY, DANIEL	1990	ARCHAEOLOGICAL ASSESSMENT OF THE MORGER PROPERTY LOCATED IN OLSEN CANYON IN TEMESCAL VALLEY, RIVERSIDE COUNTY, CALIFORNIA	LAKE MATHEWS
RI-02744	MCKENNA, JEANETTE A., KEN HEDGES, AND DIANE HAMANN	1990	ARCHAEOLOGICAL TEST EXCAVATIONS IN THE TEMESCAL QUARRY SITE, OLSEN CANYON, RIVERSIDE COUNTY, CALIFORNIA	LAKE MATHEWS
RI-02881	GREENWOOD, ROBERTA AND J. FOSTER	1990	CONTEXT EVALUATION OF HISTORICAL SITES IN THE PRADO BASIN.	CORONA NORTH, PRADO DAM
RI-02890	MCKENNA, J. ET AL.	1990	HISTORIC AND ARCHAEOLOGICAL INVESTIGATIONS OF THE SANDBERG PROJECT SITE, GLEN IVY, RIVERSIDE COUNTY, CALIFORNIA	ALBERHILL, LAKE MATHEWS
RI-02905	MCKENNA, JEANETTE	1988	AN INTENSIVE SURVEY OF THE CORONA RANCH PROJECT AREA, CITY OF CORONA, RIVERSIDE COUNTY, CALIFORNIA.	CORONA NORTH
RI-02980	DIGREGORIO, LEE A.	1990	AN ARCHAEOLOGICAL RECONNAISSANCE REPORT (TRABUCO LAND EXCHANGE)	ALBERHILL, CORONA SOUTH, WILDOMAR
RI-02984	DROVER, CHRISTOPHER	1990	AN ARCHAEOLOGICAL ASSESSMENT OF THE TEMESCAL VALLEY PROJECT, TEMESCAL VALLEY, EAST OF CORONA, CALIFORNIA.	ALBERHILL, LAKE MATHEWS
RI-03138	SCIENTIFIC RESOURCE SURVEYS, INC.	1990	CULTURAL AND PALEONTOLOGICAL SURVEY REPORT ON THE NASTONERO PROPERTY, RIVERSIDE COUNTY, CALIFORNIA	BLACK STAR CANYON, CORONA SOUTH
RI-03153	COTTRELL, MARIE G., D., STEPHEN DIBBLE, AND VADA DRUMMY-CHAPEL	1988	A CULTURAL RESOURCE ASSESSMENT OF A PROPOSED DEVELOPMENT IN THE TEMESCAL VALLEY, RIVERSIDE COUNTY, CALIFORNIA; PART I: ARCHAEOLOGY; PART II: HISTORIC ASSESSMENT	CORONA SOUTH, LAKE MATHEWS
RI-03175	SWOPE, KAREN	1991	CULTURAL RESOURCES ASSESSMENT: TEMESCAL VALLEY PROJECT, RIVERSIDE COUNTY, CALIFORNIA	ALBERHILL, CORONA SOUTH, LAKE MATHEWS
RI-03306	FREEMAN, TREVOR A. AND DAVID M. VAN HORN	1989	ARCHAEOLOGICAL SURVEY REPORT: CULTURAL RESOURCE ASSESSMENT OF THE SEIGAL FARMS PROPERTY LAKE MATHEWS, RIVERSIDE COUNTY, CALIFORNIA	LAKE MATHEWS
RI-03320	DROVER, CHRISTOPHER	1990	ENVIRONMENTAL IMPACT EVALUATION: AN ARCHAEOLOGICAL ASSESSMENT OF THE WERNER SURFACE MINE, TEMESCAL VALLEY, EAST OF CORONA, CALIFORNIA	ALBERHILL, LAKE MATHEWS
RI-03322	THE KEITH COMPANIES	1988	STATE ROUTE 91 IMPROVEMENTS PROJECT: HISTORIC PROPERTY SURVEY REPORT	BLACK STAR CANYON, CORONA NORTH, PRADO DAM, RIVERSIDE WEST
RI-03322	THE KEITH COMPANIES	1988	STATE ROUTE 91 IMPROVEMENTS PROJECT: HISTORIC PROPERTY SURVEY REPORT	BLACK STAR CANYON, CORONA NORTH, PRADO DAM, RIVERSIDE WEST

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RI-03514	MACKO, MICHAEL E. AND KEITH D. RHODES	1992	PHASE I ARCHAEOLOGICAL RESOURCE ASSESSMENT: GLEN IVY HOT SPRINGS FLOOD CONTROL PROJECT, LINKED TO PLOT PLAN 9026, RIVERSIDE COUNTY, CALIFORNIA	LAKE MATHEWS
RI-03564	MCKENNA, JEANNETTE A.	1992	A CULTURAL RESOURCES INVESTIGATION AND SITE EVALUATIONS FOR THE PROPOSED 200 ACRE WINDWARD DEVELOPMENT PROJECT AREA, NORCO, RIVERSIDE COUNTY, CA.	CORONA NORTH
RI-03598	SEYMOUR, GREGORY AND DAVID DOAK	1992	AN ARCHAEOLOGICAL SURVEY FOR THE WESTERN RIVERSIDE REGIONAL WASTEWATER TREATMENT FACILITY CONVEYANCO SYSTEM IN CORONA AND NORCO, RIVERSIDE COUNTY, CALIFORNIA.	CORONA NORTH
RI-03599	SEYMOUR, GREGORY R.	1993	AN ARCHAEOLOGICAL SURVEY FOR THE HOME GARDENS SANITARY DISTRICT INITIAL STUDY IN CORONA, RIVERSIDE COUNTY, CALIFORNIA.	CORONA NORTH, CORONA SOUTH
RI-03602	BROWN, JOAN C.	1993	CULTURAL RESOURCE RECONNAISSANCE AND ASSESSMENT FOR THE EAGLE VALLEY EAST PROJECT.	LAKE MATHEWS
RI-03629	GREGORY SEYMOUR AND DAVID DOAK	1992	AN ARCHAEOLOGICAL SURVEY FOR THE WESTERN RIVERSIDE REGIONAL WASTE WATER TREATMENT SYSTEM IN CORONA AND NORCO, RIVERSIDE COUNTY.	CORONA NORTH
RI-03722	DESAUTELS, NANCY AND ROBERT BEER	1993	GEOPHYSICAL INVESTIGATIONS AND SUBSURFACE RECOVERY ON TOM'S FARMS PROPERTY, RIVERSIDE COUNTY, CALIFORNIA; PARCEL MAP 4927	LAKE MATHEWS
RI-03768	ALEXANDROWICZ, J. S., ARTHUR KUHNER, EDWARD KNELL, AND SUSAN ALEXANDROWICZ	1994	HISTORIC PRESERVATION INVESTIGATIONS FOR THE SOUTH NORCO CHANNEL LINE SB, STAGE 1, CITY OF CORONA, CITY OF NORCO, COUNTY OF RIVERSIDE, CALIFORNIA	CORONA NORTH
RI-03810	DUFFIELD, ANNE Q.	1989	ARCHAEOLOGICAL & HISTORICAL SURVEY REPORT FOR THE CAJALCO CANYON ROCK QUARRY	LAKE MATHEWS
RI-03811	HATHEWAY, ROGER	1990	LETTER REPORT: SUPPLEMENT TO ARCHAEOLOGICAL & HISTORICAL SURVEY REPORT FOR THE CAJALCO CANYON ROCK QUARRY	LAKE MATHEWS
RI-03890	LSA ASSOCIATES, INC.	1990	AN ARCHAEOLOGICAL ASSESSMENT OF THE EMPIRE HOMES SPECIFIC PLAN AND TENTATIVE TRACT 25466, RIVERSIDE COUNTY, CALIFORNIA	CORONA SOUTH
RI-04120	MASON, ROGER, PHILIPPE LAPIN, AND WAYNE H. BONNER	1998	CULTURAL RESOURCES RECORDS SEARCH AND SURVEY REPORT FOR A PACIFIC BELL MOBILE SERVICES TELECOMMUNICATIONS FACILITY: CM 150-03, CITY OF CORONA, CALIFORNIA	CORONA NORTH
RI-04144	LOVE, BRUCE AND BAI "TOM" TANG	1998	CULTURAL RESOURCES REPORT: TEMESCAL VALLEY REGIONAL INTERCEPTOR, SANTA ANA WATERSHED PROJECT AUTHORITY, RIVERSIDE COUNTY, CALIFORNIA	ALBERHILL, CORONA NORTH, CORONA SOUTH, LAKE ELSINORE, LAKE MATHEWS
RI-04144	LOVE, BRUCE AND BAI "TOM" TANG	1998	CULTURAL RESOURCES REPORT: TEMESCAL VALLEY REGIONAL INTERCEPTOR, SANTA ANA WATERSHED PROJECT AUTHORITY, RIVERSIDE COUNTY, CALIFORNIA	ALBERHILL, CORONA NORTH, CORONA SOUTH, LAKE ELSINORE, LAKE MATHEWS
RI-04144	LOVE, BRUCE AND BAI "TOM" TANG	1998	CULTURAL RESOURCES REPORT: TEMESCAL VALLEY REGIONAL INTERCEPTOR, SANTA ANA WATERSHED PROJECT AUTHORITY, RIVERSIDE COUNTY, CALIFORNIA	ALBERHILL, CORONA NORTH, CORONA SOUTH, LAKE ELSINORE, LAKE MATHEWS
RI-04170	LOVE, BRUCE AND BAI "TOM" TANG	1999	IDENTIFICATION AND EVALUATION OF HISTORIC PROPERTIES: TEMESCAL VALLEY PIPELINE PHASE III (EXTENSION), CITY OF CORONA, RIVERSIDE COUNTY, CALIFORNIA	CORONA SOUTH
RI-04171	MCKENNA, JEANNETTE AND KAREN C. BENNETT	1998	HISTORIC RESOURCES INVESTIGATION AND EVALUATION OF THE RESIDENCE LOCATED AT 2542 GILBERT AVENUE, CORONA, RIVERSIDE COUNTY, CALIFORNIA	CORONA SOUTH
RI-04203	CHAMBERS GROUP, INC.	1993	CULTURAL RESOURCES SURVEY FOR THE CENTRAL POOL AUGMENTATION AND WATER QUALITY PROJECT.	BLACK STAR CANYON, CANADA GOBERNADORA, CORONA NORTH, CORONA SOUTH, LAKE MATHEWS, PRADO DAM
RI-04357	LAPIN, PHILIPPE	2000	LETTER REPORT: CULTURAL RESOURCE ASSESSMENT FOR MODIFICATIONS TO PACIFIC BELL WIRELESS FACILITY CM 109-06, COUNTY OF RIVERSIDE, CALIFORNIA.	CORONA NORTH
RI-04360	DUKE, CURT	2000	LETTER REPORT: CULTURAL RESOURCES ASSESSMENT FOR THE AT&T WIRELESS SERVICES FACILITY NUMBER C581, COUNTY OF RIVERSIDE, CALIFORNIA.	CORONA NORTH

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RI-04659	WHITE, ROBERT S. AND LAURA S. WHITE	2004	A CULTURAL RESOURCES ASSESSMENT OF A PROPOSED REGIONAL DRAINAGE FACILITY, TEMESCAL CANYON ROAD AT LEROY ROAD, SOUTH CORONA, RIVERSIDE COUNTY	CORONA SOUTH, LAKE MATHEWS
RI-04665	LOVE, BRUCE AND BAI "TOM" TANG	1997	IDENTIFICATION AND EVALUATION OF HISTORIC PROPERTIES TEMESCAL VALLEY PROJECT ELSINORE VALLEY MUNICIPAL WATER DISTRICT RIVERSIDE COUNTY, CALIFORNIA	ALBERHILL, CORONA SOUTH, LAKE MATHEWS
RI-04665	LOVE, BRUCE AND BAI "TOM" TANG	1997	IDENTIFICATION AND EVALUATION OF HISTORIC PROPERTIES TEMESCAL VALLEY PROJECT ELSINORE VALLEY MUNICIPAL WATER DISTRICT RIVERSIDE COUNTY, CALIFORNIA	ALBERHILL, CORONA SOUTH, LAKE MATHEWS
RI-04713	SMITH, BROOKS AND DEBORAH MCLEAN	2004	CULTURAL RESOURCE ASSESSMENT, FAR WEST HOUSING, LLC, SIERRA BELLA PROJECT, RIVERSIDE COUNTY, CALIFORNIA	BLACK STAR CANYON, CORONA SOUTH
RI-04737	STRUDWICK, IVAN H. AND KATHLEEN ANN BERGIN	1999	ARCHAEOLOGICAL SURVEY, TESTING AND EVALUATION OF SITES CA-RIV-101/H, CA-RIV- 2992/H, CA-RIV-6152/H AND CA-RIV-6153 FOR THE TEMESCAL SUMMIT PROJECT, RIVERSIDE COUNTY, CALIFORNIA	LAKE MATHEWS
RI-04765	HOOVER, ANNA M., KRISTIE R. BLEVINS, HUGH M. WAGNER, AND STEPHEN VAN WORMER	2004	AN ARCHAEOLOGICAL AND PALEONTOLOGICAL PHASE I SURVEY, A PHASE II SIGNIFICANCE TESTING PROGRAM, AND A HISTORIC PROPERTIES EVALUATION REPORT, THE SERRANO SPECIFIC PLAN (SSP), CASE #441, RIVERSIDE COUNTY, CALIFORNIA	LAKE MATHEWS
RI-04871	LOVE, BRUCE, MICHAEL HOGAN, AND HARRY QUINN	2001	ARCHAEOLOGICAL MONITORING REPORT: TRILOGY AT GLEN IVY: NEAR THE COMMUNITY OF GLEN IVY HOT SPRINGS, RIVERSIDE COUNTY, CALIFORNIA	CORONA SOUTH, LAKE MATHEWS
RI-04891	WLODARSKI, ROBERT J.	2002	A PHASE 1 ARCHAEOLOGICAL STUDY FOR THE PROPOSED CORONA SENIOR HOUSING PROJECT LOCATED AT 701, 733, 735, AND 777 SHERMAN AVENUE (APN# 110-040- 013, -014, -015, AND -016), CITY OF CORONA, COUNTY OF RIVERSIDE, CALIFORNIA	CORONA NORTH
RI-04895	FOX, JULIA K., ANNA M. HOOVER, KRISTIE R. BLEVINS, HUGH M. WAGNER, AND MARK A ROEDER	2005	A BIOLOGICAL, ARCHAEOLOGICAL, AND PALEONTOLOGICAL PHASE IV MITIGATION REPORT, MONTE VERDE, TRACT 29000, +457-ACRE PROPERTY, CITY OF CORONA, COUNTY OF RIVERSIDE, CALIFORNIA	CORONA SOUTH
RI-04969	HOOVER, ANNA M., WILLIAM R. GILLEAN, AND HUGH M. WAGNER	2005	A PHASE I ARCHAEOLOGICAL AND PALEONTOLOGICAL SURVEY REPORT FOR APNS 290- 060-007, -017 AND -019 AND 290-080-012, -014 AND -015, A +32-ACRE PROPERTY, COUNTY OF RIVERSIDE, CALIFORNIA.	LAKE MATHEWS
RI-05153	HOLMES, AMY AND J.D. STEWART	2005	RESULTS OF A CULTURAL AND PALEONTOLOGICAL ASSESSMENT OF THE APPROXIMATELY 4 ACRE SMITH AVENUE	CORONA NORTH
RI-05409	LOVE, BRUCE, BAI "TOM" TANG, MICHAEL HOGAN, AND MARIAM DAHDUL	2001	HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY REPORT, ARLINGTON DESALTER AND PIPELINE, CITIES OF RIVERSIDE, CORONA, AND NORCO, RIVERSIDE COUNTY, CALIFORNIA	CORONA NORTH, RIVERSIDE WEST
RI-05433	JACKSON, ADRIANNA	2000	LETTER REPORT: RECORDS SEARCH RESULTS FOR SPRING PCS FACILITY RV54XC472A (GREEN RIVER WATER TANK SITE), CORONA, RIVERSIDE COUNTY, CALIFORNIA	PRADO DAM
RI-05435	JACKSON, ADRIANNA	2000	LETTER REPORT: RECORDS SEARCH RESULTS FOR SPRING PCS FACILITY RV34ZC472B (GREEN RIVER FIRE STATION SITE), CORONA, RIVERSIDE COUNTY, CALIFORNIA	PRADO DAM
RI-05764	WLODARSKI, ROBERT J.	2005	LETTER REPORT: RECORDS SEARCH AND FIELD RECONNAISSANCE RESULTS FOR THE PROPOSED NEXTEL WIRELESS COMMUNICATIONS SITE (CA5379-A: MOORE ELECTRIC) LOCATED AT 463 NORTH SMITH AVENUE, CITY OF CORONA, RIVERSIDE COUNTY, CALIFORNIA 92880	CORONA NORTH
RI-05827	WHITE, ROBERT S., LAURIE S. WHITE, AND DAVID M. VAN HORN	2003	CULTURAL RESOURCES INVESTIGATION FOR THE ELSINORE ADVANCED PUMPED STORAGE PROJECT, LAKE ELSINORE, RIVERSIDE COUNTY	ALBERHILL, LAKE ELSINORE

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RI-06085	STERNER, MATHEW., ET AL.	2004	RANCHING, RAILS, AND CLAY: THE DEVELOPMENT AND DEMISE OF THE TOWN OF RINCON/PRADO, ARCHAEOLOGICAL DATA RECOVERY AT CA-RIV-1039H AND CA-RIV- 1044H, RIVERSIDE COUNTY, CALIFORNIA	CORONA NORTH
RI-06103	AISLIN-KAY, MARNIE	2004	CULTURAL RESOURCE RECORDS SEARCH AND SITE VISIT RESULTS FOR SPRINT TELECOMMUNICATIONS FACILITY CANDIDATE RV60XC809A (255 AIRPORT CIRCLE), LOCATED AT 255 AIRPORT CIRCLE, CORONA, RIVERSIDE COUNTY, CA	CORONA NORTH
RI-06214	EARTH TOUCH, INC.	2006	NEW TOWER ("NT") SUBMISSION PACKET, FCC FORM 620: CORONA FIRE STATION	CORONA NORTH
RI-06626	HOGAN, MICHAEL	2006	LETTER REPORT: ARCHAEOLOGICAL/PALEONTOLOGICAL MONITORING OF EARTH-MOVING ACTIVITIES, THE SYCAMORE CREEK PROJECT, PHASE 2B, TRACTS 30440 (PA 2B), 30440-2 (PA 12B), AND 30440-3 (PA 10), NEAR THE COMMUNITY OF GLEN IVY HOT SPRINGS, RIVERSIDE COUNTY, CALIFORNIA	ALBERHILL, LAKE MATHEWS
RI-06888	LERCH, MICHAEL K. AND GRAY, MARLESA A.	2006	CULTURAL RESOURCES ASSESSMENT OF THE VALLEY-IVYGLEN TRANSMISSION LINE PROJECT, RIVERSIDE COUNTY, CALIFORNIA	ALBERHILL, LAKE ELSINORE, LAKE MATHEWS, PERRIS, ROMOLAND, STEELE PEAK
RI-06911	KING, GARY	2000	NEGATIVE HISTORY PROPERTY SURVEY REPORT FOR STATE ROUTE 91 AT MAIN STREET INTERCHANGE CORONA, CALIFORNIA	CORONA NORTH
RI-07166	CAPRICE D. HARPER	2004	CULTURAL RESOURCE ASSESSMENT FOR CINGULAR WIRELESS FACILITY NO. SB 286-01 NEAR CORONA, RIVERSIDE COUNTY, CALIFORNIA	PRADO DAM
RI-07219	COOLEY, THEODORE G.	2007	ARCHAEOLOGICAL SURVEY REPORT FOR SOUTHERN CALIFORNIA EDISON COMPANY UNDERGROUND CABLE CONDUIT INSTALLATIONS FOR THE EAST AND WEST TAPS TO THE CHASE SUBSTATION, CITY OF CORONA, RIVERSIDE COUNTY, CALIFORNIA	CORONA SOUTH
RI-07425	MCLEAN, DEBORAH	2007	HISTORIC PROPERTY SURVEY REPORT (FIRST SUPPLEMENTAL HISTORIC PROPERTY SURVEY REPORT: 08/12-RIV/ORR-91-PM 15.9-19.9/0.0-2.9 KP25.6-32.0/0.0/4.7 EASTBOUND LANE ADDITION EA: 0E800/0G040)	BLACK STAR CANYON, PRADO DAM
RI-07433	BONNER, H. WAYNE AND AISLIN-KAY, MARNIE	2007	CULTURAL RESOURCE RECORDS SEARCH AND SITE VISIT RESULTS FOR T-MOBILE CANDIDATE IE05297 (SYCAMORE CREEK WATER TANK), UNADDRESSED PARCEL, CORONA, RIVERSIDE COUNTY, CALIFORNIA	ALBERHILL
RI-07494	UNDERBRINK, SUSAN	2006	HISTORIC PROPERTY SURVEY REPORT (ARCHAEOLOGICAL SURVEY REPORT FOR THE EASTBOUND SR-91 LANE ADDITION PROJECT FROM SR-241 TO SR-71, COUNTY OF ORANGE, AND COUNTY OF RIVERSIDE CALIFORNIA)	BLACK STAR CANYON, PRADO DAM
RI-07666	COOLEY, THEODORE G. AND ANDREA M. CRAFT	2008	ADDENDUM: CULTURAL RESOURCES ASSESSMENT OF THE VALLEY-IVYGLEN TRANSMISSION LINE PROJECT, RIVERSIDE COUNTY, CALIFORNIA	ALBERHILL, LAKE ELSINORE, LAKE MATHEWS
RI-07666	COOLEY, THEODORE G. AND ANDREA M. CRAFT	2008	ADDENDUM: CULTURAL RESOURCES ASSESSMENT OF THE VALLEY-IVYGLEN TRANSMISSION LINE PROJECT, RIVERSIDE COUNTY, CALIFORNIA	ALBERHILL, LAKE ELSINORE, LAKE MATHEWS
RI-07734	GREENE, RICHARD AND BRIAN F. SMITH	2006	A PHASE I ARCHAEOLOGICAL ASSESSMENT OF THE SITEWORK DEVELOPMENT PROJECT, APN 279-230-034	CORONA SOUTH
RI-07766	BROWN, JOAN C.	2007	CULTURAL RESOURCES SURVEY OF THE NEW PROPOSED CAJALCO ROAD, EAGLE CANYON ROAD AND THE SCENARIO 2 ROAD ALIGNMENTS, CITY OF CORONA, RIVERSIDE COUNTY, CALIFORNIA. (INCLUDING RESULTS FROM PREVIOUS EAGLE VALLEY ACCESS ROAD STUDIES)	CORONA NORTH, CORONA SOUTH, LAKE MATHEWS, RIVERSIDE WEST
RI-08043	SHERRI GUST AND AMY GLOVER	2008	PHASE I CULTURAL RESOURCES ASSESSMENT REPORT FOR THE CENTENNIAL HIGH SCHOOL PROJECT IN CORONA, CALIFORNIA	CORONA SOUTH
RI-08044	SHERRI GUST AND AMY GLOVER	2008	PHASE I CULTURAL RESOURCES ASSESSMENT REPORT FOR THE SANTIAGO HIGH SCHOOL PROJECT IN CORONA, CALIFORNIA.	CORONA SOUTH



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RI-08045	SHERRI GUST, AMY GLOVER, AND VERONICA HARPER	2008	PHASE I CULTURAL RESOURCES ASSESSMENT REPORT FOR THE LINCOLN ALTERNATIVE ELEMENTARY SCHOOL PROJECT IN CORONA, CALIFORNIA	CORONA SOUTH
RI-08215	BAI "TOM" TANG	2009	LETTER REPORT: HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY OF A PORTION OF APN 290-660-004, GLEN IVY HOT SPRINGS AREA, RIVERSIDE COUNTY, CALIFORNIA	ALBERHILL
RI-08238	PAMELA MAXWELL	1993	LOS ANGELES DISTRICT PROJECT TO CLEAR VEGETATION TO REGAIN EFFICIENT USE OF WATER GAUGING STATION, AND REPAIR EXISTING CONCRETE CHANNEL BOTTOM, ON THE SANTA ANA RIVER, RIVERSIDE COUNTY, CALIFORNIA-CULTURAL RESOURCES.	PRADO DAM
RI-08519	JAMES J. SCHMIDT	2010	LETTER REPORT: MIRA LOMA-CLEARGEN-DELGEN 66KV TRANSMISSION LINE DETERIORATED POLE REPLACEMENT PROJECT (WO 4305-4114; 80028383), CORONA, RIVERSIDE COUNTY, CALIFORNIA	CORONA NORTH
RI-08533	JAMES J. SCHMIDT	2010	LETTER REPORT: BUCKBOARD AND HITCH 12KV (P#2263076E) AND UNIDENTIFIED CIRCUIT (P#2245653E) DETERIORATED POLE REPLACEMENT PROJECT (WO 6088-4800; 0-4878, & 0-4880), RIVERSIDE COUNTY, CALIFORNIA	LAKE MATHEWS, PECHANGA
RI-08534	JAMES J. SCHMIDT	2010	LETTER REPORT: DETERIORATED POLE REPLACEMENTS PROJECTS (WO 6088-4800; 0- 4876, 0-4877, 0-4881, 0-4883.2010), RIVERSIDE COUNTY, CALIFORNIA	ALBERHILL, BACHELOR MTN, LAKE MATHEWS, SAGE
RI-08605	SUSAN GOLDBERG	2010	ARCHAEOLOGICAL SURVEY REPORT FOR STATE ROUTE 91/71 INTERCHANGE PROJECT, RIVERSIDE COUNTY, CALIFORNIA (08-RIV-91 - P.M. R0.6/ R2.6; 08-RIV-71. 1.6/3.0) EA 0F541	BLACK STAR CANYON, PRADO DAM
RI-08623	CARY D. COTTERMAN AND EVELYN N. CHANDLER	2011	CULTURAL RESOURCES INVENTORY OF TWO PROPOSED POLE REPLACEMENTS IN CORONA AND TEMESCAL CANYON, RIVERSIDE COUNTY, CALIFORNIA (W.O. 6034-4800, K 4892, TD 495676)	CORONA SOUTH, LAKE MATHEWS
RI-08660	WAYNE H. BONNER, SARAH A. WILLIAMS, AND KATHLEEN A. CRAWFORD	2011	CULTURAL RESOURCES RECORDS SEARCH AND SITE VISIT RESULTS FOR T-MOBILE USA CANDIDATE IE24189-A	CORONA NORTH
RI-08694	WAYNE H. BONNER, SARAH A. WILLIAMS, AND KATHLEEN A. CRAWFORD	2011	CULTURAL RESOURCES RECORD SEARCH AND SITE VISIT RESULTS FOR T-MOBILE USA CANDIDATE IE25763-A	CORONA SOUTH
RI-08707	WAYNE H. BONNER, MARNIE AISLIN- KAY, AND KATHLEEN A. CRAWFORD	2010	CULTURAL RESOURCES RECORD SEARCH AND SITE VISIT RESULTS FOR T-MOBILE USA CANDIDATE IE24154-D	CORONA NORTH
RI-08761	BAI "TOM" TANG, MICHAEL HOGAN, DANIEL BALLESTER, HARRY M. QUINN, AND LAURA H. SHAKER	2012	IDENTIFICATION AND EVALUATION OF HISTORIC PROPERTIES: BUTTERFIELD PARK RECLAIMED WATERLINE	CORONA NORTH
RI-08763	ROBIN HOFFMAN, TIMOTHY YATES, AND KAREN CRAWFORD	2012	CULTURAL RESOURCES INVENTORY REPORT FOR THE PROPOSED CIRCLE CITY SUBSTATION AND MIRA LOMA-JEFFERSON SUBTRANSMISSION LINE PROJECT	CORONA NORTH, CORONA SOUTH, GUASTI
RI-08817	BAI "TOM" TANG, MICHAEL HOGAN, DANIEL BALLESTER, LAURA H. SHAKER, AND HARRY M. QUINN	2012	IDENTIFICATION AND EVALUATION OF HISTORIC PROPERTIES BUTTERFIELD PARK RECYCLED WATERLINE PROJECT	CORONA NORTH
RI-08826	BAI "TOM" TANG, MICHAEL HOGAN, AND TERRI JACQUEMAIN	2012	PHASE I CULTURAL RESOURCES ASSESSMENT: ASSESSOR'S PARCEL NOS. 172-110-007 AND -008	CORONA NORTH

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RI-08838	WAYNE H. BONNER AND SARAH A. WILLIAMS	2012	LETTER REPORT: CULTURAL RESOURCES RECORDS SEARCH AND SITE VISITS RESULTS FOR AT&T MOBILITY, LLC CANDIDATE LA6044 (CATTLE RUN & GREEN RIVER), 1400 NICHOLAS PLACE, CORONA, RIVERSIDE COUNTY, CALIFORNIA	PRADO DAM
RI-08870	CARY D. COTTERMAN AND EVELYN N. CHANDLER	2011	CULTURAL RESOURCES INVENTORY OF TWO PROPOSED POLE REPLACEMENTS IN CORONA AND TEMESCAL CANYON, RIVERSIDE COUNTY, CALIFORNIA (W.O. 6034-4800, K 4872, TD 495676)	CORONA SOUTH, LAKE MATHEWS
RI-08897	RIORDAN GOODWEN	2012	CULTURAL RESOURCE ASSESSMENT: SANTA ANA RIVER TRAIL IMPROVEMENTS PROJECT	BLACK STAR CANYON, PRADO DAM
RI-08902	JOSH SMALLWOOD	2012	CULTURAL RESOURCES REPORT FOR THE PROPOSED MAGNOLIA POINT PROJECT, SW CORNER 6TH STREET AND MAGNOLIA AVENUE IN CORONA, RIVERSIDE COUNTY, CALIFORNIA. ASSESSOR'S PARCEL NOS. 107-030-003, -014, -015, -018, -019, -020, -024, AND -027	CORONA SOUTH
RI-08988	SUSAN L. BUPP	2013	SUPPLEMENTAL ARCHAEOLOGICAL SURVEY REPORT FOR SR-91 CORRIDOR IMPROVEMENT PROJECT, CITY OF CORONA, RIVERSIDE COUNTY, CALIFORNIA, CALIFORNIA DEPARTMENT OF TRANSPORTATION, DISTRICT 8	BLACK STAR CANYON, CORONA NORTH, CORONA SOUTH, PRADO DAM, RIVERSIDE WEST
RI-08989	CARRIE CHASTEEN	2013	SUPPLEMENTAL FINDING OF NO ADVERSE EFFECT REPORT FOR SR-91 CORRIDOR IMPROVEMENT PROJECT, CITY OF CORONA, RIVERSIDE COUNTY, CALIFORNIA, CALIFORNIA DEPARTMENT OF TRANSPORTATION, DISTRICT 8	BLACK STAR CANYON, CORONA NORTH, CORONA SOUTH, PRADO DAM, RIVERSIDE WEST
RI-09088	MICHAEL DICE	2009	CULTURAL RESOURCE SURVEY AND HISTORIC RESOURCE ASSESSMENT OF THE CORONA CITY PARK, 930 E. SIXTH STREET, CORONA, CALIFORNIA	CORONA NORTH, CORONA SOUTH
RI-09144	J. CLAIRE DEAN	2009	JOSHUA TREE NATIONAL PARK: FINAL REPORT, ROCK IMAGE CONDITION ASSESSMENT AND CONSERVATION PROJECT	INDIAN COVE, KEYS VIEW, MALAPAI HILL
RI-09216	DON C. PREZ	2013	CULTURAL RESOURCES SURVEY RS0310	CORONA SOUTH
RI-09221	HEATHER R. PUCKETT	2013	CULTURAL RESOURCES SUMMARY FOR THE PROPOSED VERIZON WIRELESS. INC. PROPERTY AT THE TREEHOUSE SITE 615 RICHEY STREET, CORONA RIVERSIDE COUNTY, CALIFORNIA 92879	CORONA NORTH
RI-09304	SARA WILLIAMS	2014	CULTURAL RESOURCE RECORDS SEARCH AND SITE VISIT RESULTS FOR VERIZON WIRELESS CANDIDATE 'KLUG', 2395 RAILROAD STREET, CORONA, RIVERSIDE COUNTY, CALIFORNIA	CORONA NORTH
RI-09337	SHELLY LONG	2013	CORONA REGIONAL MEDICAL CENTER EXPANSION PROJECT ARCHAEOLOGICAL AND PALEONTOLOGICAL RESOURCES REPORT	CORONA NORTH, CORONA SOUTH
RI-09384	SUSAN L. BUPP	2013	SUPPLEMENTAL ARCHAEOLOGICAL SURVEY REPORT FOR SR-91 CORRIDOR IMPROVEMENT PROJECT, CITY OF CORONA, RIVERSIDE COUNTY, CALIFORNIA	BLACK STAR CANYON, CORONA NORTH, CORONA SOUTH, PRADO DAM, RIVERSIDE WEST
RI-09384	SUSAN L. BUPP	2013	SUPPLEMENTAL ARCHAEOLOGICAL SURVEY REPORT FOR SR-91 CORRIDOR IMPROVEMENT PROJECT, CITY OF CORONA, RIVERSIDE COUNTY, CALIFORNIA	BLACK STAR CANYON, CORONA NORTH, CORONA SOUTH, PRADO DAM, RIVERSIDE WEST
RI-09384	SUSAN L. BUPP	2013	SUPPLEMENTAL ARCHAEOLOGICAL SURVEY REPORT FOR SR-91 CORRIDOR IMPROVEMENT PROJECT, CITY OF CORONA, RIVERSIDE COUNTY, CALIFORNIA	BLACK STAR CANYON, CORONA NORTH, CORONA SOUTH, PRADO DAM, RIVERSIDE WEST
RI-09419	BRIAN F. SMITH, DAVID K. GRABSKI, AND TRACY A. STOPEs	2014	A SECTION 106 (NHPA) CULTURAL RESOURCES STUDY FOR THE TOSCANA PROJECT, RIVERSIDE COUNTY, CALIFORNIA	LAKE MATHEWS
RI-09420	LSA ASSOCIATES INC.	2000	CULTURAL RESOURCES ASSESSMENT GREEN RIVER RANCH SPECIFIC PLAN CORONA, RIVERSIDE COUNTY, CALIFORNIA, LSA PROJECT NO. CCR932	BLACK STAR CANYON, PRADO DAM
RI-09584	JUSTIN LEV- TOV, MEGAN WILSON, LYNN FURNIS, AND SHERRI GUST	2016	SHOPPES AT CORONA VISTA CULTURAL RESOURCES ASSESSMENT CITY OF CORONA, RIVERSIDE COUNTY, CALIFORNIA	CORONA SOUTH

#### 4. Results

Report	Author	Year	Title	Quad
RI-09593	MICHAEL HOGAN	2016	FINAL REPORT ON ARCHAEOLOGICAL AND PALEONTOLOGICAL RESOURCES MONITORING SANTA ANA CANYON - BELOW PRADO: INLAND EMPIRE BRINE LINE PROTECTION PROJECT NEAR THE CITY OF CORONA, RIVERSIDE COUNTY, CALIFORNIA CRM TECH CONTRACT #2903	PRADO DAM
RI-09603	ANDRE SIMMONS AND SHERRI GUST	2016	CULTURAL RESOURCES ASSESSMENT FOR THE CORONA AFFORDABLE HOUSING PROJECT, CITY OF CORONA, RIVERSIDE COUNTY, CALIFORNIA	CORONA SOUTH
RI-09678	CARRIE D. WILLS AND KATHLEEN A. CRAWFORD	2015	DIRECT APE HISTORIC ARCHITECTURAL ASSESSMENT FOR T-MOBILE WEST, LLC CANDIDATE IE04109A (CM109 LB124 [CORONA DOWNTOWN]) 511 SOUTH JOY STREET, CORONA, RIVERSIDE COUNTY	CORONA NORTH
RI-09714	HEATHER R. PUCKETT	2014	CULTURAL RESOURCES SUMMERY FOR THE PROPOSED VERIZON WIRELESS, INC., PROPERTY AT THE RAILROAD SITE, 665 WEST RINCON STREET, CORONA, RIVERSIDE COUNTY, CALIFORNIA 92880	CORONA NORTH, CORONA SOUTH
RI-09741	RIORDAN GOODWIN	2016	CULTURAL RESOURCES ASSESSMENT CORONA 720 PROJECT LSA PROJECT NO. GRY1501	BLACK STAR CANYON, PRADO DAM
RI-09746	JASON ANDREW MILLER	2013	CULTURAL RESOURCES SURVEY REPORT ADDENDUM VALLEY-IVY GLENN 115KV TRANSMISSION LINE PROJECT SOUTHERN CALIFORNIA EDISON RIVERSIDE COUNTY, CALIFORNIA	ALBERHILL, LAKE ELSINORE, ROMOLAND
RI-09770	BRIAN F. SMITH AND DAVID K. GRABSKI	2014	A PHASE II CULTURAL RESOURCE EVALUATION REPORT FOR RIV-8118 AT THE TOSCANA PROJECT	LAKE MATHEWS
RI-09771	BRIAN F. SMITH AND JENNIFER R. KRAFT	2014	HISTORIC STRUCTURE ASSESSMENT 11950 EL HERMANDO ROAD	LAKE MATHEWS

The record search indicated that 96 previously recorded cultural resources are located within the RWMP Project area (Table 2). The previously recorded resources include prehistoric and historic archaeological sites, built environment resources and isolates. The locations of the cultural resources are included in Confidential Appendix C. Thirty of the previously recorded cultural resources are also listed as built environment resources and were included as historic addresses by the EIC, shown in Table 3.

The 96 previously recorded resources consist of 28 prehistoric resources, 66 historic resources, and 2 multicomponent resources. Fourteen of the resources are within 100 feet of a Project Component and an additional two of the resources are intersected by a Project Component.

Table 2. Previously Recorded Cultural Resources within the RWMP Project Area

Primary Number	Trinomial	Period	Quadrangle	Recorder Date	Intersect Project Component	Within 100 ft of Project Component
P-33-000675	CA-RIV-675	Prehistoric	Corona North	Smith (1952) S. Schwartz (1980)	No	No
P-33-000808	CA-RIV-808	Multicomponent	Corona North	Reiss, Clough, and Banwer (1974) Cottrell (1980)	No	No
P-33-001040	CA-RIV-1040	Prehistoric	-	G. Smith (n.d.) M.C. Hall (1975) S. Schwartz (1980)	No	No
P-33-001044	CA-RIV-1044	Historic	-	M. Hall (1975) S. Schwartz (1980) M.D. Selverson (1995)	No	No
P-33-001259	CA-RIV-1259	Prehistoric	-	J.P. Barker (1974) R.S. Brown and J.A. McKenna (1988)	No	No
P-33-001438	CA-RIV-1438	Prehistoric	-	S. Hammond (1977) Cottrell (1980)	Sampson Pipeline	No

#### 4. Results

Primary Number	Trinomial	Period	Quadrangle	Recorder Date	Intersect Project Component	Within 100 ft of Project Component
P-33-001439	CA-RIV-1439	Prehistoric	-	S. Hammond (1977) Cottrell (1980)	No	No
P-33-001440	CA-RIV-1440	Prehistoric	-	S. Hammond (1977) Cottrell (1980) P. Chace and B. McManis (1993)	No	No
P-33-001441	CA-RIV-1441	Prehistoric	-	S. Hammond (1977)	No	No
P-33-001443	CA-RIV-1443	Prehistoric	-	S. Hammond (1977) J. Swenson (1979) C.E. Drover (1979) R.S. Brown and J.A. McKenna (1988) L. Franklin and J. Schmidt (1992) P.O. Maxon (1999)	No	No
P-33-001445	CA-RIV-1445	Prehistoric	Corona North	S. Hammond (1977) J. McKenna and R. Brown (1988) R.S. Brown and J.A. McKenna (1988)	No	No
P-33-001511	-	Historic	Corona South	M. Brown (1978) C. Rector (1983)	No	No
P-33-001653	CA-RIV-1653	Prehistoric	Corona North	Pink and Singer (1979) Cottrell (1980)	No	No
P-33-001654	CA-RIV-1654	Prehistoric	Corona North	Pink, Singer, Brown, and Giansanti (1979) Cottrell (1980)	No	No
P-33-001801	CA-RIV-1801	Prehistoric	Prado Dam	M. Desautels and J. Cizek (1979)	No	No
P-33-001837	-	Prehistoric	Corona South	Schupp and Wessel (1980) R.S. Shepard (2004)	No	No
P-33-003055	-	Historic	Corona South	K.K. Swope (1987)	No	No
P-33-003175	CA-RIV-4112H	Prehistoric	Anza	S.J. Bouscaren, J. Pierrou, and E. Plummer (1987)	No	No
P-33-003424	CA-RIV-3424	Historic	Black Star Canyon	A. Pignolo (1988)	No	No
P-33-003559	CA-RIV-3559	Prehistoric	Corona South	D.F. McCarthy (1989)	No	No
P-33-003693	CA-RIV-3693	Historic	Prado Dam	J. Brock and J. Elliot (1989)	No	No
P-33-003832	CA-RIV-3832	Historic	Alberhill, Corona North, Corona South, Lake Elsinore, Lake Mathews	K. Swope and D. Peirce (1990) D.F. McCarthy (1990) B. Love and T. Tang (2001) K.R. Blevins and A.M. Hoover (2005) J.D. Goodman (2006) J. Goodman, N. Reseburg, and Windy Jones (2006) R.D. Hoffman (2011)	Sampson Pipeline	No
P-33-004112	CA-RIV-4112H	Historic	Corona South, Lake Mathews	K. Swope and K. Hallaran (1991) B. Love (1997) I. Strudwick, J. Bauman, and B. Jones (2005) J. Patterson (2007)	No	No
P-33-004118	CA-RIV-4118	Prehistoric	Lake Mathews	Dibble, Carr, and Jones (1988) A. Wesson (2002)	No	No
P-33-004119	CA-RIV-4119	Prehistoric	Lake Mathews	Dibble, Carr, and Jones (1988)	No	No
P-33-004120	CA-RIV-4120	Prehistoric	Lake Mathews	Dibble, Carr, and Jones (1988)	No	No

#### 4. Results

Primary Number	Trinomial	Period	Quadrangle	Recorder Date	Intersect Project Component	Within 100 ft of Project Component
P-33-004121	CA-RIV-4121	Prehistoric	Lake Mathews	Dibble, Carr, and Jones (1988)	No	No
P-33-004791	CA-RIV-4791	Historic	Corona North, Corona South, Riverside East, Riverside West, San Bernardino South	R. Wlodarski (1992) A. Gustafson and M. McGrath (2001) J.A. McKenna et al. (2005)	No	No
P-33-004808	CA-RIV-4808	Multicomponent	Myoma	R. Cecil and F. Dittmer (1992)	No	No
P-33-005310	CA-RIV-5310	Historic	Corona North	Unknown Recorder (n.d.)	No	No
P-33-005781	CA-RIV-5521H	Historic	Corona North	A.G. Toren (1995)	No	No
P-33-005782	CA-RIV-5522H	Historic	Prado Dam	A.G. Toren (1995) R. Goodwin (2012)	No	No
P-33-007423	-	Historic	Fontana	S. Saunders (1984)	No	No
P-33-007586	-	Historic	Corona North	J. Brock and B. Smith (1996)	No	No
P-33-007719	CA-RIV-6197H	Historic	Corona South	L. White (1999)	No	No
P-33-008406	CA-RIV-6133H	Historic	Corona South	B. Love (1998)	No	No
P-33-009653	CA-RIV-6453H	Historic	Corona South	Unknown Recorder (n.d.)	No	No
P-33-010819	CA-RIV-6532H	Historic	Black Star Canyon	M. Sterner (2000)	No	No
P-33-012556	-	Prehistoric	Corona South	Unknown Recorder (n.d.)	No	No
P-33-012622	-	Prehistoric	Corona North	Unknown Recorder (n.d.)	No	No
P-33-013056	CA-RIV-7574	Prehistoric	Toro Peak	Unknown Recorder (n.d.)	No	No
P-33-013148	-	Prehistoric	Corona South	K. Swope and D. Pierce (1990) J. Patterson (2007)	No	No
P-33-013275	-	Historic	Corona South	R. Goodwin (2004) R.S. Shepard (2007)	No	No
P-33-013276	-	Historic	Corona South	R. Goodwin (2004) R.S. Shepard (2007)	No	No
P-33-013277	-	Historic	Corona South	R. Goodwin (2004) R.S. Shepard (2007)	No	No
P-33-013409	-	Prehistoric	Corona North	C.E. Drover (1980)	No	No
P-33-013857	-	Prehistoric	Corona South	L.S. White (2004)	No	No
P-33-013858	-	Historic	Corona South	L.S. White (2004)	No	No
P-33-013859	-	Historic	Corona South	L.S. White (2004)	No	No
P-33-014754	-	Historic	Corona North	Winn, R., and Winn, M. (2005)	No	Buena Vista Tenth Pipeline
P-33-017132	-	Historic	Corona South	C. Demcak (2008)	No	No
P-33-017133	-	Historic	Corona South	C. Demcak (2008)	No	No
P-33-017926	-	Historic	Corona North, Corona South	Dice, M.H. (2009)	No	Rimpau California Pipeline
P-33-019802	-	Historic	Prado Dam	A. Belcourt (2011)	No	No
P-33-020200	-	Historic	Corona South	Yates, T. (2011)	No	No

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Primary Number	Trinomial	Period	Quadrangle	Recorder Date	Intersect Project Component	Within 100 ft of Project Component
P-33-020201	-	Historic	Corona South	Yates, T. (2011) Smallwood, J. (2012)	No	No
P-33-020202	-	Historic	Corona South	Yates, T. (2011)	No	Sampson Pipeline
P-33-020203	-	Historic	Corona South	Yates, T. (2011)	No	No
P-33-020204	-	Historic	Corona South	Yates, T. (2011)	No	No
P-33-020205	-	Historic	Corona South	Yates, T. (2011)	No	No
P-33-020206	-	Historic	Corona South	Yates, T. (2011)	No	No
P-33-020207	CA-RIV-20207	Historic	Corona South	Yates, T. (2011)	No	Sampson Pipeline
P-33-020208	-	Historic	Corona North	Yates, T. (2011)	No	No
P-33-020209	-	Historic	Corona North	Yates, T. (2011)	No	No
P-33-020210	-	Historic	Corona North	Yates, T. (2011)	No	No
P-33-020211	-	Historic	Corona North	Yates, T. (2011)	No	River Pipeline
P-33-020212	-	Historic	Corona North	Yates, T. (2011)	No	River Pipeline
P-33-020213	-	Historic	Corona North	Yates, T. (2011)	No	River Pipeline
P-33-020225	-	Historic	Corona North	Yates, T. (2011)	No	River Pipeline
P-33-020226	-	Historic	Corona North	Yates, T. (2011)	No	River Pipeline
P-33-020227	-	Historic	Corona North	Yates, T. (2011)	No	No
P-33-020229	-	Historic	Corona North	Yates, T. (2011)	No	No
P-33-020231	-	Historic	Corona North	Yates, T. (2011)	No	No
P-33-020232	-	Historic	Corona North	Yates, T. (2011)	No	No
P-33-020233	-	Historic	Corona North	Yates, T. (2011)	No	River Pipeline
P-33-020234	-	Historic	Corona North	Yates, T. (2011)	No	No
P-33-020235	-	Historic	Corona North	Yates, T. (2011)	No	River Pipeline
P-33-020236	-	Historic	Corona North	Yates, T. (2011)	No	No
P-33-020237	-	Historic	Corona North	Yates, T. (2011)	No	River Pipeline
P-33-023618	-	Historic	Corona South	C.D. Wills (2005)	No	No
P-33-024119	CA-RIV-11860	Historic	Corona South	Goodwin, R. (2014)	No	No
P-33-024188	-	Historic	Corona South	P. Moruzzi (2012)	No	Buena Vista Tenth Pipeline
P-33-024189	-	Historic	Corona South	P. Moruzzi (2012)	No	No
P-33-024190	-	Historic	Corona South	P. Moruzzi (2012)	No	No
P-33-024191	-	Historic	Corona South	P. Moruzzi (2012)	No	No
P-33-024192	-	Historic	Corona South	P. Moruzzi (2012)	No	No
P-33-024207	-	Historic	Corona North	Yates, T. (2012)	No	No
P-33-024551	CA-RIV-12171	Historic	Prado Dam	Goodwin, R. (2015)	No	No



#### 4. Results

Primary Number	Trinomial	Period	Quadrangle	Recorder Date	Intersect Project Component	Within 100 ft of Project Component
P-33-024552	-	Historic	Prado Dam	R.E. Reynolds (2000)	No	No
P-33-024553	CA-RIV-12173	Historic	Corona South	R.S. Shepard (2004)	No	No
P-33-024723	CA-RIV-12241	Historic	Corona South	W. Burns, N.F. Hearth, and B. Scherzer (2015)	No	No
P-33-024724	-	Prehistoric	Corona South	N.F. Hearth and W. Burns (2015)	No	No
P-33-024725	-	Prehistoric	Corona South	N.F. Hearth and W. Burns (2015)	No	No
P-33-024726	-	Prehistoric	Corona South	N.F. Hearth and W. Burns (2015)	No	No
P-33-024855	-	Historic	Corona South	L. Furnis (2015)	No	Ontario Slipline
P-33-024866	CA-RIV-12327	Historic	Corona North	H. Switalski and V. Harvey (2016)	No	No

The record search also indicated that 30 built environment resources, that have been assigned primary numbers, have been previously recorded within the RWMP Project area, (Table 3). Built environment resources primarily include residential or commercial buildings, but also includes a park, a quarry, and built environment resources associated with agriculture. Twelve of the built environment resources are within 100 ft of a Project Component. All thirty of the built environment resources were also included by the EIC as cultural resources, shown in Table 2, above.

Table 3. Built Environment Resources within the RWMP Project Area.

Primary Number	Trinomial	Address	Parcel Number	USGS Topographic Quadrangle	Recorder and Date	Intersect Project Component	Within 100 ft of Project Component
P-33-014754	-	-	-	Corona North	Winn, R., and Winn, M. (2005)	No	Buena Vista Tenth Pipeline
P-33-017926	-	Corona City Park	-	Corona North, Corona South	Dice, M.H. (2009)	No	Rimpau California Pipeline
P-33-020200	-	-	107-020-012	Corona South	Yates, T. (2011)	No	No
P-33-020201	-	14282 E. 6th Street	107-030-003	Corona South	Yates, T. (2011) Smallwood, J. (2012)	No	No
P-33-020202	-	-	107-030-022	Corona South	Yates, T. (2011)	No	Sampson Pipeline
P-33-020204	-	-	107-040-006	Corona South	Yates, T. (2011)	No	No
P-33-020203	-	-	107-040-005	Corona South	Yates, T. (2011)	No	No
P-33-020205	-	-	107-060-003	Corona South	Yates, T. (2011)	No	No
P-33-020206	-	-	107-060-008 107-060-009	Corona South	Yates, T. (2011)	No	No
P-33-020207	CA-RIV-20207	-	115-090-003	Corona South	Yates, T. (2011)	No	Sampson Pipeline
P-33-020208	-	-	117-031-001	Corona North	Yates, T. (2011)	No	No
P-33-020209	-	-	117-031-002	Corona North	Yates, T. (2011)	No	No
P-33-020210	-	-	117-031-036	Corona North	Yates, T. (2011)	No	No
P-33-020211	-	-	119-041-013	Corona North	Yates, T. (2011)	No	River Pipeline

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Primary Number	Trinomial	Address	Parcel Number	USGS Topographic Quadrangle	Recorder and Date	Intersect Project Component	Within 100 ft of Project Component
P-33-020212	-	-	119-041-014	Corona North	Yates, T. (2011)	No	River Pipeline
P-33-020213	-	-	119-041-015	Corona North	Yates, T. (2011)	No	River Pipeline
P-33-020225	-	-	119-041-016	Corona North	Yates, T. (2011)	No	River Pipeline
P-33-020226	-	-	119-041-017	Corona North	Yates, T. (2011)	No	River Pipeline
P-33-020227	-	-	119-041-018	Corona North	Yates, T. (2011)	No	No
P-33-020229	-	-	119-041-020	Corona North	Yates, T. (2011)	No	No
P-33-020231	-	1108 Serene Drive	119-041-022	Corona North	Yates, T. (2011)	No	No
P-33-020232	-	1002 Peaceful Drive	119-041-024	Corona North	Yates, T. (2011)	No	No
P-33-020233	-	1090 Serene Drive	110-043-001	Corona North	Yates, T. (2011)	No	River Pipeline
P-33-020234	-	1082 Serene Drive	119-043-002	Corona North	Yates, T. (2011)	No	No
P-33-020235	-	1070 Serene Drive	119-043-003	Corona North	Yates, T. (2011)	No	River Pipeline
P-33-020236	-	1058 Serene Drive	119-043-004	Corona North	Yates, T. (2011)	No	No
P-33-020237	-	1050 Serene Drive	119-043-005	Corona North	Yates, T. (2011)	No	River Pipeline
P-33-024119	CA-RIV-11860	Sidebotham (Phillips) Quarry	-	Corona South	Goodwin, R. (2014)	No	No
P-33-024207	-	-	-	Corona North	Yates, T. (2012)	No	No
P-33-024551	CA-RIV-12171	-	-	Prado Dam	Goodwin, R. (2015)	No	No

The *City of Corona General Plan Update: Cultural Resources Technical Report* (SWCA 2018) identified that in the City of Corona and the SOI, 451 properties have been recorded at the EIC, and there are six historic properties defined as listed or eligible for listing on the NRHP.

**Carnegie Library (1906):** This neo-classical building was designed by Los Angeles architect Franklin Pierce Burnham with construction completed on July 2, 1906. The exterior was cream and red colored pressed brick, with stone and concrete trim. It was symmetrically designed with a central staircase flanked by sloping banisters, which held decorative iron lights. The entrance was topped by an overhanging triangular pediment with ornate plaster designs and supported by fluted Ionic columns on either side. This building served as the City’s public library until July 3, 1971, when a much larger public library facility was constructed several blocks away. The building remained empty for the next six years. Despite efforts to have it restored, it fell into disrepair and was damaged by fires and vandalism; the building was demolished April 18, 1978.

**Corona Heritage Park (1900):** This 5-acre complex was the headquarters for the Corona Foothill Lemon Company, the largest citrus ranch in the area in the early 1900s. The various buildings within the complex were primarily constructed between 1913 and 1937, and are largely intact today. The Corona Heritage Foundation is restoring the complex as a historic park and museum facility.

**Corona High School/Civic Center** (1923): Originally constructed as Corona’s second high school, it became the Civic Center in 1961. The classic Spanish Revival architecture and expansive front lawns make it a recognizable feature in Corona’s downtown area.

**Grand Boulevard Historic District** (1886): This unique circular roadway was a prominent design element in the original layout for the townsite. Corona derives its longstanding moniker “The Circle City” from the boulevard. Internationally acclaimed road races were held on this street in 1913, 1914, and 1916, drawing more than 100,000 spectators, as well as racing legends. The boulevard displays wide parkways, large mature trees, and historic streetlights fronting grand homes and more modest bungalows along its route.

**Women’s Improvement Club Clubhouse** (1913): Southern California architect Thomas Preston designed this one-story, multi-gabled, Craftsman-style bungalow clubhouse that was built in 1913. The club was formed in 1899 as a civic organization called the Town Improvement Association; it changed its name to the Women’s Improvement Club of Corona in 1902. The building’s architectural features include painted wood shingles on the exterior walls, a steep-gabled main roof with clipped gables over the side wings, an original oak front door with beveled glass, and wooden porch piers on a prominent brick base. It was added to the National Register on November 3, 1988, and is the only remaining structure within Corona city limits with that status.

**Corona Theater Landmark Building** (1929): The Spanish Revival-style Corona Theater, also known as the Landmark Building, was designed by Southern California architect Carl Boller and dedicated on August 29, 1929. Various celebrities including Al Jolson, Laurel and Hardy, and Irving Berlin attended its grand opening ceremonies. Its L-shaped design features a two-story elevation in front and three stories in the rear, with separate segments of varying heights topped by individual gable roofs and interspersed with hipped roof towers. The building was constructed of brick, with stucco on its front elevation. Some remodeling has been done to the exterior, but significant details remain. Over the years, the building has had various uses, including commercial office space, a Masonic Lodge meeting hall, and a large theater. The building is the only pre-Depression Era theater remaining in Corona, has been determined eligible for the National Register.

The six properties listed on the NRHP are also automatically eligible for listing to the CRHR. In addition, there are nine other properties that are eligible for the CRHR:

1. Jefferson Elementary School (1927)
2. Barber Home (1893) – Eastlake
3. 1101 S Ramona Ave (1915) – Vernacular Wood Frame with Classical revival Elements
4. Terpening House (1899) – Queen Anne
5. Corona First Methodist Church (1914) – Tudor Revival
6. 401 East 8<sup>th</sup> Street (1908) – Vernacular Wood Frame
7. Camp Haan Barracks (1942) – Vernacular Wood Frame
8. 517 E 8<sup>th</sup> Street (1896)
9. El Gordo Caballo Ranch (1939)

Within the City of Corona, there are no State Historic Landmarks. Within the SOI, outside the boundaries of the City of Corona, there are five State Historic Landmarks:

#### 4. Results

1. Butterfield Stage Station (No. 188): Site of Butterfield Stage Station where mail was delivered and horses changed. The first stage carrying overland mail left Tipton, Missouri on September 15, 1858 and, passing through Temescal, arrived in Los Angeles October 7, 1858.
2. Painted Rock (No. 190): In tribute to the earliest record of any people in this region, the Santa Fe Railway has preserved this rock with its ancient pictograph, and the Committee of the Corona Women's Improvement Club has placed a tablet.
3. Ruins of the Third Serrano Adobe (No. 224): Don Leandro Serrano set out orchards and vineyards and cultivated some of the fertile lands of the Temescal Valley. In the 1840s he built his third adobe, which the Serrano family occupied until 1898, on the well-traveled road between San Diego and Los Angeles.
4. Old Temescal Road (No. 638): This route was used by Luiseño and Gabrielino Indians, whose villages were nearby. Leandro Serrano established a home here in 1820. Jackson and Warner traveled the road in 1831, and Frémont in 1848. It was the southern emigrant road for gold seekers from 1849 to 1851, the Overland Mail route from 1858 to 1861, and a military road between Los Angeles and San Diego from 1861 to 1865.
5. Corona Founders Monument (No. 738): R.B. Taylor, George L. Joy, Samuel Merrill, A.S. Garretson, and Adolph Rimpau, after purchasing lands of La Sierra Rancho and El Temescal grant, founded the citrus colony and town of Corona on May 4, 1886.

The City of Corona contains two State Historical Points of Interest:

1. Bandini-Cota Adobe Site
2. Temescal Tin Mines California Register of Historical Resources

The City of Corona contains 10 historic districts and 47 historic landmarks (Table 4 below):

Table 4. City of Corona Historic Districts and Historic Landmarks

Historic District (HD)/ Historic Landmark (HL) Number	Address	APN	Description	Date Approved by Corona City Council
HD-001	510 W Foothill Avenue	114-350-046	Heritage Park District	May 16, 2001
HD-002	2750 S Rimpau Av	120-121-028	Lemonia Grove District	May 16, 2001
HD-003	2837 S Kellogg Av	120-072-008	Kammeyer Ranch District	May 16, 2001
HD-004	1125 S Rimpau Av	111-290-024	Sunny Slope Cemetery District	May 16, 2001
HD-005	930 E Sixth St	117-310-001	City Park District	May 16, 2001
HD-006	Grand Blvd Circle	Not Available	Grand Blvd. Streetscape District	May 16, 2001
HD-007	Chase Dr (Garretson To Foothill)	Not Available	Chase Drive Palm Trees District	May 16, 2001
HD-008	Rimpau Av (Old Temescal Rd To Chase)	Not Available	Rimpau Ave. Palm Trees District	May 16, 2001
HD-009	Main St (Olive To Chase)	Not Available	South Main Street Palm Trees District	May 16, 2001
HD-010	Palisades Dr (1 Mile From Green River/Wardlow Wash Bridge)	Not Available	Palisades Drive Roadway District	June 3, 2015
HL-001	1101 S Main St	117-266-006	Woman's Improvement Club	May 16, 2001

#### 4. Results

Historic District (HD)/ Historic Landmark (HL) Number	Address	APN	Description	Date Approved by Corona City Council
HL-002	815 W Sixth St	118-270-049	Historic City Hall	May 16, 2001
HL-003	900 S Victoria Av	117-236-001	Victoria Park/Old Lincoln Cemetery	May 16, 2001
HL-004	722/423 S Joy St/Eighth	117-206-009	Joy Street Market and Residence	Revoked On Nov 18, 2009
HL-005	1169 E Grand Blvd	Not Available	Not Available	May 16, 2001
HL-006	1156 E Grand Blvd	Not Available	Not Available	May 16, 2001
HL-007	1148 E Grand Blvd	Not Available	Not Available	May 16, 2001
HL-008	1136 E Grand Blvd	Not Available	Not Available	May 16, 2001
HL-009	1036 E Grand Blvd	Not Available	Not Available	May 16, 2001
HL-010	822 S Joy St	117-241-001	Not Available	September 17, 2001
HL-011	1314 S Victoria Av	109-041-014	Not Available	July 17, 2001
HL-012	1147 E Grand Blvd	Not Available	Not Available	September 18, 2002
HL-013	123 W Eleventh St	117-254-012	Vernacular Wood Frame	July 16, 2003
HL-014	1214 S Belle Av	110-192-018	Vernacular Wood Frame	July 16, 2003
HL-015	616 W Eleventh St	110-172-009	Provincial Revival	January 7, 2004
HL-016	1315 S Main St	109-041-002	Mediterranean/Spanish Revival	October 20, 2004
HL-017	818 S Howard St	117-233-022	Queen Anne	October 20, 2004
HL-018	1128 E Grand Blvd	117-263-016	Vernacular Wood Frame	October 19, 2005
HL-019	1052 E Grand Blvd	117-264-005	Victorian (mixed style)	May 3, 2006, Dec. 19, 2007
HL-020	809 E Grand Blvd	111-022-011	Not Available	May 3, 2006
HL-021	1052 E Grand Blvd	Not Available	Not Available	July 5, 2006
HL-022	1170 E Grand Blvd	117-265-010	Mediterranean/Spanish Revival	August 16, 2006
HL-023	1301 S Main St	109-041-004	Vernacular Wood Frame w/Craftsman Bungalow Elements	October 4, 2006
HL-024	1124 Palm Av	109-033-005	Vernacular Wood Frame	October 18, 2006
HL-025	920 S Victoria Av	117-237-002	Bungalow	October 18, 2006
HL-026	1107 W Grand Blvd	117-252-022	Vernacular Wood Frame	May 16, 2007
HL-027	1120 Palm Av	109-033-004	Vernacular Wood Frame	June 20, 2007
HL-028	824 S Sheridan St	117-221-001	Vernacular Wood Frame	June 20, 2007
HL-029	623 S Merrill St	117-173-016	Victorian (mixed style)/Queen Anne	July 18, 2007
HL-030	1047 E Grand Blvd	109-031-002	Not Available	September 5, 2007
HL-031	1101/1103 S Victoria Av	117-263-014	Transitional Bungalow	October 17, 2007
HL-032	1133 E Grand Blvd	109-022-002	Not Available	August 6, 2007

#### 4. Results

Historic District (HD)/ Historic Landmark (HL) Number	Address	APN	Description	Date Approved by Corona City Council
HL-033	914 S Victoria Av	117-237-012	Vernacular Wood Frame w/Bungalow Elements	October 17, 2007
HL-034	1164 E Grand Blvd	117-265-009	Not Available	July 16, 2008
HL-035	1208 Palm Av	109-033-007	Bungalow	September 17, 2008
HL-036	122 E Olive St	109-041-006	Bungalow	September 17, 2008
HL-037	1222 S Victoria Av	109-021-011	Vernacular Wood Frame	September 17, 2008
HL-038	934 E Grand Blvd	117-243-009	Not Available	September 17, 2008
HL-039	802 W Grand Blvd	110-112-007	Not Available	October 21, 2009
HL-040	805/809 S Ramona Av	117-232-007	Gothic Revival	August 5, 2009
HL-041	1127 E Grand Blvd	109-022-003	Not Available	September 1, 2010
HL-041	1127 E Grand Blvd	109-022-003	Not Available	September 1, 2010
HL-042	353 E Olive St	109-033-012	Not Available	July 17, 2013
HL-043	1031 E Grand Blvd	109-031-004	Not Available	September 17, 2014
HL-044	1518 S Main St	109-072-008	Not Available	September 16, 2015
HL-045	119 E Kendall St	109-041-021	Vernacular Wood Frame	September 17, 2016
HL-046	502 W Eleventh St	110-172-020	Mission Revival	October 18, 2017

The City of Corona also contains 10 historic markers (Table 5 below):

Table 5. City of Corona Historic Markers

Historic Marker Number	Description	Location	Date Built	Date Dedicated
HM-00	Corona Road Races	W. Grand Blvd and Main Street	1913	1986
HM-01	Corona High School and Civic Center	W. Sixth Street and Buena Vista Avenue	1023	Date Not Available
HM-02	First Congregational Church	Ramona and Eighth Street	1887, 1911	Date Not Available
HM-03	First Corona Police Office Killed in Line of Duty Memorial	Sixth Street and Howard	1913	Date Not Available
HM-04	Jefferson Elementary	Tenth St and Vicentia Street	1927	Date Not Available
HM-05	Site of Corona's First Fire Station	S. Main and Eighth Street	1898	1998
HM-06	Site of Lincoln Elementary School	Howard and Ninth Street	1889, 1914	1998
HM-07	Original Site of Victoria Hotel	E. Sixth Street and Victoria Avenue	1904	1999
HM-08	Site of First Corona Hospital	Eighth St and Belle Street	1933	1999
HM-09	Corona's First High School and Middle School	Main Street and Grand Blvd	1937	2000



### 4.1.2 NAHC Record Search Results

A record search of the SLF held by the NAHC was requested on March 30, 2020. On April 2, 2020 the NAHC responded that the record search of the SLF was positive. The NAHC provided a list of 37 Native American tribal organizations and individuals that might have additional knowledge of cultural resources in the Project area. On April 6, 2020 Red Tail Environmental sent letters to the 37 Native American tribal organizations and individuals requesting any information they may have on cultural resources in the RWMP Project area. The 37 contacts provided by the NAHC are from the following Native American groups:

- Agua Caliente Band of Cahuilla Indians
- Augustine Band of Cahuilla Mission Indians
- Cabazon Band of Mission Indians
- Cahuilla Band of Indians
- Campo Band of Diegueno Mission Indians
- Ewiiapaayp Band of Kumeyaay Indians
- Gabrielino Band of Mission Indians - Kizh Nation
- Gabrielino/Tongva San Gabriel Band of Mission Indians
- Gabrielino /Tongva Nation
- Gabrielino Tongva Indians of California Tribal Council
- Gabrielino-Tongva Tribe
- Jamul Indian Village
- Juaneno Band of Mission Indians Acjachemen Nation – Belardes
- La Jolla Band of Luiseno Indians
- La Posta Band of Diegueno Mission Indians
- Los Coyotes Band of Cahuilla and Cupeño Indians
- Manzanita Band of Kumeyaay Nation
- Mesa Grande Band of Diegueno Mission Indians
- Morongo Band of Mission Indians
- Pala Band of Mission Indians
- Pauma Band of Luiseno Indians
- Pechanga Band of Luiseno Indians
- Quechan Tribe of the Fort Yuma Reservation
- Ramona Band of Cahuilla
- Rincon Band of Luiseno Indians
- San Fernando Band of Mission Indians
- San Luis Rey Band of Mission Indians
- San Pasqual Band of Diegueno Mission Indians
- Santa Rosa Band of Cahuilla Indians
- Soboba Band of Luiseno Indians
- Sycuan Band of the Kumeyaay Nation
- Torres-Martinez Desert Cahuilla Indians
- Viejas Band of Kumeyaay Indians

To date, three responses have been received. Jill McCormick, Historic Preservation Officer for the Fort Yuma Quechan Tribe, responded on April 14, 2020 that the tribe has no comments on the project. Cheryl Madrigal, Tribal Historic Preservation Officer and Cultural Resources Manager for the Rincon Band of Luiseño Indians responded that the project is within the Territory of the Luiseño people and within the Band’s specific Area of Historic Interest. They have identified Luiseño place names within the project area but no known Tribal Cultural Resources or Traditional Cultural Properties and they recommend at

#### 4. Results

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archaeological/cultural resources study to be conducted and a final copy of the study to be provided to the Rincon Band for their review and comment, as well the inclusion of appropriate provisions for inadvertent discoveries. On June 9, 2020 Patricia Garcia Plotkin, Director of Historic Preservation, Agua Caliente Band of Cahuilla Indians, responded that the project is not located within the Tribe's Traditional Use Area, they defer to other tribes in the area, and this concludes their consultation efforts.

All correspondence pertaining to the NAHC is included in Appendix B.

### 4.2 ARCHIVAL RESEARCH RESULTS

USGS topographic maps from 1901, 1902, and 1904 show the Santa Ana River, Temescal Wash, the railroad, early streets within Corona, and the several land grants that bisect the project area. Additional USGS topographic maps are not available until the 1940s. The 1942 map shows development at the historic center of Corona and agricultural use in the remainder of the valley (USGS 2020).

Aerial photographs of the project area begin in 1938, however this aerial photograph includes only the far north wester corner of the project area. It shows the meandering alignment of the Santa Ana River, prior to the construction of the Prado Dam, along with agricultural use of the northwest corner of the project area. The 1946 aerial photograph shows a slightly larger portion of the north west corner of the project area and shows that the Prado dam has been constructed along with several transportation routes in the vicinity of the dam. The 1948 and subsequent aerial photographs show the entirety of the project area. The 1948 aerial photograph shows the residential and commercial development surrounding Grand Boulevard and that much of the project area is in use for agriculture, with residential or agricultural infrastructure and streets common across the project area. Aerial photographs from 1966, 1967 and 1980 show considerable additional development on the norther side of the project area spreading out from Grand Boulevard with the remainder of the project area in use for agriculture. The next aerial photograph which includes the entire project area is from 2005 and shows that most of the project area has been developed and little agricultural or undeveloped land remains (Historicaerial.com 2020).

The *City of Corona General Plan Update: Cultural Resources Technical Report* (SWCA 2018) received parcel information with building dates for Corona and the SOI. Historic development within the RWMP project area began in the late 1800s within the vicinity of Grand Boulevard. Development within the RWMP project area was focused around the Grand Boulevard circle through the 1920s. By the 1930s additional development spread farther out from Grand Boulevard and within El Cerrito. Through the 1940s development continued to be focused along Grande Boulevard, south of 6<sup>th</sup> Street, and in El Cerrito and south of El Cerrito Road. The 1950s show a large increase of development in Coronita, in Corona south of 6<sup>th</sup> Street, and in the vicinity of El Cerrito. The 1960s shows the first large scale residential development of track homes within the RWMP project area and this style development continued through the 1970s. The 1980s through the 2010s show a huge increase in development especially in the southern half of Corona and along the northern boundary of the City (SWCA 2018). As of 2018 there were at least 5,390 parcels that contain properties that were constructed prior to 1968 and therefore are at least 50 years old. There are an additional 3,217 parcels that contain buildings constructed between 1969 and 1978 (SWCA 2018).

### 4.3 TRIBAL CULTURAL RESOURCES RESULTS

A Scared Lands File search conducted by the Native American Heritage Commission (NAHC) for the project site. The NAHC identified 37 local Native American representatives from the following Native American groups as potentially having local knowledge of Tribal Cultural Resources:

- Agua Caliente Band of Cahuilla Indians
- Augustine Band of Cahuilla Mission Indians

- Cabazon Band of Mission Indians
- Cahuilla Band of Indians
- Campo Band of Diegueno Mission Indians
- Ewiiapaayp Band of Kumeyaay Indians
- Gabrieleno Band of Mission Indians - Kizh Nation
- Gabrieleno/Tongva San Gabriel Band of Mission Indians
- Gabrielino /Tongva Nation
- Gabrielino Tongva Indians of California Tribal Council
- Gabrielino-Tongva Tribe
- Jamul Indian Village
- Juaneno Band of Mission Indians Acjachemen Nation – Belardes
- La Jolla Band of Luiseno Indians
- La Posta Band of Diegueno Mission Indians
- Los Coyotes Band of Cahuilla and Cupeño Indians
- Manzanita Band of Kumeyaay Nation
- Mesa Grande Band of Diegueno Mission Indians
- Morongo Band of Mission Indians
- Pala Band of Mission Indians
- Pauma Band of Luiseno Indians
- Pechanga Band of Luiseno Indians
- Quechan Tribe of the Fort Yuma Reservation
- Ramona Band of Cahuilla
- Rincon Band of Luiseno Indians
- San Fernando Band of Mission Indians
- San Luis Rey Band of Mission Indians
- San Pasqual Band of Diegueno Mission Indians
- Santa Rosa Band of Cahuilla Indians
- Soboba Band of Luiseno Indians
- Sycuan Band of the Kumeyaay Nation
- Torres-Martinez Desert Cahuilla Indians
- Viejas Band of Kumeyaay Indians

## 5. CULTURAL RESOURCE SENSITIVITY ANALYSIS

The RWMP project area has been categorized into three cultural resource sensitivity levels rated low, moderate, or high based on the results of the archival research, the NAHC Sacred Lands File record search, regional environmental factors, and historic and modern development (Figure 11 and Confidential Appendix C). A low sensitivity rating indicates areas where there is a high level of disturbance or development and the area has been subject to previous cultural resource surveys, such as areas developed after the late-1970s, since the introduction of environmental laws requiring archaeological studies or in areas where specific geographic features that have a low potential for cultural resources, such rugged areas with a slope over 20%. Within these areas, the potential for additional cultural resources to be identified is low. A moderate sensitivity rating indicates that some previously recorded resources have been identified, and/or the area has a moderate potential for cultural resources, or if the area has not been previously surveyed for cultural resources, the geographic features of the area cause the potential for cultural resources to be moderate. A high sensitivity rating indicates areas where significant resources have been documented, and/or have the potential to be identified, such as alluvial areas and areas near historic or prehistoric water sources. The resources in high sensitivity areas are generally complex in nature with unique and/or abundant artifact assemblages. In some cases, the previously identified resources in high sensitivity areas may have been determined to be significant under local, State or Federal guidelines.

*City of Corona General Plan Update: Cultural Resources Technical Report*, identified that much of the City and the SOI has not been systematically surveyed to identify cultural resources and that some cultural resources may have been paved over during development (SWCA 2018). In addition, the 2001 *Draft Program Environmental Impact Report for the City of Corona Recycled Water Master Plan Project SCH# 99031097* identified that much of the RWMP project area has a moderate to high sensitivity for cultural resources (Parsons Engineering Science, Inc. 2001). The 2001 DEIR identified that portions of the project area located on the Black Star Canyon, California 7.5' USGS topographic quad maps have a low potential for archaeological resources, however the remainder of the project area has a moderate to high level of sensitivity.

While much of the RWMP Project area has been developed, archaeological research identified Native American use of the RWMP Project area for thousands of years, and it is possible that intact subsurface cultural deposits are present in areas that have been previously developed or alluvial areas, as well as in areas that have had little ground disturbance. Developments constructed through the 1970s may not have been subject to cultural resource assessments as part of compliance with environmental laws and the cultural resource sensitivity of these areas may still be moderate to high depending on the amount of ground disturbance and mass grading previously conducted. The potential to encounter prehistoric cultural resources across the RWMP Project area is moderate to high, expected resource types include: lithic scatters, bedrock milling features, habitation areas, and resource procurement areas.

In addition to prehistoric resources, historic archaeological resources or built environment resources may also be present. Based on the historic and archival research conducted historic archaeological resources may include archaeological deposits and features associated with agriculture, especially ranching and citrus cultivation, as well as early development, such as trash scatters, wells and privy pits, and built environment resources. Historic development within the RWMP project area began in the late 1800s within the vicinity of Grand Boulevard and expanded, mostly southward into the project area through the 1920s. By the 1930s additional development spread farther out from Grande Boulevard and within El Cerrito. Through the 1940s development continued to be focused along Grande Boulevard, south of 6<sup>th</sup> Street, and in El Cerrito and south of El Cerrito Road. The 1950s show a large increase of development in Coronita, in Corona south of 6<sup>th</sup> Street, and in the vicinity of El Cerrito. The 1960s shows the first large scale residential development of track homes within the RWMP Project area and this style development continued through the 2000s. In

addition, portions of the RWMP Project area that were in use prior to the mid-20<sup>th</sup> century may contain built environment resources that exceed the age threshold for eligibility to the CRHR and Corona Register. In addition, properties constructed prior to the 1920s may contain historic archaeological features associated with privy pits, wells, and trash scatters. While these areas were subject to early development, they may not have been impacted by mass grading and buildings, roads, and hardscapes may have preserved intact subsurface archaeological deposits and features which could be eligible to the CRHR and/or Corona Register and impacted by the implementation of the Project.

Areas shown on Figure 11 as having a high sensitivity for cultural resources are in proximity to known water sources, contain previously recorded cultural resources, or contain areas that were developed prior to the mid-20<sup>th</sup> century and may contain historic resources. Early development and agricultural uses may have impacted the location of original water sources and drainages. Prehistoric resources are commonly found in proximity to water resources. Due to the presence of the Santa Ana River Basin within the Project and the unknown location of possible obscured or destroyed water sources, the majority of the project area is rated moderate to high for prehistoric archaeological resources. The areas identified as moderate and high sensitivity and unknown represents a prehistorically and historically active environment.

Areas identified as moderate sensitivity were developed later, and may have been subject to greater disturbances, contained a lower concentration of previously recorded cultural resources, or contain geographic features or distances from water sources which make them less ideal for prehistoric or early historic uses.

The area identified on the western edge of the RWMP Project area as low sensitivity contains steep slopes of greater than 20% which prohibited prehistoric and early historic uses. The area identified on the eastern edge of the RWMP Project area as low sensitivity contains extensive disturbances from mining and other land uses likely destroying any cultural resources which may have been present.

5. Cultural Resource Sensitivity Analysis

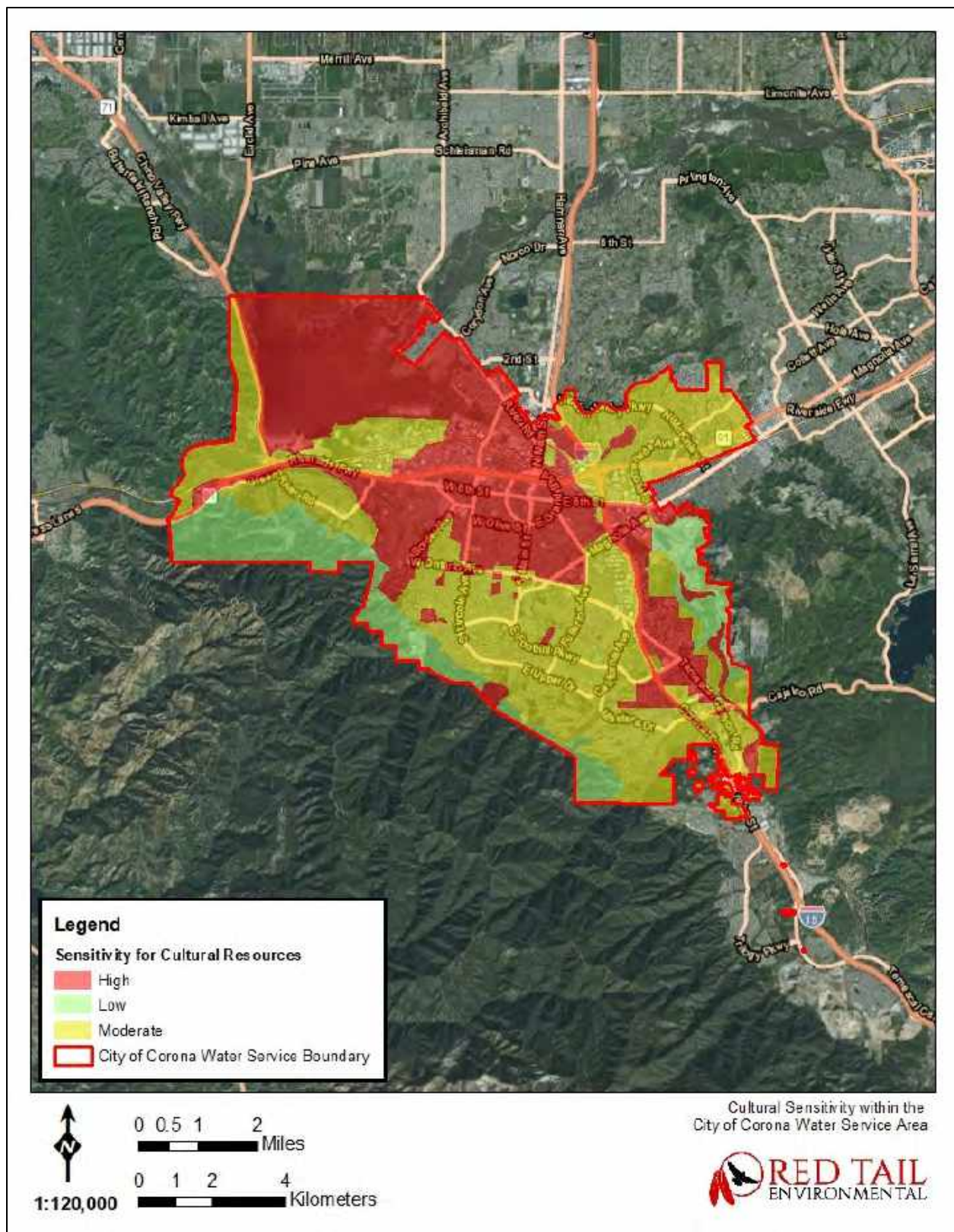


Figure 11. Cultural Resource Sensitivity within the RWMP Project Area.



## 6. RESOURCE IMPACT ANALYSIS

This impact analysis presents a program level analysis that evaluates the potential impacts of implementing the RWMP on existing pre-historic and historic environmental conditions. Based on the existing conditions described above this impact analysis programmatically assesses the direct and indirect impacts on cultural resources.

### 6.1 SIGNIFICANCE CRITERIA

Under CEQA, archaeological and/or built environment resources may meet the definition of a historical resource or unique archaeological resource. Any project that may cause a substantial adverse change in the significance of a historical resource would also have a significant effect on the environment. Substantial adverse change to the significance of a historical resource is defined as physical demolition, destruction, alteration, or relocation of the resource or immediate surroundings such that its significance would be materially impaired. CEQA states that when a project would cause damage to a unique archaeological resource, reasonable efforts must be made to preserve the resource in place or leave it in an undisturbed state.

### 6.2 BUILT ENVIRONMENT RESOURCES IMPACT ANALYSIS

The record search conducted for the *City of Corona General Plan Update: Cultural Resources Technical Report* identified 30 built environment resources, which were assigned a primary number by the EIC. Twelve of the built environment resources are within 100 ft of a Project Component (Table 6, below). In addition, six historic properties defined as listed or eligible for listing on the NRHP and nine other properties were eligible to the CRHR within the City of Corona. There were five State Historic Landmarks within the SOI and two State Historical Points of Interest within the City of Corona. The Corona Register included 10 Historic Districts, 47 Historic Landmarks, and 10 Historic Markers. Furthermore, as of 2018, the *City of Corona General Plan Update: Cultural Resources Technical Report* identified at least 5,390 parcels that contain properties that were constructed prior to 1968 and therefore are at least 50 years old. There are an additional 3,217 parcels that contain buildings constructed between 1969 and 1978, which may meet the 50-year age threshold for eligibility during implementation of the RWMP (SWCA 2018).

Construction of the Project Components of the RWMP would largely occur within existing roadway rights of way and developed areas. The demolition or direct physical alteration of potential historic structures, historic districts, or other built environment resources would be unlikely based on the description of the Project Components. For these reasons, direct impacts to historic properties would be less than significant. Once constructed all future maintenance and operational activities would be restricted to the City's existing rights of way or existing site locations and, therefore, no encroachment into adjacent properties would occur. Based on these considerations no impacts would result from future maintenance and operational activities.

Construction of the Project Components of the RWMP could result in temporary vibration-related effects in the immediate vicinity of the construction from the use of heavy equipment and machinery, as construction activities can produce varying degrees of ground vibration depending on the equipment and methods employed and localized soil conditions. Construction techniques that commonly result in excessive vibration, such as blasting and pile driving, are not anticipated for RWMP implementation. Based on criteria presented in the Federal Transit Administration's (FTA) Noise and Vibration Manual (2006), "fragile buildings" are subject to damage when vibration exceeds 0.20 PPV. For the RWMP Project construction-related vibration levels would be below the 0.20 PPV threshold for typical building damage

## 7. Recommendations

and the 94 VdB threshold for annoyance at a distance of approximately 40 feet. Historic structures are often considered in this category due to their age of construction and the building codes enacted at the time of construction. As a result, construction activities within 40 feet of fragile structures could result in damaging vibration levels for historic structures, where present and eligible for the NRHP, CRHR, and/or Corona Register. However, in the absence of precise information on the location and types of construction, if work is proposed within 40 feet or less of one or more contributing elements to a historic property or district, then vibration-related impacts could potentially be significant. Therefore, Mitigation Measure CULT-1 is recommended to minimize construction-related vibration impacts to historic structures.

### 6.3 ARCHAEOLOGICAL RESOURCES IMPACT ANALYSIS

Based on the cultural resource sensitivity analysis much of the RWMP Project area has been identified as having a moderate to high sensitivity for cultural resources. The record search conducted for the *City of Corona General Plan Update: Cultural Resources Technical Report* identified 96 previously recorded cultural resources are located within the RWMP Project area, 30 of which are included as built environment resources, discussed above (SWCA 2018). Thirteen of the resources are within 100 feet of a Project Component and an additional three of the resources are intersected by a Project Component (Table 6, below and Confidential Appendix C).

Development in accordance with the proposed project could adversely impact known or previously unrecorded cultural resources that may be eligible to the CRHR or Corona Register. Potential impacts to cultural/archaeological resources could result from clearing, trenching, and grading activities associated with the construction of pipelines, underground structures, or other related facilities, or any rehabilitations of existing pipes, which may result in disturbing native soil outside of previously excavated trenches. Impacts to resources that are determined to be important under criteria provided in CEQA (Section 15064.5) would be considered significant. The precise extent and nature of impacts that could result by the construction of the RWMP Project Components would be determine at the time more engineering detail is developed for each Project Component. Therefore, all potential impacts are assumed to be significant at the program level of analysis. Mitigation Measures CUL-2 and CULT-3 are recommended to minimize the potential for disturbance of archaeological resources.

In addition, there is a potential to identify unexpected human remains during the construction of the Project Components, as the RWMP Project area contained numerous prehistoric and historic settlements. These direct impacts could be significant. Mitigation Measure CULT-4 is recommended to reduce these potential impacts to the unexpected discovery of human remains.

Once constructed the Project Components would not have the potential for additional impacts to archaeological or historic resources. Typical operations and maintenance of the Project Components would not result in additional physical impacts and are recommended as a less than significant impact. No indirect effects to archaeological resources were identified.

Table 6. Impact Analysis and Recommended Mitigation Measure for RWMP Project Components

Project Component Number	Project Component	Known Resources Intersected	Known Resources within 100 ft.	Cultural Resource Sensitivity of the Project Component	Recommended Mitigation Measure
1*	WRCRWA Booster Pump Station*	n/a	n/a	n/a	n/a
2	WRCRWA Transmission Pipeline	None	None	High	CULT-1, CULT-2, CULT-3, CULT-4
3	WRCRWA Flow Control Improvements	None	None	High	CULT-1, CULT-2, CULT-3, CULT-4

## 6. Historical Resource Impact Analysis

4	Rimpau California Pipeline	None	P-33-017926	Moderate, High	CULT-1, CULT-2, CULT-3, CULT-4
5	Chase Booster Pump Station	None	None	Moderate	CULT-1, CULT-2, CULT-3, CULT-4
6	Chase Tank	None	None	Moderate	CULT-1, CULT-2, CULT-3, CULT-4
7	Buena Vista Tenth Pipeline	None	P-33-014754 P-33-024188	High	CULT-1, CULT-2, CULT-3, CULT-4
8	Ontario Slipline	None	P-33-024855	Moderate, High	CULT-1, CULT-2, CULT-3, CULT-4
9	River Pipeline	None	P-33-020211 P-33-020212 P-33-020213 P-33-020225 P-33-020226 P-33-020233 P-33-020235 P-33-020237	Moderate, High	CULT-1, CULT-2, CULT-3, CULT-4
10	Sampson Pipeline	P-33-001438 P-33-003832	P-33-020207 P-33-020202	Moderate, High	CULT-1, CULT-2, CULT-3, CULT-4
11	Old Temescal Pipeline	None	None	Moderate, High	CULT-1, CULT-2, CULT-3, CULT-4
12	Lincoln Foothill Pipeline	None	None	Moderate	CULT-1, CULT-2, CULT-3, CULT-4
13	Avenida Del Vista Pipeline	None	None	High	CULT-1, CULT-2, CULT-3, CULT-4
14	Border Pipeline	None	None	Moderate, High	CULT-1, CULT-2, CULT-3, CULT-4
15	Promenade Pipeline	None	None	Moderate	CULT-1, CULT-2, CULT-3, CULT-4
16	Research Promenade Pipeline	None	None	Moderate, High	CULT-1, CULT-2, CULT-3, CULT-4
17	Smith Pipeline	None	None	Moderate, High	CULT-1, CULT-2, CULT-3, CULT-4
18	Via Pacifica Pipeline	None	None	Moderate	CULT-1, CULT-2, CULT-3, CULT-4
19	Tehachapi Pipeline	None	None	Moderate	CULT-1, CULT-2, CULT-3, CULT-4
20	Jenks Pipeline	None	None	Moderate	CULT-1, CULT-2, CULT-3, CULT-4
21	Airport Circle Pipeline	None	None	Moderate	CULT-1, CULT-2, CULT-3, CULT-4
22	Helicopter Pipeline	None	None	Moderate	CULT-1, CULT-2, CULT-3, CULT-4
23	Glider Pipeline	None	None	Moderate	CULT-1, CULT-2, CULT-3, CULT-4
24	Citation Pipeline	None	None	Moderate	CULT-1, CULT-2, CULT-3, CULT-4
25	Klug Pipeline	None	None	Moderate	CULT-1, CULT-2, CULT-3, CULT-4
26	Monica Pipeline	None	None	Moderate	CULT-1, CULT-2, CULT-3, CULT-4
27	Chase Hudson Pipeline	None	None	Moderate	CULT-1, CULT-2, CULT-3, CULT-4
28	Cessna Pipeline	None	None	Moderate	CULT-1, CULT-2, CULT-3, CULT-4
29	Main Citrus Pipeline	None	None	Moderate, High	CULT-1, CULT-2, CULT-3, CULT-4

\* WRCRWA Booster Pump Station, is located outside of the RWMP Project area, and was analyzed separately.

## 6.4 TRIBAL CULTURAL RESOURCES IMPACT ANALYSIS

The record search of the SLF held by the NAHC was positive. The NAHC identified 37 Native American organizations which may wish to consult with the City regarding Tribal Cultural Resources. Consultation with tribal organizations is ongoing.

The construction of Project Components as part of the RWMP would involve ground disturbing construction activities that would occur within 100 ft of potentially significant known or unknown archaeological resources. These direct impacts could be significant to Tribal Cultural Resources. Mitigation Measures CULT-2, CULT-3, and CULT-4 are recommended to mitigate impacts to Tribal Cultural Resources.

Once constructed the Project Components would not have the potential for additional impacts to Tribal Cultural Resources. Typical operations and maintenance of the Project Components would not result in additional physical impacts and are recommended as a less than significant impact.

During construction activities, indirect adverse effects may result from increased accessibility to archaeological or Tribal Cultural Resources (such as artifacts) that could lead to resource looting or

## *7. Recommendations*

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vandalism activities. This is considered a significant impact. Mitigation Measures CULT-2, CULT-3 and CULT-4 are recommended to mitigate this potential indirect impact.

## 7. RECOMMENDATIONS

### 7.1 RESOURCE MANAGEMENT

Within the RWMP Project area 96 cultural resources have been previously recorded, and 13 of the resources are within 100 feet of a Project Component and an additional three of the resources are intersected by a Project Component. The *City of Corona General Plan Update: Cultural Resources Technical Report* identified that much of the RWMP has not been systematically surveyed for cultural resources (SWCA 2018). Due to continued use and development of the project area, it is assumed that many of the cultural resources within the RWMP Project area have been disturbed. However, it is possible that intact cultural resources are present in areas of the RWMP Project area that have not been previously developed, are buried in alluvial deposits, or have been preserved under hardscapes and pavement. This study reveals that cultural sensitivity varies across the RWMP Project area and the majority of the project area has been identified as moderate to high sensitivity for cultural resources. Therefore, there is a potential that cultural resources will be impacted during the implementation RWMP, especially within areas that have been categorized as moderate or high sensitivity for cultural resources.

Mitigation Measures CULT-1, -2, -3, and -4, outlined below, are recommended to avoid adverse effects to historical resources during implementation of the RWMP.

### 7.2 MITIGATION MEASURES

Implementation of the following recommended mitigation measures would reduce potentially significant impacts. This report was completed in compliance with state and local regulations. Separate mitigation measures are not required. Rather, each mitigation measure has been designed to fulfill the requirements of CEQA and the Corona Historic Resources Ordinance. The City is the lead agency implementing cultural resource mitigation measures.

#### 7.2.1 Mitigation Measure CULT-1: Construction Related Vibration

Construction plans for individual projects under the 2018 RWMP shall include a requirement that no vibratory equipment be operated within 40 feet of a structure eligible or listed on the NRHP, CRHR, and/or Corona Register. Instead, alternative construction equipment shall be used, such as smooth wheel rollers without a vibratory component.

For structures that have not been previously evaluated, the City Engineer shall consult with a qualified Architectural Historian, approved by the City, to conduct an evaluation of the structure. If the structure is determined eligible or already eligible or listed in the NRHP, CRHR, or Corona Register, structural evaluation shall be conducted by a Professional Structural Engineer to identify maximum allowable levels of vibration during construction. If a historic determination is required, the engineer shall provide recommendations on approaches to stabilization in conjunction with vibration monitoring. Permanent stabilization measures shall follow the Secretary of the Interior's guidelines for the treatment of historic properties. If the buildings are temporarily stabilized for the duration of construction activities, when removed, the buildings shall be restored to their pre-construction condition when the stabilization measures are removed.

### **7.2.2 Mitigation Measure CULT-2: Project Specific Archaeological Survey**

Each Project Component should be reviewed by the City to determine if a site-specific archaeological survey should be conducted. Site specific archaeological surveys should be conducted for Project Components which are located in areas that have not been previously developed, that will impact land with visible ground surface, and/or projects which may impact built environment resources that meet the age threshold for eligibility.

If cultural resources are identified during the site-specific archaeological survey then evaluation of the resources to the CRHR and the Corona Register should be conducted to determine if the resource is significant under CEQA, and would be adversely impacted by the project. A Native American monitor from a culturally affiliated Tribe should be present during any archaeological excavations involving prehistoric cultural resources. If no significant resources are found, and site conditions are such that there is no potential for further discoveries, then no further action is required. Resources found to be non-significant as a result of a survey and/or evaluation will require no further work beyond documentation of the resources on the appropriate Department of Parks and Recreation (DPR) site forms and inclusion of results in a technical report.

If significant resources are present, then avoidance, preservation in place, or a data recovery program is recommended. The data recovery program is subject to the provisions as outlined in CEQA, Section 21083.2. The data recovery program should be conducted in accordance with the Office of Historic Preservation's *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format* (1990) and *Guidelines for Archaeological Research Designs* (1991). The data recovery program must be reviewed and approved by the City

If no significant resources are found, but if there is a potential for unknown archaeological resources, or Tribal Cultural Resources to be uncovered during construction activities then Mitigation Measure CULT-3, an archaeological and Native American monitoring program, is recommended.

### **7.2.3 Mitigation Measure CULT-3: Archaeological and Native American Monitoring Program**

As there is always a potential for encountering cultural resources during excavation, therefore the creation of an archaeological and Native American monitoring program is recommended for Project Components which will conduct new ground disturbance in areas identified as moderate or high sensitivity for cultural resources and for Project Components that are located within 100 ft of previously recorded archaeological resources. The archaeological and Native American monitoring program shall consist of the full-time presence of a qualified archaeologist and traditionally and culturally affiliated Native American monitor during new ground disturbing activities. New ground disturbance can include new trenching, or expanding previously excavated trenches, grading, and vegetation removal. The archaeological and Native American monitoring program should include the following:

1. The requirement for the archaeological and Native American monitoring to be noted on applicable construction documents, including plans;
2. The archaeologist and Native American monitor should attend the preconstruction meeting with the contractor and/or the City;
3. The archaeologist shall maintain ongoing collaborative consultation with the Native American Monitor during all ground disturbing or altering activities, as identified above;
4. The archaeologist and/or Native American Monitor may halt ground disturbing activities if archaeological artifact deposits or cultural features are discovered. In general, ground-disturbing activities shall be directed away from these deposits for a short time to allow a determination of



## 7. Recommendations

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potential significance, the subject of which shall be determined by the archaeologist and the Native American Monitor. Ground disturbing activities shall not resume until the archaeologist, in consultation with the Native American Monitor and the City, deems the cultural resource or feature has been appropriately documented and/or protected;

5. Archaeological isolates and non-significant materials will be minimally documented in the field and ground disturbance will be allowed to resume;
6. The avoidance and protection of discovered unknown and significant cultural resources and/or unique archaeological resources is the preferable mitigation for the proposed project. If avoidance is not feasible, a Data Recovery Plan may be authorized by the City as the Lead Agency under CEQA; and
7. Prior to the release of any Bonds associated with the construction of the Project Components a Monitoring Report and/or Evaluation Report, which describes the results, analysis and conclusions of the archaeological and Native American monitoring program (such as, but not limited to, a Data Recovery Program) shall be submitted by the archaeologist, along with the Native American monitor's notes and comments, to the City for approval.

### **7.2.4 Mitigation Measure CULT-4: Identification and Treatment of Human Remains**

In the event that human remains or possible human remains are encountered during any work associated with the RWMP all ground disturbance within 25 ft of the remains shall halt and CEQA Guidelines Section 15064.5, subdivision (e), California Public Resource Code Section 5097.98, and California Health and Safety Code §7050.5 should be followed. If Native American remains are discovered, the remains shall be kept *in situ* (in place), or in a secure location, as approved by the Native American monitor until the repatriation process can be completed.

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## **APPENDICES**

## **APPENDIX A: RESUMES**

### **Professional Profile**

Ms. Castells is the Director of Archaeology for Red Tail Environmental and acts as the Project Manager and Principal Investigator for all cultural resource studies. She has over fourteen years of experience in archaeology and cultural resource management in Southern California. She has been the Principal Investigator and Project Manager for numerous survey, monitoring, testing, and data recovery projects within the counties of San Diego, Imperial, Orange, Riverside, San Bernardino, and Kern. Ms. Castells has extensive experience providing regulatory compliance for CEQA, NEPA, NHPA, NAGPRA, and local guidelines and regulations. Ms. Castells is a Registered Professional Archaeologist, and exceeds the Secretary of the Interior Professional Qualifications Standards for Archaeology. Her interests focus on historical archaeology and the regional history and prehistory of Southern California.

### **Education**

M.A., Anthropology, San Diego State University  
B.A., Anthropology, University of California, San Diego

### **Registrations**

Register of Professional Archaeologists (3748180)  
San Diego County CEQA Consultant List for Archaeological Resources  
Orange County's Reference List for Certified Archaeologists  
Riverside County Cultural Resources Consultants List

### **Selected Archaeological Experience**

#### **City of San Diego Cultural and Paleontological Resources On-Call As-Needed Environmental Consulting Agreement (R-309919/H146284), San Diego, CA**

##### **Principal Investigator / Project Manager | San Diego County, CA**

Provides cultural resources and paleontological support of the City of San Diego's utilities undergrounding program. Conducts cultural resources inventories including record searches and archaeological surveys to identify project areas which may contain cultural resources in support of multiple MNDs and a programmatic EIR. Recommends mitigation measures including resource testing and evaluation, avoidance, and construction monitoring. Works with the City and contractors to fulfill mitigation measures including construction monitoring, resource identification, recordation, and evaluation. City of San Diego, Transportation and Storm Water Department is the lead agency.

#### **University of California, San Diego, Hillcrest Campus Long Range Development Plan EIR Project**

##### **Principal Investigator / Project Manager | San Diego, CA**

Conducted a cultural resources survey and prepared a technical report in support of the project's EIR. Identified a cultural resource with human remains within the project area. Recommended mitigation measures for the resource to avoid adverse effects. Assisted UCSD with their AB-52 tribal consultation, including organizing, scheduling, facilitating, and reporting on tribal consultation meetings. UCSD was the lead agency.

#### **SANDAG Bayshore Bikeway – Segment 8B Project**

##### **Principal Investigator / Project Manager | San Diego and National Cities**

Conducted a cultural resource study for the Project including: delineating and mapping the area of potential effect, conducting a record search and an archaeological survey of the APE, preparing the Historic Property Survey Report,

Archaeological Survey Report, Finding of Effect document, and Department of Parks and Recreation Archaeological Site Forms for a railroad line eligible for and listed in the San Diego Register of Historical Resources and for a historic district that was eligible for the National Register of Historic Places. Created mitigation measures to avoid an adverse impact to these historic properties during implementation of the Project. Conducted AB-52 consultation on behalf of SANDAG. Assisted in SHPO consultation.

**Heritage Road Bridge Replacement Project**

**Principal Investigator / Project Manager | City of Chula Vista, CA**

Conducted a cultural resource study for the Project including: delineating and mapping the area of potential effect (APE), conducting a record search and an archaeological survey of the APE, preparing the Historic Property Survey Report and the Archaeology Survey Report, and creating mitigation measures. City of Chula Vista and Caltrans were the lead agencies.

**North County Transit District Advanced Train Control and Positive Train Control Antennas at Five Locations for the Elvira to Morena Double Track Project**

**Principal Investigator / Project Manager | San Diego, CA**

Conducted a cultural resources survey of the five areas of potential effect and prepared the associated Archaeological Resources Management Reports. Prepared the Federal Communications Commission's Form 620, public outreach and Tower Construction Notification System for each antenna. Consulted with the California State Historic Preservation. Federal Communication Commission was the lead agency.

**Harbor View Hotel Project,**

**Principal Investigator / Project Manager | San Diego, CA**

Prepared an archaeological assessment of the Project area and a construction monitoring plan in compliance with the City of San Diego's Mitigation Monitoring requirements. Managed the archaeological monitoring of the Project's construction during the initial ground disturbance and grading of the Project area. Identified, documented, and evaluated for significance under CEQA, to the CRHR, and to the City of San Diego Historical Resources Register a feature containing the remains of a historic boat. Documented the boat feature on DPR 523 forms. Provided a technical report with the results of the monitoring, testing, evaluation and data recovery, including an artifact analysis and historic research. City of San Diego was the lead agency.

**Machado Smith Excavation, Old Town San Diego State of California Historic Park**

**Principal Investigator / Project Manager | San Diego, CA**

Prepared a work plan and California State Parks permit application for the excavation in order to identify the location of two 19th century structures, evaluate the archaeological remains for eligibility to the CRHR and significance under CEQA, and to assist in the recreation of the buildings in Old Town San Diego State of California Historic Park. Directed excavations including mechanical trenching and hand excavations. Excavated 19th century features. Directed laboratory work associated with the excavations, cataloged the artifacts, performed the artifact analysis, and prepared the artifact collection for curation. Evaluated the cultural resource for eligibility to the NRHP and CRHR, and for significance under CEQA. Prepared a technical report providing the results of the excavation, artifact analysis, evaluation of the resources to the CRHR, provided mitigation measures, and guidance to the building recreation process. Prepared DPR 523 forms for the cultural resource. California State Parks was the lead agency.

**San Diego County Administration Center Parking Garage, Cedar and Ketter Project**

**Principal Investigator / Project Manager | San Diego, CA**

Prepared an archaeological assessment of the project area and a construction monitoring plan in compliance with CEQA and the City of San Diego's Mitigation Monitoring requirements. Managed the archaeological monitoring of the project's construction during the initial ground disturbance and grading of the Project area. Identified, documented, and evaluated

for significance under CEQA, to the CRHR, and to the City of San Diego Historical Resources Register a historic well. Performed a data recovery on the well feature. Provided a technical report with the results of the monitoring, testing, evaluation and data recovery, including an artifact analysis and historic research. Documented cultural resources on DPR 523 forms. Prepared the artifact collection, artifact analysis, and historic research to be incorporated into a display to be placed in the parking garage and the County Administration Center. City of San Diego was the lead agency.

**Archaeological Survey for the County of San Diego Fuel Reduction Parcel Preparation Program in Julian, Whispering Pines, and Along State Route 78/79**

**Principal Investigator / Project Manager | San Diego County, CA**

Conducted a cultural resources survey of the project area in compliance with CEQA and San Diego County Guidelines. Prepared a technical report and created avoidance measures in consultation with the County of San Diego to avoid all impacts to cultural resources and prepared a technical report. Documented cultural resources on DPR 523 Forms. San Diego County was the lead agency.

**Pacifica Vista Self Storage Project**

**Principal Investigator / Project Manager | Vista, CA**

Conducted a cultural resource survey of the project area and prepared technical report in compliance with CEQA and City of Vista Guidelines. Identified two cultural resources within the Project area, evaluated one cultural resource and created avoidance measures to avoid the second resource. Documented cultural resources on DPR 523 Forms. City of Vista was the lead agency.

**Broadway Earthen Channel Repairs Project**

**Principal Investigator / Project Manager | El Cajon, CA**

Conducted a cultural resource survey of the project area and prepared a technical report in support of the project's environmental documents. The project is subject to CEQA-Plus and was conducted in compliance with City of El Cajon, County of San Diego and Section 106 of the NHPA requirements. Identified, documented, and evaluated a cultural resource within the project area. City of El Cajon, County of San Diego, and California Clean Water State Revolving Fund Program were the lead agencies.

**Rancho Del Rio Biological Mitigation Parcel Project**

**Principal Investigator / Project Manager | San Diego, CA**

Conducted a cultural resource survey of the project area and prepared a technical report in compliance with the City of San Diego CEQA Guidelines. Identified a cultural resource within the project area and documented the resource on DPR 523 Forms recommended avoidance measures or evaluation of the resource to the CRHR and City Register. City of San Diego was the lead agency.

**India and Date Project at 1703 India Street for H.G. Fenton**

**Principal Investigator / Project Manager | San Diego, CA**

Prepared an archaeological assessment of the Project area and a construction monitoring plan in compliance with the City of San Diego's Mitigation Monitoring requirements. Conducted a pre-testing program within the Project area using mechanically excavated trenches to identify possible archaeological deposits. Identified a layer of fill soil that did not need to be monitored. Managed the archaeological monitoring of the Project's construction during the initial ground disturbance and grading of the Project area. Identified, documented, and evaluated for significance under CEQA, to the CRHR, and to the City of San Diego Historical Resources Register two historic trash scatters. Performed evaluation testing on the archaeological deposits. Documented cultural resources on DPR 523 forms. Provided a technical report with the results of the monitoring, testing, and evaluation, including an artifact analysis and historic research. City of San Diego was the lead agency.

## Professional Profile

Mr. Spencer Bietz is the Archaeological Field Director at Red Tail Environmental and has worked as a qualified archaeologist in California for the past 15 years. Mr. Bietz has completed a wide variety of cultural resource management projects and is a qualified archaeological monitor for the City of San Diego and County of San Diego. Mr. Bietz has worked on cultural resource projects throughout San Diego, Imperial, Orange, Riverside, San Bernardino, Inyo, Kern, Mono, Los Angeles, and Tulare Counties in California. Mr. Bietz has participated in projects for federal agencies such as the Bureau of Land Management and U.S. Forest Service; state agencies, including California State Parks and Caltrans; local governments, including the City and County of San Diego; and private clients. As an archaeologist and paleontologist, Mr. Bietz has experience with construction monitoring, geotechnical sampling, GIS mapping and data management, technical writing, soil screening, field survey and site recordation, resource evaluation, and artifact cataloging and preparation for curation. Mr. Bietz's personal research interests include historical archaeology and the regional history and prehistory of Southern California, GIS data management, modeling, and cartography.

## Education

Certificate of Performance as Geographic Information Systems Specialist, San Diego Mesa College  
B.A., Anthropology with Concentration in Archaeology, University of California, San Diego

## Selected Archaeology Experience

### **City of San Diego Cultural and Paleontological Resources On-Call As-Needed Environmental Consulting Agreement (R-309919/H146284), San Diego, CA**

#### **Senior Archaeologist | San Diego County, CA**

Conducts cultural resources inventories including record searches and archaeological surveys to identify project areas which may contain cultural resources in support of multiple MNDs and a programmatic EIR. Recommends mitigation measures including resource testing and evaluation, avoidance, and construction monitoring. Performs archaeological construction monitoring, resource identification, recordation, and evaluation. Also acts as the GIS Specialist to produce report maps and record resources identified during construction monitoring. City of San Diego, Transportation and Storm Water Department is the lead agency.

### **Archaeological Survey and Monitoring for the Tenaja Fire State and Campground and the Upper San Juan Campground Contract Areas, Trabuco Ranger District**

#### **Field Archaeologist | Cleveland National Forest, CA (2018-ongoing)**

Conducted cultural resource monitoring and documentation of planned structure demolition within the Upper San Juan Campground Contract Area. Will be performing archaeological monitoring during ground disturbance in 2019. Contributed to technical report and created cartographic figures and digital GIS database. United States Forest Service is the lead agency.

### **Archaeological and Native American Monitoring for UU525 Block 4J1 Project**

#### **Field Director/Archaeological Monitor | San Diego, CA (2018-ongoing)**

Field Director and archaeological monitor for the archaeological monitoring for the utility undergrounding project. Worked with construction crews to provide updated schedules. Reviewed notes, created monitoring schedule and archaeological discovery database. Created cartographic figures and digital GIS database. Collected, cleaned, and cataloged artifacts recovered during cultural resource monitoring efforts. City of San Diego is the lead agency.

**Ives Residential at 1874 Spindrift Project**

**Field Director | San Diego, CA (2018-ongoing)**

Conducted extended Phase I testing of the project area. Identified, recorded, and evaluated a prehistoric archaeological deposit. Contributed to data recovery technical report and created cartographic figures and GIS digital database. City of San Diego is the lead agency.

**Mission Bay Geo-Archaeological Testing**

**Cultural Resource Monitor | San Diego, CA (2018)**

Contributed as the primary cultural resource monitor, assisting in the collection of subsurface core samples for geo-archaeological analysis. Performed subsurface geotechnical bore sampling, photo documentation, sample documentation, GIS map creation and data management, and technical writing. City of San Diego was lead agency.

**Crown Point Sewer and Water Group Monitoring, San Diego, California**

**Cultural Resource Monitor | San Diego, California (2016-2018)**

Contributed as a cultural resource monitor during the excavation of trenches and manhole vaults in the community of Crown Point in Pacific Beach, California. City of San Diego was the lead agency.

**Pio Pico North Development Project**

**Field Director | Carlsbad, CA (2016-2017)**

Contributed as field director for subsurface testing of multiple resources within a parcel proposed for residential development. Assisted in the creation of the testing protocol and with technical report writing, and directed the excavation of more than 50 mechanically-excavated trenches and 20 TEUs. Additional activities included site recordation and evaluation, historical archival research, recordation and evaluation of a historic-era linear feature (water pipeline), artifact cataloging, shell speciation, GIS data creation and management, and figure creation.

**Administration of Courts (AOC) California, San Diego County Courthouse Monitoring**

**Lead Cultural Resource Monitor | San Diego, CA (2014)**

Contributed as the primary cultural resource monitor, assisting in the recording of cultural deposits and features during footing excavation. Oversaw the recording of cultural discoveries, photo documentation, artifact collection, testing of historic features, and site recordation using Trimble GeoXH devices. Assisted in GIS map creation and data management, and artifact preparation.

**San Diego Gas and Electric Cultural Resources On-Call, San Diego County, California**

**Field Archaeologist | Cultural Resource Monitor | San Diego, CA (2014)**

Contributed as a field archaeologist assisting in a variety of projects including cultural resource monitoring, deteriorated pole survey, FiRM infrastructure survey, resource testing and evaluation, technical report and summary letter writing, GIS data creation and management, and figure creation.

**Sunrise Powerlink Monitoring, San Diego County, California**

**Cultural Resource Monitor | San Diego, CA (2008-2009)**

Contributed as a cultural resource monitor accompanying survey and geo-technical testing crews in the survey and placement of proposed electrical tower locations and their respective access areas along the Sunrise Powerlink. Assisted in site recording, photo documentation, and the identification and marking of sensitive cultural areas for future avoidance by work crews. Additional tasks included writing and compiling of tower cultural data for the final summary report.



**APPENDIX B: NAHC CORRESPONDENCE**



March 30, 2020

California Native American Heritage Commission  
1550 Harbor Blvd, Suite 100  
West Sacramento, CA 95691  
nahc@nahc.ca.gov

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear NAHC,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire city of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan.

Red Tail is currently conducting a records search with the Eastern Information Center. I am writing to request a record search of the Sacred Lands File to determine if you have registered any cultural resources, tribal cultural resources, traditional cultural properties, or areas of heritage sensitivity within the proposed project area. The project area is shown on the following USGS 7.5' Quad Maps:

Prado Dam Quad:

T3S R7W Section 30

T3S R8W Section 25

Unsectioned portions of the La Sierra Yorba land grant

Black Star Canyon Quad:

T3S R7W Sections 32, 33

T3S R8W Section 36

T4S R7W Section 5

Unsectioned portions of the La Sierra Yorba land grant

Corona South Quad:

T3S R7W Section 33

T4S R6W Sections 5, 8, 16, 17, 18, 19, 20, 21, 22

T4S R7W Sections 5, 9, 10

Unsectioned portions of the La Sierra Yorba land grant

Unsectioned portions of the Sobrante De San Jacinto land grant

Lake Matthews Quad:

T4S R6W Section 22

Unsectioned portions of the Sobrante De San Jacinto land grant

Corona North Quad:

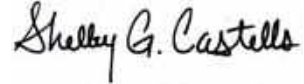
Unsectioned portions of the La Sierra Yorba land grant

Unsectioned portions of the Sobrante De San Jacinto land grant

March 30, 2020  
City of Corona Reclaimed Water Project

Our investigation will include direct contact with local tribal entities. Please include a list of the appropriate individuals to contact related to this project. Please submit your response via email to [Shelby@redtailenvironmental.com](mailto:Shelby@redtailenvironmental.com).

Sincerely,

A handwritten signature in black ink that reads "Shelby G. Castells". The signature is written in a cursive, flowing style.

Shelby Castells, M.A., RPA  
Director of Archaeology

Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area

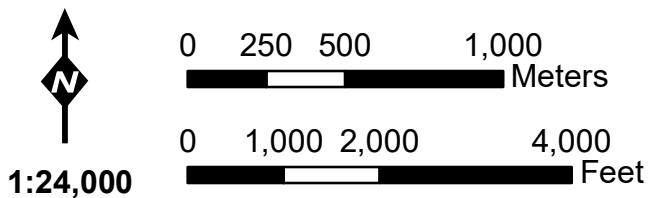






Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

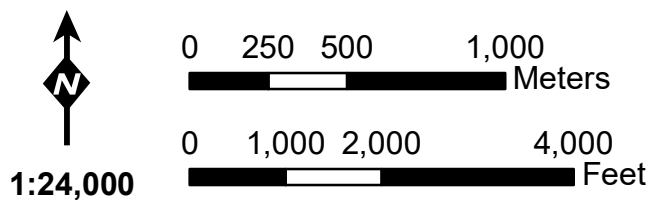






Figure 1. Project Area

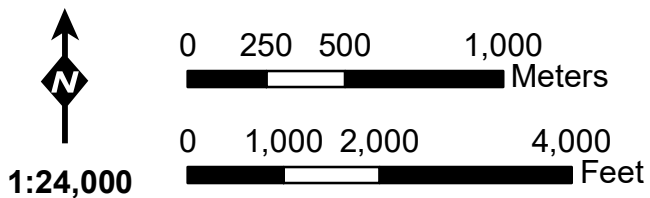






Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

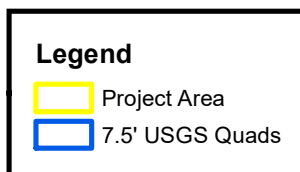






Figure 1. Project Area





## NATIVE AMERICAN HERITAGE COMMISSION

April 2, 2020

Shelby Castells  
Red Tail EnvironmentalVia Email to: [Shelby@redtailenvironmental.com](mailto:Shelby@redtailenvironmental.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, City of Corona Reclaimed Water Project, Riverside County

Dear Ms. Castells:

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:



CHAIRPERSON  
Laura Miranda  
Luiseño

VICE CHAIRPERSON  
Reginald Pagaling  
Chumash

SECRETARY  
Merri Lopez-Keifer  
Luiseño

PARLIAMENTARIAN  
Russell Attebery  
Karuk

COMMISSIONER  
Marshall McKay  
Wintun

COMMISSIONER  
William Mungary  
Paiute/White Mountain  
Apache

COMMISSIONER  
Joseph Myers  
Pomo

COMMISSIONER  
Julie Tumamait-  
Stenslie  
Chumash

COMMISSIONER  
[Vacant]

EXECUTIVE SECRETARY  
Christina Snider  
Pomo

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

- 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 Native American Heritage Commission was positive. Please contact the tribes on the attached list for more information.

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: [Andrew.Green@nahc.ca.gov](mailto:Andrew.Green@nahc.ca.gov).

Sincerely,



Andrew Green  
Cultural Resources Analyst

Attachment

**Native American Heritage Commission  
Tribal Consultation List  
Riverside County  
4/2/2020**

**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

**Ewiaapaayp Band of Kumeyaay  
Indians**

Robert Pinto, Chairperson  
4054 Willows Road                              Diegueno  
Alpine, CA, 91901  
Phone: (619) 445 - 6315  
Fax: (619) 445-9126  
wmicklin@leaningrock.net

**Augustine Band of Cahuilla  
Mission Indians**

Amanda Vance, Chairperson  
P.O. Box 846                                      Cahuilla  
Coachella, CA, 92236  
Phone: (760) 398 - 4722  
Fax: (760) 369-7161  
hhaines@augustinetribe.com

**Ewiaapaayp Band of Kumeyaay  
Indians**

Michael Garcia, Vice Chairperson  
4054 Willows Road                              Diegueno  
Alpine, CA, 91901  
Phone: (619) 445 - 6315  
Fax: (619) 445-9126  
michaelg@leaningrock.net

**Cabazon Band of Mission  
Indians**

Doug Welmas, Chairperson  
84-245 Indio Springs Parkway              Cahuilla  
Indio, CA, 92203  
Phone: (760) 342 - 2593  
Fax: (760) 347-7880  
jstapp@cabazonindians-nsn.gov

**Gabrieleno Band of Mission  
Indians - Kizh Nation**

Andrew Salas, Chairperson  
P.O. Box 393                                      Gabrieleno  
Covina, CA, 91723  
Phone: (626) 926 - 4131  
admin@gabrielenoindians.org

**Cahuilla Band of Indians**

Daniel Salgado, Chairperson  
52701 U.S. Highway 371                      Cahuilla  
Anza, CA, 92539  
Phone: (951) 763 - 5549  
Fax: (951) 763-2808  
Chairman@cahuilla.net

**Gabrieleno/Tongva San Gabriel  
Band of Mission Indians**

Anthony Morales, Chairperson  
P.O. Box 693                                      Gabrieleno  
San Gabriel, CA, 91778  
Phone: (626) 483 - 3564  
Fax: (626) 286-1262  
GTTribalcouncil@aol.com

**Campo Band of Diegueno  
Mission Indians**

Ralph Goff, Chairperson  
36190 Church Road, Suite 1                  Diegueno  
Campo, CA, 91906  
Phone: (619) 478 - 9046  
Fax: (619) 478-5818  
rgoff@campo-nsn.gov

**Gabrielino /Tongva Nation**

Sandonne Goad, Chairperson  
106 1/2 Judge John Aiso St.,              Gabrielino  
#231  
Los Angeles, CA, 90012  
Phone: (951) 807 - 0479  
sgoad@gabrielino-tongva.com

**Gabrielino Tongva Indians of  
California Tribal Council**

Robert Dorame, Chairperson  
P.O. Box 490                                      Gabrielino  
Bellflower, CA, 90707  
Phone: (562) 761 - 6417  
Fax: (562) 761-6417  
gtongva@gmail.com

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 City of Corona Reclaimed Water Project, Riverside County.

**Native American Heritage Commission  
Tribal Consultation List  
Riverside County  
4/2/2020**

**Gabrielino-Tongva Tribe**

Charles Alvarez,  
23454 Vanowen Street  
West Hills, CA, 91307  
Phone: (310) 403 - 6048  
roadkingcharles@aol.com  
Gabrielino

**Jamul Indian Village**

Erica Pinto, Chairperson  
P.O. Box 612  
Jamul, CA, 91935  
Phone: (619) 669 - 4785  
Fax: (619) 669-4817  
epinto@jiv-nsn.gov  
Diegueno

**Jamul Indian Village**

Lisa Cumper, Tribal Historic  
Preservation Officer  
P.O. Box 612  
Jamul, CA, 91935  
Phone: (619) 669 - 4855  
lcumper@jiv-nsn.gov  
Diegueno

**Juaneno Band of Mission  
Indians Acjachemen Nation -  
Belardes**

Matias Belardes, Chairperson  
32161 Avenida Los Amigos  
San Juan Capistrano, CA, 92675  
Phone: (949) 293 - 8522  
kaamalam@gmail.com  
Juaneno

**La Jolla Band of Luiseno  
Indians**

Fred Nelson, Chairperson  
22000 Highway 76  
Pauma Valley, CA, 92061  
Phone: (760) 742 - 3771  
Luiseno

**La Posta Band of Diegueno  
Mission Indians**

Javaughn Miller, Tribal  
Administrator  
8 Crestwood Road  
Boulevard, CA, 91905  
Phone: (619) 478 - 2113  
Fax: (619) 478-2125  
jmiller@LPtribe.net  
Diegueno

**La Posta Band of Diegueno  
Mission Indians**

Gwendolyn Parada, Chairperson  
8 Crestwood Road  
Boulevard, CA, 91905  
Phone: (619) 478 - 2113  
Fax: (619) 478-2125  
LP13boots@aol.com  
Diegueno

**Los Coyotes Band of Cahuilla  
and Cupeño Indians**

Shane Chapparosa, Chairperson  
P.O. Box 189  
Warner Springs, CA, 92086-0189  
Phone: (760) 782 - 0711  
Fax: (760) 782-0712  
Cahuilla

**Manzanita Band of Kumeyaay  
Nation**

Angela Elliott Santos, Chairperson  
P.O. Box 1302  
Boulevard, CA, 91905  
Phone: (619) 766 - 4930  
Fax: (619) 766-4957  
Diegueno

**Mesa Grande Band of Diegueno  
Mission Indians**

Michael Linton, Chairperson  
P.O Box 270  
Santa Ysabel, CA, 92070  
Phone: (760) 782 - 3818  
Fax: (760) 782-9092  
mesagrandeband@msn.com  
Diegueno

**Morongo Band of Mission  
Indians**

Robert Martin, Chairperson  
12700 Pumarra Road  
Banning, CA, 92220  
Phone: (951) 849 - 8807  
Fax: (951) 922-8146  
dtorres@morongo-nsn.gov  
Cahuilla  
Serrano

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 City of Corona Reclaimed Water Project, Riverside County.

**Native American Heritage Commission  
Tribal Consultation List  
Riverside County  
4/2/2020**

***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

***Quechan Tribe of the Fort Yuma Reservation***

Jill McCormick, Historic  
Preservation Officer  
P.O. Box 1899      Quechan  
Yuma, AZ, 85366  
Phone: (760) 572 - 2423  
historicpreservation@quechantribe.com

***Ramona Band of Cahuilla***

Joseph Hamilton, Chairperson  
P.O. Box 391670      Cahuilla  
Anza, CA, 92539  
Phone: (951) 763 - 4105  
Fax: (951) 763-4325  
admin@ramona-nsn.gov

***Rincon Band of Luiseno Indians***

Cheryl Madrigal, Tribal Historic  
Preservation Officer  
One Government Center Lane      Luiseno  
Valley Center, CA, 92082  
Phone: (760) 297 - 2635  
crd@rincon-nsn.gov

***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 Fernando Band of Mission Indians***

Donna Yocum, Chairperson  
P.O. Box 221838      Kitanemuk  
Newhall, CA, 91322      Vanyume  
Phone: (503) 539 - 0933      Tataviam  
Fax: (503) 574-3308  
ddyocum@comcast.net

***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

***San Pasqual Band of Diegueno Mission Indians***

Allen Lawson, Chairperson  
P.O. Box 365      Diegueno  
Valley Center, CA, 92082  
Phone: (760) 749 - 3200  
Fax: (760) 749-3876  
allenl@sanpasqualtribe.org

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This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed City of Corona Reclaimed Water Project, Riverside County.



**Native American Heritage Commission  
Tribal Consultation List  
Riverside County  
4/2/2020**

***Santa Rosa Band of Cahuilla  
Indians***

Steven Estrada, Chairperson  
P.O. Box 391820                      Cahuilla  
Anza, CA, 92539  
Phone: (951) 659 - 2700  
Fax: (951) 659-2228  
mflaxbeard@santarosacahuilla-  
nsn.gov

***Soboba Band of Luiseno  
Indians***

Scott Cozart, Chairperson  
P. O. Box 487                      Cahuilla  
San Jacinto, CA, 92583              Luiseno  
Phone: (951) 654 - 2765  
Fax: (951) 654-4198  
jontiveros@soboba-nsn.gov

***Sycuan Band of the Kumeyaay  
Nation***

Cody Martinez, Chairperson  
1 Kwaaypaay Court                      Kumeyaay  
El Cajon, CA, 92019  
Phone: (619) 445 - 2613  
Fax: (619) 445-1927  
ssilva@sycuan-nsn.gov

***Torres-Martinez Desert Cahuilla  
Indians***

Thomas Torte, Chairperson  
P.O. Box 1160                      Cahuilla  
Thermal, CA, 92274  
Phone: (760) 397 - 0300  
Fax: (760) 397-8146  
tmchair@torresmartinez.org

***Viejas Band of Kumeyaay  
Indians***

John Christman, Chairperson  
1 Viejas Grade Road                      Diegueno  
Alpine, CA, 91901  
Phone: (619) 445 - 3810  
Fax: (619) 445-5337

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 City of Corona Reclaimed Water Project, Riverside County.



April 6, 2020

Angela Elliott Santos  
Chairperson  
Manzanita Band of Kumeyaay Nation  
PO Box 1302, Boulevard, CA, 91905  
619-766-4930

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Ms. Elliott Santos,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

- USGS 7.5' Prado Dam Quad map within:
  - Township 3 South Range 7 West Section 30,
  - Township 3 South Range 8 West Section 25,
  - Unsectioned portions of the La Sierra Yorba Land Grant.
- USGS 7.5' Black Star Canyon Quad map within:
  - Township 3 South Range 7 West Sections 32 and 33,
  - Township 3 South Range 8 West Section 36,
  - Township 4 South Range 7 West Section 5,
  - Unsectioned portions of the La Sierra Yorba Land Grant.
- USGS 7.5' Corona South Quad map within:
  - Township 3 South Range 7 West Section 33,
  - Township 4 South Range 6 West Sections 5, 8, 16, 17, 18, 19, 20, 21, and 22,
  - Township 4 South Range 7 West Sections 5, 9, and 10,
  - Unsectioned portions of the La Sierra Yorba Land Grant,
  - Unsectioned portions of the Sobrante De San Jacinto Land Grant.
- USGS 7.5' Lake Matthews Quad map within:
  - Township 4 South Range 6 West Section 22,
  - Unsectioned portions of the Sobrante De Sa Jacinto Land Grant.
- USGS 7.5' Corona North Quad map within:
  - Unsectioned portions of the La Sierra Yorba Land Grant,
  - Unsectioned portions of the Sobrante De San Jacinto Land Grant.

A record search of the Sacred Lands File with the California Native American Heritage Commission was positive. Red Tail also conducted a record search at the Eastern Information Center.

April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

We are contacting you to request additional information regarding the Project area, if you are aware of any issues of cultural concern regarding the area shown on the enclosed map. In particular, we would like to know if you have knowledge of any Traditional Cultural Properties, Sacred Sites, Tribal Cultural Resources, resource collecting areas, or any other areas of concern of which you would wish us to be aware. If you have any questions or concerns regarding the proposed Project, please contact me at the address or phone number listed below, or via email at [Shelby@redtailenvironmental.com](mailto:Shelby@redtailenvironmental.com). We appreciate any input you may have on this project.

Sincerely,

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

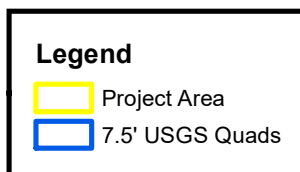
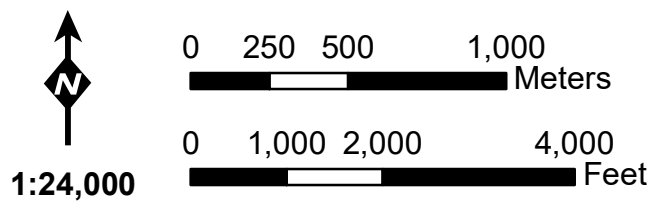






Figure 1. Project Area







Corona South

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

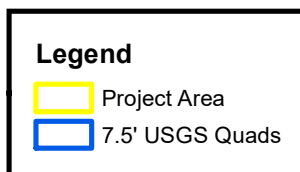






Figure 1. Project Area







April 6, 2020

Allen Lawson  
Chairperson  
San Pasqual Band of Diegueno Mission Indians  
PO Box 365, Valley Center, CA, 92082  
760-749-3200  
allenl@sanpasqualtribe.org

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Lawson,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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A record search of the Sacred Lands File with the California Native American Heritage Commission was positive. Red Tail also conducted a record search at the Eastern Information Center.

April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Director of Archaeology  
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Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







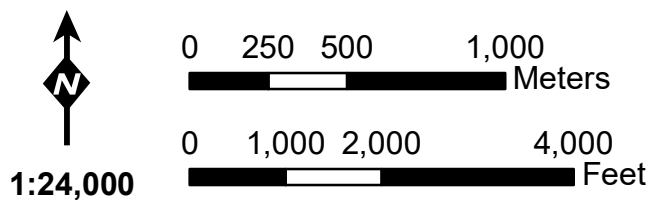
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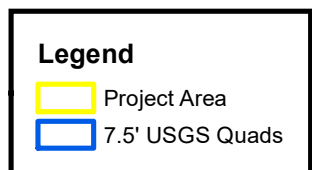
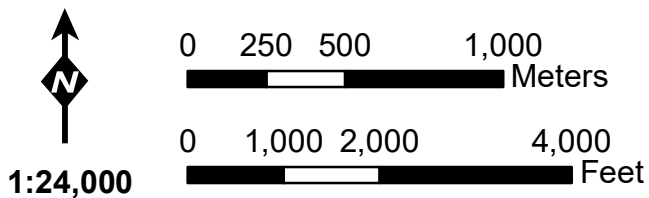






Corona South

Figure 1. Project Area





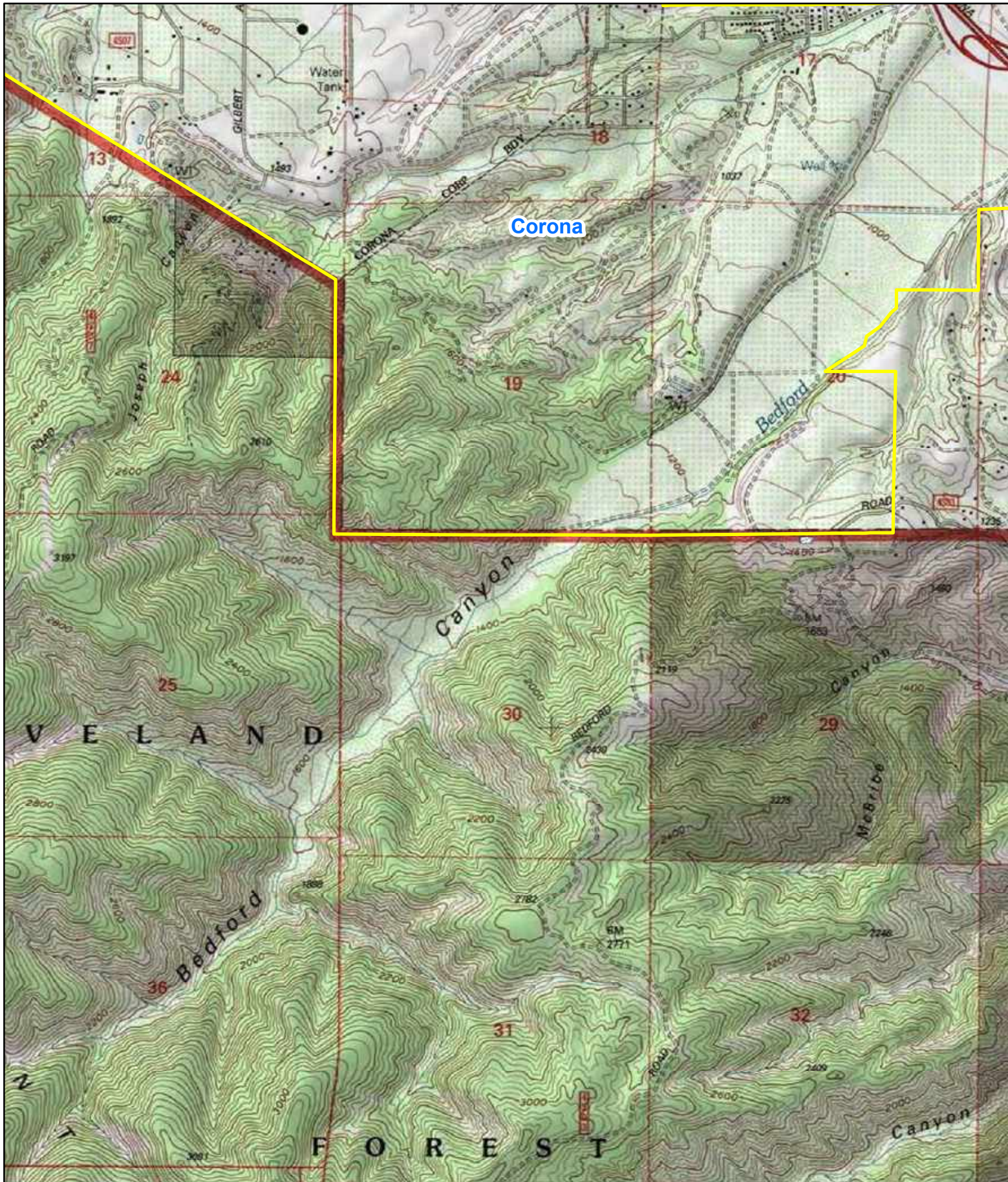


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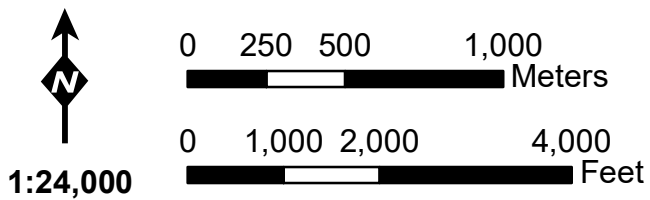






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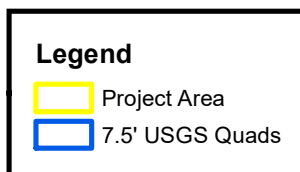






Figure 1. Project Area







April 6, 2020

Anthony Morales  
Chairperson  
Gabrieleno/Tongva San Bagriel Band of Mission Indians  
PO Box 693, San Gabriel, CA, 91778  
626-483-3564  
GTTribalcouncil@aol.com

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Morales,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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A record search of the Sacred Lands File with the California Native American Heritage Commission was positive. Red Tail also conducted a record search at the Eastern Information Center.

April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

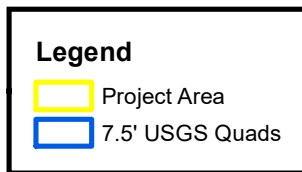
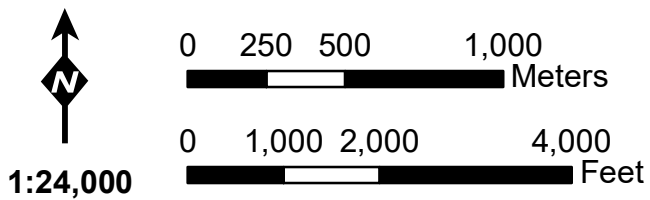
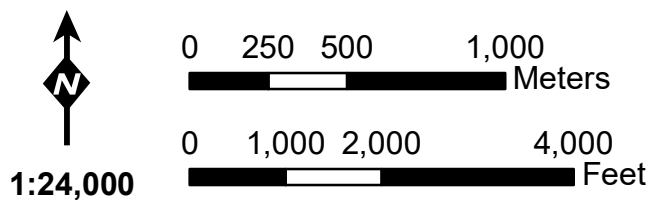






Figure 1. Project Area







Corona South

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

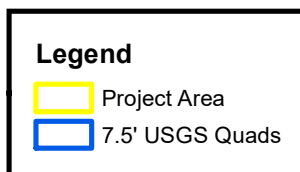






Figure 1. Project Area







April 6, 2020

Andrew Salas  
Chairperson  
Gabrieleno Band of Mission Indians - Kizh Nation  
PO Box 393, Covina, CA, 91723  
626-926-4131  
admin@gabrielenoindians.org

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Salas,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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City of Corona Reclaimed Water Project  
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Prado Dam

Figure 1. Project Area



**Legend**

- Project Area
- 7.5' USGS Quads







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

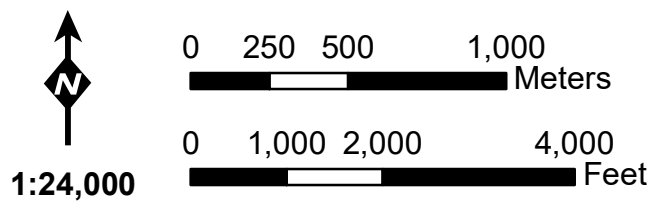






Figure 1. Project Area







Corona South

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







April 6, 2020

Amanda Vance  
Chairperson  
Augustine Band of Cahuilla Mission Indians  
PO Box 846, Coachella, CA, 92236  
760-398-4722  
hhaines@augustinetribe.com

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Ms. Vance,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





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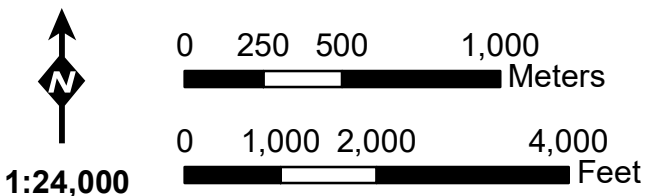






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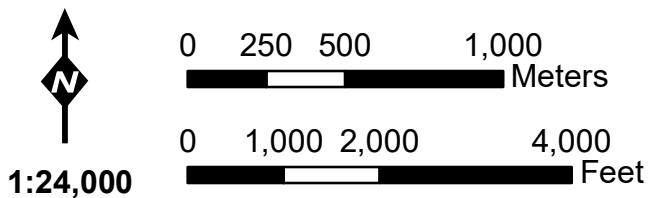






Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Corona South

Figure 1. Project Area

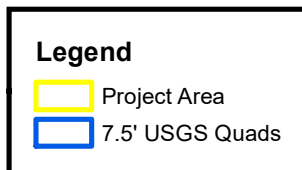
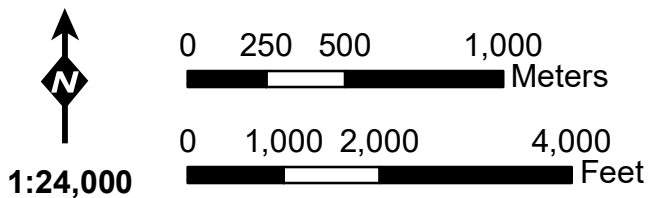






Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







April 6, 2020

Bo Mazzetti  
Chairperson  
Rincon Band of Luiseno Indians  
One Government Center Land, Valley Center, CA, 92082  
760-749-1051  
bomazzetti@aol.com

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Mazzetti,

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City of Corona Reclaimed Water Project  
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Director of Archaeology  
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Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

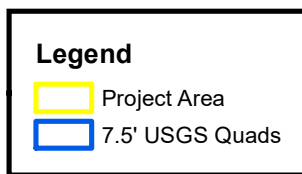
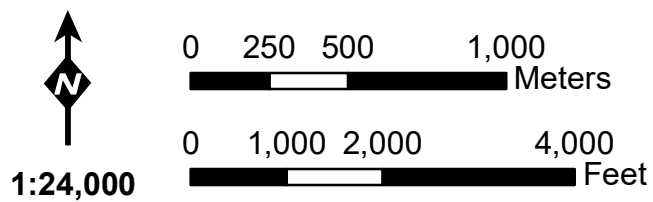






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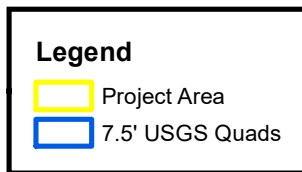
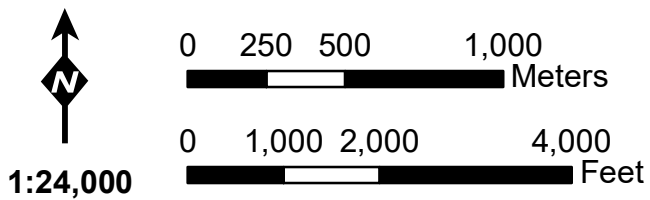
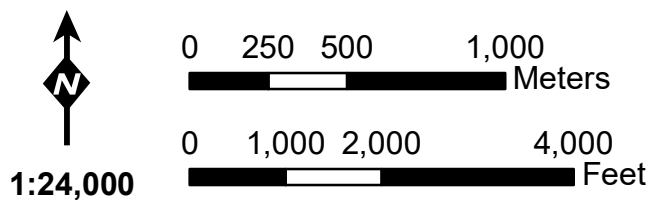






Figure 1. Project Area







Corona South

Figure 1. Project Area

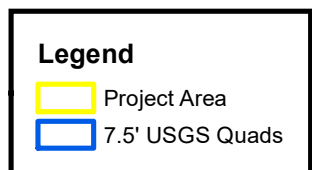
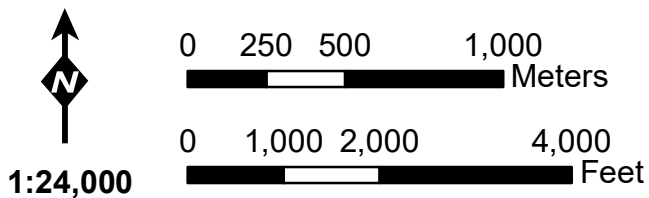






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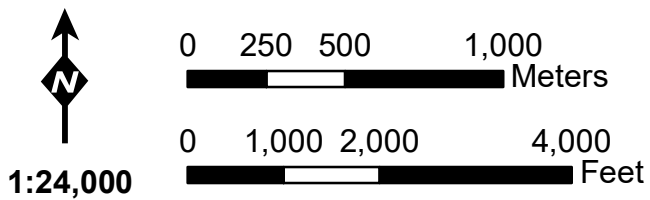






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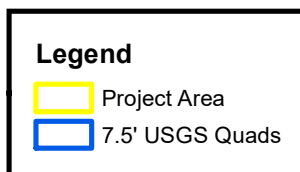
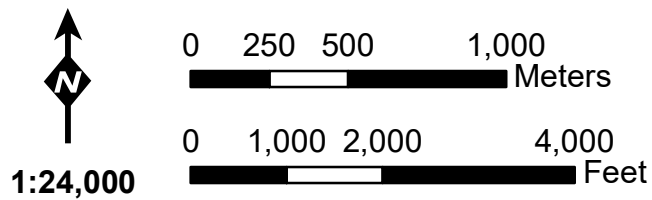






Figure 1. Project Area







April 6, 2020

Charles Alvarez

Gabrielino-Tongva Tribe  
23454 Vanowen Street, West Hills, CA, 91307  
310-403-6048  
roadkingcharles@aol.com

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Alvarez,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area





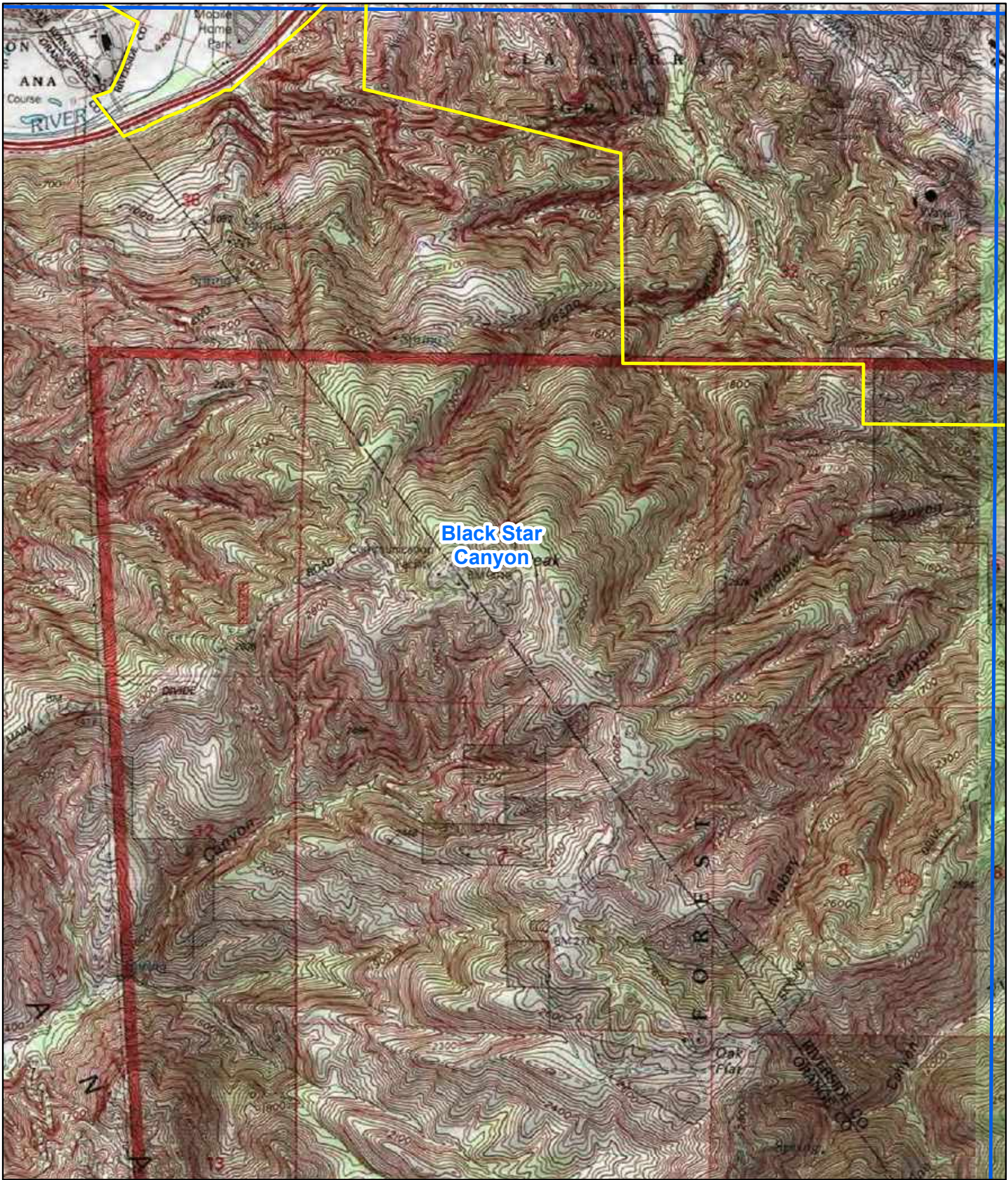


Figure 1. Project Area







Figure 1. Project Area

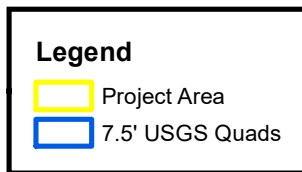
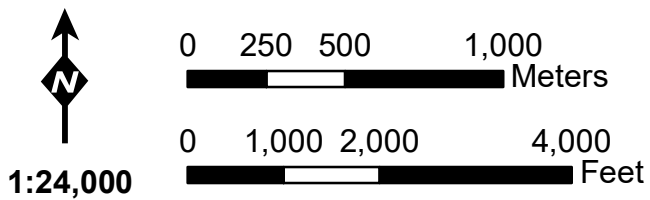






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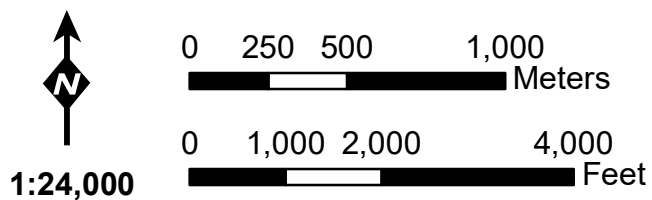






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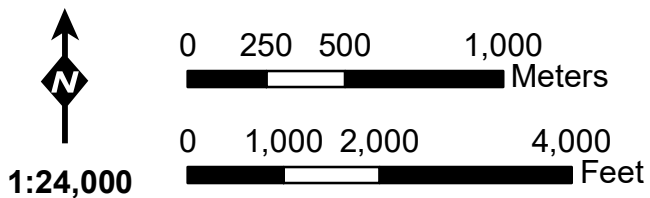






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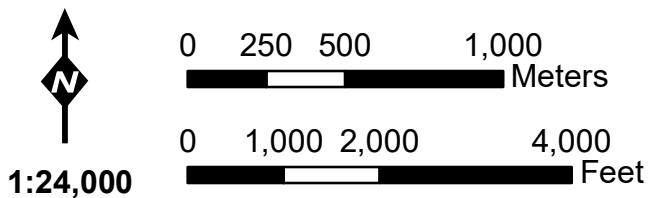






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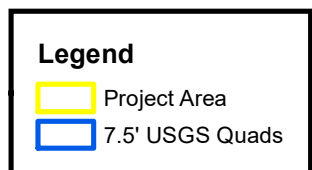
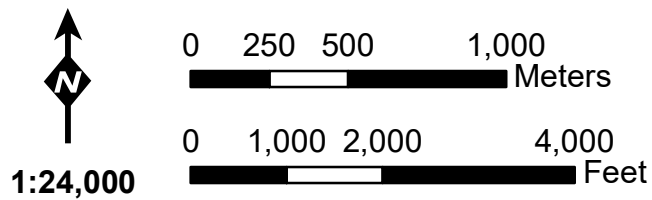






Figure 1. Project Area







April 6, 2020

Cheryl Madrigal  
Tribal Historic Preservation Officer  
Rincon Band of Luiseno Indians  
One Government Center Land, Valley Center, CA, 92082  
760-297-2635  
crd@rincon-nsn.gov

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Ms. Madrigal,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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  - Township 3 South Range 7 West Section 33,
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  - Township 4 South Range 7 West Sections 5, 9, and 10,
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- USGS 7.5' Corona North Quad map within:
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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Sincerely,

A handwritten signature in black ink that reads "Shelby G. Castells". The signature is written in a cursive style with a large, prominent 'S' at the beginning.

Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area



**Legend**

- Project Area
- 7.5' USGS Quads







Figure 1. Project Area

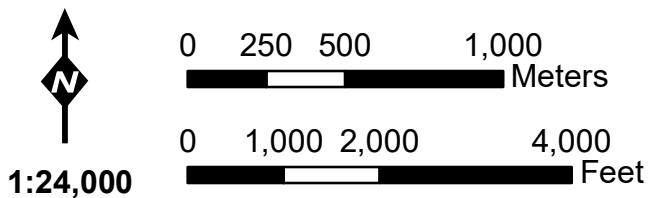






Figure 1. Project Area







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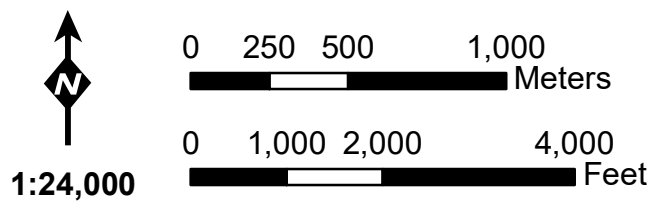
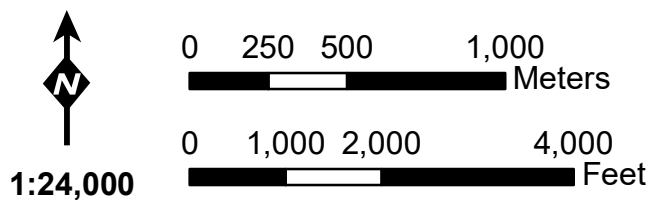






Figure 1. Project Area







Corona South

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area





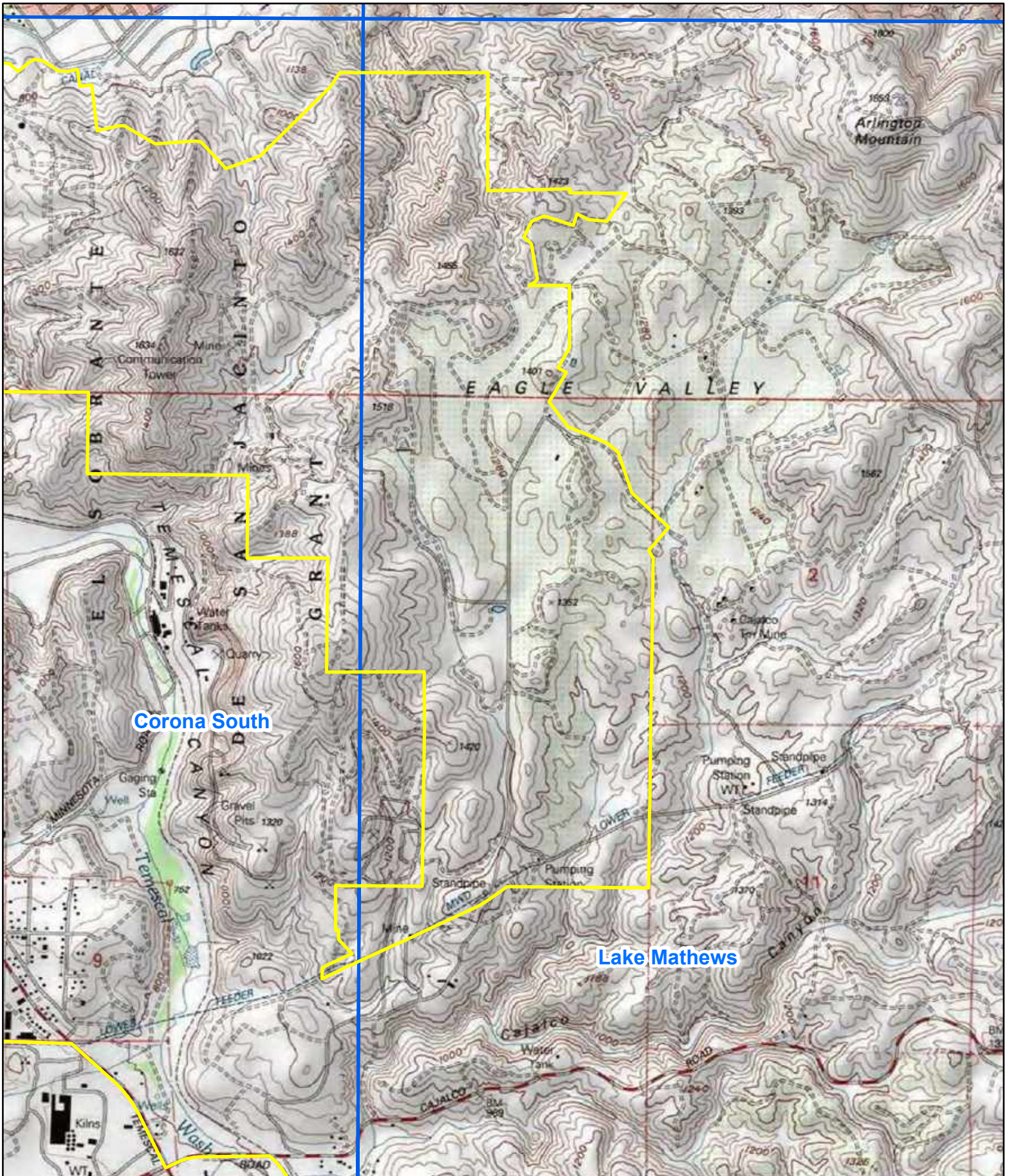


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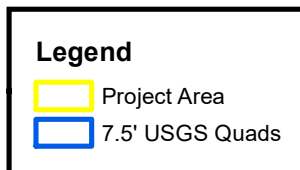
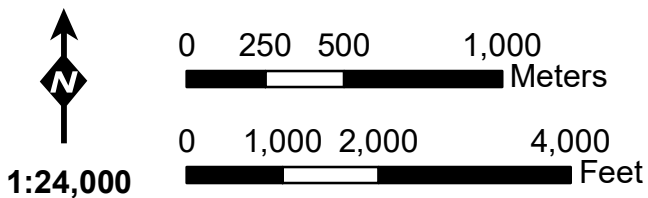






Figure 1. Project Area







April 6, 2020

Cody Martinez  
Chairperson  
Sycuan Band of the Kumeyaay Nation  
1 Kwaaypaay Court, El Cajon, CA, 92019  
619-445-2613  
ssilva@sycuan-nsn.gov

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Martinez,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Sincerely,

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area

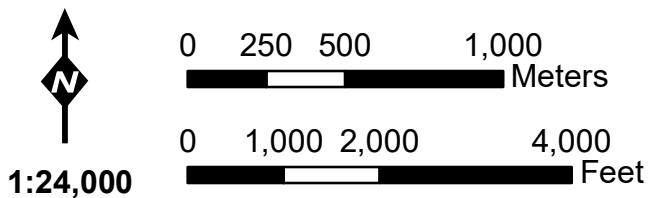






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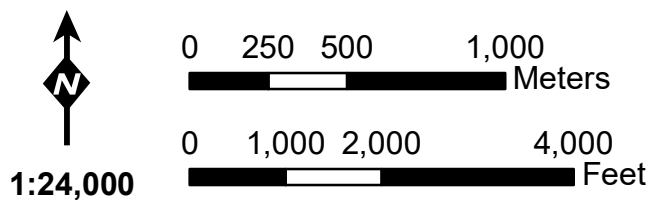
Figure 1. Project Area







Figure 1. Project Area







Corona South

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

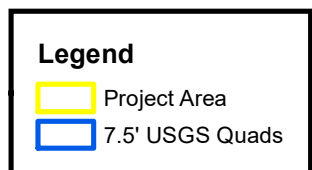






Figure 1. Project Area







April 6, 2020

Daniel Salgado  
Chairperson  
Cahuilla Band of Indians  
52701 US Highway 371, Anza, CA, 92539  
951-763-5549  
chairman@cahuilla.net

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Salgado,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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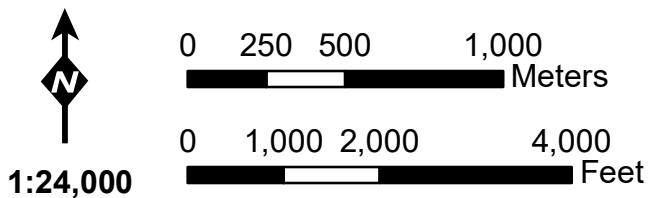






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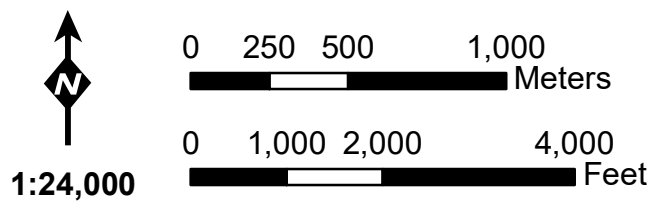






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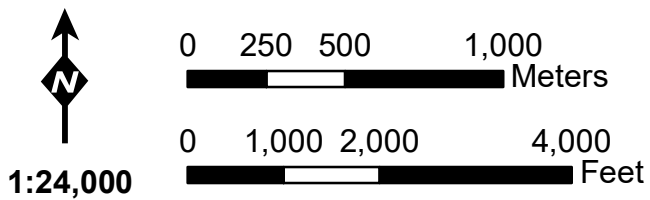






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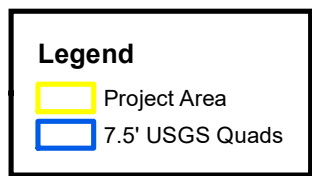






Figure 1. Project Area







April 6, 2020

Doug Welmas  
Chairperson  
Cabazon Band of Mission Indians  
84-245 Indio Springs Parkway, Indio, CA, 92203  
760-342-2593  
jstapp@cabazonindians-nsn.gov

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Welmas,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Director of Archaeology  
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Prado Dam

Figure 1. Project Area







Figure 1. Project Area

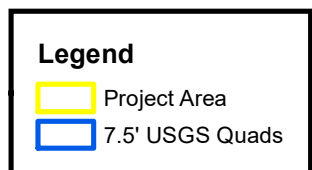
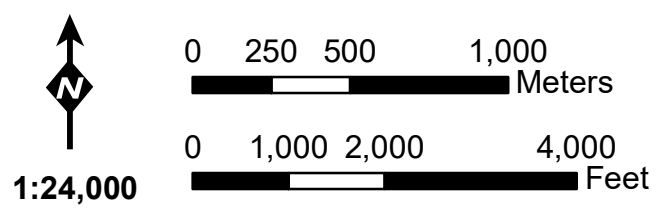






Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Corona South

Figure 1. Project Area

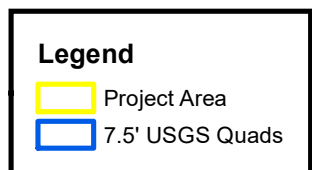
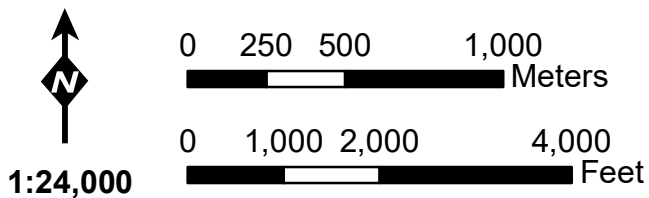






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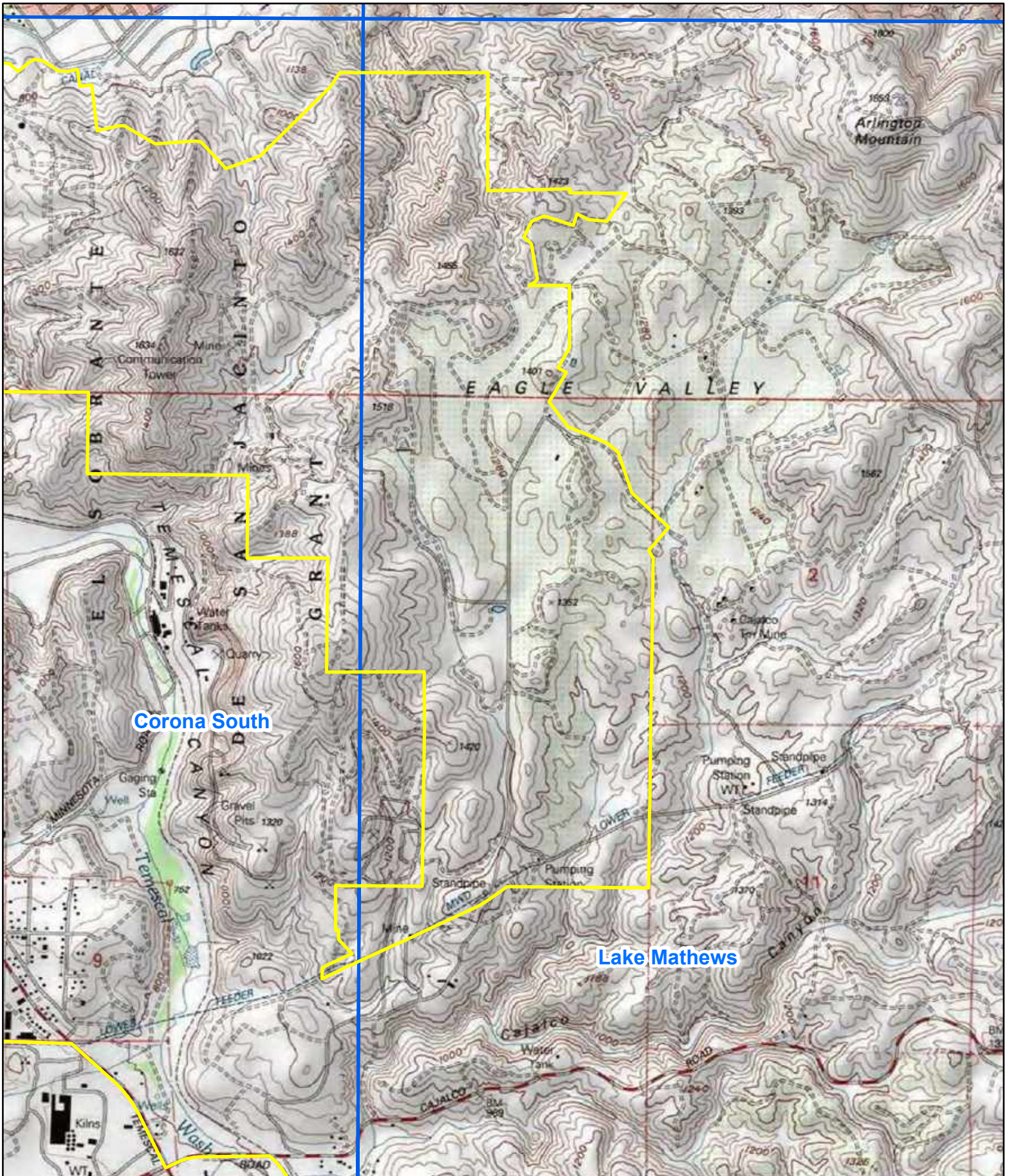


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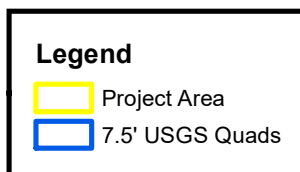






Figure 1. Project Area







April 6, 2020

Donna Yocum  
Chairperson  
San Fernando Band of Mission Indians  
PO Box 221838, Newhall, CA, 91322  
503-539-0933  
ddyocum@comcast.net

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Ms. Yocum,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Sincerely,

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area





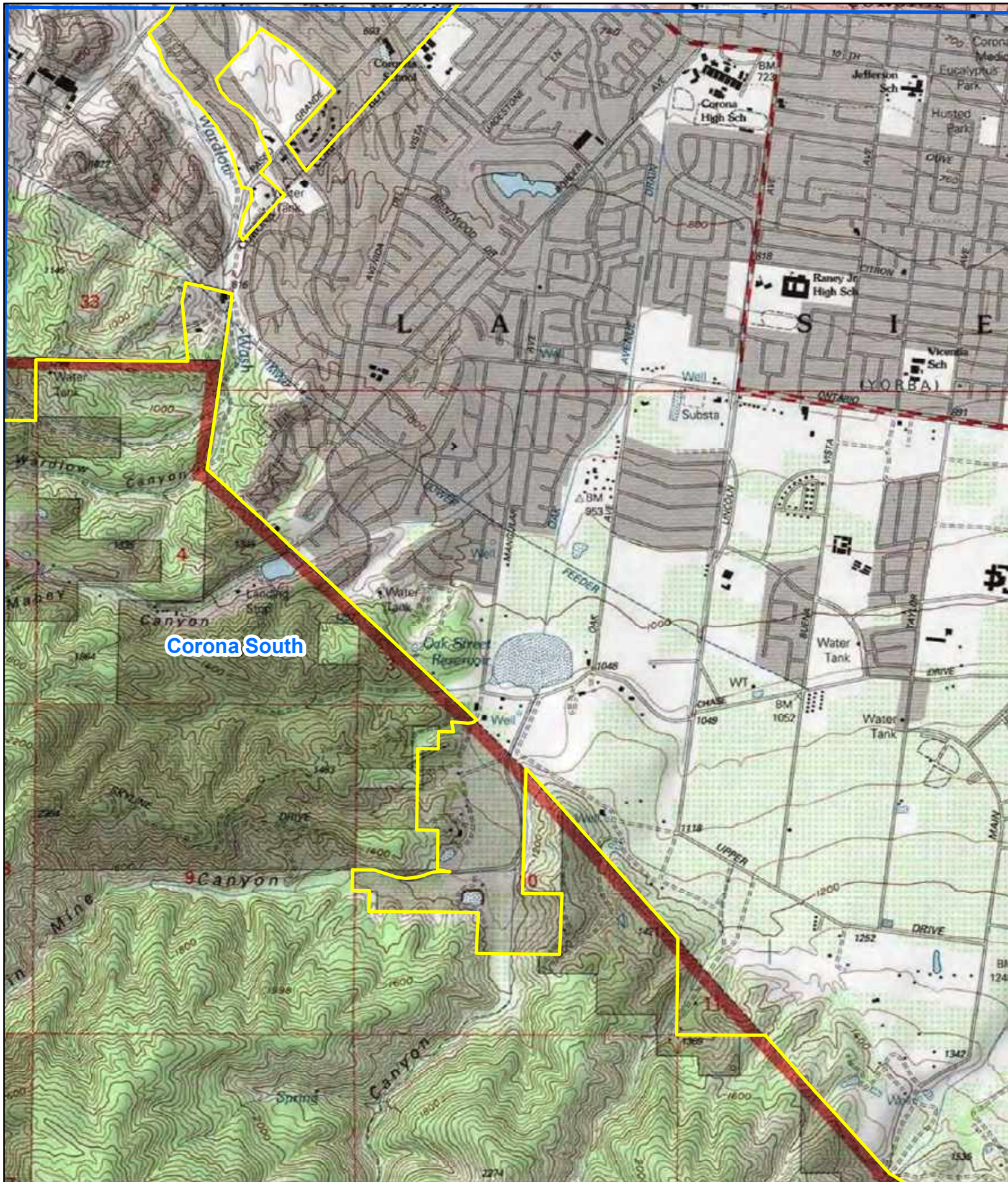


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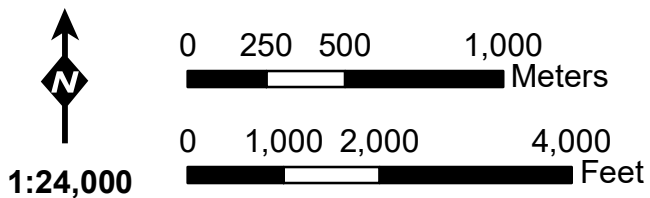
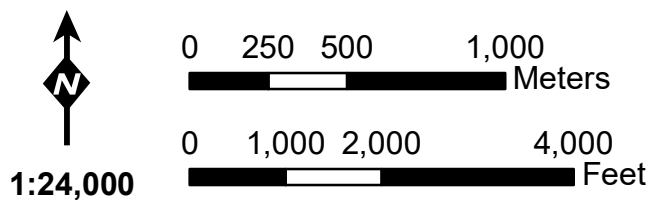






Figure 1. Project Area







Corona South

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







April 6, 2020

Erica Pinto  
Chairperson  
Jamul Indian Village  
PO Box 612, Jamul, CA, 91935  
619-669-4785  
epinto@jiv-nsn.gov

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Ms. Pinto,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Prado Dam

Figure 1. Project Area







Figure 1. Project Area

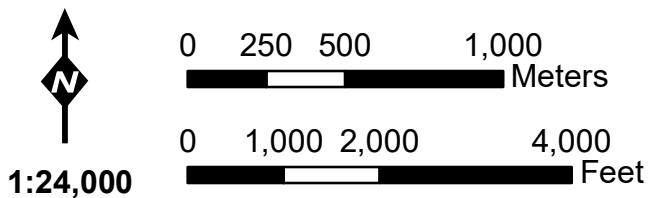






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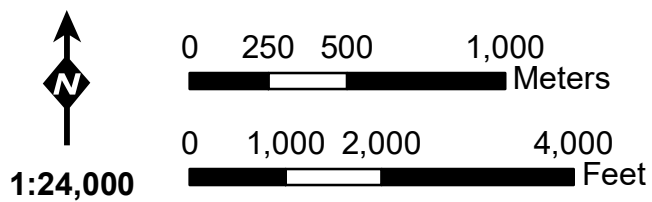
Figure 1. Project Area







Figure 1. Project Area







Corona South

Figure 1. Project Area

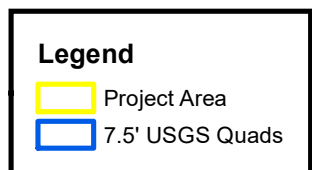
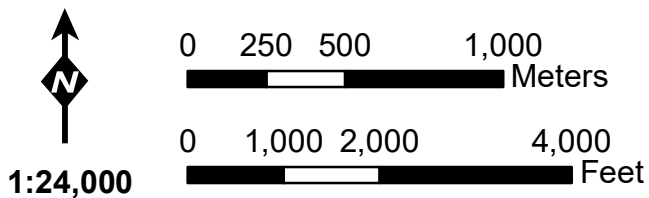






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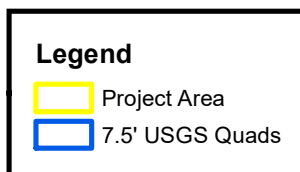






Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







April 6, 2020

Fred Nelson  
Chairperson  
La Jolla Band of Luiseno Indians  
22000 Highway 76, Pauma Valley, CA, 92061  
760-742-3771

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Nelson,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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  - Township 3 South Range 8 West Section 25,
  - Unsectioned portions of the La Sierra Yorba Land Grant.
- USGS 7.5' Black Star Canyon Quad map within:
  - Township 3 South Range 7 West Sections 32 and 33,
  - Township 3 South Range 8 West Section 36,
  - Township 4 South Range 7 West Section 5,
  - Unsectioned portions of the La Sierra Yorba Land Grant.
- USGS 7.5' Corona South Quad map within:
  - Township 3 South Range 7 West Section 33,
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  - Unsectioned portions of the La Sierra Yorba Land Grant,
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- USGS 7.5' Lake Matthews Quad map within:
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- USGS 7.5' Corona North Quad map within:
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  - Unsectioned portions of the Sobrante De San Jacinto Land Grant.

A record search of the Sacred Lands File with the California Native American Heritage Commission was positive. Red Tail also conducted a record search at the Eastern Information Center.



April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Sincerely,

A handwritten signature in black ink that reads "Shelby G. Castells". The signature is written in a cursive style with a large initial 'S'.

Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

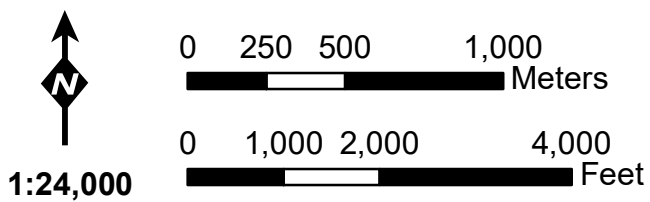
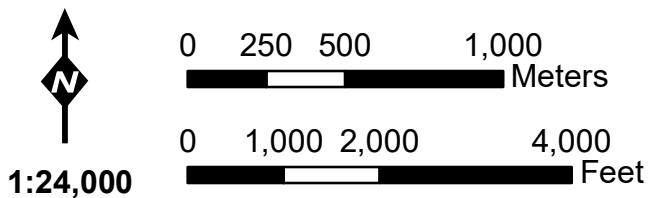






Figure 1. Project Area







Corona South

Figure 1. Project Area

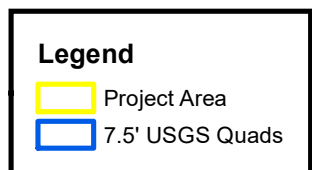
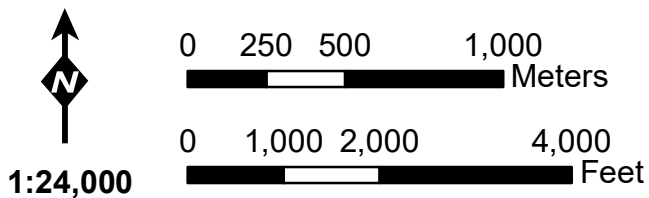






Figure 1. Project Area







Figure 1. Project Area







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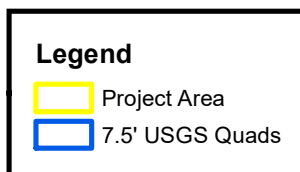






Figure 1. Project Area







April 6, 2020

Gwendolyn Parada  
Chairperson  
La Posta Band of Diegueno Mission Indians  
8 Crestwood Road, Boulevard, CA, 91905  
619-478-2113  
LP13boots@aol.com

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Ms. Parada,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Sincerely,

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area

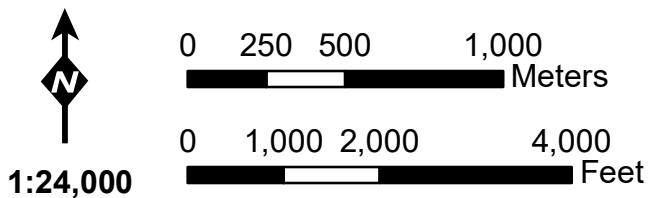






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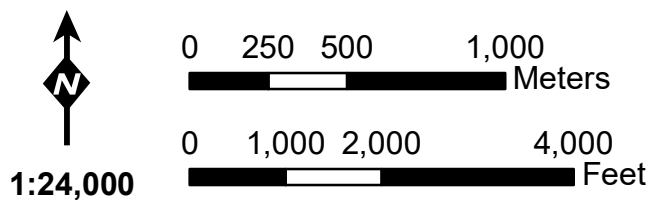
Figure 1. Project Area







Figure 1. Project Area







Corona South

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

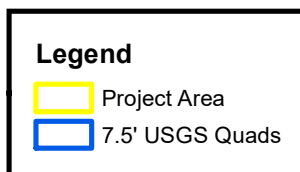






Figure 1. Project Area







April 6, 2020

John Christman  
Chairperson  
Viejas Band of Kumeyaay Indians  
1 Viejas Grade Road, Alpine, CA, 91901  
619-445-3810

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Christman,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

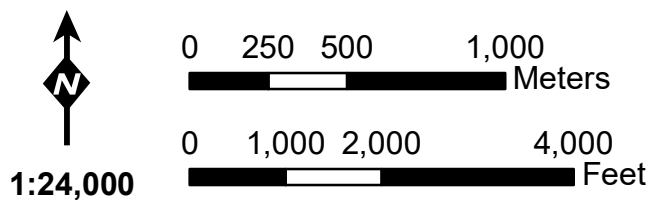






Figure 1. Project Area

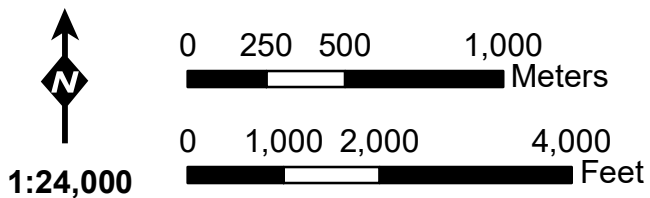
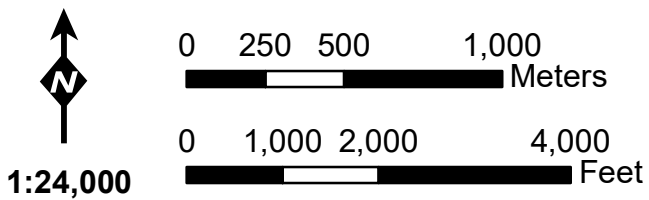






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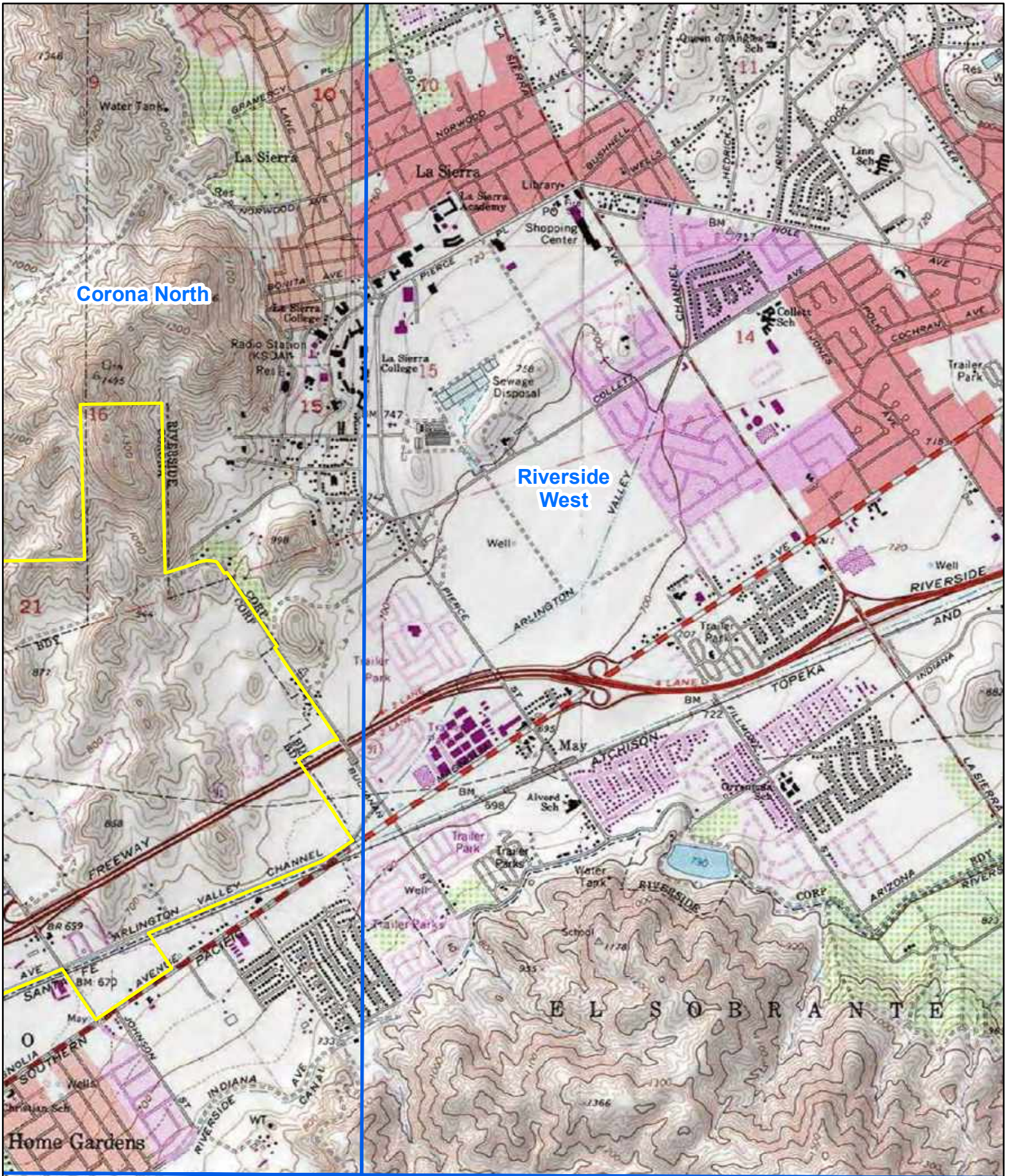


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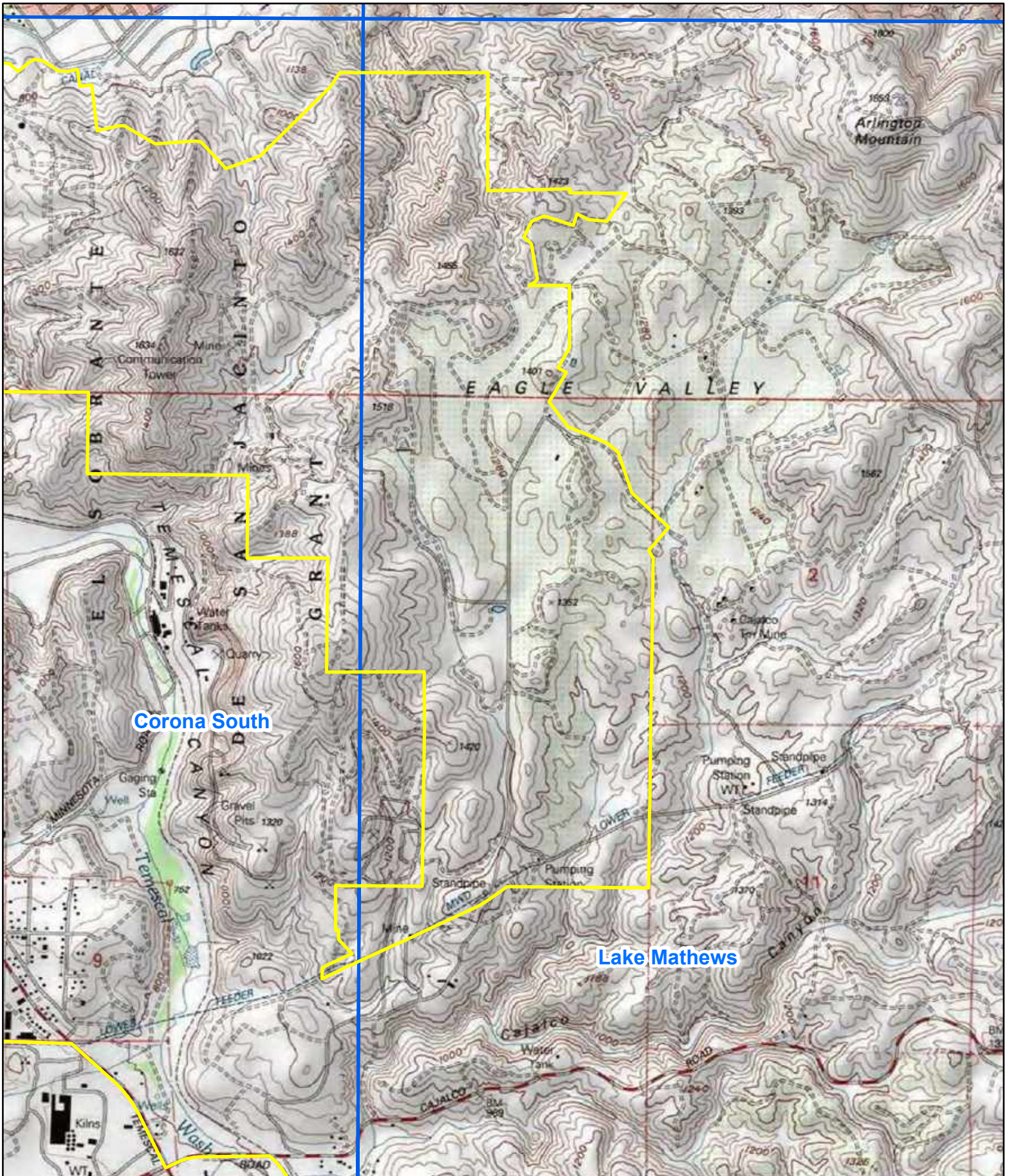


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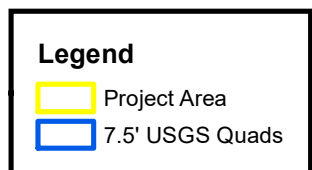
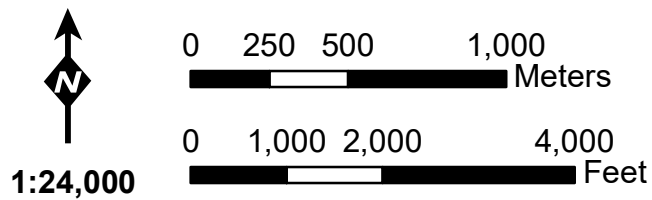






Figure 1. Project Area







April 6, 2020

Jeff Grubbe  
Chairperson  
Agua Caliente Band of Cahuilla Indians  
5401 Dinah Shore Drive, Palm Springs, CA, 92264  
760-699-6800

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Grubbe,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Sincerely,

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

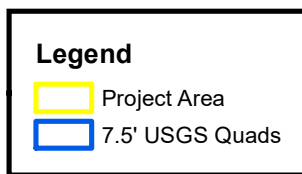
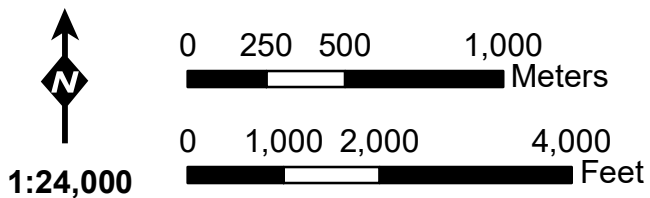






Figure 1. Project Area







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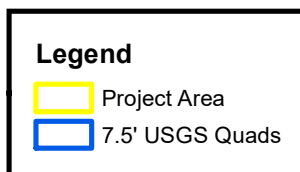






Figure 1. Project Area







April 6, 2020

Joseph Hamilton  
Chairperson  
Ramona Band of Cahuilla  
PO Box 391670, Anza, CA, 92539  
951-763-4105  
admin@ramona-nsn.gov

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Hamilton,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Shelby Castells, M.A., RPA  
Director of Archaeology  
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Prado Dam

Figure 1. Project Area







Figure 1. Project Area

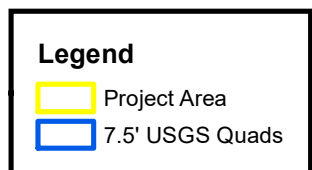
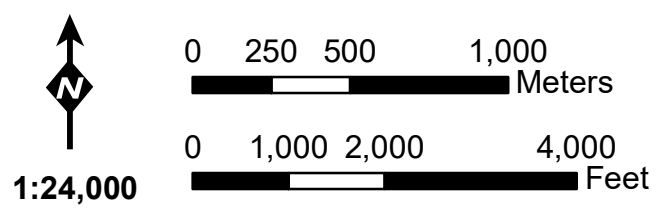






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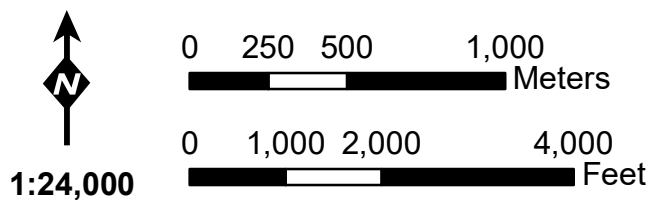






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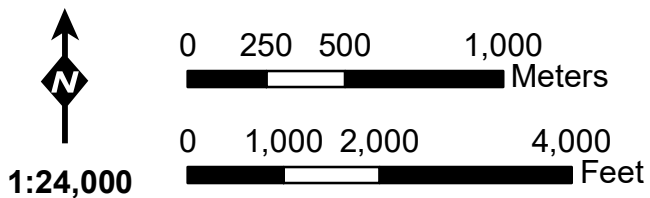






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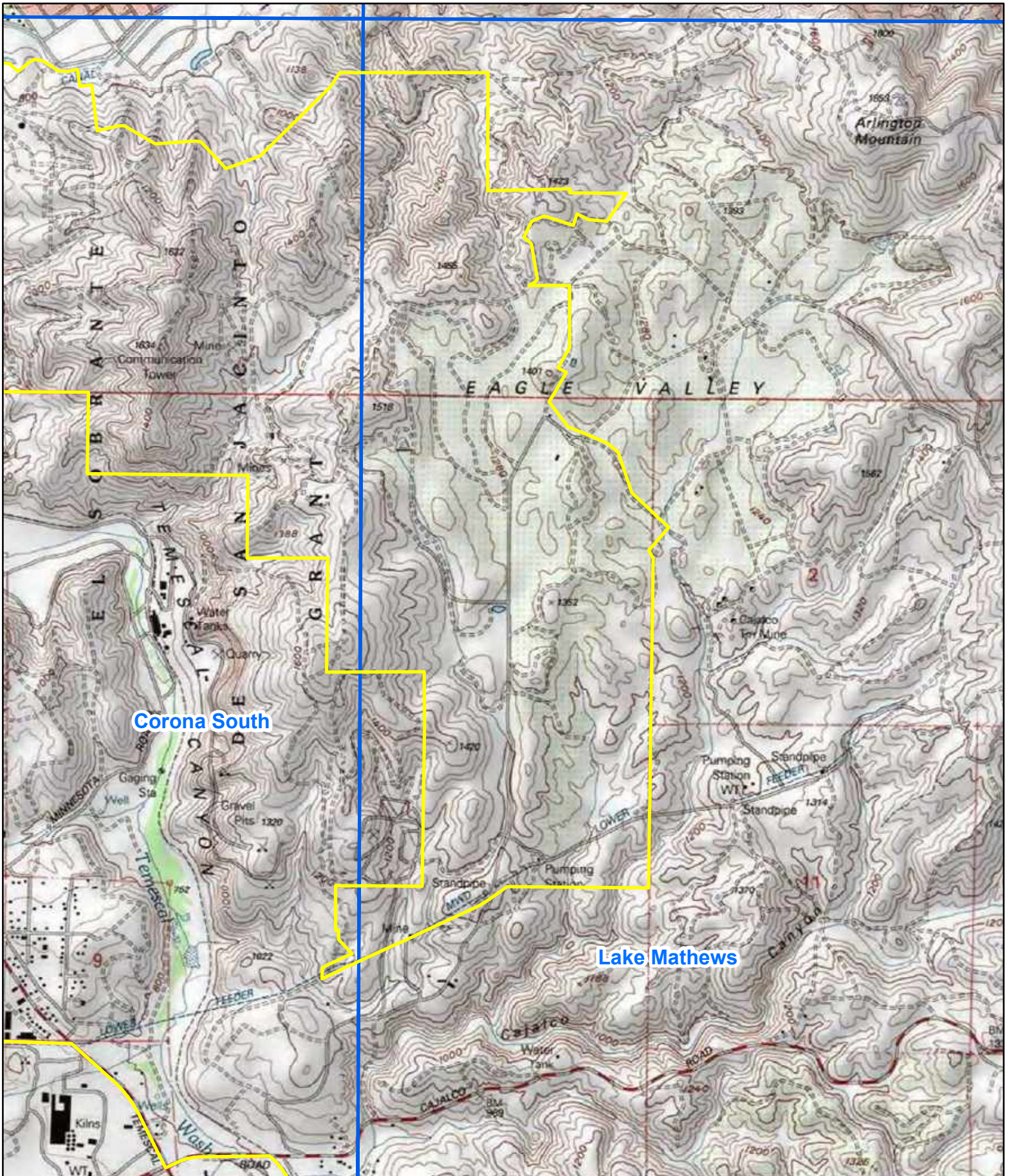


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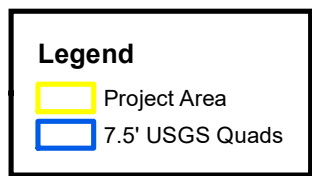
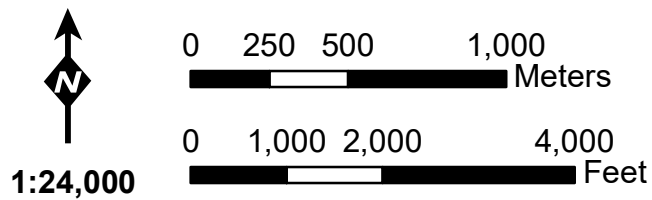






Figure 1. Project Area







April 6, 2020

Jill McCormick  
Historic Preservation Officer  
Quechan Tribe of the Fort Yuma Reservation  
PO Box 1899, Yuma, AZ, 85366  
760-572-2423  
historicpreservation@quechantribe.com

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Ms. McCormick,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
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Prado Dam

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Figure 1. Project Area

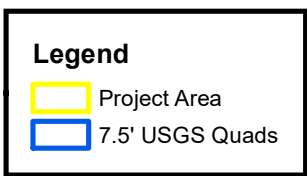
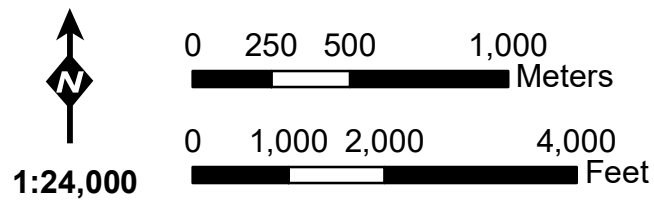






Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

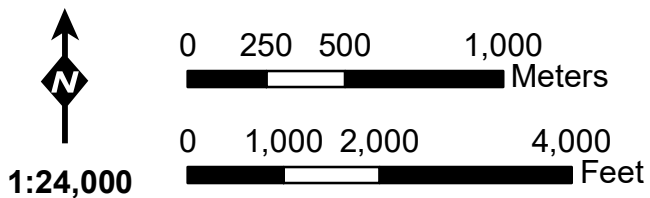






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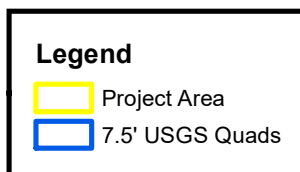
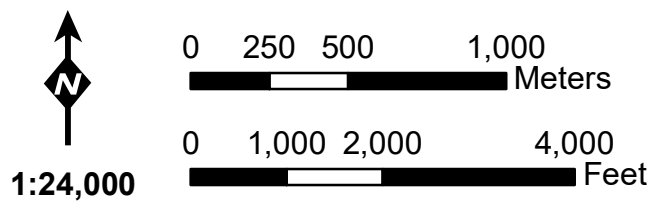






Figure 1. Project Area





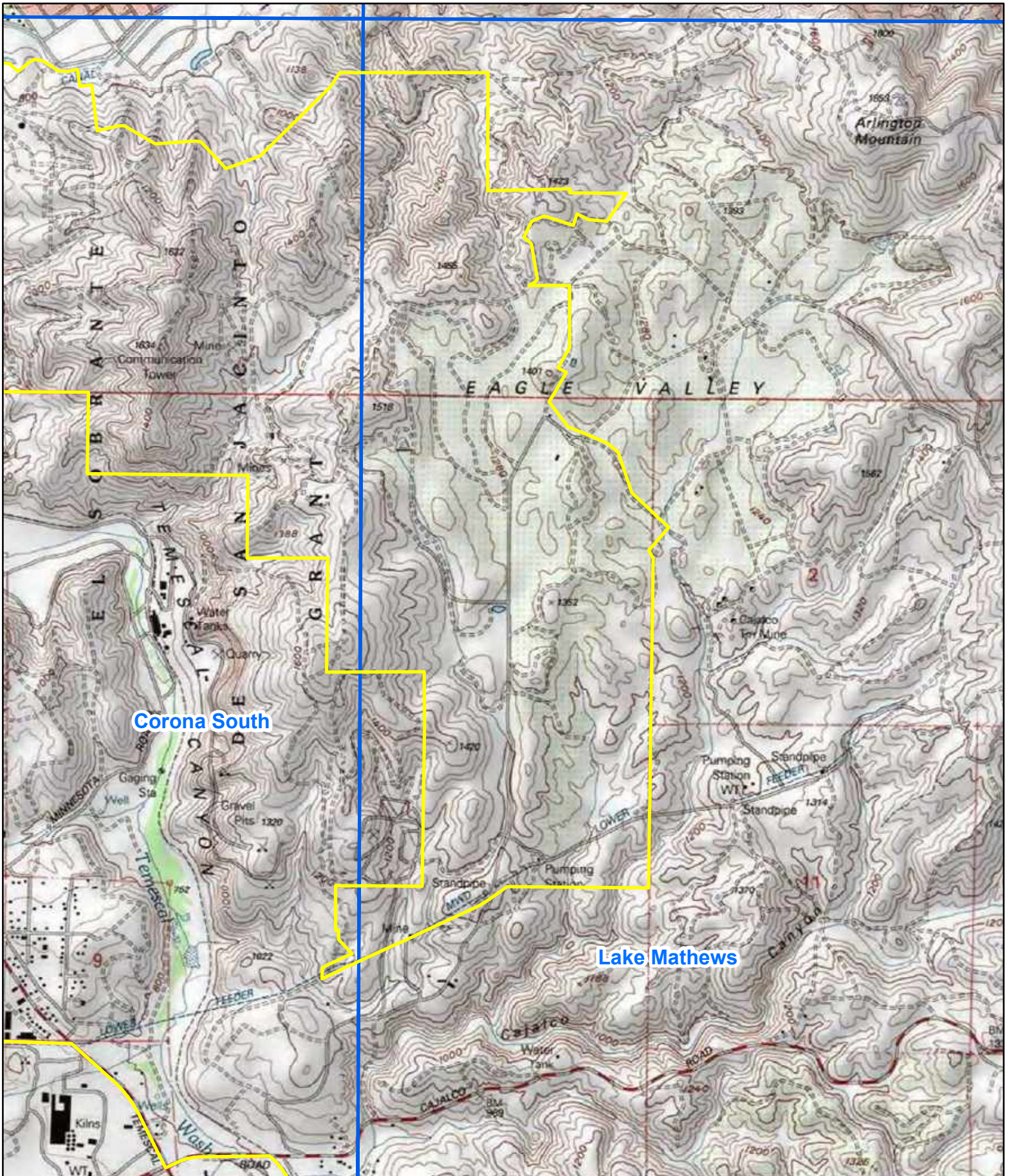


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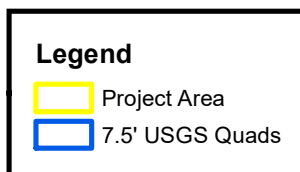






Figure 1. Project Area







April 6, 2020

Javaughn Miller  
Tribal Administrator  
La Posta Band of Diegueno Mission Indians  
8 Crestwood Road, Boulevard, CA, 91905  
619-478-2113  
jmiller@Lptribe.net

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Miller,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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A record search of the Sacred Lands File with the California Native American Heritage Commission was positive. Red Tail also conducted a record search at the Eastern Information Center.



April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Sincerely,

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







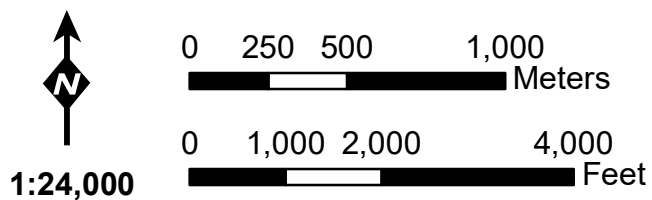
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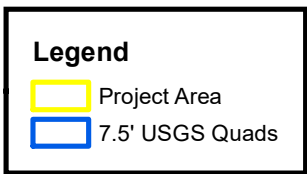
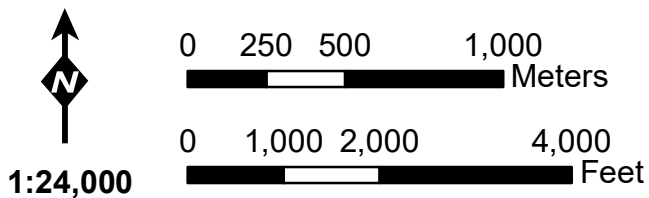






Corona South

Figure 1. Project Area





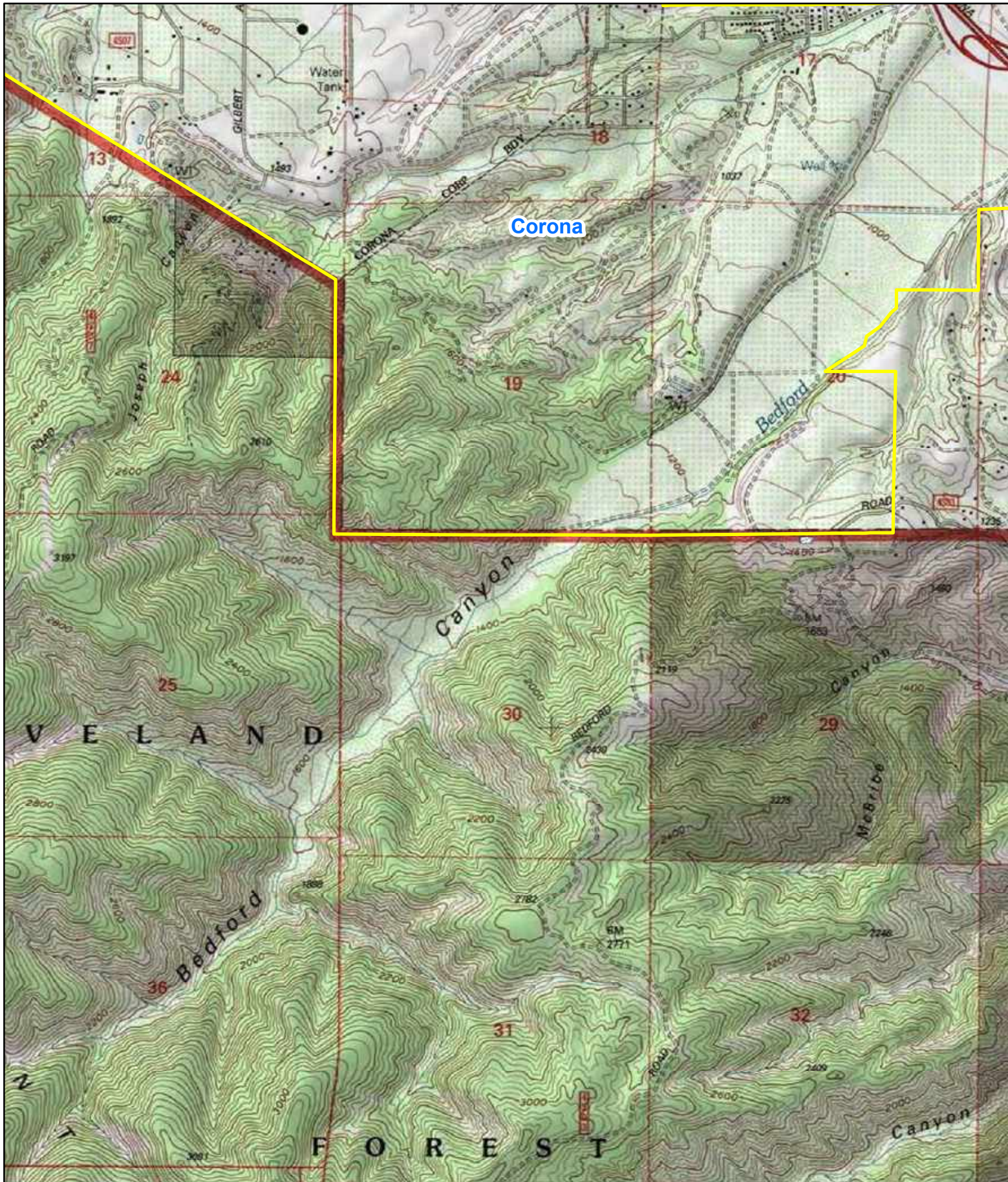
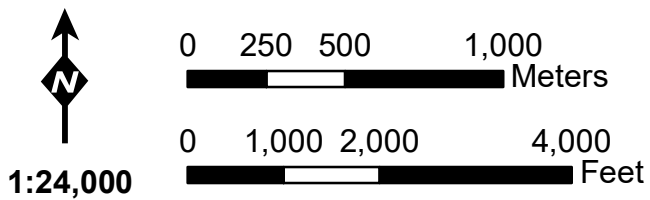


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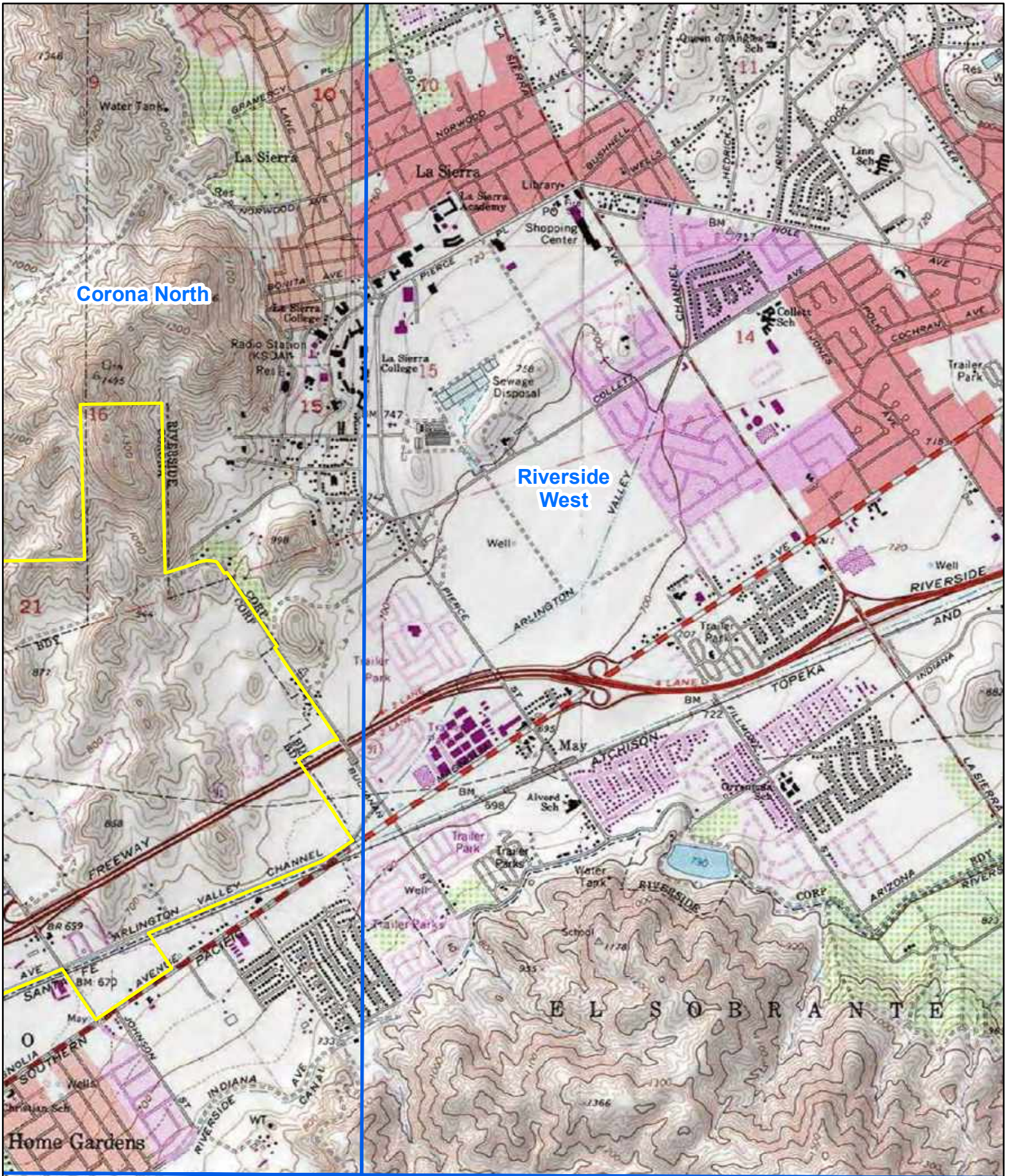


Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







April 6, 2020

Lisa Cumper  
Preservation Officer  
Jamul Indian Village  
PO Box 612, Jamul, CA, 91935  
619-669-4855  
lcumper@jiv-nsn.gov

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Ms. Cumper,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area





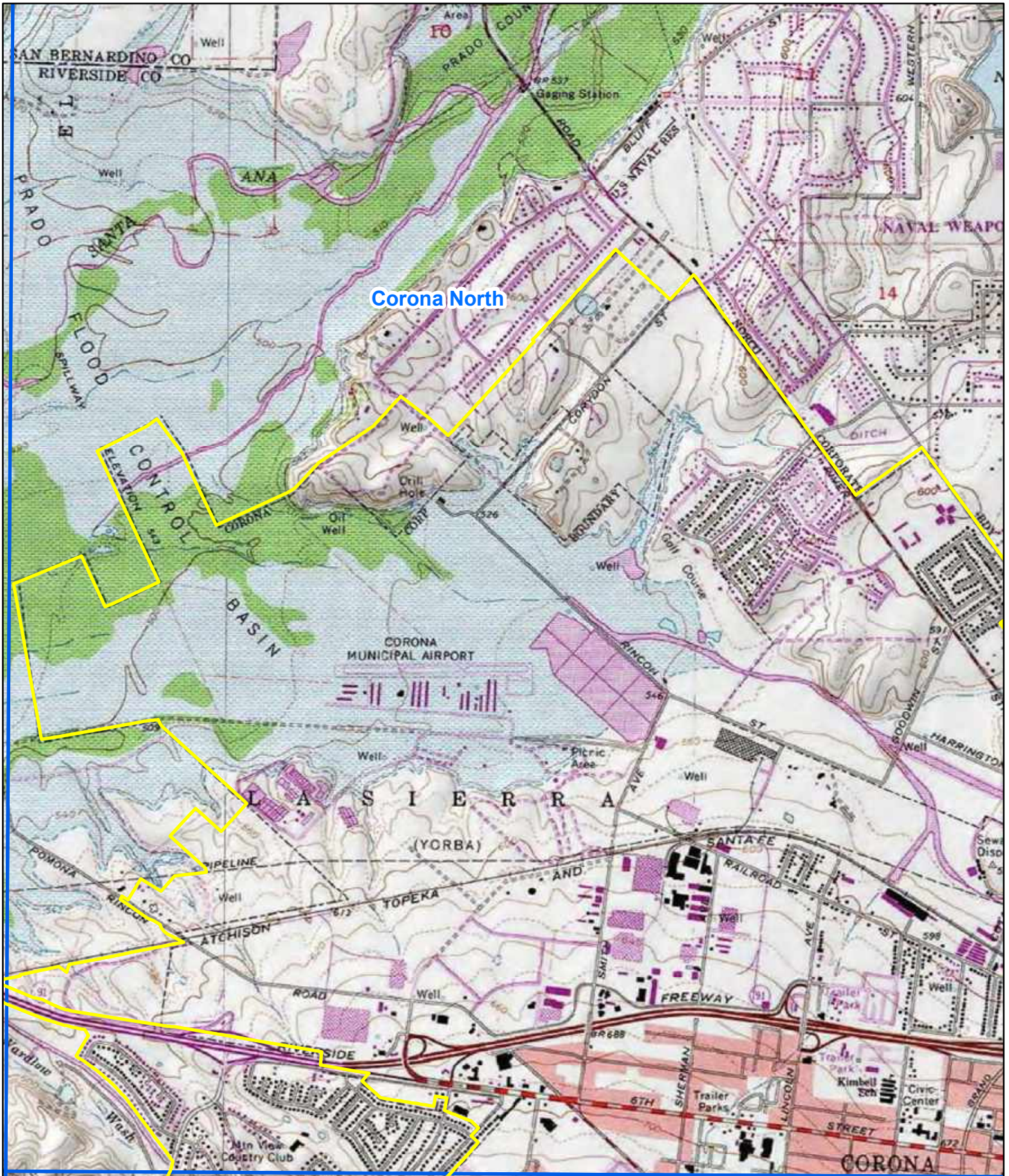


Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

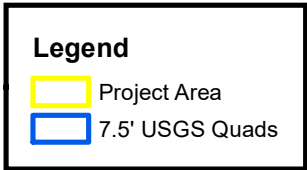






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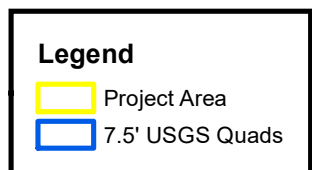
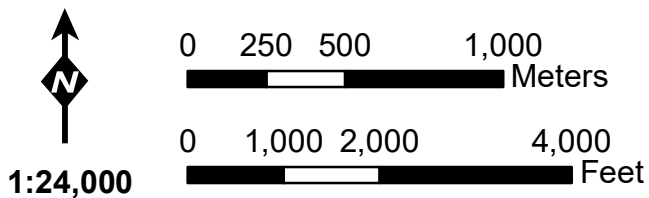






Corona South

Figure 1. Project Area





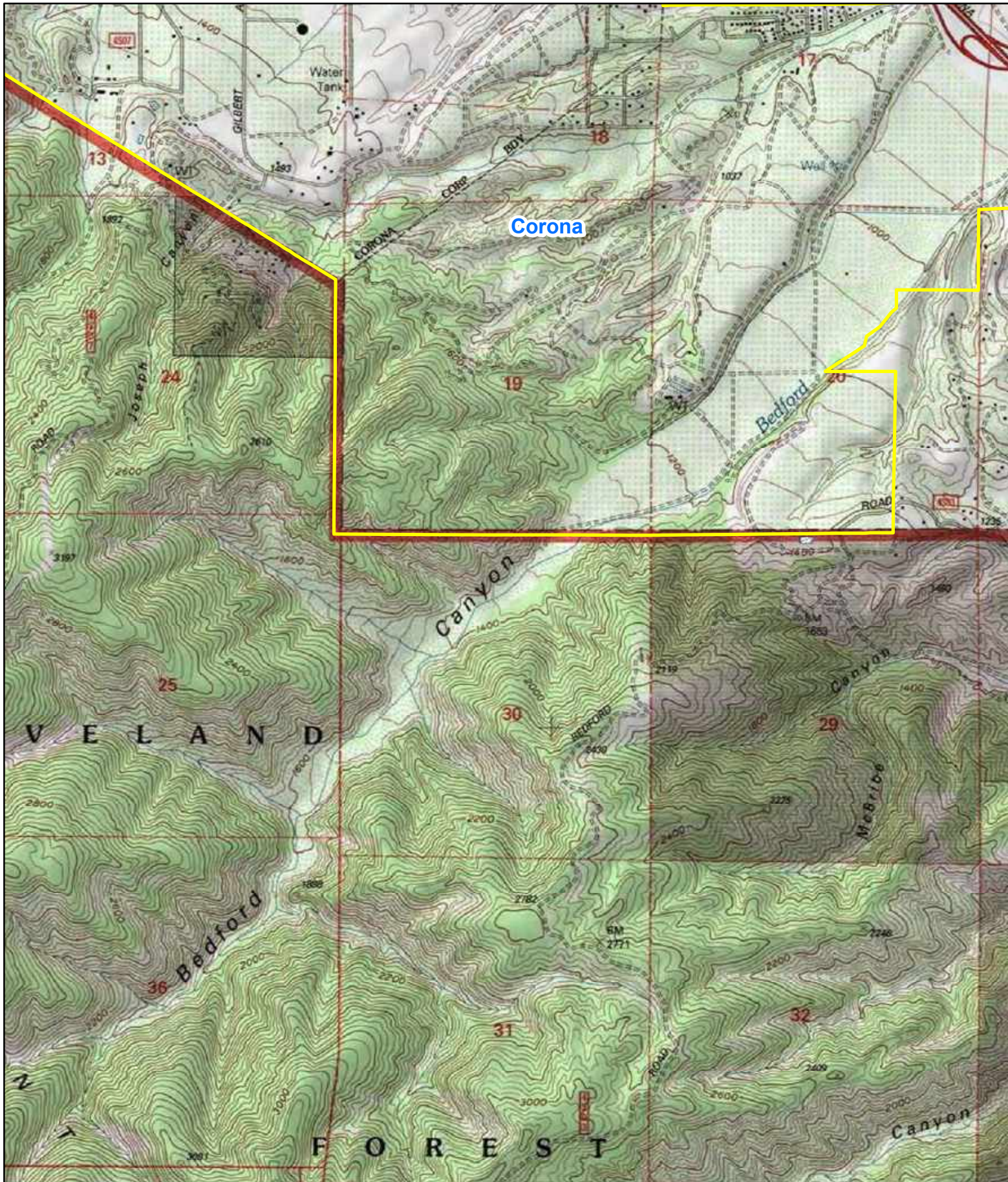


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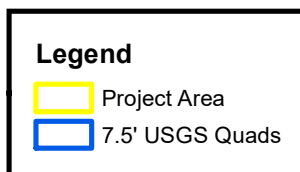






Figure 1. Project Area







April 6, 2020

Matias Belardes  
Chairperson

Juaneno Band of Mission Indians Acjachemen Nation - Belardes  
32161 Avenida Los Amigos, San Juan Capistrano, CA, 92675  
949-293-8522  
kaamalam@gmail.com

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Belardes,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Sincerely,

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

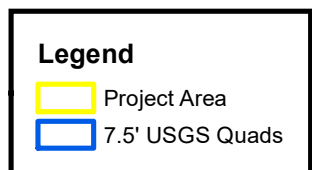
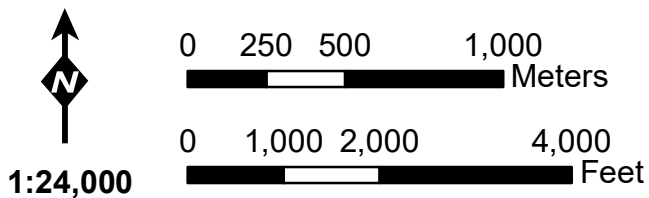






Corona South

Figure 1. Project Area





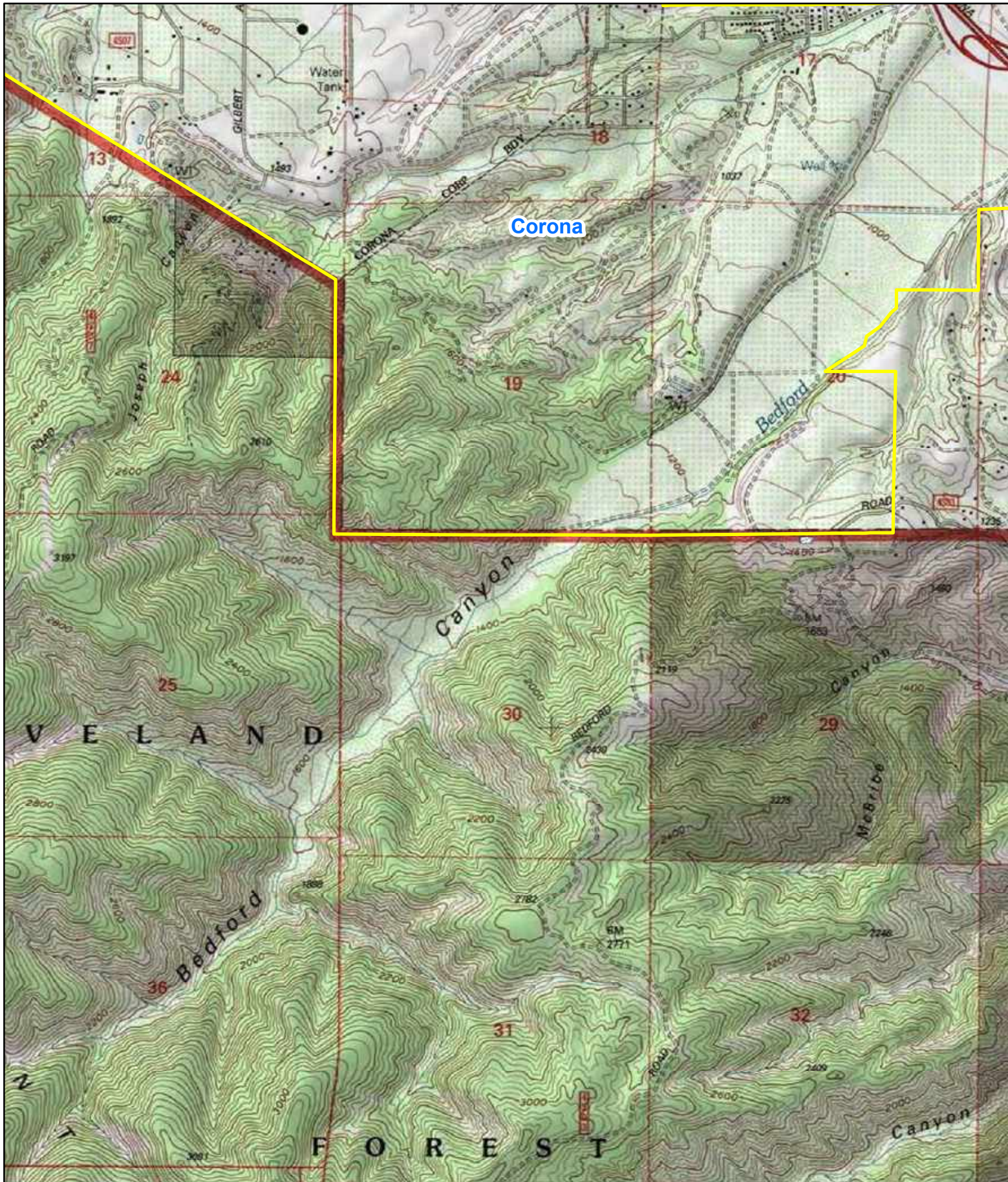


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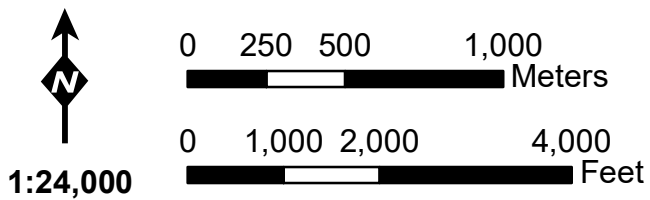






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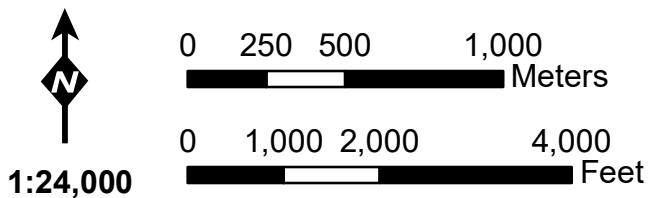






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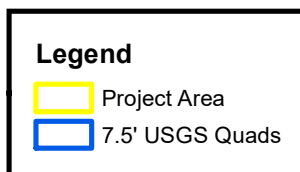






Figure 1. Project Area







April 6, 2020

Michael Garcia  
Vice Chairperson  
Ewiiapaayp Tribe  
4054 Willows Road, Alpine, CA, 91901  
619-445-6315  
michaelg@leaningrock.net

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Garcia,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area





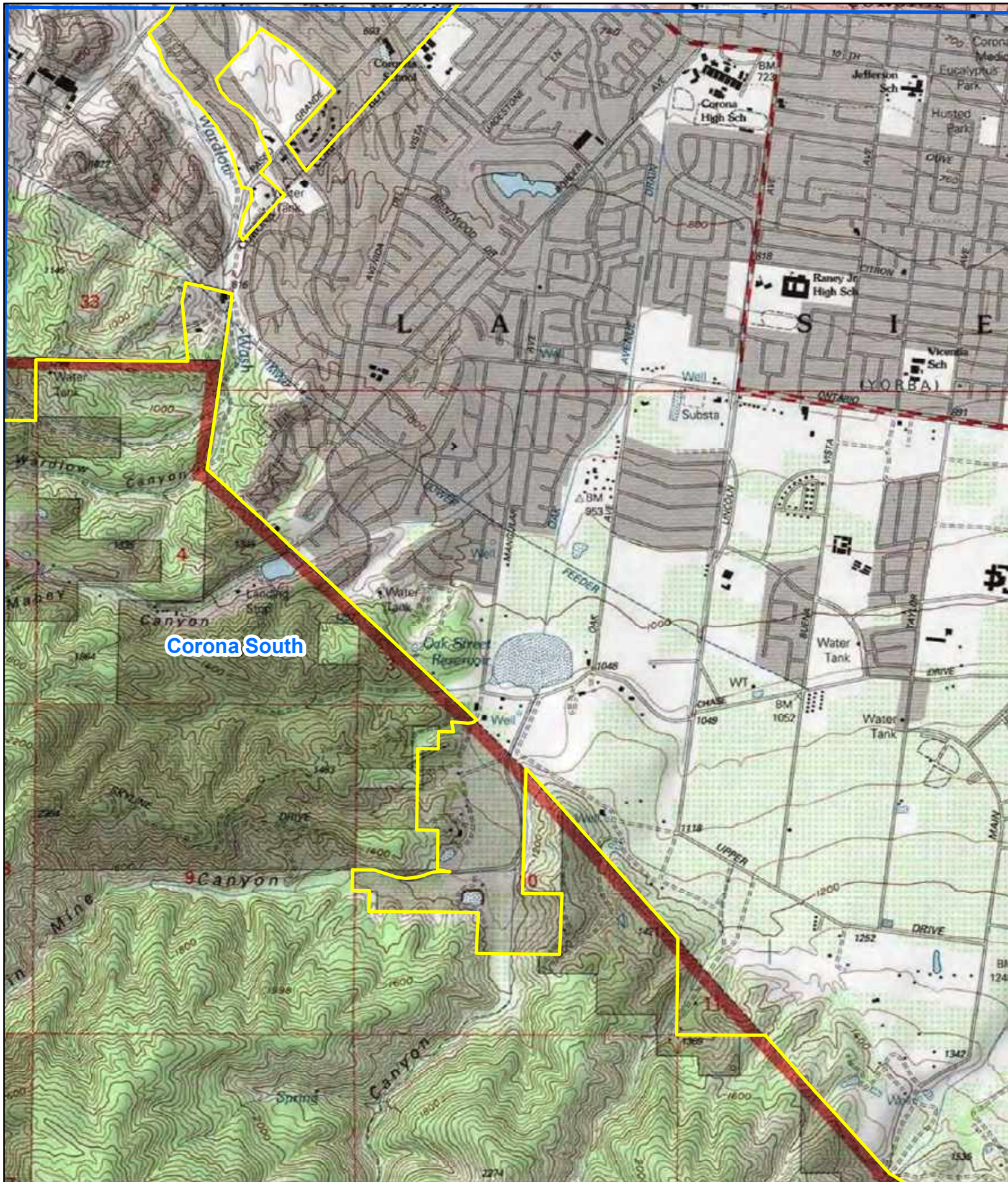


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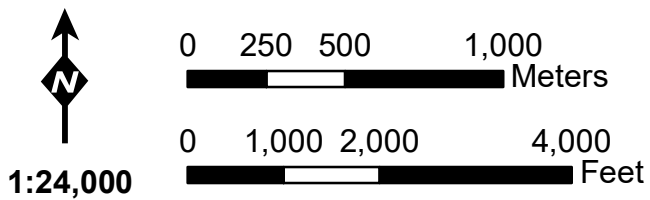
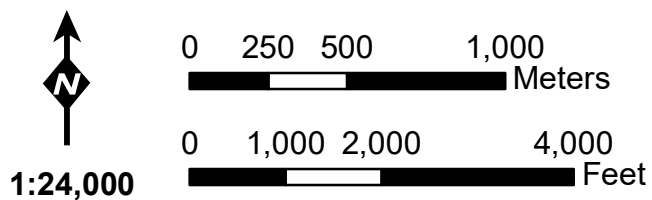






Figure 1. Project Area







Corona South

Figure 1. Project Area





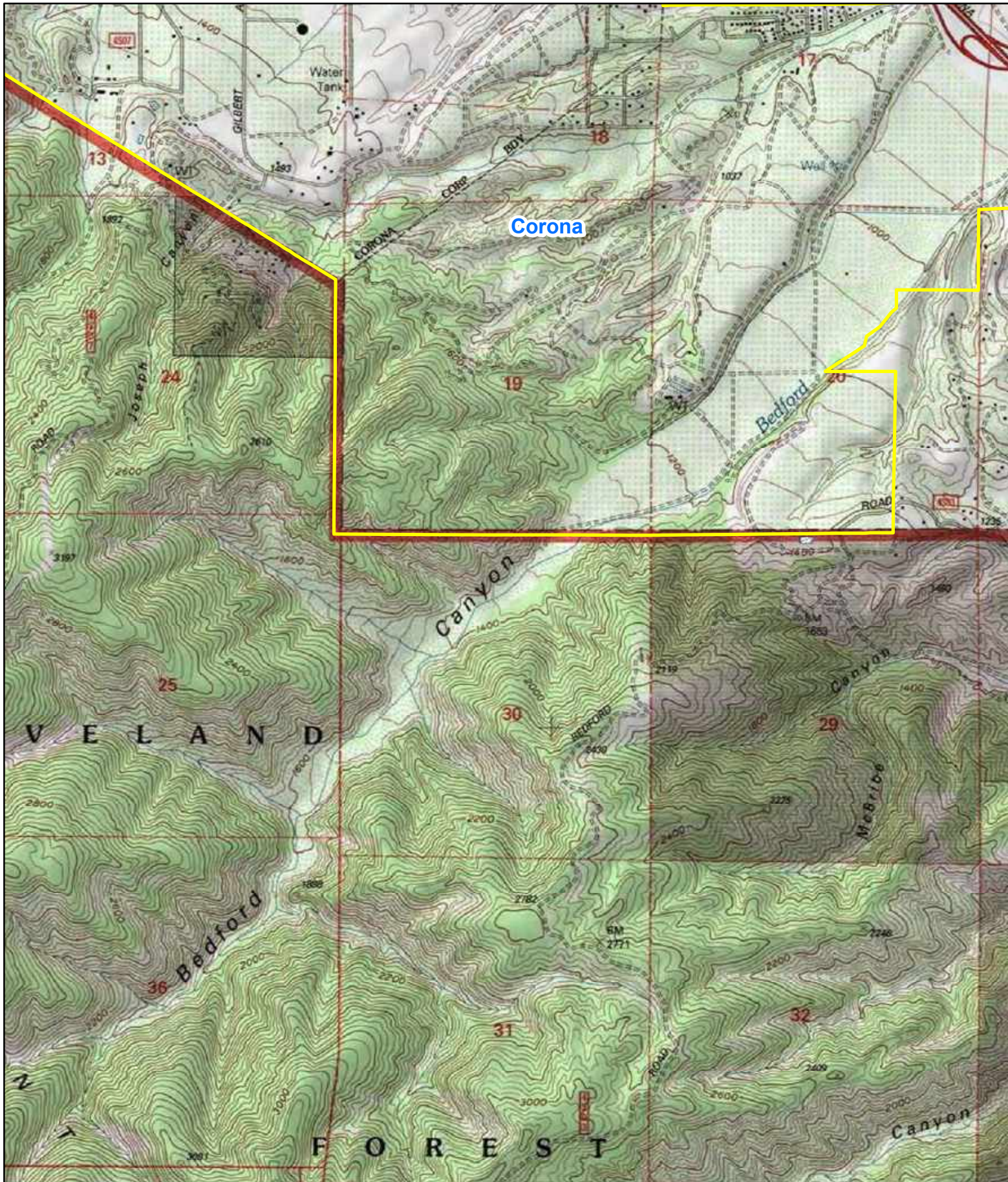
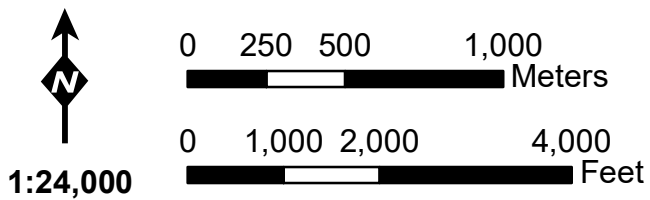


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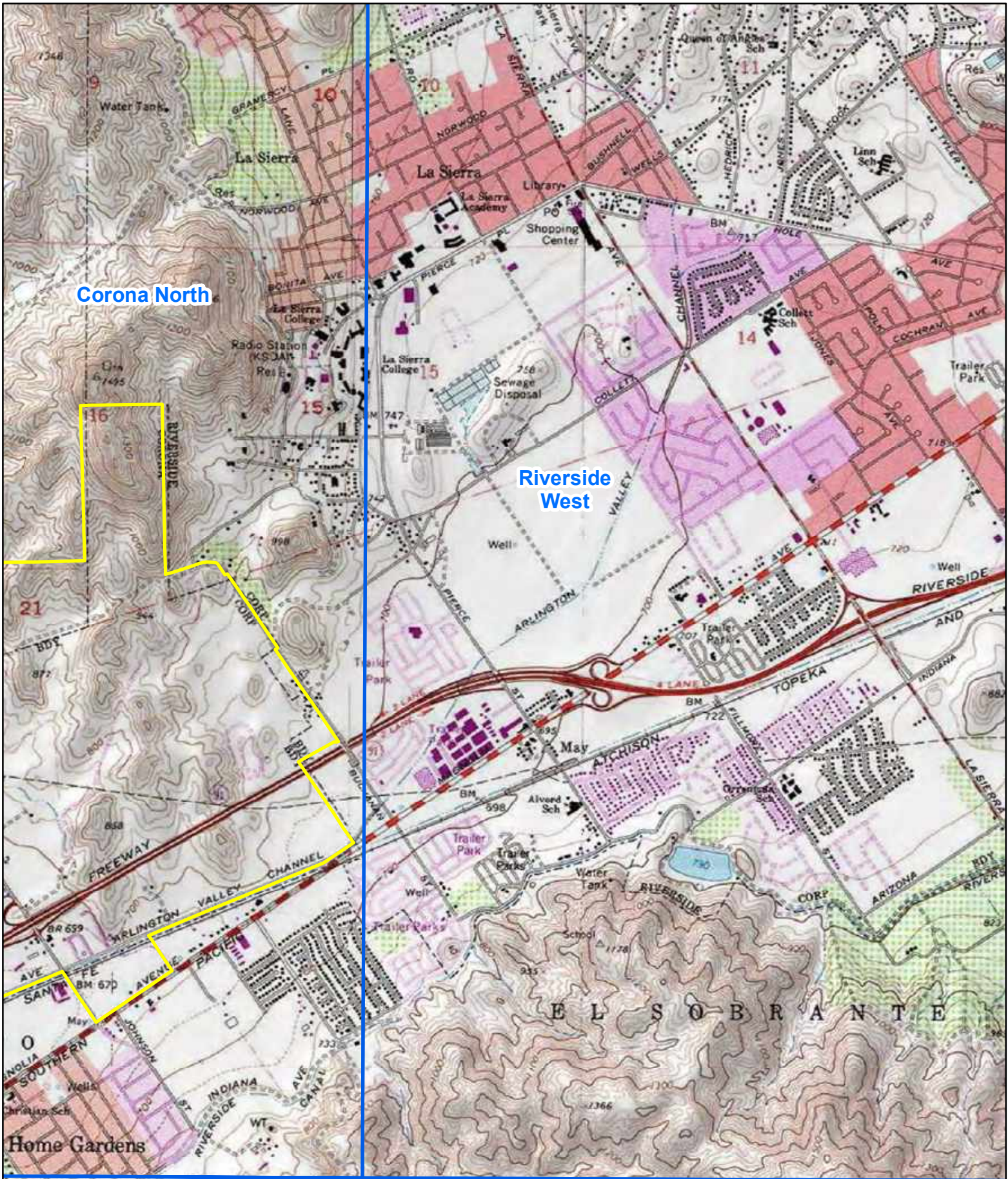
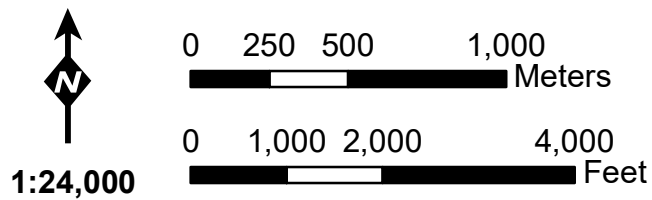


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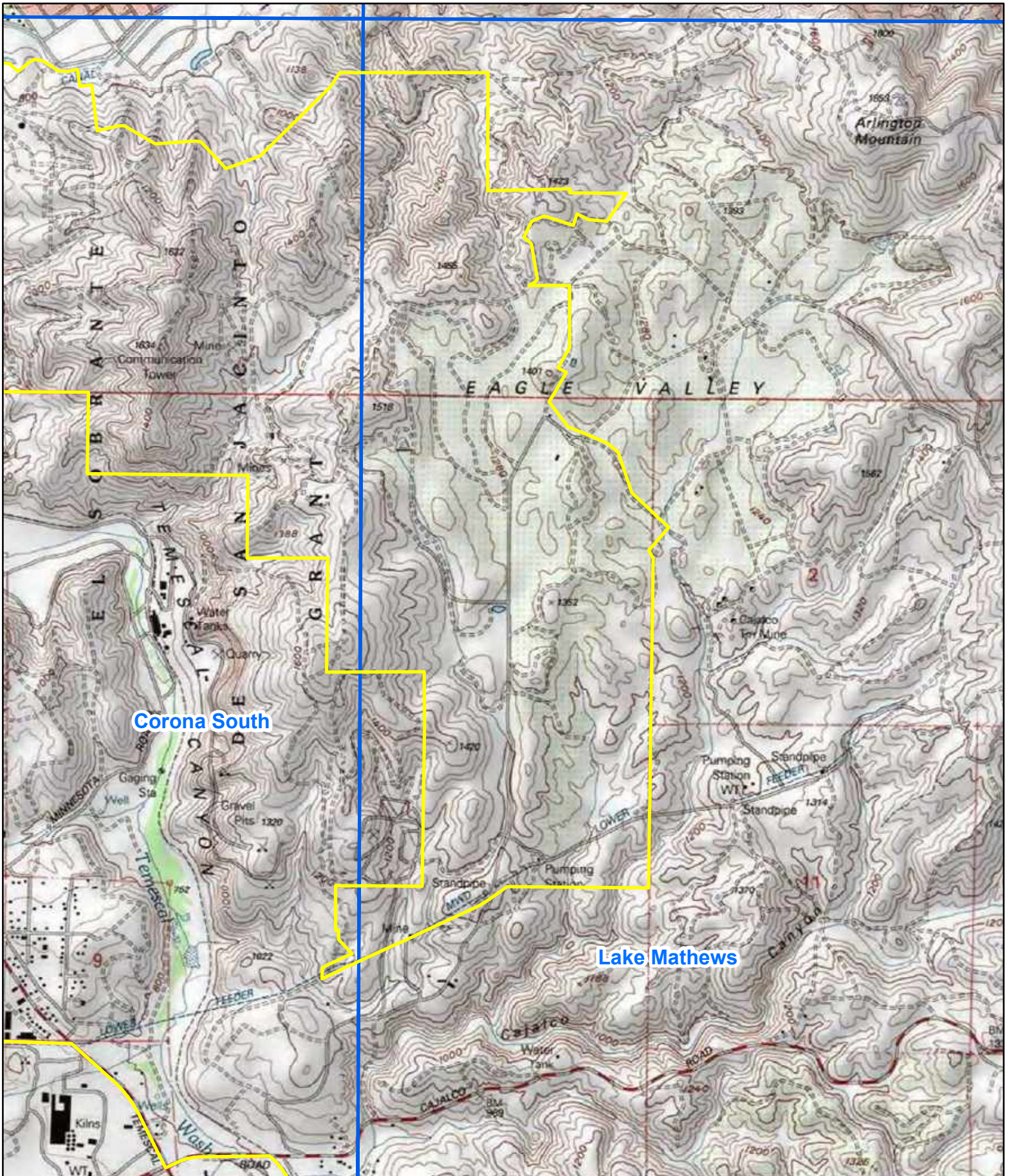
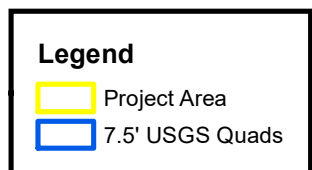


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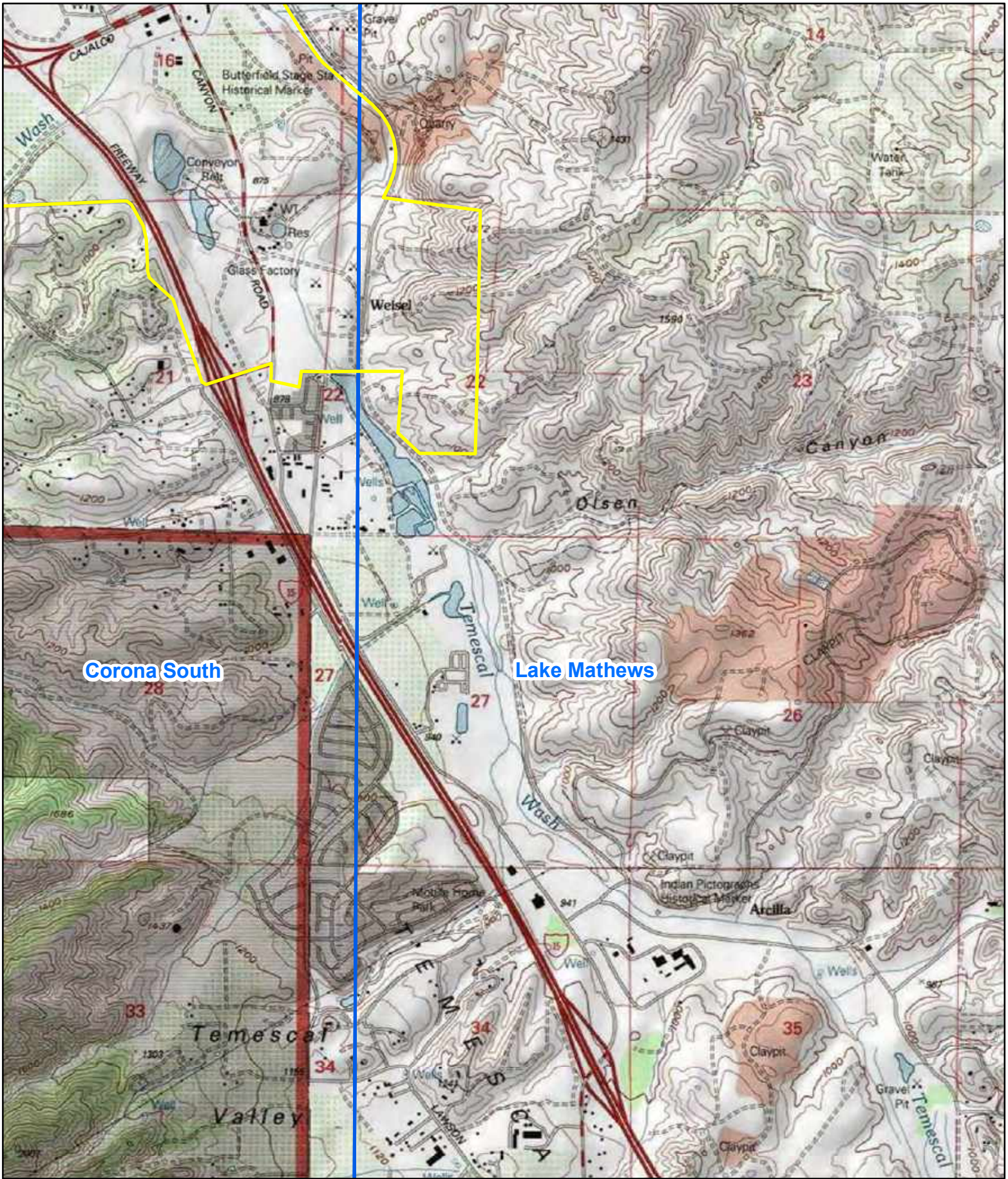


Figure 1. Project Area







April 6, 2020

Michael Linton  
Chairperson  
Mesa Grande Band of Diegueno Mission Indians  
PO Box 270, Santa Ysabel, CA, 92070  
760-782-3818  
mesagrandeband@msn.com

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Linton,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area





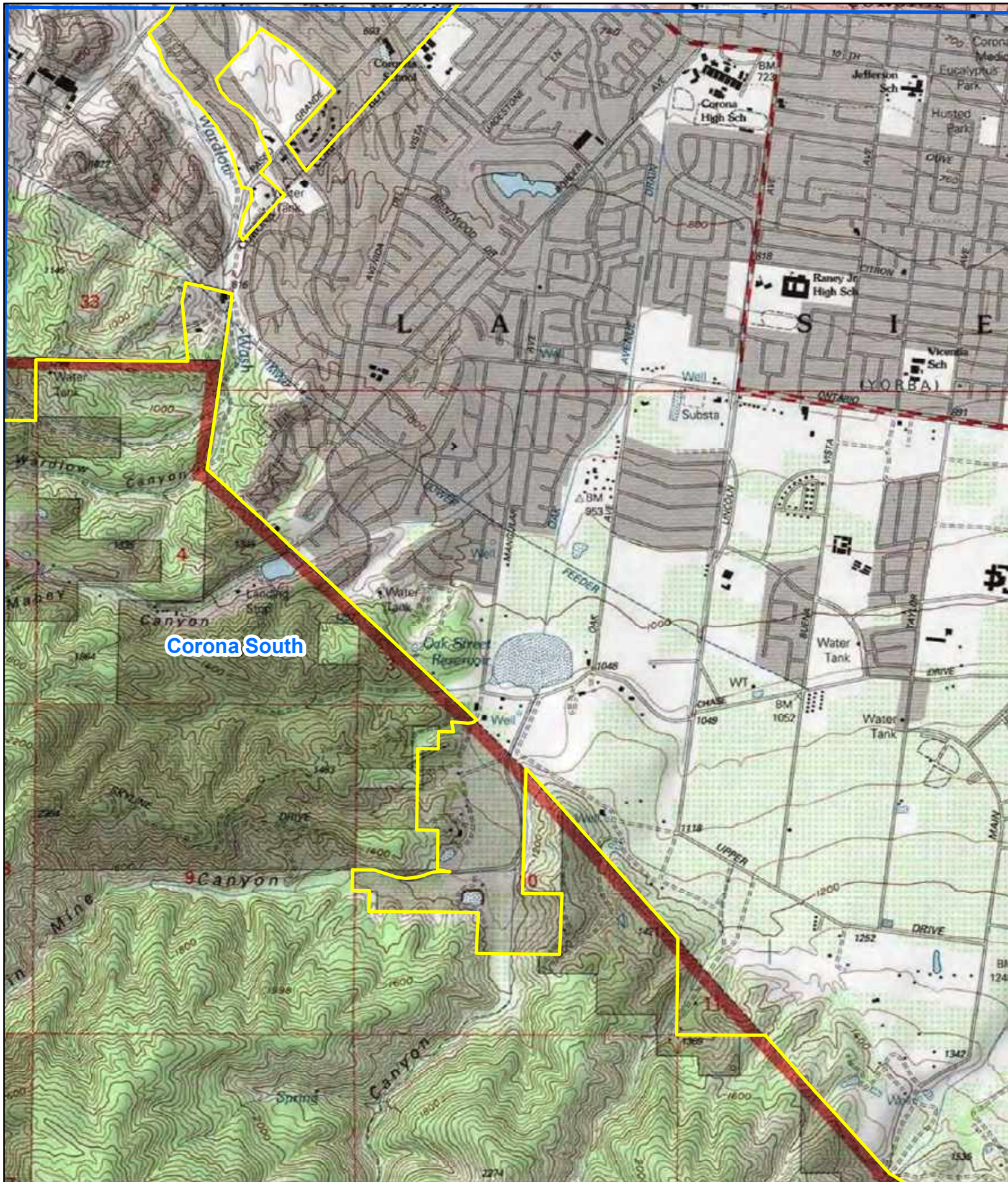


Figure 1. Project Area



**Legend**

- Project Area
- 7.5' USGS Quads







Figure 1. Project Area

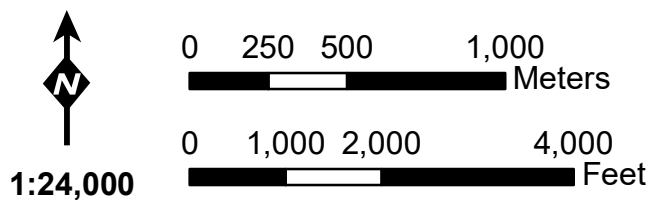






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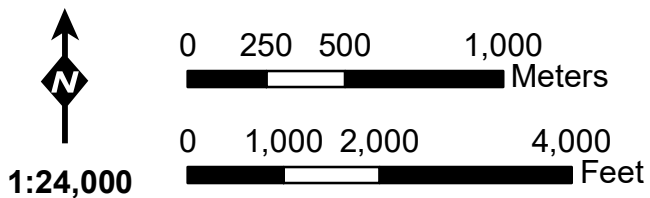






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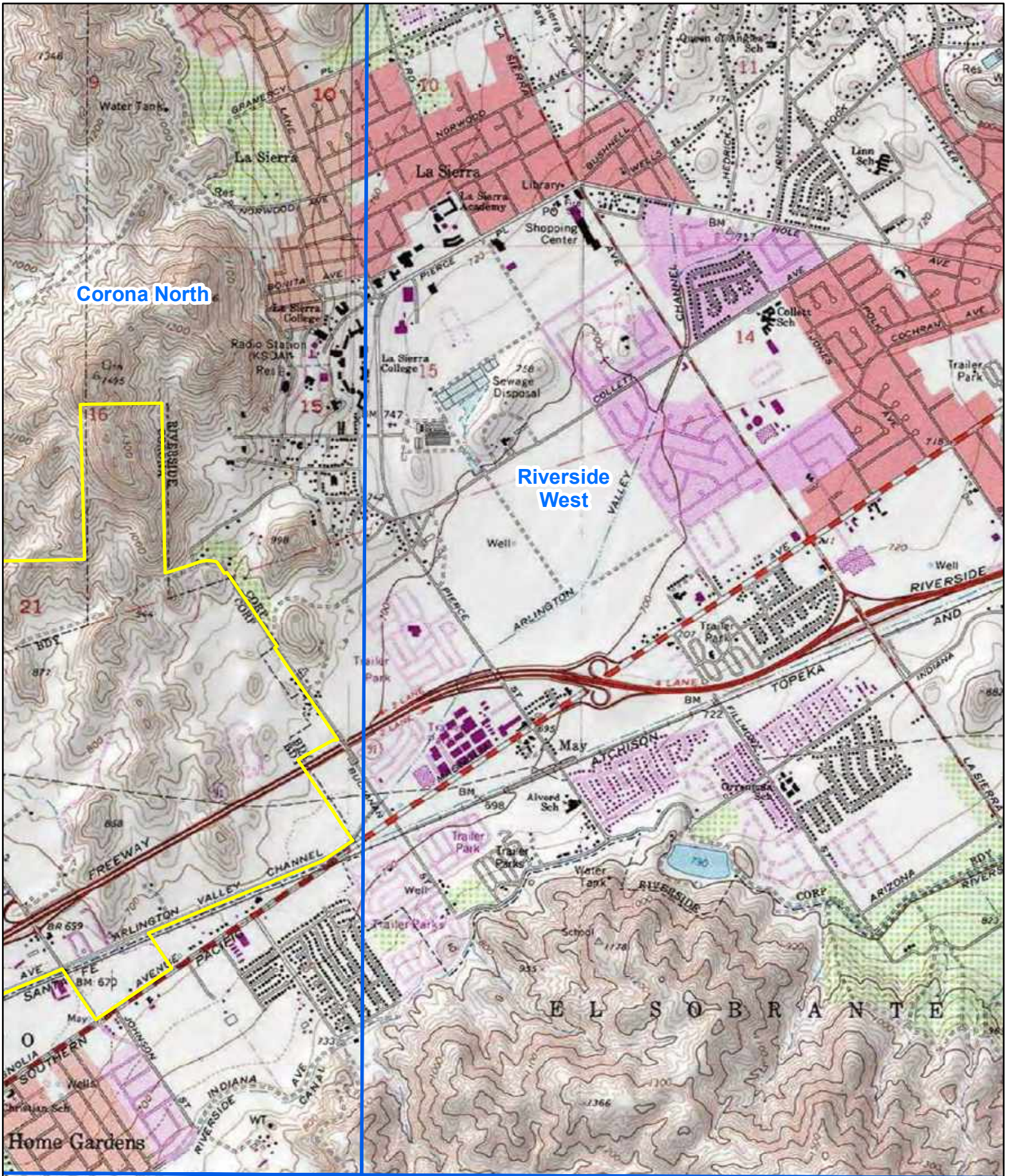


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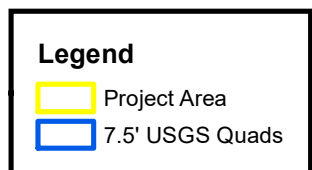
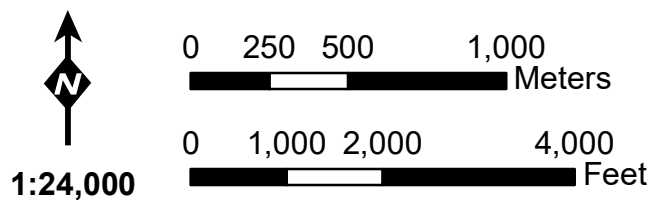






Figure 1. Project Area







April 6, 2020

Mark Macarro  
Chairperson  
Pechanga Band of Luiseno Indians  
PO Box 1477, Temecula, CA, 92593  
951-770-6000  
epreston@pechanga-nsn.gov

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Macarro,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Sincerely,

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area

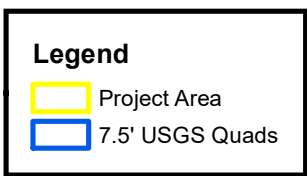
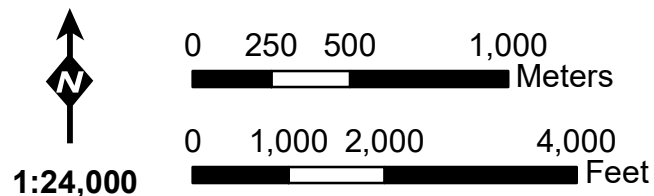






Figure 1. Project Area







Figure 1. Project Area

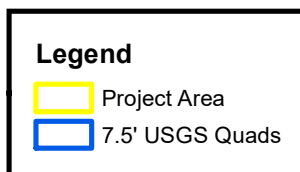
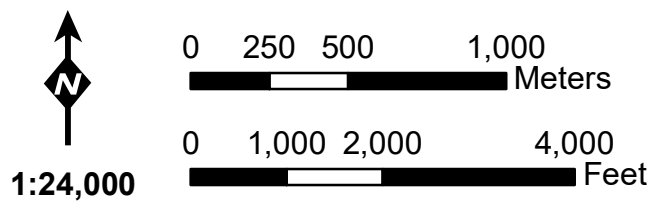
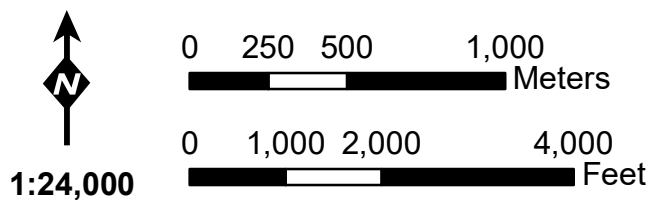






Figure 1. Project Area







Corona South

Figure 1. Project Area



**Legend**

- Project Area
- 7.5' USGS Quads







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







April 6, 2020

Robert Dorame  
Chairperson  
Gabrielino Tonvoa Indians of California Tribal Council  
PO Box 490, Bellflower, CA, 90707  
562-761-6417  
gtongva@gmail.com

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Dorame,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





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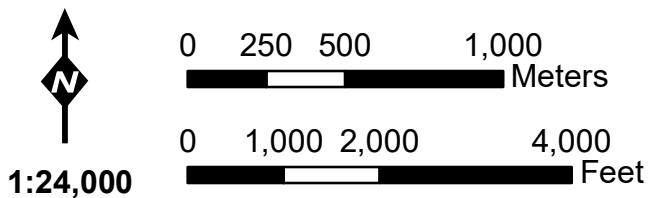






Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







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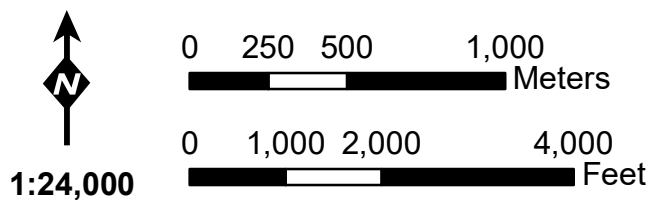






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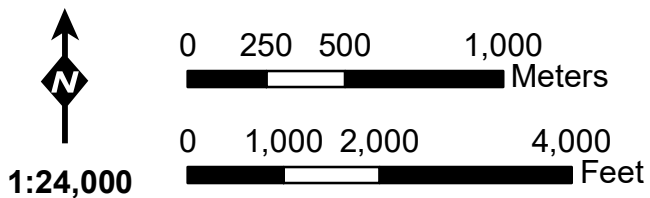






Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

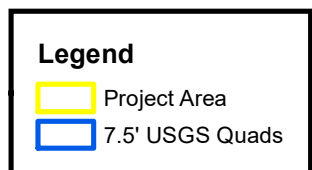






Figure 1. Project Area







April 6, 2020

Ralph Goff  
Chairperson  
Campo Band of Diegueno Mission Indians  
36190 Church Road, Suite 1, Campo, CA, 91906  
619-478-9046  
rgoff@campo-nsn.gov

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Goff,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Shelby Castells, M.A., RPA  
Director of Archaeology  
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Prado Dam

Figure 1. Project Area



**Legend**

- Project Area
- 7.5' USGS Quads







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Corona South

Figure 1. Project Area

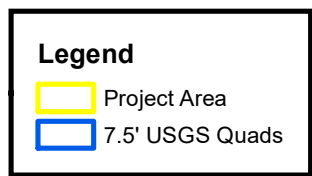
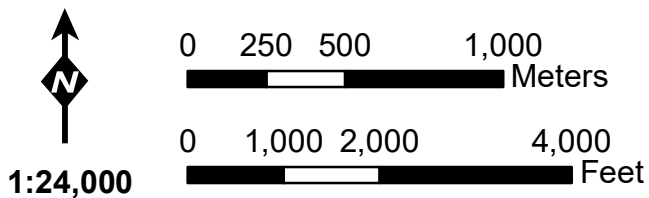






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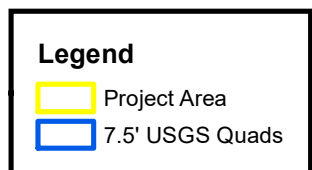
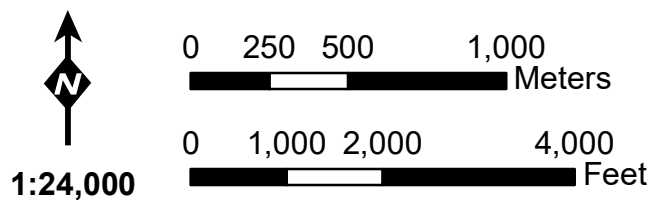






Figure 1. Project Area







April 6, 2020

Robert Martin  
Chairperson  
Morongo Band of Mission Indians  
12700 Pumarra Road, Banning, CA, 92220  
951-849-8807  
dtorres@morongo-nsn.gov

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Martin,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Prado Dam

Figure 1. Project Area







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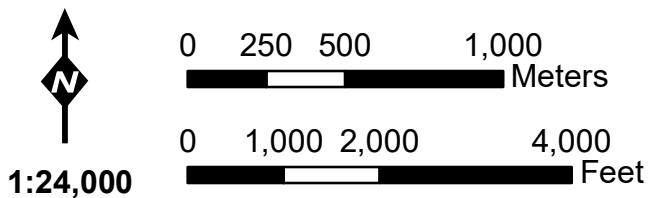






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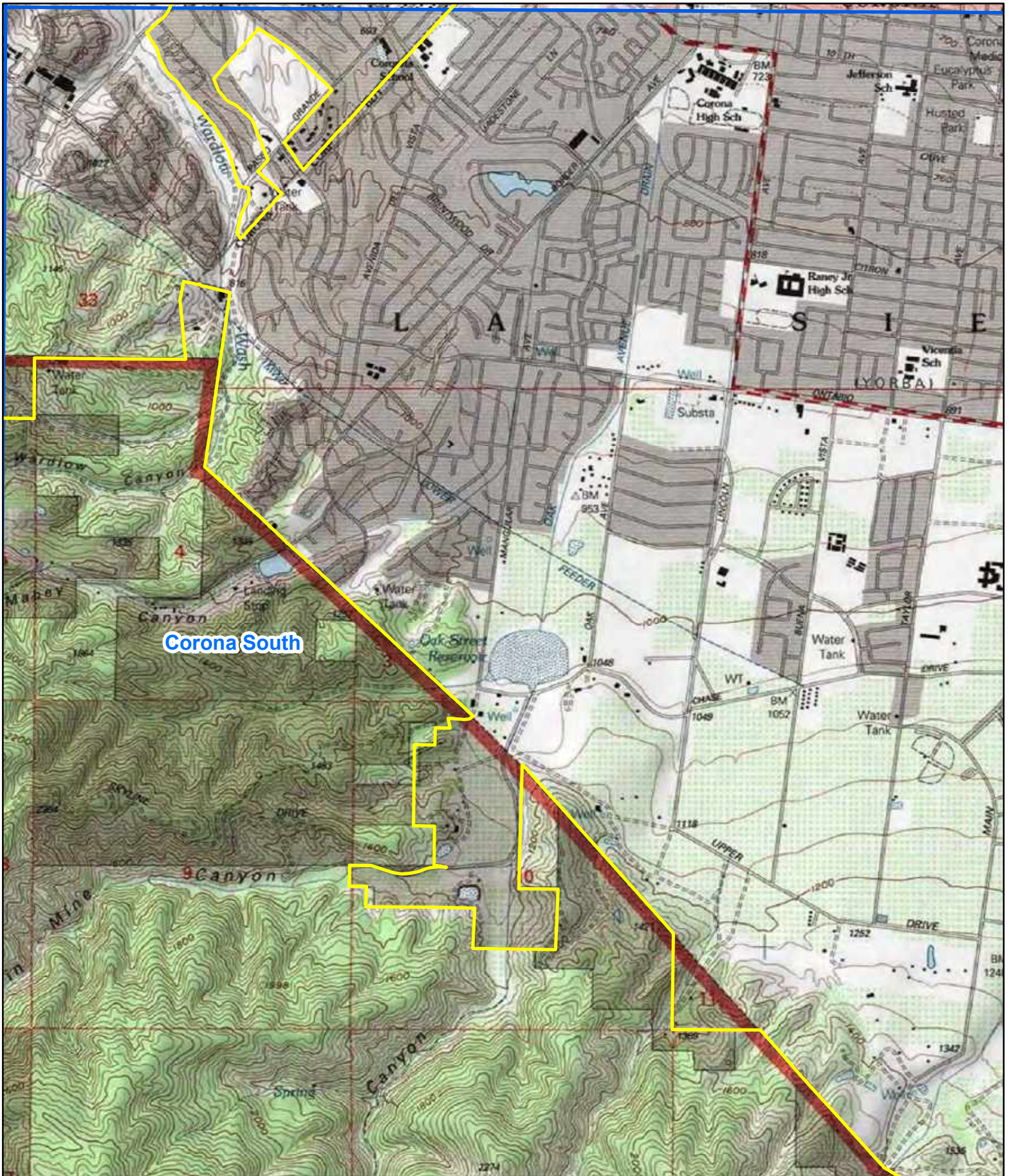


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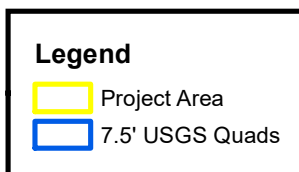
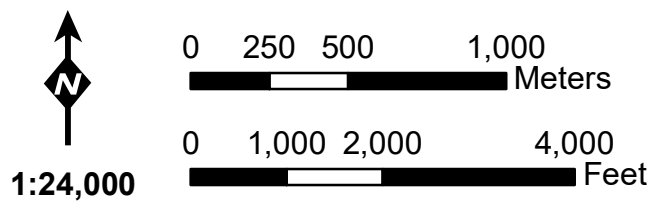






Figure 1. Project Area







Corona South

Figure 1. Project Area

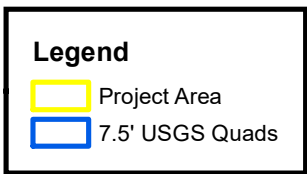
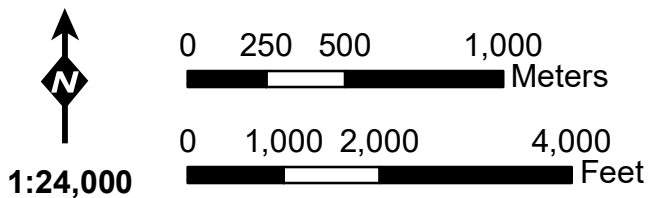






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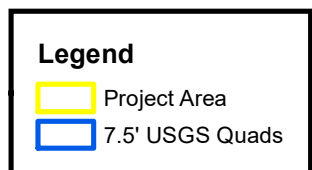






Figure 1. Project Area







April 6, 2020

Robert Pinto  
Chairperson  
Ewiiapaayp Tribe  
4054 Willows Road, Alpine, CA, 91901  
619-445-6315  
wmicklin@leaningrock.net

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Pinto,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

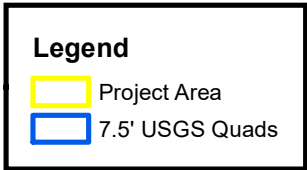






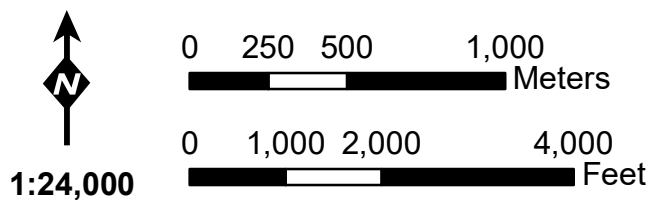
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Figure 1. Project Area







Corona South

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area





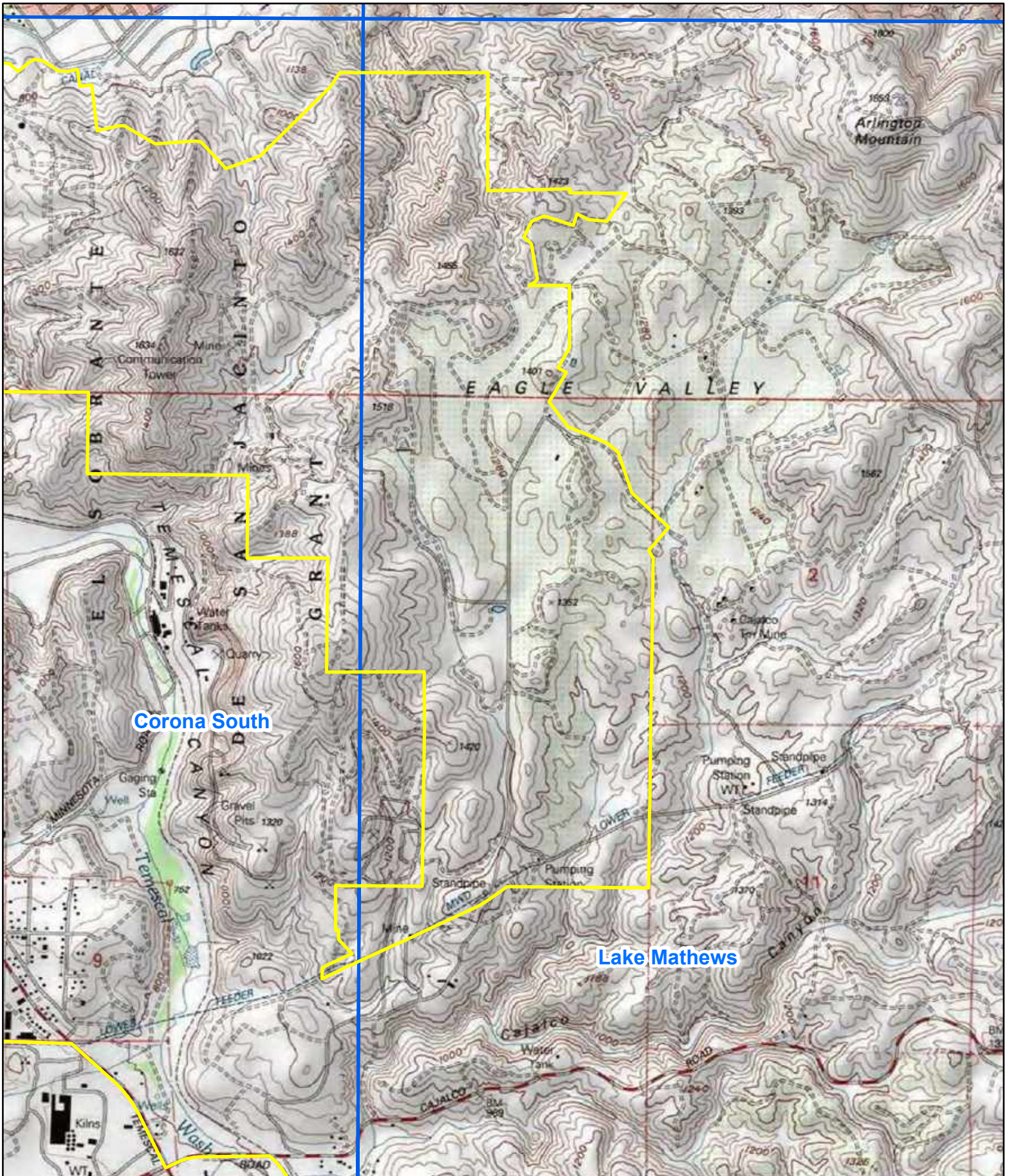
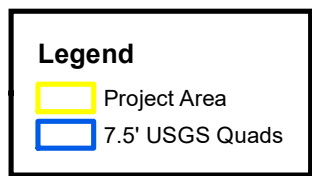


Figure 1. Project Area







Corona South

Lake Mathews

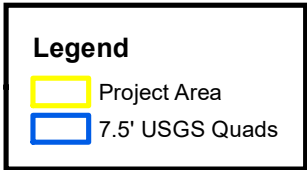
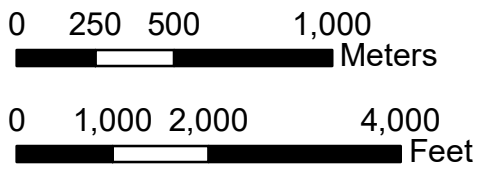


Figure 1. Project Area







April 6, 2020

Shane Chapparosa  
Chairperson  
Los Coyotes Band of Cahuilla and Cupeño Indians  
PO Box 189, Warner Springs, CA, 92086-0189  
760-782-0711

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Chapparosa,

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April 6, 2020  
City of Corona Reclaimed Water Project  
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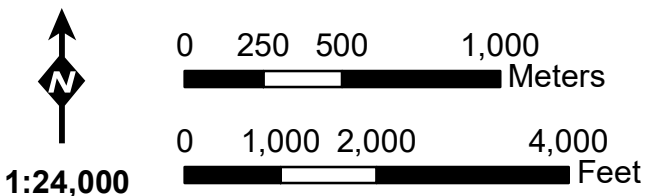






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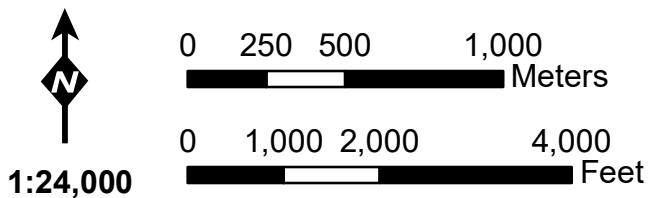
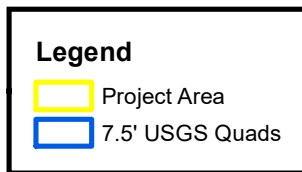
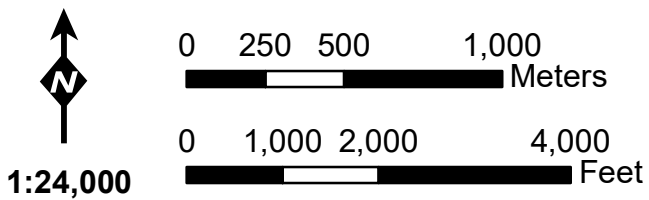






Figure 1. Project Area





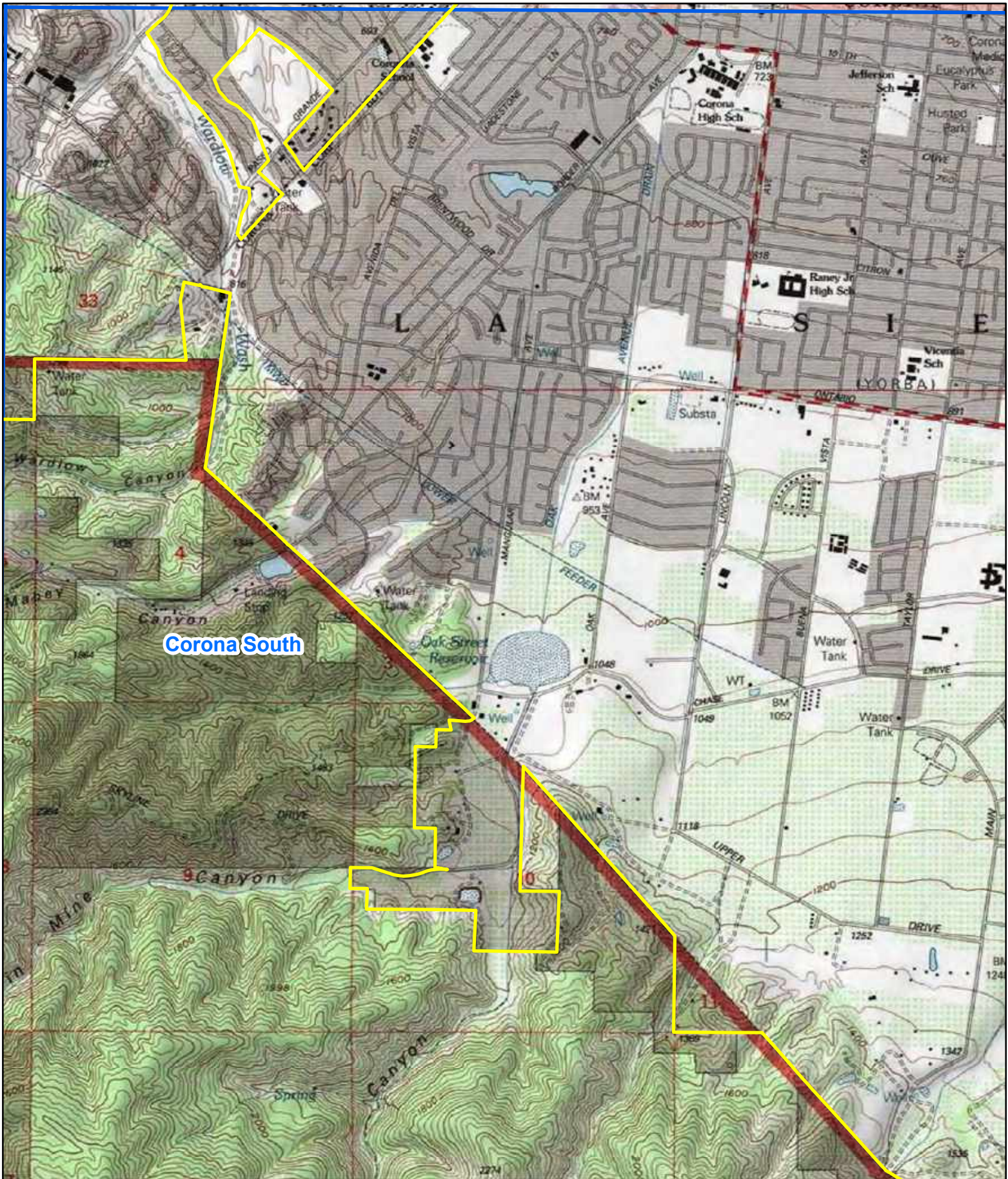


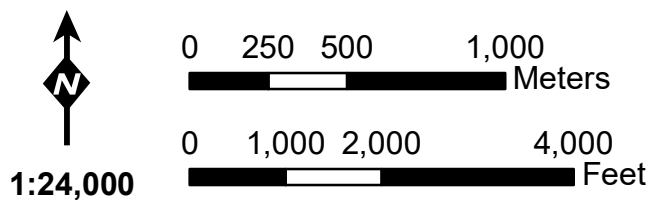
Figure 1. Project Area







Figure 1. Project Area







Corona South

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







April 6, 2020

Scott Cozart  
Chairperson  
Soboba Band of Luiseno Indians  
PO Box 487, San Jacinto, CA, 92583  
951-654-2765  
jontiveros@soboba-nsn.gov

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Cozart,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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A record search of the Sacred Lands File with the California Native American Heritage Commission was positive. Red Tail also conducted a record search at the Eastern Information Center.



April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Sincerely,

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

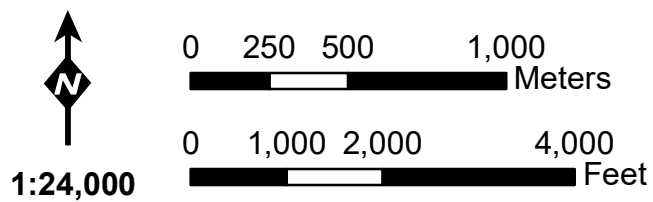






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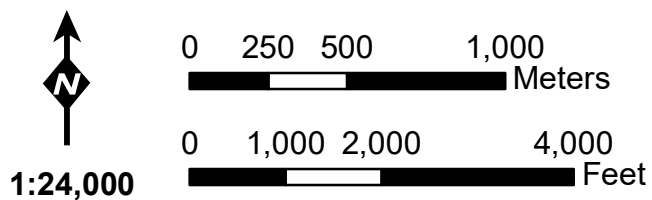






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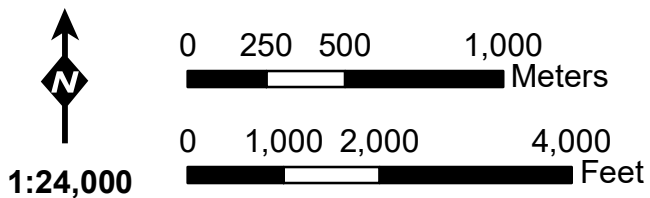






Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

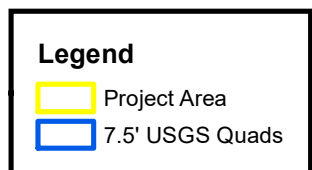






Figure 1. Project Area







April 6, 2020

Steven Estrada  
Chairperson  
Santa Rosa Band of Cahuilla Indians  
PO Box 391820, Anza, CA, 92539  
951-659-2700  
mflaxbeard@santarosacahuilla-nsn.gov

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Estrada,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Sincerely,

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

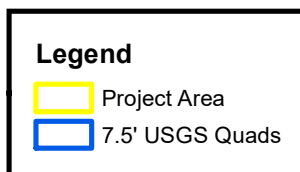
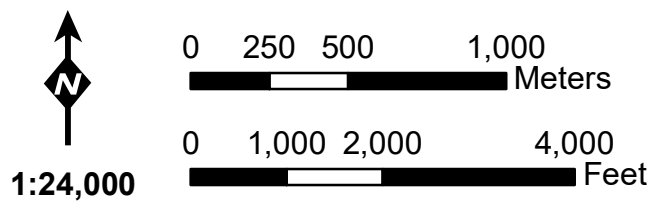






Figure 1. Project Area







Corona South

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

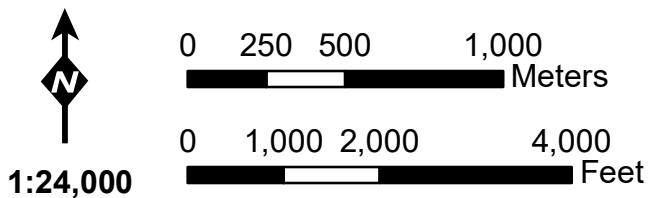






Figure 1. Project Area







Figure 1. Project Area







April 6, 2020

Shasta Gaughen  
Tribal Historic Preservation Officer  
Pala Band of Mission Indians  
PMB 50, 35008 Pala Temecula Road, Pala, CA, 92059  
760-891-3515  
sgaughen@palatribe.com

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Ms. Gaughen,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Sincerely,

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

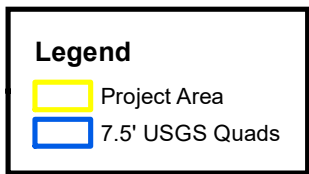
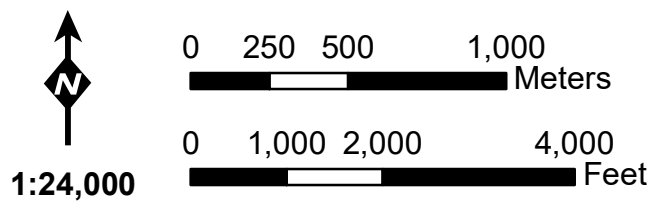
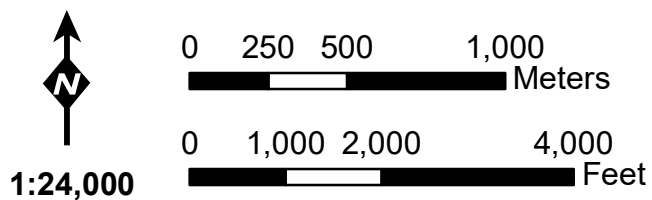






Figure 1. Project Area







Corona South

Figure 1. Project Area







Figure 1. Project Area

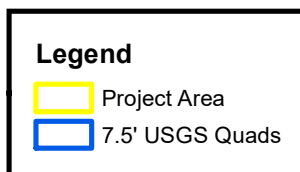






Figure 1. Project Area







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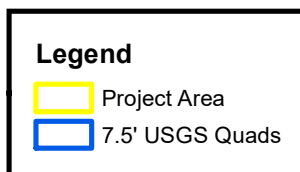






Figure 1. Project Area







April 6, 2020

Sandonne Goad  
Chairperson  
Gabrielino/Tongva Nation  
106 1/2 Judge John Aiso St. #231, Los Angeles, CA, 90012  
951-807-0479  
sgoad@gabrielino-tongva.com

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Ms. Goad,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Sincerely,

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Corona South

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

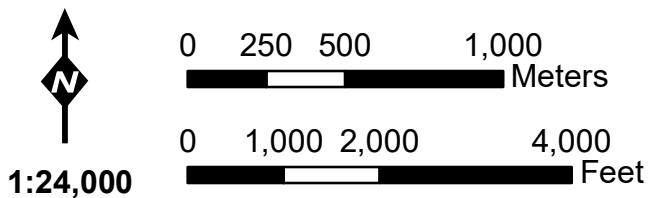






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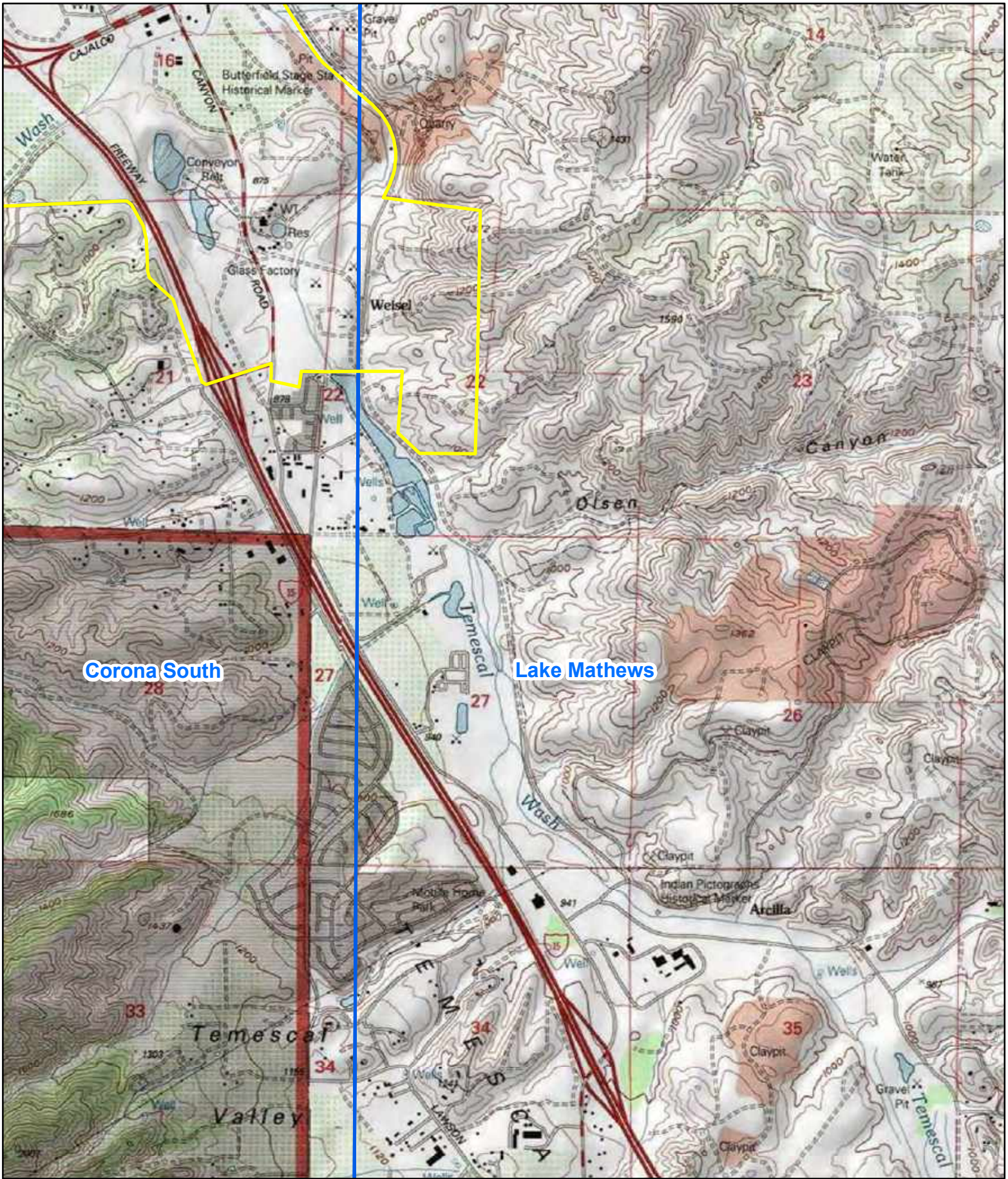


Figure 1. Project Area







April 6, 2020

San Luis Rey Tribal Council  
San Luis Rey Band of Mission Indians  
1889 Sunset Drive, Vista, CA, 92081  
760-724-8505  
cjmojado@slrmissionindians.org

Re: City of Corona Reclaimed Water Project, Riverside County, California

To Whom It May Concern,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Sincerely,

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area

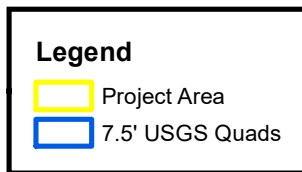
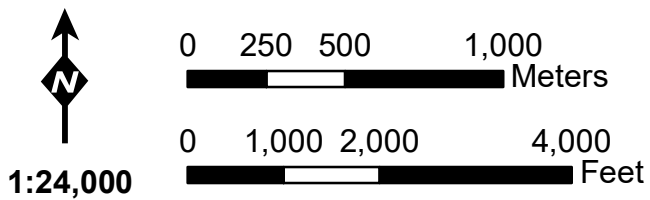






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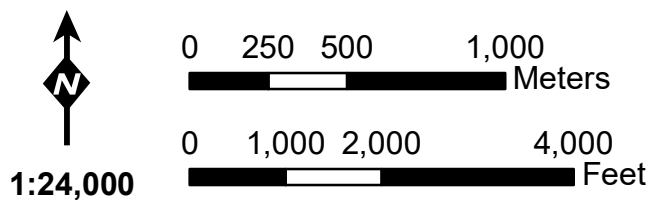






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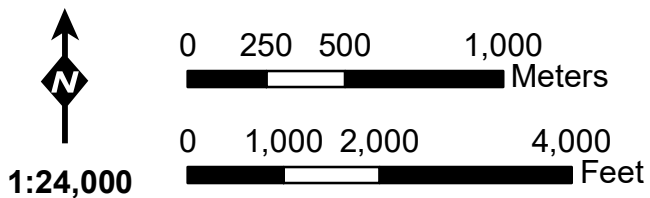






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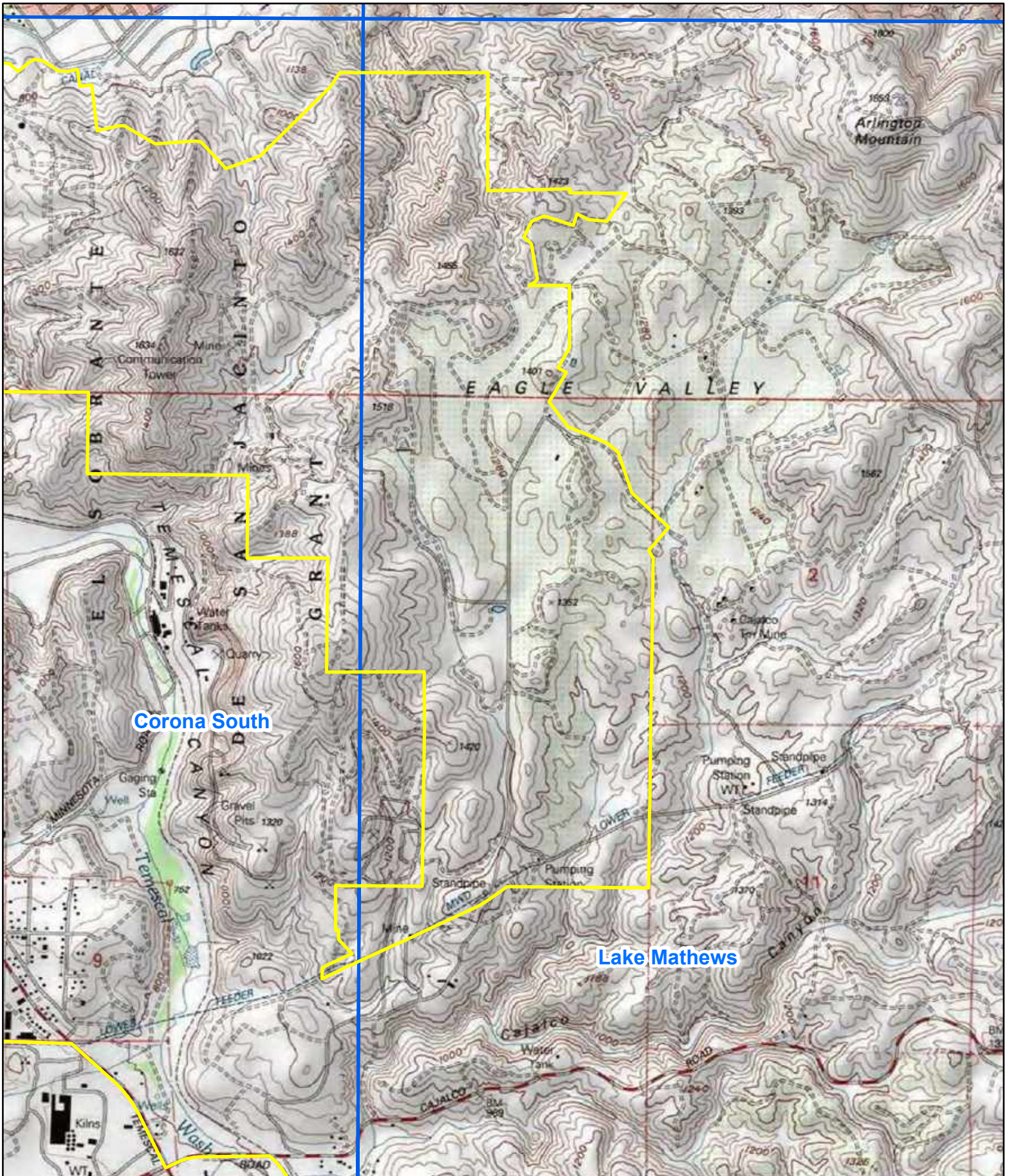


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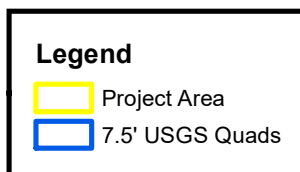






Figure 1. Project Area







April 6, 2020

Temet Aguilar  
Chairperson  
Pauma Band of Luiseno Indians  
PO Box 369, Pauma Valley, CA, 92061  
760-742-1289  
bennaecalac@aol.com

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Aguilar,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

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Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







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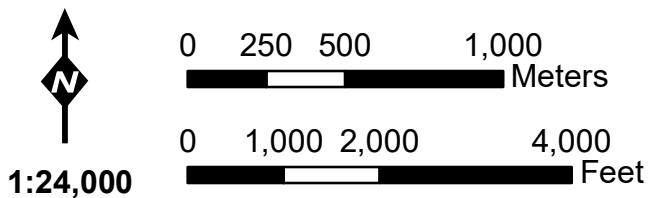






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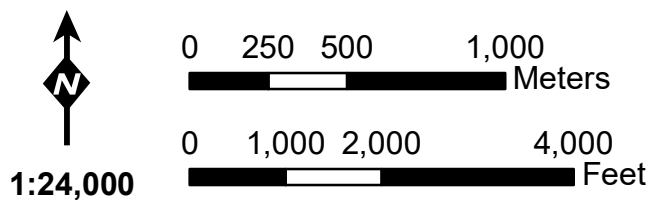






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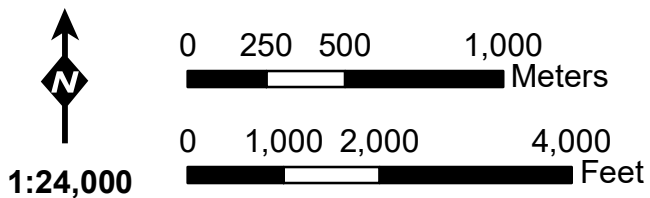






Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







Figure 1. Project Area







April 6, 2020

Thomas Tortez  
Chairperson  
Torres-Martinez Desert Cahuilla Indians  
PO Box 1160, Thermal, CA, 92274  
760-397-0300  
tmchair@torresmartinez.org

Re: City of Corona Reclaimed Water Project, Riverside County, California

Dear Mr. Tortez,

Red Tail Environmental (Red Tail) is conducting an archaeological study for the City of Corona Reclaimed Water Project (project), located within the City of Corona, Riverside County, California. The project area includes the entire City of Corona and the city's sphere of influence. The project is subject to the California Environmental Quality Act (CEQA) and will assess the environmental impact of the City of Corona's Reclaimed Water Master Plan. The City of Corona is the lead agency. The project area is shown on the following USGS 7.5' Quad Maps:

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  - Unsectioned portions of the La Sierra Yorba Land Grant,
  - Unsectioned portions of the Sobrante De San Jacinto Land Grant.
- USGS 7.5' Lake Matthews Quad map within:
  - Township 4 South Range 6 West Section 22,
  - Unsectioned portions of the Sobrante De Sa Jacinto Land Grant.
- USGS 7.5' Corona North Quad map within:
  - Unsectioned portions of the La Sierra Yorba Land Grant,
  - Unsectioned portions of the Sobrante De San Jacinto Land Grant.

A record search of the Sacred Lands File with the California Native American Heritage Commission was positive. Red Tail also conducted a record search at the Eastern Information Center.



April 6, 2020  
City of Corona Reclaimed Water Project  
Page 2 of 2

We are contacting you to request additional information regarding the Project area, if you are aware of any issues of cultural concern regarding the area shown on the enclosed map. In particular, we would like to know if you have knowledge of any Traditional Cultural Properties, Sacred Sites, Tribal Cultural Resources, resource collecting areas, or any other areas of concern of which you would wish us to be aware. If you have any questions or concerns regarding the proposed Project, please contact me at the address or phone number listed below, or via email at [Shelby@redtailenvironmental.com](mailto:Shelby@redtailenvironmental.com). We appreciate any input you may have on this project.

Sincerely,

A handwritten signature in black ink that reads "Shelby G. Castells". The signature is written in a cursive style with a large, prominent 'S' at the beginning.

Shelby Castells, M.A., RPA  
Director of Archaeology  
Attachments: Project Area Maps (1-10)





Prado Dam

Figure 1. Project Area







Figure 1. Project Area

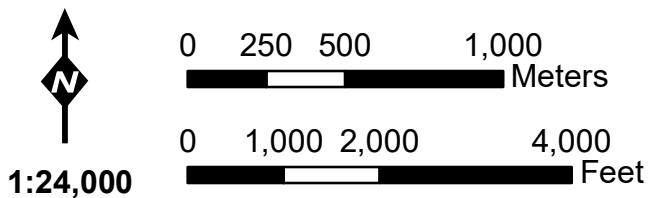






Figure 1. Project Area







Corona South

Figure 1. Project Area

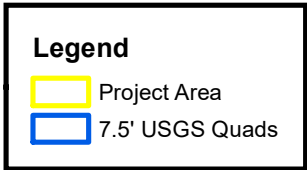
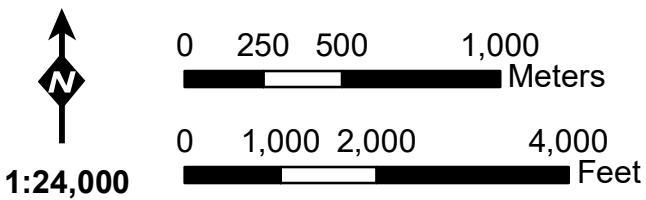
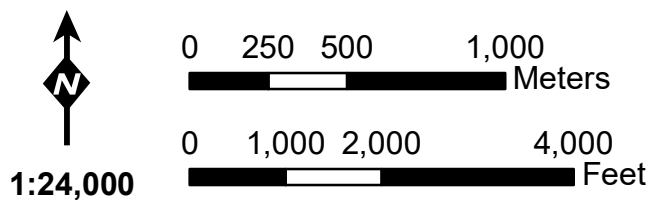






Figure 1. Project Area







Corona South

Figure 1. Project Area

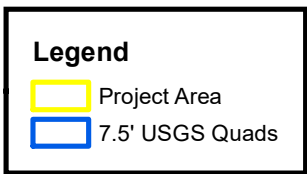
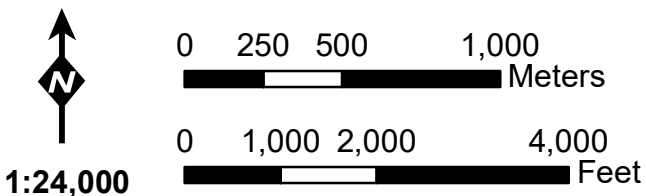






Figure 1. Project Area







Figure 1. Project Area

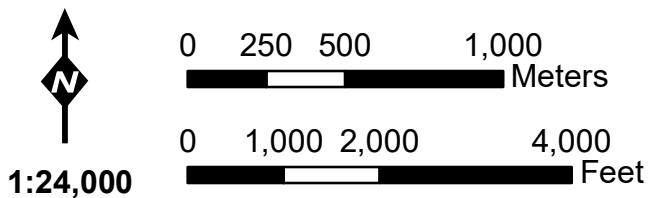






Figure 1. Project Area

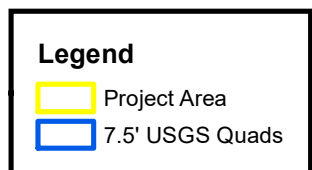






Figure 1. Project Area







Shelby Castells <shelby@redtailenvironmental.com>

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## City of Corona Reclaimed Water Project, Riverside County, California

1 message

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**Quechan Historic Preservation** <historicpreservation@quechantribe.com>  
To: Shelby@redtailenvironmental.com

Tue, Apr 14, 2020 at 2:39 PM

This email serves to inform you that we wish to make no comments on this project.

H. Jill McCormick, M.A.

Historic Preservation Officer

Ft. Yuma Quechan Tribe

[350 Picacho Road](#)

[Yuma, AZ 85366](#)

[Office: 760-572-2423](#)

[Cell: 928-261-0254](#)



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# Rincon Band of Luiseño Indians

## CULTURAL RESOURCES DEPARTMENT

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One Government Center Lane | Valley Center | CA 92082  
(760) 749-1051 | Fax: (760) 749-8901 | rincon-nsn.gov



April 20, 2020

**Sent via email: [Shelby@redtailenvironmental.com](mailto:Shelby@redtailenvironmental.com)**

Shelby Castells  
Redtail Environmental  
328 State Place  
Escondido, CA 92029

**Re: City of Corona Reclaimed Water Project, Riverside County, California**

Dear Ms. Castells,

This letter is written on behalf of the Rincon Band of Luiseño Indians (“Rincon Band” or “Band”), a federally recognized Indian Tribe and sovereign government in response to your request for additional information on the above referenced project.

The Rincon Band wishes to inform Redtail Environmental that the location identified in the transmitted project documents is situated within the Territory of the Luiseño people and within the Band’s specific Area of Historic Interest (AHI). As such, Rincon is traditionally and culturally affiliated to the project area.

After review of the provided documents and our internal information, we have identified Luiseño place names within the proposed project area but no known Tribal Cultural Resources (TCRs) or Traditional Cultural Properties (TCPs) have been recorded within or surrounding the project area. However, the Band believes that the potential exists for cultural resources to be identified during further research and survey work. Therefore, the following is recommended:

- An archaeological/cultural resources study be conducted by a Secretary of the Interior qualified archaeologist for this project, to include an archeological record search and complete intensive survey of the property;
- A final copy of the study to be provided to the Rincon Band for our review and comment

It is important to note that the Band is not opposed to development projects per se, but is opposed to direct, indirect, and cumulative impacts that projects may have to TCRs, TCPs, and sovereign lands, and requests that the Redtail Environmental also clearly address these types of impacts to cultural resources in the final environmental report.

Furthermore, Rincon requests from Redtail Environmental inclusion of appropriate provisions for inadvertent discoveries as required by every major Federal and state law (See CEQA (Cal. Pub. Resources Code §21083.2(i); 14 CCR §15064.5(f)); Section 106 (36 CFR §800.13); NAGPRA (43 CFR §10.4)). Please also include language outlining the formal State process for the discovery of human remains and grave goods for the final report (CA Health and Safety Code §7050.5; Cal. Pub Resources Code §5097.98).

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Bo Mazzetti  
Chairman

Tishmall Turner  
Vice Chair

Laurie E. Gonzalez  
Council Member

Alfonso Kolb, Sr.  
Council Member

John Constantino  
Council Member



The Rincon Band reserves its right to fully participate in the environmental review process and to review and submit additional information after the above documentation has been received during our consultation meeting(s) with the lead agency. The Band thanks Redtail Environmental for submitting this project for Tribal review and thoughtfully addressing the Band's requests and recommendations in the final cultural resources report.

If you have additional questions or concerns, please do not hesitate to contact our office at your convenience at (760) 297-2635 or via electronic mail at [cmadrigan@rincon-nsn.gov](mailto:cmadrigan@rincon-nsn.gov). We look forward to working together to protect and preserve our cultural assets.

Sincerely,

A handwritten signature in blue ink, appearing to read "Cheryl Madrigal".

Cheryl Madrigal  
Tribal Historic Preservation Officer  
Cultural Resources Manager





Shelby Castells <shelby@redtailenvironmental.com>

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## City of Corona Water Project

1 message

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**Croft, Katherine (TRBL)** <kcroft@aguacaliente.net>  
To: "Shelby@redtailenvironmental.com" <Shelby@redtailenvironmental.com>

Tue, Jun 9, 2020 at 2:04 PM

Greetings,

A records check of the Tribal Historic Preservation Office's cultural registry revealed that this project is not located within the Tribe's Traditional Use Area. Therefore, we defer to the other tribes in the area. This letter shall conclude our consultation efforts.

Thank you,

Patricia Garcia Plotkin

Agua Caliente Band of Cahuilla Indians

Director of Historic Preservation

*\*Due to COVID-19 the THPO is operating remotely with a reduced staff. Please send all correspondence to our department email address [ACBCI-THPO@aguacaliente.net](mailto:ACBCI-THPO@aguacaliente.net)*



**APPENDIX C: CONFIDENTIAL MAPS, CULTURAL RESOURCE LOCATIONS  
(provided separately)**



## **Appendix E. Greenhouse Gas Emissions Impact Analysis**



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# TECHNICAL MEMORANDUM

**To:** Mohammed Ibrahim, PE, Senior Engineer, City of Corona, Department of Water and Power  
**From:** Sharon Toland, Project Manager, Harris & Associates  
**Subject:** City of Corona 2018 Reclaimed Water Master Plan – Greenhouse Gas Emissions Impact Analysis  
**Date:** July 15, 2020  
**CC:** Kristin Blackson, Senior Project Manager, Harris & Associates

Dear Mr. Ibrahim,

The following presents the results of Harris & Associates’ analysis of potential greenhouse gas (GHG) impacts from construction and operation of the City of Corona 2018 Reclaimed Water Master Plan (2018 RWMP or project). The projects included in the 2018 RWMP include sources of supply projects and distribution pipeline projects as listed in Table 1. In total, 29 projects are to be completed over the next 10 years before the buildout year (2030); 7 short-term projects are scheduled within the next 5 years, and 22 long-term projects do not have a specified implementation year.

**Table 1. 2018 Reclaimed Water Master Plan Projects**

Project Name	Location	Description	Construction Time Frame
WRCRWA Booster Pump Station	WRCRWA	The booster pumping stations would pump WRCRWA supply to the 833 Subzone.	2021/22
WRCRWA Transmission Pipeline	Between WRCRWA and River FCS-833 Subzone	The transmission pipeline would connect the WRCRWA booster pumping station to the 833 Subzone.	2020/21
WRCRWA Flow Control Improvements	Between Butterfield and WRF1 Tank	These control stations would direct WRCRWA supply to the Lincoln-Cota Ponds and the WRF1 Tank.	2020/21
Rimpau California Pipeline	Between Central Park and Chase Park	This transmission pipeline would provide the additional capacity needed to move WRCRWA supply to demands south of the water service area between City Park and Chase Park.	Long-term
Chase Tank	Chase Park	The storage facility at Chase Park would be an operational component of the Rimpau California Pipeline.	Long-term
Chase Booster Pump Station	Chase Park	The booster pumping facility at Chase Park is an operational component of the Rimpau California Pipeline.	Long-term
Buena Vista Tenth Pipeline	Railroad Street and Rimpau Avenue via Buena Vista Avenue and Tenth Street	This pipeline would reinforce the primary loop between WRF1 at the 1380 Zone following construction of the Rimpau California Pipeline.	Long-term



**Table 1. 2018 Reclaimed Water Master Plan Projects**

Project Name	Location	Description	Construction Time Frame
Ontario Slipline	Compton Avenue and Lincoln Avenue	This sliplined pipeline would form a secondary loop along the length of the 1175 Subzone.	Long-term
Sampson Pipeline	Central Park and McKinley Street	This pipeline would form a secondary loop in the 1008.5 Zone to improve performance and eliminate the need for additional local storage.	Long-term
River Pipeline	River Rd. from Corydon Avenue through Main Street	This pipeline would expand the 833 Subzone north of Temescal Creek and west of Interstate 15.	Long-term
Old Temescal Pipeline	Fullerton Avenue and Interstate 15 Freeway	This pipeline would convert 15.1 gpm of potable water demand for irrigation to reclaimed water demand.	2021/22
Lincoln Foothill Pipeline	Lincoln Avenue between Highgrove Street and Foothill Parkway	This pipeline would convert 12.5 gpm of potable water demand for irrigation to reclaimed water demand at one church and six existing LMD meters.	Long-term
Avenida Del Vista Pipeline	Via Del Rio and MFR demands north of Via Santiago	This pipeline would convert 19.8 gpm of potable water demand for irrigation to reclaimed water demand at three MFR complexes.	Long-term
Border Pipeline	Brentwood Drive and MFR demands north of Tenth Street	This pipeline would convert 36.4 gpm of potable water demand for irrigation to reclaimed water demand at numerous MFR and CII complexes.	Long-term
Promenade Pipeline	McKinley Avenue and Cresta Verde Park	This pipeline would convert 26.9 gpm of potable water demand for irrigation to reclaimed water demand at 2 MFR complexes and 15 existing landscaping irrigation meters.	Long-term
Research Pipeline	CII demands west of Auto Center Drive	This pipeline would convert 9 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Smith Pipeline	Railroad Street and Pomona Road	This pipeline would convert 13.6 gpm of potable water demand for irrigation and car washing to reclaimed water demand.	Long-term
Via Pacifica Pipeline	MFR and LMD demand north of Ontario Avenue	This pipeline would convert 21.3 gpm of potable water demand for irrigation to reclaimed water demand at two LMD meters and one MFR complex.	Long-term
Tehachapi Pipeline	McKinley Avenue and Tehachapi Park	This pipeline would convert 6.2 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Jenks Pipeline	North and south of Railroad Street	The pipeline would convert 5.8 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Airport Circle Pipeline	South of Railroad Street	The pipeline would convert 4.1 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Helicopter Pipeline	South of Railroad Street	This pipeline would convert 3.9 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Glider Pipeline	South of Railroad Street	The pipeline would convert 1.3 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Citation Pipeline	South of Railroad Street	This pipeline would convert 1.2 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term



**Table 1. 2018 Reclaimed Water Master Plan Projects**

Project Name	Location	Description	Construction Time Frame
Klug Pipeline	North and south of Railroad Street	This pipeline would convert 3.9 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Monica Pipeline	North of Railroad Street	The pipeline would convert 3.2 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Chase Hudson Pipeline	LMD demands at Chase Drive and Hudson Avenue	This pipeline would convert 4.7 gpm at two LMD meters from potable water demand for irrigation to reclaimed water demand.	Long-term
Cessna Pipeline	North of Railroad Street	This pipeline would convert 3 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Main Citrus Pipeline	Main Street at Citrus Avenue and four CII customers at Main Street and Magnolia Avenue	This pipeline would convert 21.4 gpm of potable water demand for irrigation to reclaimed water demand for CII customers.	Long-term

**Notes:** CII = commercial, industrial, and institutional; gpm = gallons per minute; LMD = landscape maintenance district; MFR = multi-family residential; WRCRWA = Western Riverside County Regional Wastewater Authority; WRF = water reclamation facility

## Background

A GHG is any gas that absorbs infrared radiation and traps heat in the atmosphere. GHGs are produced from natural processes and human activities. The accumulation of GHGs in the atmosphere influences the long-term atmospheric temperatures and contributes to global climate change. In California, per Assembly Bill 32 (2016), GHGs are defined to include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, plus chlorofluorocarbons and other chlorine or bromine-containing gases. Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful GHGs that are emitted from a variety of industrial processes and the production of chlorodifluoromethane. Construction or operation of the project would not include any industrial processes, and chlorodifluoromethane has been mostly phased out of use in the United States, with the exception of feedstock production (USEPA 2020); therefore, these GHGs are not discussed further in this memorandum. Carbon dioxide accounts for the largest amount of GHG emissions, and collectively, CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O amount to 80 percent of the total radiative forcing from well-mixed GHGs (CARB 2014).

For each GHG, a global warming potential has been calculated to reflect how long emissions remain in the atmosphere and how strongly each GHG absorbs energy on a per-kilogram basis relative to CO<sub>2</sub>. For example, 1 pound of methane has 25 times more heat capturing potential than 1 pound of CO<sub>2</sub>. To simplify reporting and analysis, GHG emissions are typically reported in metric tons of carbon dioxide equivalent (MTCO<sub>2</sub>e) units. Global warming potential is a metric that indicates the relative climate forcing of a kilogram of emissions when averaged over the period of interest. Table 2 identifies the CO<sub>2</sub> equivalent and atmospheric lifetimes of basic GHGs.

**Table 2. Global Warming Potential for Select Greenhouse Gases**

Pollutant	Atmospheric Lifetime (years)	Global Warming Potential (100-year) <sup>1</sup>
CH <sub>4</sub>	12	28
CO <sub>2</sub>	~100 <sup>a</sup>	1
N <sub>2</sub> O	121	265

**Source:** CAPCOA 2017. Consistent with CalEEMod, Version 2016.3.2.

**Notes:** CH<sub>4</sub> = methane; CO<sub>2</sub> = carbon dioxide; N<sub>2</sub>O = nitrous oxide

<sup>1</sup> The warming effects over a 100-year period relative to other GHGs.



## Regulatory Setting

### Federal

The U.S. Environmental Protection Agency is responsible for implementing federal policy to address global climate change. In 2009, the U.S. Environmental Protection Agency issued a Final Rule for mandatory reporting of GHG emissions, which applies to fossil fuel and industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles, and requires annual reporting of emissions. This rule does not regulate the emission of GHGs; it only requires the monitoring and reporting of GHGs for those sources above certain thresholds.

### State

California has enacted a variety of legislation relating to climate change, much of which has set aggressive goals for GHG emissions reductions throughout the state. California Executive Order S-03-05 (2005) establishes the goal of reducing GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. In September 2006, Governor Schwarzenegger signed California's Global Warming Solutions Act of 2006 (Assembly Bill 32), requiring the California Air Resources Board to establish a statewide GHG emissions cap for 2020 based on 1990 emissions and adopt mandatory reporting rules for significant sources of GHG emissions. In April 2015, Governor Brown signed Executive Order B-30-15, which established the goal of reducing GHG emissions to 40 percent below 1990 levels by 2030.

### Regional

The City of Corona (City) is in the South Coast Air Basin, and the South Coast Air Quality Management District (SCAQMD) is the agency primarily responsible for comprehensive air pollution control in the basin. To provide GHG emission guidance to the local jurisdictions within the South Coast Air Basin, the SCAQMD organized a working group to develop GHG emission analysis guidance and thresholds. In 2008, the SCAQMD's governing board adopted a tiered interim approach for determining GHG emission significance, whereby the level of detail and refinement needed to determine significance increases with a project's total GHG emissions. The approach defines projects that are exempt under the California Environmental Quality Act (CEQA) (Tier 1) and projects that are within a GHG Reduction Plan (Tier 2) as less than significant. Tier 3 provides numerical GHG significance threshold of 3,000 MTCO<sub>2e</sub> per year for all land use types (City of Corona 2019).

### Local

In June 2020, the City adopted the 2019 Climate Action Plan (CAP) Update, which includes an interim goal of reducing GHG emission to 49 percent below 2008 levels by the year 2030 and a longer-term GHG reduction goal of 66 percent below 2008 levels by 2040. The interim and longer-term goals put the City on a path toward the state's long-term goal to reduce emissions 80 percent below 1990 levels by 2050. The 2019 CAP Update (establishes goals and policies that encourage energy efficiency, water conservation, alternative transportation, solid waste reduction, and clean energy (City of Corona 2019).

## Significance Thresholds

The City's 2019 CAP Update provides a method consistent with the 2012 CAP for determining the significance of GHG emissions from new development in the City but reflects updated emission reduction targets (City of Corona 2019). A project that is consistent with the 2019 CAP Update would contribute its fair share to the City's emissions reduction targets and would result in a less than significant impact. Consistency with the 2019 CAP Update is demonstrated through the CAP Screening Tables, which provide a menu of emission reduction options with associated points based on development type. If a project can garnish 100 points from the screening table, the project is considered less than significant. The 2019 CAP Update includes Screening Tables for residential, commercial, industrial, or mixed-use projects. The Screening Tables do not include measures applicable to municipal infrastructure projects as proposed in the 2018 RWMP; therefore, this impact analysis relies on the SCAQMD's interim GHG significance threshold for Tier 3 projects to screen for potentially significant GHG emissions. The Tier 3 screening level threshold of 3,000 MTCO<sub>2e</sub> per year is intended to achieve a regional emission capture rate of 90 percent. That is, most future projects would be required to implement GHG reduction measures while excluding small projects that would contribute a relatively small fraction of the cumulative



statewide GHG emissions. Consistent with SCAQMD methods, construction emissions should be amortized over a 30-year project life and added to operational emissions. Therefore, the project would result in significant GHG emissions if annual operation and amortized construction emissions would exceed 3,000 MTCO<sub>2</sub>e.

## Impact Analysis

### Construction

Project construction emissions were estimated using the CalEEMod Model, version 2016.3.2, based on construction information provided by the City. To estimate maximum daily criteria pollutants from implementation of the project, Harris & Associates modeled a construction scenario that is intended to represent the maximum construction that may occur simultaneously and in a given 12-month period. Detailed assumptions and modeling data sheets are provided in Attachment 1. Construction is anticipated to begin in 2020. It was assumed that an average of three projects would occur in any given year based on the number of projects included in the 2018 RWMP and the time frame until buildout (29 projects in 10 years). The Sampson Pipeline Project was selected from the 2018 RWMP project list to represent the worst-case GHG emissions that could occur from any project. The Sampson Pipeline Project is calculated to require the greatest total amount of soil import and export; therefore, it would require the greatest number of truck trips. Therefore, assuming annual construction of three projects with the construction intensity of the Sampson Pipeline Project represents a conservative worst-case scenario. For comparison, cut quantities are anticipated to vary between 37 cubic yards (CY) and 24,200 CY for the remaining projects proposed in the 2018 RWMP compared to 27,852 CY for the Sampson Pipeline Project. The Sampson Pipeline Project would require 22,281 CY of fill compared to 30 CY to 15,644 CY for the remaining projects.

Construction activities associated with the 2018 RWMP projects would result in short-term GHG emissions from heavy equipment and construction worker vehicles. Total GHG emissions associated with construction of the Sampson Pipeline Project would be approximately 411 MTCO<sub>2</sub>e. Assuming annual construction of three projects, maximum annual emissions would be approximately 1,233 MTCO<sub>2</sub>e. Maximum annual emissions are conservative because less intense construction is anticipated to occur within each 12-month period, and segments that would be completed in later years are anticipated to benefit from more stringent emissions standards. Because buildout of the project would take place of 29 years, the worst-case annual emission of 1,233 MTCO<sub>2</sub>e are conservatively assumed to be the amortized construction emissions for the project. The significance of the amortized construction emissions is addressed with operational emissions below.

### Operation

Most of the projects associated with the 2018 RWMP would be passive, new, or upgraded pipelines and storage projects, which would not result in any new sources of GHG emissions. Following construction, operation of the pipelines and water storage would be passive and would not result in an increase in GHG emissions. Landscape equipment would occasionally be used for maintenance. However, once new landscaping is established, only periodic brush clearing, tree trimming, and weed abatement would be required. Due to the limited amount of equipment and time required for maintenance at each facility, landscape equipment use would not substantially increase compared to existing conditions. Night-time safety lighting installed at some project sites would require minimal additional energy consumption. The new pump stations would have daily maintenance checks, and tanks would have weekly maintenance checks; however, maintenance for new and improved facilities would be incorporated into the existing maintenance schedule. Therefore, the net increase in new vehicle trips would be minimal, and the vehicle emissions associated with project implementation would not be significant.

However, GHG emissions would potentially result from a net increase in energy use from operation two new pump stations. The City currently has six active reclaimed water booster pump stations, and it is assumed that operation of the two new pump stations would be similar to existing pump stations. GHG emissions, presented in Table 3, are calculated based on the 2001 Draft Program Environmental Impact Report for the City of Corona RWMP Project assumption that the electrical consumption for a newly constructed pump station would be approximately 1.7 million Kwh per year (City of Corona 2001) and the GHG intensity factor for energy consumption from Southern California Edison (EEI 2018).



**Table 3. Estimated Annual Operational Emissions from Electrical Consumption**

Project	MTCO <sub>2</sub> e
Amortized Construction Emissions	1,233
Pump Station Emissions	789
<b>Total Calculated Annual Emissions</b>	<b>2,022</b>
SCAQMD Threshold	3,000
<i>Significant Impact?</i>	<i>No</i>

Source: EEI 2018.

Notes: MTCO<sub>2</sub>e = metric tons of carbon dioxide equivalent; SCAQMD = South Coast Air Quality Management District  
 Southern California Edison CO<sub>2</sub>e Intensity Factor (2017) = 0.232 MT/MWH

As shown in Table 3, GHG emissions from the project’s ongoing electrical consumption and amortized construction would be well below the SCAQMD significance threshold. These emissions would not exceed the 3,000 MTCO<sub>2</sub>e threshold for GHG emissions. In addition, the project would support the City’s 2019 CAP Update goals (5.2.C and 5.2.F) to increase residential, commercial, and industrial reclaimed water use (City of Corona 2020). This impact would be less than significant.

## Summary

Implementation of the project would not result in a significant impact related to GHG emissions. No mitigation measures are necessary.

## References

- CARB (California Air Resources Board). 2014. First Update to the Climate Change Scoping Plan: Building on the Framework Pursuant to AB 32, the California Global Warming Solutions Act of 2006. May. Accessed July 2020. [https://www.arb.ca.gov/cc/scopingplan/2013\\_update/first\\_update\\_climate\\_change\\_scoping\\_plan.pdf](https://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf).
- CAPCOA (California Air Pollution Control Officers Association). 2017. “Appendix A: Calculation Details for CalEEMod.” In California Emissions Estimator Model Users Guide. Version 2016.3.2. November.
- EEI (Edison Electric Institute). 2018. ESG/Sustainability Template – Section 2: Quantitative Information. Accessed May 5, 2020. <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>.
- City of Corona. 2001. Draft Program Environmental Impact Report for the City of Corona Recycled Master Plan Project (SCH No. 99031097). Prepared by Parson Engineering Science, Inc. February.
- City of Corona. 2019. City of Corona Climate Action Plan Update. Prepared by LSA Associates, Inc. March.
- City of Corona. 2020. General Plan Technical Update: Final Environmental Impact Report.
- USEPA (U.S. Environmental Protection Agency). 2020. “Phaseout of Ozone-Depleting Substances (ODS).” Last updated March 19. <https://www.epa.gov/ods-phaseout>.



**Attachment 1. CalEEMod Results**

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Sampson Pipeline - South Coast AQMD Air District, Annual

**Sampson Pipeline**  
**South Coast AQMD Air District, Annual**

**1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	3.45	Acre	3.45	150,282.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	31
<b>Climate Zone</b>	10			<b>Operational Year</b>	2022
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MW hr)</b>	702.44	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics -

Land Use -

Construction Phase - 8.7 months \*21 working days per month

Off-road Equipment -

Grading -



## Sampson Pipeline - South Coast AQMD Air District, Annual

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	8.00	183.00
tblConstructionPhase	PhaseEndDate	2/17/2021	10/20/2021
tblGrading	MaterialExported	0.00	27,852.00
tblGrading	MaterialImported	0.00	22,281.00
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment

## 2.0 Emissions Summary

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Sampson Pipeline - South Coast AQMD Air District, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-4-2021	4-3-2021	0.6871	0.6871
2	4-4-2021	7-3-2021	1.0946	1.0946
3	7-4-2021	9-30-2021	1.0706	1.0706
		Highest	1.0946	1.0946

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	0.0118	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	9.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	16.7591	16.7591	6.9000e-004	1.4000e-004	16.8190
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
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
<b>Total</b>	<b>0.0118</b>	<b>0.0000</b>	<b>4.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>16.7592</b>	<b>16.7592</b>	<b>6.9000e-004</b>	<b>1.4000e-004</b>	<b>16.8191</b>



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**2.2 Overall Operational**

**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	0.0118	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	9.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	16.7591	16.7591	6.9000e-004	1.4000e-004	16.8190
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
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
<b>Total</b>	<b>0.0118</b>	<b>0.0000</b>	<b>4.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>16.7592</b>	<b>16.7592</b>	<b>6.9000e-004</b>	<b>1.4000e-004</b>	<b>16.8191</b>

	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
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	2/6/2021	10/20/2021	5	183	Includes piping, trenching and backfilling, asphalt restoration, and striping



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Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 91.5

Acres of Paving: 3.45

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Paving Equipment	1	6.00	132	0.36
Grading	Excavators	1	8.00	158	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41

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	7	18.00	0.00	3,482.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**



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**3.2 Grading - 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					
Fugitive Dust					0.6024	0.0000	0.6024	0.3086	0.0000	0.3086	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2226	2.3947	1.6230	2.9900e-003		0.1126	0.1126		0.1036	0.1036	0.0000	262.6141	262.6141	0.0849	0.0000	264.7375
<b>Total</b>	<b>0.2226</b>	<b>2.3947</b>	<b>1.6230</b>	<b>2.9900e-003</b>	<b>0.6024</b>	<b>0.1126</b>	<b>0.7150</b>	<b>0.3086</b>	<b>0.1036</b>	<b>0.4122</b>	<b>0.0000</b>	<b>262.6141</b>	<b>262.6141</b>	<b>0.0849</b>	<b>0.0000</b>	<b>264.7375</b>

**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	0.0128	0.4537	0.0962	1.3200e-003	0.0299	1.3700e-003	0.0313	8.2200e-003	1.3100e-003	9.5300e-003	0.0000	130.0003	130.0003	8.9000e-003	0.0000	130.2229
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	6.8600e-003	5.0700e-003	0.0574	1.7000e-004	0.0181	1.4000e-004	0.0182	4.8000e-003	1.2000e-004	4.9200e-003	0.0000	15.7397	15.7397	4.2000e-004	0.0000	15.7503
<b>Total</b>	<b>0.0197</b>	<b>0.4588</b>	<b>0.1536</b>	<b>1.4900e-003</b>	<b>0.0480</b>	<b>1.5100e-003</b>	<b>0.0495</b>	<b>0.0130</b>	<b>1.4300e-003</b>	<b>0.0145</b>	<b>0.0000</b>	<b>145.7401</b>	<b>145.7401</b>	<b>9.3200e-003</b>	<b>0.0000</b>	<b>145.9731</b>



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**3.2 Grading - 2021**

**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					
Fugitive Dust					0.6024	0.0000	0.6024	0.3086	0.0000	0.3086	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2226	2.3947	1.6230	2.9900e-003		0.1126	0.1126		0.1036	0.1036	0.0000	262.6138	262.6138	0.0849	0.0000	264.7372
<b>Total</b>	<b>0.2226</b>	<b>2.3947</b>	<b>1.6230</b>	<b>2.9900e-003</b>	<b>0.6024</b>	<b>0.1126</b>	<b>0.7150</b>	<b>0.3086</b>	<b>0.1036</b>	<b>0.4122</b>	<b>0.0000</b>	<b>262.6138</b>	<b>262.6138</b>	<b>0.0849</b>	<b>0.0000</b>	<b>264.7372</b>

**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	0.0128	0.4537	0.0962	1.3200e-003	0.0299	1.3700e-003	0.0313	8.2200e-003	1.3100e-003	9.5300e-003	0.0000	130.0003	130.0003	8.9000e-003	0.0000	130.2229
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	6.8600e-003	5.0700e-003	0.0574	1.7000e-004	0.0181	1.4000e-004	0.0182	4.8000e-003	1.2000e-004	4.9200e-003	0.0000	15.7397	15.7397	4.2000e-004	0.0000	15.7503
<b>Total</b>	<b>0.0197</b>	<b>0.4588</b>	<b>0.1536</b>	<b>1.4900e-003</b>	<b>0.0480</b>	<b>1.5100e-003</b>	<b>0.0495</b>	<b>0.0130</b>	<b>1.4300e-003</b>	<b>0.0145</b>	<b>0.0000</b>	<b>145.7401</b>	<b>145.7401</b>	<b>9.3200e-003</b>	<b>0.0000</b>	<b>145.9731</b>

**4.0 Operational Detail - Mobile**

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**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**

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

**4.3 Trip Type Information**

Land Use	Miles			Trip %			Trip Purpose %		
	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
Parking Lot	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
Parking Lot	0.549559	0.042893	0.201564	0.118533	0.015569	0.005846	0.021394	0.034255	0.002099	0.001828	0.004855	0.000709	0.000896











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**5.3 Energy by Land Use - Electricity**

**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	52598.7	16.7591	6.9000e-004	1.4000e-004	16.8190
<b>Total</b>		<b>16.7591</b>	<b>6.9000e-004</b>	<b>1.4000e-004</b>	<b>16.8190</b>

**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	52598.7	16.7591	6.9000e-004	1.4000e-004	16.8190
<b>Total</b>		<b>16.7591</b>	<b>6.9000e-004</b>	<b>1.4000e-004</b>	<b>16.8190</b>

**6.0 Area Detail**

**6.1 Mitigation Measures Area**



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	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	0.0118	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	9.0000e-005
Unmitigated	0.0118	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	9.0000e-005

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	2.0900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	9.7100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	9.0000e-005
<b>Total</b>	<b>0.0118</b>	<b>0.0000</b>	<b>4.0000e-005</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>9.0000e-005</b>	<b>9.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>9.0000e-005</b>



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**6.2 Area by SubCategory**

**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	2.0900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	9.7100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	9.0000e-005
<b>Total</b>	<b>0.0118</b>	<b>0.0000</b>	<b>4.0000e-005</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>9.0000e-005</b>	<b>9.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>9.0000e-005</b>

**7.0 Water Detail**

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**7.1 Mitigation Measures Water**



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	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			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>



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**7.2 Water by Land Use**

**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**8.0 Waste Detail**

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**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



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**8.2 Waste by Land Use**

**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

**9.0 Operational Offroad**

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

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**Fire Pumps and Emergency Generators**

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

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**

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## **Appendix F. Noise Impact Analysis**



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# MEMORANDUM

**To:** Mohammed Ibrahim, PE, Senior Engineer, City of Corona, Department of Water and Power  
**From:** Sharon Toland, Project Manager, Harris & Associates  
**RE:** City of Corona 2018 Reclaimed Water Master Plan – Noise Impact Analysis  
**Date:** July 20, 2020  
**CC:** Kristin Blackson, Senior Project Manager, Harris & Associates

Dear Mr. Ibrahim,

The following presents the results of Harris & Associates' analysis of the potential noise impacts from implementation of the City of Corona 2018 Reclaimed Water Master Plan (2018 RWMP or project). The projects proposed in the 2018 RWMP include sources of supply projects and distribution pipeline projects as listed in Table 1. In total, 29 projects are to be completed over the next 10 years before the buildout year (2030); 7 short-term projects are scheduled within the next 5 years, and 22 long-term projects do not have a specified implementation year.

**Table 1. 2018 Reclaimed Water Master Plan Projects**

Project Name	Location	Description	Construction Time Frame
WRCRWA Booster Pump Station	WRCRWA	The booster pumping stations would pump WRCRWA supply to the 833 Subzone.	2021/22
WRCRWA Transmission Pipeline	Between WRCRWA and River FCS-833 Subzone	The transmission pipeline would connect the WRCRWA booster pumping station to the 833 Subzone.	2020/21
WRCRWA Flow Control Improvements	Between Butterfield and WRF1 Tank	These control stations would direct WRCRWA supply to the Lincoln-Cota Ponds and the WRF1 Tank.	2020/21
Rimpau California Pipeline	Between Central Park and Chase Park	This transmission pipeline would provide the additional capacity needed to move WRCRWA supply to demands south of the water service area between City Park and Chase Park.	Long-term
Chase Tank	Chase Park	The storage facility at Chase Park would be an operational component of the Rimpau California Pipeline.	Long-term
Chase Booster Pump Station	Chase Park	The booster pumping facility at Chase Park is an operational component of the Rimpau California Pipeline.	Long-term
Buena Vista Tenth Pipeline	Railroad Street and Rimpau Avenue via Buena Vista Avenue and Tenth Street	This pipeline would reinforce the primary loop between WRF1 at the 1380 Zone following construction of the Rimpau California Pipeline.	Long-term
Ontario Slipline	Compton Avenue and Lincoln Avenue	This sliplined pipeline would form a secondary loop along the length of the 1175 Subzone.	Long-term



**Table 1. 2018 Reclaimed Water Master Plan Projects**

Project Name	Location	Description	Construction Time Frame
Sampson Pipeline	Central Park and McKinley Street	This pipeline would form a secondary loop in the 1008.5 Zone to improve performance and eliminate the need for additional local storage.	Long-term
River Pipeline	River Rd. from Corydon Avenue through Main Street	This pipeline would expand the 833 Subzone north of Temescal Creek and west of Interstate 15.	Long-term
Old Temescal Pipeline	Fullerton Avenue and Interstate 15 Freeway	This pipeline would convert 15.1 gpm of potable water demand for irrigation to reclaimed water demand.	2021/22
Lincoln Foothill Pipeline	Lincoln Avenue between Highgrove Street and Foothill Parkway	This pipeline would convert 12.5 gpm of potable water demand for irrigation to reclaimed water demand at one church and six existing LMD meters.	Long-term
Avenida Del Vista Pipeline	Via Del Rio and MFR demands north of Via Santiago	This pipeline would convert 19.8 gpm of potable water demand for irrigation to reclaimed water demand at three MFR complexes.	Long-term
Border Pipeline	Brentwood Drive and MFR demands north of Tenth Street	This pipeline would convert 36.4 gpm of potable water demand for irrigation to reclaimed water demand at numerous MFR and CII complexes.	Long-term
Promenade Pipeline	McKinley Avenue and Cresta Verde Park	This pipeline would convert 26.9 gpm of potable water demand for irrigation to reclaimed water demand at 2 MFR complexes and 15 existing landscaping irrigation meters.	Long-term
Research Pipeline	CII demands west of Auto Center Drive	This pipeline would convert 9 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Smith Pipeline	Railroad Street and Pomona Road	This pipeline would convert 13.6 gpm of potable water demand for irrigation and car washing to reclaimed water demand.	Long-term
Via Pacifica Pipeline	MFR and LMD demand north of Ontario Avenue	This pipeline would convert 21.3 gpm of potable water demand for irrigation to reclaimed water demand at two LMD meters and one MFR complex.	Long-term
Tehachapi Pipeline	McKinley Avenue and Tehachapi Park	This pipeline would convert 6.2 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Jenks Pipeline	North and south of Railroad Street	The pipeline would convert 5.8 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Airport Circle Pipeline	South of Railroad Street	The pipeline would convert 4.1 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Helicopter Pipeline	South of Railroad Street	This pipeline would convert 3.9 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Glider Pipeline	South of Railroad Street	The pipeline would convert 1.3 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Citation Pipeline	South of Railroad Street	This pipeline would convert 1.2 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Klug Pipeline	North and south of Railroad Street	This pipeline would convert 3.9 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term



**Table 1. 2018 Reclaimed Water Master Plan Projects**

Project Name	Location	Description	Construction Time Frame
Monica Pipeline	North of Railroad Street	The pipeline would convert 3.2 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Chase Hudson Pipeline	LMD demands at Chase Drive and Hudson Avenue	This pipeline would convert 4.7 gpm at two LMD meters from potable water demand for irrigation to reclaimed water demand.	Long-term
Cessna Pipeline	North of Railroad Street	This pipeline would convert 3 gpm of potable water demand for irrigation to reclaimed water demand.	Long-term
Main Citrus Pipeline	Main Street at Citrus Avenue and four CII customers at Main Street and Magnolia Avenue	This pipeline would convert 21.4 gpm of potable water demand for irrigation to reclaimed water demand for CII customers.	Long-term

**Notes:** CII = commercial, industrial, and institutional; gpm = gallons per minute; LMD = landscape maintenance district; MFR = multi-family residential; WRCRWA = Western Riverside County Regional Wastewater Authority; WRF = water reclamation facility

## Background

### Noise

The California Department of Transportation defines noise as sound that is loud, unpleasant, unexpected, or undesired. Sound pressure levels are quantified using a logarithmic ratio of actual sound pressures to a reference pressure squared, called “bels.” A bel is typically divided into tenths, or decibels (dB). Sound pressure alone is not a reliable indicator of loudness because frequency (or pitch) also affects how receptors respond to the sound. To account for the pitch of sounds and the corresponding sensitivity of human hearing to them, the raw sound pressure level is adjusted with a frequency-dependent A-weighting scale that is stated in units of decibels (dBA) (Caltrans 2013).

A receptor’s response to a given noise may vary depending on the sound level, duration of exposure, character of the noise sources, the time of day during which the noise is experienced, and the activity affected by the noise. Activities most affected by noise include rest, relaxation, recreation, study, and communications. In consideration of these factors, different measures of noise exposure have been developed to quantify the extent of the effects from a variety of noise levels. The Leq, or Equivalent Energy Level, provides an average acoustical or sound energy content of noise, measured during a prescribed period, such as 1 minute, 15 minutes, 1 hour, or 8 hours. The sound level may not be constant over the measured time period, but the average dB sound level, given as dBA Leq, contains an equal amount of energy as the fluctuating sound level (Caltrans 2013). Community noise equivalent level (CNEL) is an average sound level during a 24-hour day that considers the 24-hour day divided into three periods. CNEL is obtained by adding an additional 5 dBA to sound levels in the evening between 7:00 p.m. and 10:00 p.m., and an additional 10 dBA to noise levels in the nighttime hours between 10:00 p.m. to 7:00 a.m. (City of Corona 2020a).

The dB level of a sound decreases (or attenuates) as the distance from the source of that sound increases. For a single point source, such as a piece of mechanical equipment, the sound level normally decreases by approximately 6 dBA for each doubling of distance from the source. Sound that originates from a linear, or “line” source, such as vehicular traffic, attenuates by approximately 3 dBA per doubling of distance. Other contributing factors that affect sound reception include ground absorption, natural topography that provides a natural barrier, meteorological conditions, or the presence of human-made obstacles such as buildings and sound barriers (Caltrans 2013).

Noise in the City is primarily characterized by traffic noise, particularly near Interstate 15 and Interstate 91. Other noise sources in the City include commercial operations, property maintenance, and other typical urban activity noise. Average noise levels range from 45 to 65 dBA Leq depending on proximity to major freeways.



Rail noise is a major noise source in limited areas of the City. Land uses adjacent to rail operations experience noise levels that typically range from 65 to 75 CNEL, with periodic exposure to train signals at railroad crossings. The City is also subject to occasional overflights from Corona Municipal Airport, but the airport does not represent a major noise source in the City. The airport’s 65 dBA CNEL noise contour is contained in the airport and surrounding undeveloped area (City of Corona 2020a).

Noise-sensitive land uses include noise receptors (receivers) where an excessive amount of noise would interfere with normal activities. Sensitive receptors in the City include residences, senior housing, schools, places of worship, and recreational areas. Commercial and industrial uses are not considered particularly sensitive to noise or vibration (City of Corona 2020a).

### Groundborne Vibration

The Federal Transit Administration (FTA) describes groundborne vibration as vibration that can cause buildings to shake and rumbling sounds to be heard. In contrast to airborne noise, groundborne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Common sources of groundborne vibration are trains, buses on rough roads, and construction activities such as blasting, pile driving, and operation of heavy earthmoving equipment. The effects of groundborne vibration include feel-able movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is typically only a factor in the case of blasting and pile driving during construction. Groundborne vibration related to potential building damage effects is generally related to the peak particle velocity (PPV) in inches per second (FTA 2018).

## Regulatory Setting

### City of Corona Noise Ordinance

The City’s Noise Ordinance is included in Section 17.84.040 of the Corona Municipal Code. This section is referred to as the “Noise Control Ordinance.” It includes standards for stationary noise, transportation noise, and construction noise, as summarized below (City of Corona 2020a).

Stationary noise sources, such as mechanical equipment, are subject to noise source standards identified in Section 17.84.040(C)(2) and summarized in Table 2. The standards in Table 2 may not be exceeded for a cumulative period of more than 30 minutes in any hour. The noise standards in Table 2 are increased incrementally as time of exposure decreases. The noise standards in Table 2 plus 20 dB may not be exceed for any period of time.

**Table 2. Stationary Noise Standards**

Type of Land Use	Maximum Allowable Noise Levels			
	Exterior Noise Level		Interior Noise Level	
	7:00 a.m. to 10:00 p.m.	10:00 p.m. to 7:00 a.m.	7:00 a.m. to 10:00 p.m.	10:00 p.m. to 7:00 a.m.
Single-, Double- and Multi- Family Residential	55 dBA	50 dBA	45 dBA	35 dBA
Other Sensitive Land Uses	55 dBA	50 dBA	45 dBA	35 dBA
Commercial Uses	65 dBA	60 dBA	Not applicable	Not applicable
Industrial, Manufacturing or Agricultural	75 dBA	70 dBA	Not applicable	Not applicable

Source: City of Corona 2020b.

Notes: dBA = A-weighted decibel



Section 17.84.040(C)(3)(a), Roadway Noise, requires a Noise Study to be prepared before the construction of new master planned roads, roadway improvements, and rail lines or before the construction of residential or sensitive land uses adjacent to existing or master planned roads or railways. The Noise Study must identify the existing and future noise contours for the roadway and propose mitigation measures to reduce the noise impacts to a maximum of 65 dBA CNEL in the private outdoor living area of residences and to a maximum interior noise level of 45 dBA CNEL for residential and sensitive land uses.

Section 17.84.040(D)(2), Construction Noise, prohibits construction noise between the hours of 8:00 p.m. and 7:00 a.m., Monday through Saturday, and 6:00 p.m. to 10:00 a.m. on Sundays and federal holidays. Construction noise is defined by the Corona Municipal Code as noise that is disturbing, excessive, or offensive and constitutes a nuisance involving discomfort or annoyance to people of normal sensitivity residing in the area that is generated by the use of any tools, machinery, or equipment used in connection with construction operations.

### **City of Corona Vibration Ordinance**

Section 17.84.050, Vibration, of the Corona Municipal Code, states that it is unlawful for any person to create, maintain, or cause any ground vibration that is perceptible without instruments at any point on any affected property adjoining the property on which the vibration source is located. For the purposes of the Corona Municipal Code, the perception threshold is presumed to be more than 0.05 inch per second root mean square (RMS) vertical velocity. This is equivalent to 94 VdB (City of Corona 2020a).

### **City of Corona Noise Element**

The Noise Element of the City of Corona 2020–2040 General Plan contains goals and policies related to environmental noise. The Noise Element includes a Noise Land Use Compatibility Matrix that presents the Noise Element guidelines for determining acceptable and unacceptable community noise exposure limits for various land use categories. Noise levels up to 60 dBA CNEL are considered clearly compatible with residences and other sensitive uses. Noise levels up to 65 dBA CNEL are considered clearly compatible with office and recreational uses. Noise levels up to 70 dBA CNEL are considered clearly compatible with active commercial, industrial, and open space. Additionally, the City of Corona 2020–2040 General Plan includes interior noise standards of 45 dBA CNEL for sensitive land uses up to 65 dBA CNEL for some industrial uses. Additionally, it includes Policy N-2.7 to limit noise exposure during construction by requiring construction activities that occur in proximity to existing “noise-sensitive” uses, including schools, libraries, health care facilities, and residential uses, to limit the hours and days of operation in accordance with the City’s Noise Ordinance. Additionally, Policy N-3.2 requires sound barriers around outdoor mechanical equipment (City of Corona 2020c).

### **Standards of Significance**

Construction noise impacts are evaluated based on the qualitative criteria outlined in Section 17.84.040(D)(2), Construction Noise, of the Corona Municipal Code. The City has not established a quantitative screening level for construction noise. In general, construction noise impacts are based on the volume of the noise, intensity of the noise, the volume and intensity of the background noise, whether the noise can be heard from a distance of 50 feet or more from the noise source, the nature and zoning of the area within which the noise emanates, the density of inhabitation of the area within which the noise emanates, the time of the day or night the noise occurs, the duration of the noise, and whether the noise is recurrent, intermittent or constant (City of Corona 2020c).

Operational noise impacts from stationary sources are evaluated based on the noise standards identified in Section 17.84.040(C)(2), Stationary Noise Source Standards, and provided in Table 2. A permanent increase in traffic noise levels would be considered significant if it would increase noise level by greater than 3 dBA on any roadway segment and cause roadway noise levels to exceed the General Plan noise compatibility criteria.

Impacts related to vibration are evaluated based on FTA criteria and Section 17.84.050 of the Corona Municipal Code. The City does not have established vibration damage criteria; therefore, the FTA criteria for acceptable levels of groundborne vibration for various types of buildings is used for this analysis. The FTA identifies a standard of 0.12



PPV for buildings extremely sensitive to vibration damage and 0.2 PPV for non-engineered timber and masonry buildings, such as most residences (City of Corona 2020a). Additionally, the threshold of 94 VdB established in Section 17.84.050 of the Corona Municipal Code is applied for the evaluation of potential vibration annoyance.

## Project Construction

### Temporary Construction Noise

Construction of the projects proposed in the project would involve the use of heavy-duty machinery for surface preparation, excavation, surface restoration, and construction of aboveground facilities. The main pieces of equipment that may be used during construction include track-mounted excavators, backhoes, front-end loaders, a paver, forklifts, cranes, industrial saws, and welders. The transport of workers and equipment to the construction areas and import and export of material would also incrementally increase noise levels along roadways leading to and from the construction work areas.

The 2018 RWMP identifies 29 projects to be completed over the next 10 years before the buildout year (2030). Therefore, it assumed that construction of projects would overlap. However, the projects proposed in the RWMP would be throughout the water service area. For example, the Western Riverside County Regional Wastewater Authority (WRCRWA) Booster Pump Station and Old Temescal Pipeline are proposed for construction in the same fiscal year but would be located several miles apart. Additionally, most projects would be linear; therefore, construction would occur in a given area for only a short duration. As such, even if implementation of several projects would occur simultaneously, it is unlikely that simultaneous construction would result in combined impacts. Impacts related to construction would be independent to each construction project.

Sound levels of individual pieces of typical construction equipment range from 70 dBA to 83 dBA at 50 feet from the source, as shown in Table 3. When multiple pieces of equipment are operating simultaneously, the combined noise levels are higher. For example, the noise from one industrial saw at a distance of 50 feet (82.6 dBA) added to an excavator (76.7 dBA) at the same distance would equal approximately 83.6 dBA. These noise levels would attenuate by 6 dBA with every doubling of distance from the source.

**Table 3. Noise Levels at 50 Feet from Typical Construction Equipment**

Equipment Description	Leq (dBA)
Excavator	76.7
Backhoe	73.6
Front-End Loader	75.1
Paver	74.2
Forklift	67.7
Crane	72.6
Industrial Saw	82.6
Welder	70.0

**Source:** FHWA 2008.

As previously described, average noise levels in the City range from 45 to 65 dBA Leq depending on proximity to major freeways. As such, construction noise would temporarily increase the ambient noise environment and would be noticeably audible to sensitive receptors in the vicinity of the active project. As previously noted, a 5 dBA change in community noise level is generally clearly noticeable. According to Corona Municipal Code, Section 17.84.040(D)(2), construction noise is prohibited between the hours of 8:00 p.m. and 7:00 a.m., Monday through Saturday, and 6:00 p.m. to 10:00 a.m. on Sundays and federal holidays. Construction outside allowable hours is not anticipated at this time for project implementation. No pile driving is anticipated for project implementation. However, because construction noise would have the potential to be heard from a distance of 50 feet or more from the construction area, and construction would occur in residential and other zones containing sensitive



receptors, construction of individual 2018 RWMP projects would have the potential to result in significant temporary nuisance noise. Mitigation Measure NOI-1 is proposed to minimize construction noise.

Construction traffic associated with the projects proposed in the 2018 RWMP is anticipated to be minimal. Based on the worst-case construction scenario assumed in the air quality analysis (Harris 2020), average construction crews would generate approximately 18 personal automobile trips per day. The Sampson Pipeline Project is projected to require the most material import and export in the least amount of time and is anticipated to result in an average of approximately 20 truck trips per day. Therefore, the worst-case scenario would result in approximately 38 total trips per day (18 worker trips plus 20 truck trips). Compared to the tens of thousands of vehicle trips that occur on major arterial, collector, and local roadways in the City every day, the noise generated by construction traffic associated with the individual projects identified in the 2018 RWMP would not be discernable.

Because noise levels produced by project-related construction activities could potentially be considered a significant nuisance under the City's Noise Ordinance criteria, a potentially significant impact would occur. Therefore, implementation of the Mitigation Measure NOI-1 is required to minimize construction noise exposure. With implementation of the Mitigation Measure NOI-1, construction would incorporate best management practices so noise levels would not be a nuisance, and noise levels would be reduced to a less than significant level.

**NOI-1: Construction Noise Reduction Measures.** Individual projects under the 2018 Reclaimed Water Master Plan shall implement construction noise reduction measures to ensure compliance with the City of Corona's Noise Ordinance. The following measures shall be included on individual project construction plans and be submitted to the City of Corona, Public Works Department, for review before approval of final design.

- Construction equipment shall be properly outfitted and maintained with manufacturer recommended noise reduction devices.
- Diesel equipment shall be operated with closed engine doors and equipped with factory recommended mufflers.
- Mobile or fixed "package" equipment (e.g., arc-welders and air compressors) shall be equipped with shrouds and noise control features that are readily available for that type of equipment.
- Electrically powered equipment shall be used instead of pneumatic or internal-combustion powered equipment, where feasible.
- Unnecessary idling of internal combustion engines (e.g., in excess of 5 minutes) shall be prohibited.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive receptors.
- The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be limited to safety warning purposes only.
- No project-related public address or music system shall be audible at any adjacent sensitive receptor.
- The City of Corona shall notify residences within 100 feet of the construction area in writing at least 2 weeks prior to any construction activity such as concrete sawing, asphalt removal, or heavy grading operations. The notification shall describe the activities anticipated, provide dates and hours, and provide contact information with a description of a complaint and response procedure.
- In the event that a complaint is received, noise monitoring shall be conducted to determine whether hourly average noise levels during construction exceed ambient noise levels by more than 5 A-weighted decibels Equivalent Energy Level. A 1-hour noise measurements shall be taken during a normal weekday without construction activity, and a 1-hour measurement during typical construction. In the event that the above measures do not reduce noise levels to 5 A-weighted decibels or less above ambient conditions at the affected receptor, temporary sound barriers or sound blankets may be installed between construction operations and adjacent noise-sensitive receptors. Due to equipment exhaust pipes being approximately 7–8 feet above ground, a sound barrier at least 10 feet in height above grade would be required to mitigate noise to an acceptable level.



- The on-site construction supervisor shall have the responsibility and authority to receive and resolve noise complaints. A clear appeal process for the affected resident shall be established before construction begins to allow for resolution of noise problems that cannot be immediately solved by the site supervisor.
- All construction activities, including deliveries and engine warm-up, shall be prohibited between the hours of 8:00 p.m. and 7:00 a.m., Monday through Saturday, and 6:00 p.m. to 10:00 a.m. on Sundays and federal holidays.

### Temporary Construction Groundborne Vibration

Conventional construction techniques, such as earth movement by trucks, have the potential to generate groundborne vibration and noise. Construction techniques that commonly result in excessive vibration, such as blasting and pile driving, are not anticipated for projects identified in the 2018 RWMP. Reference vibration levels available from the FTA for typical construction equipment are provided in Table 4.

**Table 4. Noise Levels at 50 Feet from Typical Construction Equipment**

Equipment Description	Approximate RMS Vibration Level at 25 Feet (VdB)	Approximate PPV Vibration Level at 25 Feet (in/sec)	Approximate RMS Vibration Level at 40 Feet (VdB)
Vibratory Roller	0.21	94	0.10
Hoe Ram	0.089	87	0.044
Large bulldozer	0.089	87	0.044
Caisson drilling	0.089	87	0.044
Loaded trucks	0.076	86	0.038
Jackhammer	0.035	79	0.017
Small bulldozer	0.003	58	0.001

Source: FTA 2018.

Notes: in/sec = inches per second; ppv = peak particle velocity; RMS = root mean square; VdB = vibration decibel

As shown in Table 4, construction-related vibration levels would be below the 0.2 PPV threshold for typical building damage and the 94 VdB threshold for annoyance at a distance of approximately 25 feet. If ultimately required, vibratory rollers can generate groundborne vibration at 0.210 at a distance of 25 feet (FTA 2018); however, the vibration level would dissipate to below the threshold by adding only one additional foot of separation from the source. Therefore, impacts associated with construction equipment would be less than significant to typical buildings and receptors.

Construction would typically be below the threshold of 0.12 PPV for buildings extremely sensitive to vibration damage. However, vibration from operation of a vibratory roller, if required, would have the potential to generate vibration levels of 0.12 PPV up to approximately 40 feet from equipment operation. The Corona Heritage Inventory contains 482 properties recommended for preservation because of age or historic significance that may be considered susceptible to damage from vibration (City of Corona 2020a). Construction would generally be separated from buildings by more than 40 feet due to roadway setbacks. However, because exact future project alignments and construction fleets are unknown, construction that would involve use of vibratory equipment within 40 feet of a historic property would have the potential to result in significant vibration. Mitigation Measure NOI-2 would reduce impacts to a less than significant level.



**NOI-2: Vibratory Equipment Limitations.** Construction plans for individual projects under the 2018 Reclaimed Water Master Plan shall include a requirement that no vibratory equipment be operated within 40 feet of a structure eligible or listed on the Corona Heritage Inventory. Instead, alternative construction equipment shall be used, such as smooth wheel rollers without a vibratory component. This requirement shall be included on individual project construction plans and be submitted to the City of Corona, Public Works Department, for review before approval of final design.

## Project Operation

### Permanent Increase in Ambient Noise

With the exception of two new pump stations, most of the projects associated with the 2018 RWMP would be passive, new, or upgraded pipelines and storage facilities. These projects would not result in any new sources of operational noise as the flow of water through underground pipes and water storage does not generate audible noise. A nominal increase in vehicle trips is anticipated to be associated with maintenance of the projects. Consistent with the previous conclusions of the 2001 Draft Program Environmental Impact Report for the City of Corona RWMP Project, new and improved facilities would be incorporated into the existing maintenance schedule, and the net increase in new vehicle trips would be minimal (City of Corona 2001). Therefore, buildout of the 2018 RWMP would not result in a permanent increase in vehicle noise in the water service area. Emergency repair work may generate excessive noise from construction equipment; however, noise generated from such activities would be temporary and sporadic and not substantially different than existing emergency repair activities.

Operation of the two new pump stations (WRCRWA Booster Pump Station and Chase Booster Pump Station) identified in the 2018 RWMP would have the potential to result in new sources of stationary equipment noise. The typical noise range from pump station operation is between 80 and 90 dBA at the station. However, pump stations would be installed in enclosures that would typically reduce noise level by 10 to 20 dBA (City of Corona 2001). Assuming the worst-case noise level of 90 dBA, attenuated to 80 dBA through enclosure, the new pump stations would individually have the potential to exceed the City's most conservative stationary noise threshold of 50 dBA during nighttime hours up to 100 feet from the pump station. The WRCRWA Booster Pump Station would be approximately 800 feet west of the nearest receptors. The Chase Booster Pump Station would be in the southeastern portion of the Chase Park, more than 100 feet from the nearest residences. The Chase Booster Pump Station would have the potential to be approximately 100 feet from an existing place of worship. However, places of worship are primarily used during daytime hours. For both proposed pump stations, noise generated at the pump station would not exceed the City's daytime noise threshold of 55 dBA beyond 55 feet from the pump station. Since both pump stations are more than 10 feet from the nearest sensitive receptors, operation of the proposed pump stations would not result in a significant permanent increase in ambient noise.

Thus, operation of the project would not generate noise in excess of established thresholds or expose sensitive receptors to excessive noise. Long-term operational noise impacts would be less than significant.

### Permanent Increase in Groundborne Vibration

Once installed, the project includes passive uses (pipelines, storage) and pump stations that do not generate substantial levels of vibration. Water flowing through underground pipes, mechanical equipment operating at pump stations, and light-duty trucks associated with facility maintenance are not typical sources of groundborne vibration. Therefore, long-term operational groundborne vibration impacts would be less than significant.

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