Appendix A

Notice of Preparation; Scoping Meeting Proof of Publication and Comments Received

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NOTICE OF PREPARATION AND SCOPING MEETING

Carpinteria Valley Water District
Carpinteria Advanced Purification Project

TO: Agencies, Organizations, and Interested Parties **DATE:** January 7, 2019

SUBJECT: Notice of Preparation and Scoping Meeting for Environmental Impact Report

Carpinteria Valley Water District (CVWD) is the lead agency under the California Environmental Quality Act (CEQA) in preparation of an Environmental Impact Report (EIR) for the Carpinteria Advanced Purification Project (CAPP, or Proposed Project). CVWD is working in partnership with Carpinteria Sanitary District (CSD) on construction and operation of the CAPP. The EIR will be a joint document intended to comply with both CEQA and the National Environmental Policy Act (NEPA) (see California Code of Regulations (CCR), Title 14, Division 6, Chapter 3, Section 15222 and Code of Federal Regulations (CFR), Title 40, Sections 1502.25, 1506.2, and 1506.4 for authority for combining federal and state environmental documents).

The CAPP would consist of construction and operation of an advanced purification and groundwater injection project in the Carpinteria Groundwater Basin. The CAPP would include a one million gallon per day (mgd) (up to 1.5 mgd in future) Advanced Water Purification Facility (AWPF), a pump station, equalization tank, conveyance pipelines, injection and monitoring wells, ocean outfall modifications, and other facilities to produce advanced treated water for groundwater recharge, storage, and potable reuse (see detailed Project Description on following page). CVWD is requesting identification of environmental issues and information that you or your organization believes should be considered in the EIR.

SCOPING PERIOD: January 7, 2019 through February 8, 2019

SCOPING COMMENTS: Please indicate a contact person for your agency and send your responses and comments by February 8, 2019 to:

Mr. Robert McDonald
Carpinteria Valley Water District
1301 Santa Ynez Ave.
Carpinteria, CA 93013

Phone: (805) 684-2816 x112
E-mail: bob@cvwd.net

SCOPING MEETING: CVWD will hold one community meeting to receive input on the scope and content of the CAPP EIR. You are welcome to attend and present environmental information that you believe should be considered in the EIR. The scoping meeting is scheduled as follows:

January 24, 2018
5:00-7:00 p.m.
Carpinteria Veterans Memorial Building
941 Walnut Ave
Carpinteria, CA 93013

AGENCIES: CVWD requests your views on the scope and content of the EIR relevant to your agency's statutory responsibilities, in accordance with CEQA and NEPA. CVWD anticipates that your agency will need to concur with the CAPP EIR when considering permits or approvals that your agency must issue for the CAPP.

PROJECT LOCATION: The CAPP is located primarily within the central portion of the City of Carpinteria, in Santa Barbara County, California, with a small portion located in unincorporated Santa Barbara County adjacent to the City of Carpinteria. The Project Location is shown in **Figure 1**. Conveyance pipelines would extend from the existing CSD Wastewater Treatment Plant (WWTP; located at 5300 6th Street) west to Linden Avenue, north along Linden Avenue for approximately one mile to just south of Highway 192/Foothill Road. The Primary Pipeline alignment is shown in dark blue on Figure 1. Potential alternative alignments are still being considered, shown in red in Figure 1, should a potential issue arise with the proposed primary alignment. Injection wells would be located at up to three of the six sites indicated on Figure 1, generally adjacent to the pipeline alignment.

PROJECT DESCRIPTION: The CAPP, proposed by CVWD in partnership with CSD, would advance treat local wastewater flows and beneficially reuse them for groundwater recharge. The CAPP would consist of construction and operation of a new AWPF, conveyance pipelines, injection and monitoring wells, ocean outfall modifications, and other facilities to produce advanced treated water for groundwater recharge, storage, and potable reuse. The purpose of the CAPP is to increase local water supply and reliability through groundwater injection and storage. The CAPP aims to produce 1,100 acre-feet per year (AFY), or 1.0 mgd advanced treated water initially, with the potential for ultimate expansion to 1.5 mgd. A new AWPF would be constructed at the existing CSD WWTP, located entirely within the existing footprint of the site. Approximately 8,100 linear feet of pipeline would be installed to convey the advanced treated water to groundwater injection wells, and up to 1,400 linear feet of pipeline would be installed to convey backwash water to existing sewers or stormwater conveyance systems.

Six potential groundwater injection well sites have been identified, with up to three groundwater injection wells to be installed as part of the CAPP. Groundwater injection would put the advanced treated water into the Carpinteria Groundwater Basin for storage and later recovery by CVWD. Each injection well would be accompanied by backwash pumps and a 42,000-gallon tank. Up to six monitoring wells would be constructed down-gradient of the injection wells to allow for monitoring of groundwater quality and levels. The conveyance pipelines would largely be constructed within roadway rights of way, as would some of the monitoring wells. Advanced treated water stored in the Carpinteria Groundwater Basin would be later recovered through CVWD's existing groundwater wells. By recycling additional wastewater flows, the CAPP would reduce WWTP discharge volumes to the Pacific Ocean.

As a result, the CAPP would also include modifications to the existing CSD ocean outfall, namely installation of duckbill valves to prevent backflow into the outfall.

At various locations along the construction route, staging areas would be required to store pipe, construction equipment, and other construction-related material. Staging areas would be established where space is available, generally on vacant and CVWD or CSD-owned parcels in the vicinity of the construction activities, such as the District Yard. Staging for the AWPF will be located within the WWTP site, and injection well staging is anticipated to be established within or adjacent to the selected well sites. Typical construction activities during construction of the CAPP would include site preparation, grading, pipe installation, structural improvements (foundations and footings), well drilling, paving, electrical/ instrumentation installation, startup, and testing work.

POTENTIAL ENVIRONMENTAL EFFECTS: An EIR will be prepared to evaluate the CAPP's potential environmental impacts and analyze project alternatives. The resources anticipated to be discussed in the EIR are listed in the following table (indicated by an "x") and described further below. An Initial Study completed for the CAPP in December 2018 found the CAPP is likely to have no impact or a less than significant impact on the remaining resources areas. This EIR will be a joint document intended to comply with both CEQA and NEPA; accordingly, topic areas specific to NEPA, such as Environmental Justice, will also be evaluated with respect to the CAPP.

X	Aesthetics		Agricultural Resources	X	Air Quality
X	Biological Resources	X	Cultural Resources	X	Energy
X	Geology and Soils	X	Greenhouse Gas Emissions	X	Hazards and Hazardous Materials
	Hydrology and Water Quality	X	Land Use and Planning		Mineral Resources
X	Noise		Population and Housing		Public Services
	Recreation	X	Transportation	X	Tribal Cultural Resources
	Utilities and Service Systems	X	Wildfire		Environmental Justice
X	Mandatory Findings of Significance				

An "X" indicates a resource area with potentially significant impacts that may require mitigation.

Aesthetics – The CAPP will be analyzed to determine if it would have an adverse impact on scenic vistas, degrade the existing visual character or quality of the site and its surroundings, or create any new sources of light or glare. The AWPF, equalization tank, pump station, injection wells, and backwash tanks are anticipated to generally integrate with the existing surroundings, the monitoring wells would be underground, and the outfall modifications would be underwater. However, in some instances, their installation would potentially alter the visual character of the site and the need for mitigation such as visual screening or other measures may be considered.

Air Quality – The CAPP will be analyzed as compared to applicable air quality plans and its potential to violate air standards or contribute to existing violations, increase criteria pollutants, expose sensitive receptors, and generate odors. Potential air quality impacts from the CAPP are anticipated to primarily result from construction-related emissions and odors.

Biological Resources – The CAPP will be analyzed for its potential effects on sensitive or special status species, riparian habitat or natural communities identified by the California Department of Fish and Wildlife or U.S. Fish and Wildlife, wetlands, or migration of species. Local policies and conservation plans protecting biological resources will be reviewed to determine if conflicts are present. CAPP facilities located adjacent to Carpinteria Creek are the most likely to result in adverse biological resource impacts. CAPP facilities are not anticipated to have substantial biological resource impacts on Franklin Creek because the creek is channelized throughout the project area. Mitigation measures to reduce impacts to protected species may be considered, such as focused surveys, restrictions on construction during nesting seasons, and tree inventory and protection measures.

Cultural Resources – The CAPP will be analyzed to determine if it would have any substantial, adverse changes in the significance of historic or archaeological resources; directly or indirectly destroy a unique cultural resources feature; or disturb any human remains. Because of their location primarily within roadways and developed areas (e.g., WWTP), CAPP facilities are not anticipated to impact local cultural resources. Mitigation measures may be considered, such as archeological monitoring and construction restrictions.

Energy – The CAPP will be analyzed to determine if it would conflict with a plan for renewable energy or energy efficiency, and if it would have significant environmental impact due to wasteful or inefficient energy use. Although the AWPF would require energy use to advance treat wastewater, recycling wastewater for future potable use typically reduces overall energy demands for a water supply system when compared to energy demands of imported water that would otherwise be needed to meet water demands that would be served by the CAPP.

Geology and Soils – The CAPP will be analyzed to determine if it would expose people or structures to substantial adverse effects through seismic movement, shaking, landslides, or liquefaction; result in substantial erosion, or be located on an unstable or expansive soil. Geological and soil impacts associated with the CAPP are anticipated to be minor.

Hazards and Hazardous Materials – The CAPP will be analyzed to determine impacts to the public or environment (including nearby schools) from the transport, use, or encounter of hazardous substances; and review of potential interference with emergency response plans. The AWPF would require transport and use of various treatment chemicals, which would be controlled through expansion of the CSD's hazardous materials handling plans.

Noise – The CAPP will be analyzed to determine if it would result in exposure of persons to excessive noise or ground vibrations, either temporary or overall increases in ambient noise levels. Potential noise and vibration impacts are anticipated due to construction activities, including drilling of the injection and monitoring wells. Mitigation measures, including noise control measures and preconstruction noticing, may be considered.

Transportation – The CAPP will be analyzed to determine if it would cause an increase in traffic (temporary or long-term), increase hazards due to a design feature, result in inadequate emergency access, or conflict with transportation plans or policies, including those supporting alternative transportation. Temporary impacts to transportation patterns are anticipated due to construction activities and a contractor-led traffic management plan may be considered to mitigate potential impacts.

Tribal Cultural Resources – The CAPP will be analyzed to determine if it would result in a substantial adverse change in the significance of a tribal cultural resource that is eligible for listing as a historical resource or one that is determined by CVWD to be significant pursuant to the Public Resources Code Section 5024. Due to the historical presence of Chumash in the project area, there is potential for the CAPP to encounter buried tribal cultural resources during construction. Mitigation measures may be considered, such as tribal monitoring and construction restrictions.

Wildfire – The CAPP will be analyzed to determine the potential to impair wildfire emergency response or evacuation plans, expose occupants to wildfire or wildfire-related pollution, require installation of infrastructure that may exacerbate fire risk, or otherwise expose people to significant risks associated with wildfire impacts, including flooding or landslides. CAPP facilities are not anticipated to increase exposure to wildfire risk, except during construction-related roadway detours.

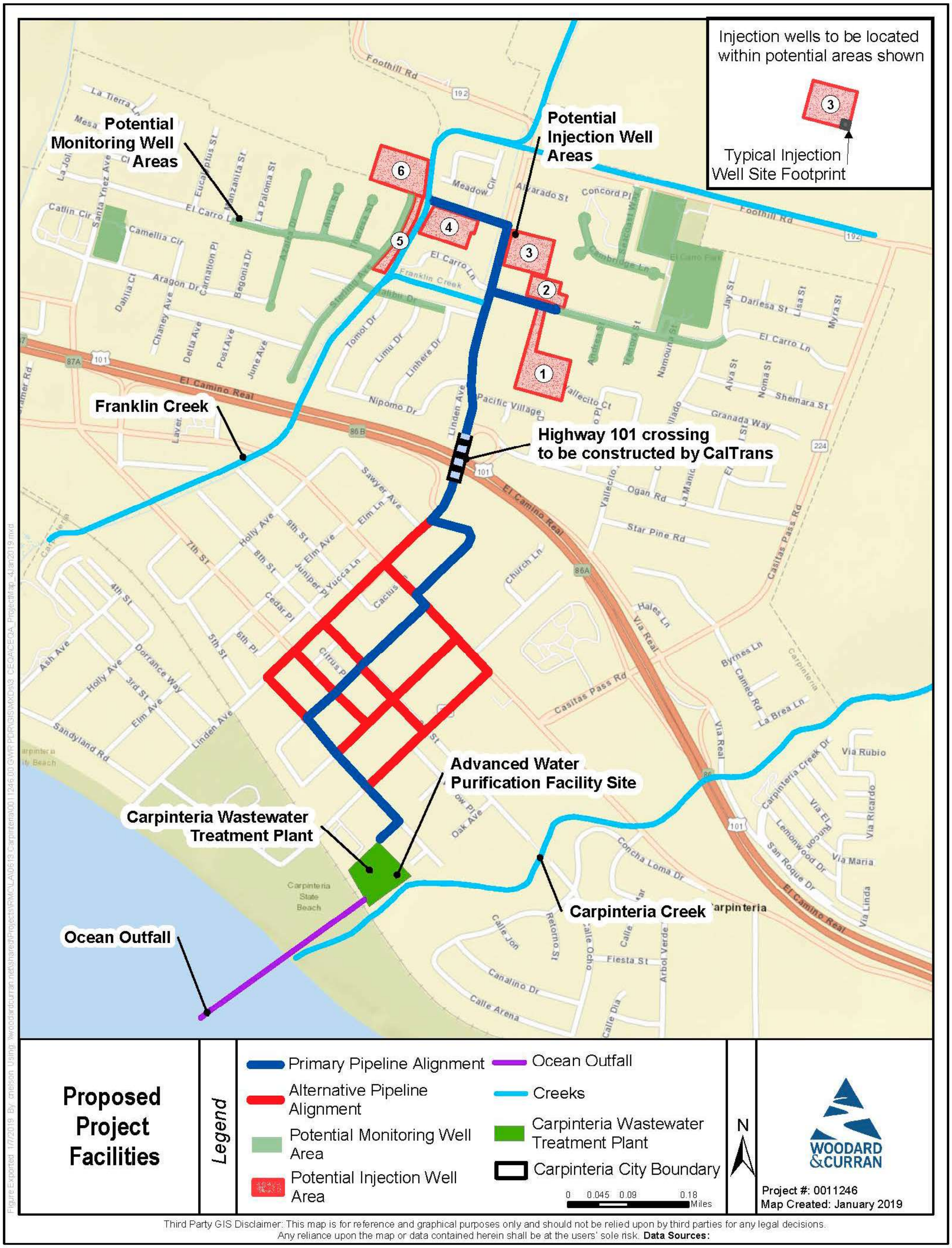
Environmental Justice – The CAPP will be analyzed to determine if it would disproportionately impact minority or low-income populations. No environmental justice impacts are anticipated for this project.

Mandatory Findings of Significance – The CAPP will be analyzed in the appropriate sections, above, to determine if it would degrade the quality of the environment including species reduction or adverse effects on human beings, or have impacts that are cumulatively considerable in combination with other projects (current or future). The need to implement mitigation measures to address such impacts will be considered as part of the analysis.

DOCUMENT AVAILABILITY: This notice, an Initial Study, and additional details on the CAPP can be viewed on CVWD's website at: http://www.cvwd.net/water_info/projects.htm

If you require additional information, please contact Bob McDonald at (805) 684-2816.

Figure 1: Proposed Project Facilities



Notice of Preparation and Scoping Meeting for Environmental Impact Report (EIR)

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This Notice of Preparation for the CAPP is available for public comment from January 7, 2019 through February 8, 2019. Please provide contact information (name, address, email) and send comments to Mr. Bob McDonald, Carpinteria Valley Water District, 1301 Santa Ynez Ave., Carpinteria, CA 93013; Phone: (805) 684-2816 x112, E-mail: bob@cvwd.net.

CVWD will hold a scoping meeting on January 24, 2019 at 5:00 – 7:00 p.m. at the Carpinteria Veterans Memorial Building, 941 Walnut Ave in Carpinteria. This scoping meeting provides an opportunity to offer input into the scope and content of the EIR. The meeting format will be an open house from 5:00 - 7:00 p.m., with a brief presentation about the project beginning at 6:00 p.m.

This notice, an Initial Study, and additional details on the CAPP can be accessed online at: http://www.cvwd.net/water_info/projects.htm

Para la traducción al español de este aviso, visite CVWD.net

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DEPARTMENT OF TRANSPORTATION
CALTRANS DISTRICT 5
50 HIGUERA STREET
SAN LUIS OBISPO, CA 93401-5415
PHONE (805) 549-3101
FAX (805) 549-3329
TTY 711
www.dot.ca.gov/dist05/

Making Conservation a California Way of Life.

February 6, 2019

SB-101-3.05
SCH# 2019011016

Robert McDonald
Carpinteria Valley Water District
1301 Santa Ynez Avenue
Carpinteria, CA 93013

COMMENTS FOR THE NOTICE OF PREPARATION (NOP) OF THE DRAFT ENVIRONMENTAL IMPACT REPORT (EIR) FOR THE CARPINTERIA ADVANCED PURIFICATION PROJECT

Dear Mr. McDonald:

The California Department of Transportation (Caltrans) appreciates the opportunity to review the Notice of Preparation (NOP) of the draft Environmental Impact Report (EIR) for the Carpinteria Advanced Purification Project. Caltrans has reviewed the project and offers the following comments:

Encroachment Permits:

Please be aware any work within the State's right-of-way will require an encroachment permit from Caltrans, and must be done to our engineering and environmental standards, and at no cost to the State. The conditions of approval and the requirements for the encroachment permit are issued at the sole discretion of the Permits Office, and nothing in this letter shall be implied as limiting those future conditioned and requirements. For more information regarding the encroachment permit process, please visit our Encroachment Permit Website at: http://www.dot.ca.gov/trafficops/ep/index.html.

Please refer to Chapter 17 of the Project Development Procedures Manual (PDPM) regarding existing and proposed manholes and piping located within or adjacent to the Caltrans right of way. Crossing under the freeway will need to be fully encased from 5 feet outside the State Freeway Right of Way on either side of the freeway http://www.dot.ca.gov/design/manuals/pdpm/chapter/chapt17.pdf.

Plans shall be prepared by a Registered Civil Engineer and shall have a pre-submittal meeting with the District Permit Engineer prior to application due to the complexity of the proposed project. Engineering plan details may be found under "Applications/Forms" at http://www.dot.ca.gov/trafficops/ep/.

Environmental:

Please be aware of the wetland on the northwest corner of US 101 at Linden Avenue, between the Linden Avenue remnant and the Linden Avenue overcrossing abutment. As a part of the Caltrans project, an enhancement planting will be provided by Caltrans as a mitigation for impacts to the existing wetlands in this quadrant. It is likely that the mitigation planting will occur prior to construction of the proposed pipeline. The site will require restoration and monitoring for success if it is disturbed during construction of the proposed pipeline. Additionally, irrigation controls will be installed in the area for the planting project and should not be disturbed.

Hydraulics:
Caltrans has found a high groundwater level on Highway 101 at Linden Avenue. The proposed project should not increase groundwater to that location.

We look forward to continued coordination with the Water District on this project. If you have any questions, or need further clarification on items discussed above, please contact me at (805) 549-3131 or ingrid.mcroberts@dot.ca.gov.

Sincerely,

Ingrid McRoberts

Ingrid McRoberts
Development Review Coordinator
District 5, LD-IGR South Branch

CALIFORNIA COASTAL COMMISSION
SOUTH CENTRAL COAST AREA
89 SOUTH CALIFORNIA ST., SUITE 200
VENTURA, CA 93001
(805) 585-1800

February 6, 2019

Robert McDonald
Carpinteria Valley Water District
1301 Santa Ynez Avenue
Carpinteria, CA 93013

RE: Notice of Preparation and Initial Study for Carpinteria Advanced Purification Project

Dear Mr. McDonald,

Commission staff has reviewed the Initial Study (IS) for the Carpinteria Advanced Purification Project and we appreciate the opportunity to provide comments for your consideration. The project is to develop a sustainable and locally controlled future water supply for the Carpinteria Valley Water District, which would include production of approximately 1,100 acre-feet per year of purified water from the Carpinteria Sanitary District Wastewater Treatment Plant (WWTP), and injection into the local groundwater basin.

The project includes facility upgrades to the existing WWTP and ocean outfall, as well as three new injection wells, six new monitoring wells, and associated conveyance and discharge piping. Aside from Potential Injection Well Area #6 and the ocean outfall, all of the proposed development is located completely within the boundaries of the City of Carpinteria (City) and is subject to the policies and provisions of the City's certified Local Coastal Program (LCP). Implementation Policy 25 in the Creekways & Riparian Habitats Section of the Land Use Plan component of the City's certified LCP requires that new development is setback 50 feet from the top of the upper bank of creeks or existing edge of riparian vegetation, whichever is further. It is difficult to determine the exact location of the proposed development in relation to Carpinteria and Franklin Creeks based on the information and exhibits in the IS; however, portions of the proposed development appear to be within the 50 foot creek setback. As such, the Environmental Impact Report (EIR) for the project should include a detailed alternatives analysis for the proposed development in order to avoid encroachment into the required creek setback, and to ensure that adverse impacts to coastal resources are avoided to the maximum extent feasible.

Additionally, the subject ocean outfall is located at least partially within the California Coastal Commission's (CCC) retained jurisdiction, as such; the proposed modifications to this facility will require a Coastal Development Permit (CDP) from the CCC. The standard of review for that portion of the project will be the Chapter 3 Policies of the Coastal Act with the relevant policies and provisions of the City's certified LCP serving as guidance.

Lastly, Potential Injection Well Area #6 is located outside of the City boundaries within the Coastal Zone of the County of Santa Barbara (County). As such, the EIR should also include an analysis of Potential Injection Well Area #6 within the context County's certified LCP, and if a well in this location is ultimately proposed, a CDP from the County would be required.

Thank you for your consideration of these comments. Please feel free to contact me if you have questions.

Sincerely,

Wesley Horn
Coastal Program Analyst

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
South Coast Region
3883 Ruffin Road
San Diego, CA 92123
(858) 467-4201
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

February 8, 2019

Robert McDonald
Carpinteria Valley Water District
1301 Santa Ynez Ave.
Carpinteria, CA 93013
bob@cvwd.net

Subject: Comments on the Notice of Preparation of a Draft Environmental Impact Report for the Carpinteria Advanced Purification Project; SCH 2019011016; Santa Barbara County

Dear Robert McDonald:

The California Department of Fish and Wildlife (CDFW) has reviewed the above-referenced Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for the Carpinteria Advanced Purification Project (Project). The Carpinteria Valley Water District is the lead agency preparing a DEIR pursuant to the California Environmental Quality Act (CEQA; Pub. Resources Code, § 21000 et. seq.) with the purpose of informing decision-makers and the public regarding potential environmental effects related to the Project.

The Project is located primarily within the central portion of the City of Carpinteria (City), in Santa Barbara County, with a small portion located in unincorporated Santa Barbara County adjacent to the City. Conveyance pipelines would extend from the existing Carpinteria Sanitary District wastewater treatment plant (located at 5300 6th Street) west to Linden Avenue, and then north along Linden Avenue for approximately one mile to just south of Highway 192/Foothill Road.

The Project would involve advanced treatment of local wastewater flows and beneficial reuse for groundwater recharge. Six potential groundwater injection well sites have been identified, with up to three groundwater injection wells to be installed as part of this Project.

The following comments and recommendations have been prepared pursuant to the CDFW's authority as a Responsible Agency (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381) over those aspects of the proposed project that come under the purview of the California Endangered Species Act (CESA; Fish and G. Code, § 2050 *et seq.*), the Native Plant Protection Act (NPPA; Fish and G. Code, §1900 et seq.), and/or CDFW's lake and streambed alteration (LSA) regulatory authority (Fish and G. Code, § 1600 *et seq.*). Comments are also being provided pursuant to our authority as Trustee Agency with jurisdiction over natural resources held in trust by statute for all the people of the state that may be affected by the Project [Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines, § 15386, subd. (a)] to assist the Lead Agency in avoiding or minimizing potential Project impacts on biological resources.

Specific Comments

1) Northern California Legless Lizard: Northern California legless lizard (*Anniella pulchra*) is a California species of special concern (SSC) and is known to occur within the general Project area, and habitats on the proposed Project site could be suitable for this species. Impacts to SSC, including northern California legless lizard, should be considered a significant direct and cumulative adverse effect under CEQA without implementing appropriate avoid and/or mitigation measures [CEQA Guidelines, §§ 15064, 15065, 15125(c) and 15380]. CDFW recommends that the DEIR include a full evaluation of potential direct and indirect impacts to legless lizard from construction and operation of the Project.

2) Monarch Butterfly Winter Roosts and Overwintering Population: Monarch butterfly (*Danaus plexippus*), also a SSC, is documented to occur to the north of the proposed Project site, and suitable habitat may occur along the riparian habitat adjacent to the Project site. CDFW recommends that the DEIR include a full evaluation of potential impacts to monarch butterfly roosting habitat (both direct and indirect) from construction and operation of the Project (Fish and G. Code, § 1021).

General Comments

1) Project Description and Alternatives: To enable CDFW to adequately review and comment on the proposed Project from the standpoint of the protection of plants, fish, and wildlife, we recommend the following information be included in the DEIR:

   a) A complete discussion of the purpose and need for, and description of, the proposed Project, including all staging areas and access routes to the construction and staging areas; and,

   b) A range of feasible alternatives to Project component location and design features to ensure that alternatives to the proposed Project are fully considered and evaluated. The alternatives should avoid or otherwise minimize direct and indirect impacts to sensitive biological resources and wildlife movement areas.

2) Lake and Streambed Alteration Agreements (LSA): As a Responsible Agency under CEQA, CDFW has authority over activities in streams and/or lakes that will divert or obstruct the natural flow; or change the bed, channel, or bank (including vegetation associated with the stream or lake) of a river or stream; or use material from a streambed. For any such activities, the project applicant (or "entity") must provide written notification to CDFW pursuant to section 1600 et seq. of the Fish and Game Code. Based on this notification and other information, CDFW determines whether a LSA Agreement (Agreement) with the applicant is required prior to conducting the proposed activities. CDFW's issuance of an Agreement for a project that is subject to CEQA will require related environmental compliance actions by CDFW as a Responsible Agency. As a Responsible Agency, CDFW may consider the CEQA document prepared by the local jurisdiction (Lead Agency) for the Project. To minimize additional requirements by CDFW pursuant to section 1600 *et seq.* and/or under CEQA, the DEIR should fully identify the potential impacts to the stream or

riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for issuance of the LSA.[1]

a) The Project area supports aquatic, riparian, and wetland habitats; therefore, a preliminary jurisdictional delineation of the streams and their associated riparian habitats should be included in the DEIR. The delineation should be conducted pursuant to the U. S. Fish and Wildlife Service (USFWS) wetland definition adopted by the CDFW.[2] Some wetland and riparian habitats subject to CDFW's authority may extend beyond the jurisdictional limits of the U.S. Army Corps of Engineers' section 404 permit and Regional Water Quality Control Board section 401 Certification.

b) In areas of the Project site which may support ephemeral streams, herbaceous vegetation, woody vegetation, and woodlands also serve to protect the integrity of ephemeral channels and help maintain natural sedimentation processes; therefore, CDFW recommends effective setbacks be established to maintain appropriately-sized vegetated buffer areas adjoining ephemeral drainages.

c) Project-related changes in drainage patterns, runoff, and sedimentation should be included and evaluated in the DEIR.

3) Wetlands Resources: CDFW, as described in Fish & Game Code section 703(a), is guided by the Fish and Game Commission's policies. The Wetlands Resources policy (http://www.fgc.ca.gov/policy/) of the Fish and Game Commission "...seek[s] to provide for the protection, preservation, restoration, enhancement and expansion of wetland habitat in California. Further, it is the policy of the Fish and Game Commission to strongly discourage development in or conversion of wetlands. It opposes, consistent with its legal authority, any development or conversion that would result in a reduction of wetland acreage or wetland habitat values. To that end, the Commission opposes wetland development proposals unless, at a minimum, project mitigation assures there will be 'no net loss' of either wetland habitat values or acreage. The Commission strongly prefers mitigation which would achieve expansion of wetland acreage and enhancement of wetland habitat values."

a) The Wetlands Resources policy provides a framework for maintaining wetland resources and establishes mitigation guidance. CDFW encourages avoidance of wetland resources as a primary mitigation measure and discourages the development or type conversion of wetlands to uplands. CDFW encourages activities that would avoid the reduction of wetland acreage, function, or habitat values. Once avoidance and minimization measures have been exhausted, the Project must include mitigation measures to assure a "no net loss" of either wetland habitat values, or acreage, for unavoidable impacts to wetland resources. Conversions include, but are not limited to, conversion to subsurface drains, placement of fill or building of structures within the wetland, and channelization or removal of materials from the streambed. All wetlands and watercourses, whether ephemeral, intermittent, or perennial, should be retained and provided with substantial setbacks, which preserve the riparian and aquatic values and functions for the benefit to on-site and off-site wildlife populations. CDFW recommends mitigation measures to

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[1] A notification package for a LSA may be obtained by accessing the CDFW's web site at www.wildlife.ca.gov/habcon/1600.
[2] Cowardin, Lewis M., et al. 1970. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service.

compensate for unavoidable impacts be included in the PEIR and these measures should compensate for the loss of function and value.

b) The Fish and Game Commission's Water policy guides CDFW on the quantity and quality of the waters of this state that should be apportioned and maintained respectively so as to produce and sustain maximum numbers of fish and wildlife; to provide maximum protection and enhancement of fish and wildlife and their habitat; encourage and support programs to maintain or restore a high quality of the waters of this state; prevent the degradation thereof caused by pollution and contamination; and, endeavor to keep as much water as possible open and accessible to the public for the use and enjoyment of fish and wildlife. CDFW recommends avoidance of water practices and structures that use excessive amounts of water, and minimization of impacts that negatively affect water quality, to the extent feasible (Fish and G. Code, § 5650).

4) CESA: CDFW considers adverse impacts to a species protected by CESA to be significant without mitigation under CEQA. As to CESA, take of any endangered, threatened, candidate species, or State-listed rare plant species that results from the Project is prohibited, except as authorized by state law (Fish and Game Code, §§ 2080, 2085; Cal. Code Regs., tit. 14, §786.9). Consequently, if the Project, Project construction, or any Project-related activity during the life of the Project will result in take of a species designated as endangered or threatened, or a candidate for listing under CESA, CDFW recommends that the Project proponent seek appropriate take authorization under CESA prior to implementing the Project. Appropriate authorization from CDFW may include an Incidental Take Permit (ITP) or a consistency determination in certain circumstances, among other options [Fish and G. Code, §§ 2080.1, 2081, subds. (b) and (c)]. Early consultation is encouraged, as significant modification to a Project and mitigation measures may be required in order to obtain a CESA Permit. Revisions to the Fish and Game Code, effective January 1998, may require that CDFW issue a separate CEQA document for the issuance of an ITP unless the Project CEQA document addresses all Project impacts to CESA-listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of an ITP. For these reasons, biological mitigation monitoring and reporting proposals should be of sufficient detail and resolution to satisfy the requirements for a CESA ITP.

5) Biological Baseline Assessment: To provide a complete assessment of the flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened, sensitive, regionally and locally unique species, and sensitive habitats, the DEIR should include the following information:

a) Information on the regional setting that is critical to an assessment of environmental impacts, with special emphasis on resources that are rare or unique to the region [CEQA Guidelines, § 15125(c)];

b) A thorough, recent, floristic-based assessment of special status plants and natural communities, following CDFW's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (see http://www.dfg.ca.gov/habcon/plant/);

c) Floristic, alliance- and/or association-based mapping and vegetation impact assessments conducted at the Project site and within the neighboring vicinity. *The Manual of California Vegetation*, second edition, should also be used to inform this mapping and assessment[3]. Adjoining habitat areas should 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;

d) A complete, recent, assessment of the biological resources associated with each habitat type on site and within adjacent areas that could also be affected by the project. CDFW's California Natural Diversity Data Base (CNDDB) in Sacramento should be contacted to obtain current information on any previously reported sensitive species and habitat. CDFW recommends that CNDDB Field Survey Forms be completed and submitted to CNDDB to document survey results. Online forms can be obtained and submitted at http://www.dfg.ca.gov/biogeodata/cnddb/submitting_data_to_cnddb.asp;

e) A complete, recent, assessment of rare, threatened, and endangered, and other sensitive species on site and within the area of potential effect, including California SSC and California Fully Protected Species (Fish and Game Code §§ 3511, 4700, 5050 and 5515). Species to be addressed should include all those which meet the CEQA definition of endangered, rare or threatened species (see CEQA Guidelines § 15380). Seasonal variations in use of the project area should also be addressed. Focused species-specific surveys, 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 USFWS; and,

f) A recent, wildlife and rare plant survey. 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 build out could occur over a protracted time frame, or in phases.

6) Biological Direct, Indirect, and Cumulative Impacts: To provide a thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts, the following should be addressed in the DEIR:

a) A discussion of potential adverse impacts from lighting, noise, human activity, exotic species, and drainage. The latter subject should address Project-related changes on drainage patterns and downstream of the project site; the volume, velocity, and frequency of existing and post-Project surface flows; polluted runoff; soil erosion and/or sedimentation in streams and water bodies; and, post-Project fate of runoff from the project site. The discussion should also address the proximity of the extraction activities to the water table, whether dewatering would be necessary and the potential resulting impacts on the habitat (if any) supported by the groundwater. Mitigation measures proposed to alleviate such Project impacts should be included;

b) A discussion regarding indirect Project impacts on biological resources, including resources in nearby public lands, open space, adjacent natural habitats, riparian

[3]Sawyer, J. O., Keeler-Wolf, T., and Evens J.M. 2008. A manual of California Vegetation, 2nd ed. ISBN 978-0-943460-49-9.

ecosystems, and any designated and/or proposed or existing reserve lands (e.g., preserve lands associated with a Natural Community Conservation Plan (NCCP, Fish and G .Code, § 2800 et. seq.). Impacts on, and maintenance of, wildlife corridor/movement areas, including access to undisturbed habitats in adjacent areas, should be fully evaluated in the DEIR;

c) An analysis of impacts from land use designations and zoning located nearby or adjacent to natural areas that may inadvertently contribute to wildlife-human interactions. A discussion of possible conflicts and mitigation measures to reduce these conflicts should be included in the DEIR; and,

d) A cumulative effects analysis, as described under CEQA Guidelines section 15130. 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.

7) Avoidance, Minimization, and Mitigation for Sensitive Plants: The DEIR should include measures to fully avoid and otherwise protect sensitive plant communities from Project-related direct and indirect impacts. CDFW considers these 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 CNDDB and are included in *The Manual of California Vegetation* (Sawyer et al. 2008).

8) Compensatory Mitigation: The DEIR should include mitigation measures for adverse Project-related impacts to sensitive plants, animals, and habitats. Mitigation measures should emphasize avoidance and reduction of Project impacts. For unavoidable impacts, on-site habitat restoration or enhancement should be discussed in detail. If on-site mitigation is not feasible or would not be biologically viable and therefore not adequately mitigate the loss of biological functions and values, off-site mitigation through habitat creation and/or acquisition and preservation in perpetuity should be addressed. Areas proposed as mitigation lands should be protected in perpetuity with a conservation easement, financial assurance and dedicated to a qualified entity for long-term management and monitoring. Under Government Code section 65967, the lead agency must exercise due diligence in reviewing the qualifications of a governmental entity, special district, or nonprofit organization to effectively manage and steward land, water, or natural resources on mitigation lands it approves.

9) Long-term Management of Mitigation Lands: For proposed preservation and/or restoration, the DEIR should include measures to protect the targeted habitat values from direct and indirect negative impacts in perpetuity. The objective should be to offset the Project-induced qualitative and quantitative losses of wildlife habitat values. Issues that should be addressed include (but are not limited to) restrictions on access, proposed land dedications, monitoring and management programs, control of illegal dumping, water pollution, and increased human intrusion. An appropriate non-wasting endowment should be set aside to provide for long-term management of mitigation lands.

10) Nesting Birds: CDFW recommends that measures be taken to avoid Project impacts to nesting birds. Migratory nongame native bird species are protected by international treaty

under the Federal Migratory Bird Treaty Act (MBTA) of 1918 (Title 50, § 10.13, Code of Federal Regulations). Sections 3503, 3503.5, and 3513 of the California Fish and Game Code prohibit take of all birds and their active nests including raptors and other migratory nongame birds (as listed under the Federal MBTA). Proposed Project activities including (but not limited to) staging and disturbances to native and nonnative vegetation, structures, and substrates should occur outside of the avian breeding season which generally runs from February 1 through September 1 (as early as January 1 for some raptors) to avoid take of birds or their eggs. If avoidance of the avian breeding season is not feasible, CDFW recommends surveys by a qualified biologist with experience in conducting breeding bird surveys to detect protected native birds occurring in suitable nesting habitat that is to be disturbed and (as access to adjacent areas allows) any other such habitat within 300-feet of the disturbance area (within 500-feet for raptors). Project personnel, including all contractors working on site, should be instructed on the sensitivity of the area. Reductions in the nest buffer distance may be appropriate depending on the avian species involved, ambient levels of human activity, screening vegetation, or possibly other factors.

11) Translocation/Salvage of Plants and Animal Species: Translocation and transplantation is the process of moving an individual from the Project site and permanently moving it to a new location. CDFW generally does not support the use of, translocation or transplantation as the primary mitigation strategy for unavoidable impacts to rare, threatened, or endangered plant or animal species. Studies have shown that these efforts are experimental and the outcome unreliable. CDFW has found that permanent preservation and management of habitat capable of supporting these species is often a more effective long-term strategy for conserving sensitive plants and animals and their habitats.

12) Moving out of Harm's Way: The proposed Project is anticipated to result in clearing of natural habitats that support many species of indigenous wildlife. To avoid direct mortality, we recommend that a qualified biological monitor approved by CDFW be on-site prior to and during ground and habitat disturbing activities to move out of harm's way special status species or other wildlife of low mobility that would be injured or killed by grubbing or Project-related construction activities. It should be noted that the temporary relocation of on-site wildlife does not constitute effective mitigation for the purposes of offsetting project impacts associated with habitat loss. If the project requires species to be removed, disturbed, or otherwise handled, we recommend that the DEIR clearly identify that the designated entity shall obtain all appropriate state and federal permits.

13) Wildlife Movement and Connectivity: The project area supports significant biological resources and is located adjacent to a regional wildlife movement corridor. The project area contains habitat connections and supports movement across the broader landscape, sustaining both transitory and permanent wildlife populations. On-site features that contribute to habitat connectivity should be evaluated and maintained. Aspects of the Project that could create physical barriers to wildlife movement, including direct or indirect project-related activities, should be identified and addressed in the DEIR. Indirect impacts from lighting, noise, dust, and increased human activity may displace wildlife in the general Project area.

14) Revegetation/Restoration Plan: Plans for restoration and re-vegetation 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.

a) CDFW recommends that local on-site propagules from the Project area and nearby vicinity be collected and used for restoration purposes. On-site seed collection should be initiated in the near future to accumulate sufficient propagule material for subsequent use in future years. On-site 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.

b) Restoration objectives should include providing special habitat elements where feasible to benefit key wildlife species. These physical and biological features can include (for example) retention of woody material, logs, snags, rocks and brush piles (see Mayer and Laudenslayer, 1988[4]).

CDFW appreciates the opportunity to comment on the NOP for the Carpinteria Advanced Purification Project. Questions regarding this letter and further coordination on these issues should be directed to Dan Blankenship, Senior Environmental Scientist, at (661) 259-3750) or Daniel.Blankenship@wildlife.ca.gov.

Sincerely,

FOR Erinn Wilson
Environmental Program Manager I

cc: Randy Rodriguez, Los Alamitos
Dan Blankenship, Newhall
Sarah Rains, Thousand Oaks

Scott Morgan (State Clearinghouse)

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[4]Mayer, K. E. and W. F. Laudenslayer, Jr. 1988. Editors: A guide to wildlife habitats of California. State California, The Resources Agency, Department of Forestry and Fire Protection, Sacramento, CA.

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CITY of CARPINTERIA, CALIFORNIA

February 8, 2019

Mr. Robert McDonald
Carpinteria Valley Water District
1301 Santa Ynez Avenue
Carpinteria, CA 93013

Re: Notice of Preparation for Carpinteria Advanced Purification Project
Environmental Scoping Comments

Dear Mr. McDonald:

Thank you for the opportunity to review and comment upon the Notice of Preparation (NOP) and draft Initial Study (IS) for the Carpinteria Valley Water District’s (CVWD) Carpinteria Advanced Purification Project (CAPP). As described in the scoping document, the project under consideration is the construction of an advanced water purification and groundwater injection project in the Carpinteria Groundwater Basin. The CAPP would include a one million gallon per day (mgd) (up to 1.5 mgd in future) Advanced Water Purification Facility (AWPF), a pump station, equalization tank, conveyance pipelines, injection and monitoring wells, ocean outfall modifications, and other facilities to produce advanced treated water for groundwater recharge, storage and potable reuse.

As you aware, the City will act as the principle permitting agency for this project with the responsibility for processing the requisite Conditional Use Permit and Coastal Development Permit. In the context of the California Environmental Quality Act (CEQA), the City is a responsible agency for this project, and as part of any granted permits, must accept the prepared environmental document as having adequately met the statutory requirements of CEQA and the City’s own adopted Environmental Review Regulations.

The City has reviewed and is generally in agreement with the issues and potential impacts identified in the draft IS. Comments provided herein identify issues, potential impacts, possible alternatives and/or mitigation measures that we believe were not adequately identified in the draft IS and that should be addressed and considered as part of any further environmental review in the interest of properly understanding and disclosing all potential project effects.

Global Comments

With the exception of the Air Quality, Greenhouse Gas Emissions and Noise issue area discussions, it appears most of the other issue area discussions provided in the draft IS do not disclose which, if any, environmental thresholds are being utilized to aid in evaluating the significance of given impacts. In the absence of CVWD having their own adopted environmental thresholds, we would recommend the District consider using the City’s adopted

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www.carpinteria.ca.us

environmental thresholds to aid in the determinations of impact significance. If the District has their own adopted thresholds, or in some issue areas, chooses to use other thresholds, we believe a discussion of how the project impacts relate to the City's thresholds is still germane given our need to rely on the prepared environmental document in the course of project permitting. Our Environmental Thresholds document is available on the City website at: http://www.carpinteria.ca.us/PDFs/cd_Environmental%20Review%20Guidelines.pdf

All issue area must provide an analysis and consideration of the potential cumulative effects of the proposed project and other nearby projects proposed or under construction in the vicinity of the project study area. We note, with the exception of a handful of issues areas, the draft IS does not discuss potential cumulative project effects.

Aesthetics

The Aesthetics discussion in the draft IS reasonably describes potential aesthetic impacts resulting from the construction of the AWPF and conveyance pipelines as being less than significant. The draft IS does not, however, reasonably consider the full potential aesthetic impacts of the proposed injection well facilities and their supporting infrastructure (e.g., backwash tanks), which may be located in or adjacent to a public park, public schools, and/or semi-public church facilities. According to Section 2.4.4 of the IS, each of the injection well sites may have an approximately 6,000 square foot footprint, be constructed below grade *or* above grade, and include additional equipment including, but not limited to, a 42,000 gallon backwash tank. The aesthetic impact of these facilities, particularly within public park or other similar spaces needs to be properly considered and addressed.

Publically visible facilities such as these should be properly located and screened to be as least visually intrusive as feasible. Fencing, walls, and/or landscaping should be selected for its compatibility with its surroundings, subject to review by the City's Architectural Review Board.

Be advised, with respect to new lighting associated with the AWPF improvements and/or the injection well sites, specific lighting standards are provided in the City's General Plan/Coastal Plan and Creeks Preservation Program concerning lighting in or near ESH areas or creeks, including Carpinteria and Franklin Creeks. Compliance with these specific lighting requirements should be made part of any mitigation related to lighting impacts.

Biological Resources

We understand CVWS intends to have a biological resources assessment prepared as part of any future environmental document. We support and are in agreement that this is necessary in order to fully consider the impacts of the proposed project on surrounding biological resources.

As part of any future assessment, we encourage CVWD to consider impacts to sensitive species in Carpinteria Creek that may be impacted by temporary construction activities at the Waste Water Treatment Plant (WWTP) and/or injection well sites, and the ongoing operations of these facilities. Consideration of any tree or vegetation removals to accommodate the injection well facilities should also be evaluated.

Appropriate mitigation measures may include, but not be limited to, pre-construction surveys and trainings, exclusionary buffers or seasonal construction restrictions, protective measures such as temporary fencing and containment areas for equipment/materials away from sensitive resources, and/or construction monitoring.

Cultural Resources

The City of Carpinteria is in agreement with the IS analysis of cultural resources. At minimum, a Phase I archaeological resources study should be performed to review the presence of known sites within the project study area and to identify the potential impacts that may occur as a result of the project. Depending upon the findings of the Phase I assessment, additional study, including subsurface investigations and/or construction monitoring may be warranted.

Also, please update your cultural resources discussion to reflect all seven of the City's listed landmarks. Missing from the list provided in the IS are City landmarks #6 (Tar Pits Park) and #7 (Carpinteria Valley Baptist Church, 800 Maple Avenue).

Geology & Soils/Hydrology & Water Quality

According to the IS, elements of the project may be susceptible to various geologic hazards, including but not limited to, tectonic activity, liquefaction, soil settlement, etc. In such circumstances, it would be acceptable to identify such impacts as potentially significant, and require mitigation such preparation of, and compliance with, a project specific geotechnical report.

The IS describes the AWPF facilities as being served by existing (or improved) onsite stormwater facilities designed to capture and treat all onsite runoff. The IS does not, however, discuss potential water quality impacts of other aspects of the project (outside of temporary construction impacts). Note, new or replaced impervious surfaces associated with land development projects must comply with the City's stormwater management project, including the post-construction requirements. At minimum, these measurements would be triggered by the new injection well sites.

Similar to the above discussion concerning geologic impacts, if certain permits must be obtained (e.g. Construction General Permit) or plans prepared (e.g., SWPP), it would be acceptable to identify these potential water quality impacts as potentially significant and requiring mitigation (i.e., obtaining and complying with said permits).

The IS discusses the potential flood hazard considerations of the WWTP as it relates to the new AWPF, however the IS does not disclose whether any of the other parts of the project (such as the injection well sites) would be located within a flood hazard zone, and if so, whether any specific mitigations would be required (e.g., elevating the well head above the BFE, etc.).

The IS touches on potential impacts from climate change, particularly sea level rise. Any future environmental document should evaluate the project's susceptibility to such impacts relative to the City's Sea Level Rise Vulnerability Assessment and consider whether any project design considerations and/or mitigations are appropriate to plan for anticipated future sea level rise impacts.

In terms of water quality impacts, any future environmental document should evaluate the potential for frack outs, particularly concerning any well drilling or deep foundation drilling activities near creeks. Appropriate mitigation would include, but not be limited to, have a frack out plan in place and appropriate monitoring during drilling activities.

The project description (section 2.4.4) discusses disposing of backwash fluids from the injection well sites by either discharging the waters into the sanitary sewer system, or into the City's storm drain system. The environmental document should consider and address what the potential water quality and/or biological impacts would be of additional fresh water inputs into the City storm drain system, most of which in the study area would ultimately drain to the Carpinteria Salt Marsh.

Hazards/Hazardous Materials

Any discussion concerning potential hazards or hazardous material impacts should include not only transport to/from and storage/use at the WWTP, but also any needed transport to/from and storage/use at the various injection well sites, and the potential exposure to surrounding land uses including public facilities (schools, churches), residential land uses, and recreational and open space areas to such hazardous materials resulting from spills, accidents or similar occurrences.

Land Use & Planning

The IS briefly discusses the City's required 50-foot setback for new development from creeks. However, the IS did not identify compliance with this setback requirement as a potentially significant land use issue. Short of the California Coastal Commission staff consenting to a determination that the AWPF would not qualify as new development so long as it is located within the footprint of the existing WWTP, failure to comply with the required 50-foot setback would trigger a significant land use impact, and may also require applying for a Local Coastal Program Amendment (LCPA) to attempt to carve out an exception from the 50-foot setback requirement for improvements to the existing WWTP. This same consideration also applies to the siting of any new injection well sites near Franklin Creek. In these cases, such sites would almost certainly qualify as new development and would be required to comply with the 50-foot creek setback or obtain approval of an LCPA to modify the required setback.

Section 2.5.1 of the IS describes the secondary effluent equalization tank as having a height of "approximately 30 feet." Be advised that the maximum allowed height of structures located in the UT zone district is 30 feet. The IS does not disclose the anticipated height of the facilities associated with the injection well sites, however REC zone districts have a maximum height of 16 feet, and CF zone districts allow for a maximum height of 30 feet. Also, as part of the aesthetics issue area discussion, please consider the visibility and/or aesthetic impacts of the various structures' heights and any necessary mitigation (screening with vegetation, paint, etc.).

In the event that injection well sites are located in a public park or school property, consideration should be given to the impacts resulting from a reduction in public recreational space(s). In the case of Franklin Creek Park in particular, a 6,000 square foot injection well site would reduce the usable park area by approximately 10-15%. This impact may also be appropriately discussed in the Public Facilities and Services section of the environmental document.

Noise

An evaluation of noise and vibration impacts related to the project should consider temporary construction impacts for all components of the project (e.g., AWPF construction, pipeline installation, well drilling, injection well site improvements, etc.) and operational phases for the various project elements, and the proximity of sensitive receptors to each of these project components.

The project description section describing anticipated types of equipment (section 2.5.5) should list major pieces of equipment such as the drill rig needed for well installation and/or pile driving equipment anticipated for deep foundation installations.

Temporary construction mitigation measures that could be considered include further restricted construction hours (it is the City's practice to limit most discretionary permits to construction hours of Monday through Friday, 7:00 a.m. to 5:00 p.m.), use of sound blankets or similar noise attenuation measures, and if needed, particularly for elements of the project requiring 24-hour continuous activity (e.g., well drilling), offering temporary relocation assistance to any sensitive receptors who would be exposed to noise/vibration impacts exceeding City thresholds. Attempting to schedule construction activities outside of the school year may also be beneficial if work is to occur in/near school facilities.

Public Services/Recreation/Utilities & Service Systems

As discussed elsewhere in this letter, consideration should be given to potential impacts to public recreational or school facilities resulting from the loss of usable areas to the well injection sites. Please also consider and evaluate any potential for utility conflicts arising from the new proposed facilities.

Transportation & Traffic

As discussed in the IS, the potential for construction-related temporary transportation impacts are anticipated. The City expects that CVWD will work closely with City staff to develop and implement an appropriate traffic control plan and haul routes, and, if needed, temporary detour routes. CVWD will also be expected to restore any damaged right-of-way to City specifications. We would also encourage you to coordinate with the Public Works Department concerning planned pavement repair projects over the next couple of years and the proposed conveyance pipeline route(s) through the City.

To the extent feasible, we would also encourage CVWD to consider scheduling aspects of the construction for when they would have the least impact on surrounding land uses (e.g., improvements near Canalino School to occur outside of the school year, etc.).

Trip generation rates appear to be based on an assumption that a single crew will work through the entirety of the project in single phases. Has CVWD considered working on multiple phases of the project concurrently to shorten the overall construction timeline? If so, CVWD may wish to include an analysis of whether concurrent construction activities would trigger any new or more significant impacts that what is already anticipated.

Conclusion

Once again, we appreciate the opportunity to review and comment upon the NOP and draft IS, and we look forward to continuing to work with CVWD in the preparation of a draft environmental document and obtaining land use permits for this project. We remain excited about the potential benefits this project can bring to the community in helping to improve local potable water access and reliability in the coming years.

Should you have any questions concerning this letter or the City's permit review process, please do not hesitate to contact myself or Erin Maker (805-880-3415 / erinm@ci.carpinteria.ca.us).

Sincerely,

Nick Bobroff, Senior Planner
Community Development Department
805-755-4407 / nickb@ci.carpinteria.ca.us

Cc. Project file
Erin Maker
Steve Goggia

From: Edo McGowan <edo_mcgowan@hotmail.com>
Date: February 27, 2019 at 5:42:26 PM PST
To: "bob@cvwd.net" <bob@cvwd.net>, Lea Boyd <lea@coastalview.com>, "Sheryl Hamlin" <sherylhamlin@gmail.com>
Subject: CEQA and the Carpinteria program for the use of recycled water

https://www.nytimes.com/interactive/projects/toxic-waters/index.html

https://www.nytimes.com/2009/12/17/us/17water.html

To: Robert McDonald,
General Manager
Carpinteria Valley Water District

Fm: Dr Edo McGowan

Re: CEQA issues

Bob, we don't often communicate but this needs to be said. Your recent note in the Coastal View News (***Working to Develop a Local and Sustainable Water Supply***) prompted me to forward this letter below as background, a letter addressed to colleagues in the sciences of water, re: (PMID: 29387043). The reason for sending this to you is in way of a comment on adequacy of meeting CEQA protocol. One of the requirements for the use of recycled going toward drinking purposes is to ascertain public health stability over the long run of the project. That would mean following the full recommendations of the expert panel, (see portion below). In essence, this may ultimately require development of a dedicated functioning and well coordinated pool of water and health agencies, something that does not now exist.

Part of that background bulwark is the reliability and capacity of the overseeing regulatory agencies. To gain some perspective into the quality of such regulators, the pen of Charles Duhigg is noted, see above. The plan to expand recycled wastewater, ultimately, sending it into the underlying aquifer warrants attention to the recommendations of the state expert panel. This maneuver of injecting recycled water allows for both overdraft without experiencing seawater intrusion and re-uptake that water for augmenting the drinking water supply. Both will allow expansion of the population above the area's natural carrying capacity.

As an example, I looked at the preliminary plans for the recycled water expansion, as proposed by the City of Santa Barbara. These plans are faulty, but the problems facing Santa Barbara seem to be resolved by your proposal. Santa Barbara's treatment trains, especially the screens (filters) which were too large to effectively stop a large percentage of pathogens.

Carpinteria is also looking at injecting recycled water into its aquifer. In both cases, the warranted public health aspects are in need of review to obviate getting short shrift. In its review of necessary inputs for those proposing the use of recycled for drinking, the state's expert panel came up with recommendations related to public health. Here is just a portion of that. Checking locally, little of this, if any, of this necessary agency coordination on public health exists. Looking at currently produced recycled water, we have : the Fahrenfeld report, which is an extension of my work with Dr Judy Meyer at SBCC. That report shows that considerable loads of resistant pathogens and their genes are found in recycled water. Thus a considerably more sophisticated treatment train is warranted. Even assuming such, the standard lab tests for water quality are faulty. Data show that while indicators were shown to be absent, other pathogens were presents, mainly because they were more robust that the indicators. Thus while the water based on standard indicators showed that the water was "legal"----it was not safe. Much more need to be said here.

Reclaimed water as a reservoir of antibiotic resistance genes - NCBI
https://www.ncbi.nlm.nih.gov/pubmed/23755046

The role of public health surveillance is to: (1) establish partnerships, engagement, and communication between water utilities and public health partners; (2) identify sources of data to characterize baseline public health conditions and track trends over time; and (3) help determine if transient treatment failures and contamination events lead to adverse health outcomes. Within the context of potable reuse, local public health partners should be informed when a DPR project is being considered. Points of contact should be identified and available surveillance data sources should be reviewed. In addition, processes for regular engagement, information sharing, and notification should be established with an emphasis on tracking, reporting, and communicating notifiable acute (primarily) waterborne diseases. The State Water Board also should work with DPR project sponsors and local health agencies to consider the feasibility of enhanced public health surveillance for communities with DPR systems. Such efforts may include syndromic surveillance, sentinel surveillance, or serological surveys for waterborne infections. See **Chapter 3 (Recommendations #3-1** and **3-2).**

In checking locally, none of the following are prepared to effectively deal with recycled water as to antibiotic resistant microbes or their genes: County Health, County Environmental Health, the Regional Board, the Public health offices of Dinsmore in Carp. This as to the recommendations of the expert panel leaves a void. How will the filling of such a void be accomplished?

Some of the issues related to antibiotic resistance and wastewater are also noted in the research paper discussed below, entitled:

"Strategies to combat antibiotic resistance in the wastewater treatment plants" (PMID: 29387043)

Below is a note to the authors of (PMID: 29387043) delving into some of the problems facing us. This also should be included with my comments.

These comments should be placed in the scoping portion of the CEQA process. Please let me know if such will be done. Additionally, does the CEQA RFP contain requirements or provisions for the selected consultant to have experts dealing with the issues relating to public health coordination, as discussed by the state's expert panel? Earlier "expert panels" did not and I had them thus disqualified. on this topic.

****

Drs Munir and Barancheshme:

"Strategies to combat antibiotic resistance in the wastewater treatment plants" (PMID: 29387043)

I read through your paper with keen interest. Now some hard questions over which you have little to no control, but their substance will impact the subject and final result. The USEPA is clientele captured by the subject industry. If you go back and read Meckes' paper and study, this becomes clear (https://www.ncbi.nlm.nih.gov/pubmed/7059170). BTW EPA pulled that entire study from its data base----wonder why?

So---we can write off transparent discussions via USEPA. Their aversion to discussing the topic of sewage generated ARB and ARG is driven by their coupling with the sludge industry. If USEPA openly admitted that sewer plants generate ARB and ARGs (sucked into this non-action are also CDC and USDA), they would need to admit that the land application of sewage sludge (biosolids) was spreading resistance into agricultural lands, top-dressed pasture lands and forested lands, as well as reclamation projects where the fracture fabric of the underlying Xtalline rock allows for long travel distances of concentrated contaminated ground water. On the long reach of fracture fabric ground water travel, see:
https://www.sciencedirect.com/science/article/pii/S1464343X17303679
Since many forest areas are on mountains, the bedrock of which is often Xtalline bed rock, i.e., the underlying fracture fabric is like a series of pipes, not the typical sand and gravel. Thus water moves at high speed in relative high concentration.

Perhaps one of issues to discuss later would be the removal of solids from the WWTP ahead of digestion. If this is done there is less chance for gene exchange and many of the materials that are recalcitrant to control would come off with the mass of solids. If, following the removal of the vast bulk of solids, they are passed through a fluid bed and converted to a syngas, that would represent an energy source with about the same BTU as natural gas. The remaining fluids after removal of the bulk of solids would be easier to attack.

There is such a design extant and in operation, but I don't see interest. This lack of interest may result from the fact that it would reduce the footprint of a typical WWTP by about 80%. That reduction would also mean a reduction in operating staff. The issue at this point is then political. Big POTWs are staff intensive and management salaries are, in part, based on staff numbers and plant size. The chap that runs the local plant has an annual salary $240K, percs, plus a new medium priced car every 2 years. What would his salary justification be for a plant 20% the size of his current empire? So, ask him as your local expert on what he thinks of innovative plants? Are you getting a transparent answer?

Where is the research in new plant design? Trump notes a need to refurbish the U.S. infrastructure. Will we build the same old ineffective POTWs or will we innovate to control the generation and discharge of ABR and ARGs? The last time that the taxpayers were ask to innovate sewer plants was in the late 1970s and early 1980s. The time that Meckes did his studies, but EPA pulled all the report's work and notes from its data base. These grant moneys from Congress, were dispersed by USEPA and went to plant expansion, not innovation. This was contrary to Congressional direction which was to spend the moneys toward innovation. Congress bitched bitterly about this misuse of funds by USEPA. This angst on Congresse's part is all well documented in the Congressional Record.

Hope to hear from you,

Dr Edo McGowan

WOODARD
&CURRAN

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Appendix B

Assembly Bill 52 Letter and Tribal Contact List

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Native American Heritage Commission
Native American Contact List
Santa Barbara County
1/22/2019

Barbareno/ Ventureno Band of Mission Indians
Patrick Tumamait,
992 El Camino Corto — Chumash
Ojai, CA, 93023
Phone: (805) 216 - 1253

Barbareno/ Ventureno Band of Mission Indians
Raudel Banuelos,
331 Mira Flores — Chumash
Camarillo, CA, 93012
Phone: (805) 427 - 0015

Barbareno/ Ventureno Band of Mission Indians
Eleanor Arrellanes,
P. O. Box 5687 — Chumash
Ventura, CA, 93005
Phone: (805) 701 - 3246

Barbareno/Ventureno Band of Mission Indians
Julie Tumamait-Stennslie, Chairperson
365 North Poli Ave — Chumash
Ojai, CA, 93023
Phone: (805) 646 - 6214
jtumamait@hotmail.com

Chumash Council of Bakersfield
Julio Quair, Chairperson
729 Texas Street — Chumash
Bakersfield, CA, 93307
Phone: (661) 322 - 0121
chumashtribe@sbcglobal.net

Coastal Band of the Chumash Nation
Mia Lopez, Chairperson
24 S. Voluntario Street — Chumash
Santa Barbara, CA, 93101
Phone: (805) 324 - 0135
mialopez2424@gmail.com

Northern Chumash Tribal Council
Fred Collins, Spokesperson
P.O. Box 6533 — Chumash
Los Osos, CA, 93412
Phone: (805) 801 - 0347
fcollins@northernchumash.org

San Luis Obispo County Chumash Council
Mark Vigil, Chief
1030 Ritchie Road — Chumash
Grover Beach, CA, 93433
Phone: (805) 481 - 2461
Fax: (805) 474-4729

Santa Ynez Band of Chumash Indians
Kenneth Kahn, Chairperson
P.O. Box 517 — Chumash
Santa Ynez, CA, 93460
Phone: (805) 688 - 7997
Fax: (805) 686-9578
kkahn@santaynezchumash.org

yak tityu tityu yak tiłhini – Northern Chumash Tribe
Mona Tucker, Chairperson
660 Camino Del Rey — Chumash
Arroyo Grande, CA, 93420
Phone: (805) 748 - 2121
olivas.mona@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 Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Carpinteria Valley Water District Indirect Potable Reuse Project, Santa Barbara County.

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Carpinteria Valley Water District

1301 Santa Ynez Avenue • Carpinteria, CA 93013
Phone (805) 684-2816

February 11, 2019

Barbareno/Ventureno Band of Mission Indians
Eleanor Arrellanes
P.O. Box 5687
Ventura, CA 93005

RE: Assembly Bill 52 Consultation, Carpinteria Advanced Purification Project, Santa Barbara County, California

Dear Ms. Arrellanes:

Assembly Bill (AB) 52 of 2014 (California Public Resources Code § 21080.3.1) requires Local Agencies to extend an invitation to Native American groups to engage in consultation on proposed projects to assure that potential impacts to Native American cultural resources are adequately addressed.

Carpinteria Valley Water District (CVWD), in cooperation with Carpinteria Sanitary District (CSD), is proposing construction and operation of the **Carpinteria Advanced Purification Project** (CAPP). CVWD hereby extends an invitation to consult on the review of the CAPP in order to assist with identifying, preserving and/or mitigating project impacts to Native American cultural places including, but not limited to:

- Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine; and
- Native American historic, cultural, or sacred sites that are listed or may be eligible for listing in the California Register of Historical Resources (CRHR) including historic or prehistoric ruins and any burial ground, archaeological, or historic site.

CVWD is preparing an Environmental Impact Report for the proposed CAPP in Carpinteria, Santa Barbara County, California. The proposed project consists of the development of a new Advanced Water Purification Facility at the CSD wastewater treatment plant, a purified water pump station, two new injection wells, up to six new monitoring wells, an approximately 9,000-foot pipeline for conveyance of the purified water to the proposed injection wells, and modification to the existing CSD ocean outfall to accommodate the reduced brine flows from current conditions.

The proposed project is subject to the California Environmental Quality Act (CEQA). The proposed project must comply with AB 52, which requires local governments to conduct meaningful consultation with Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

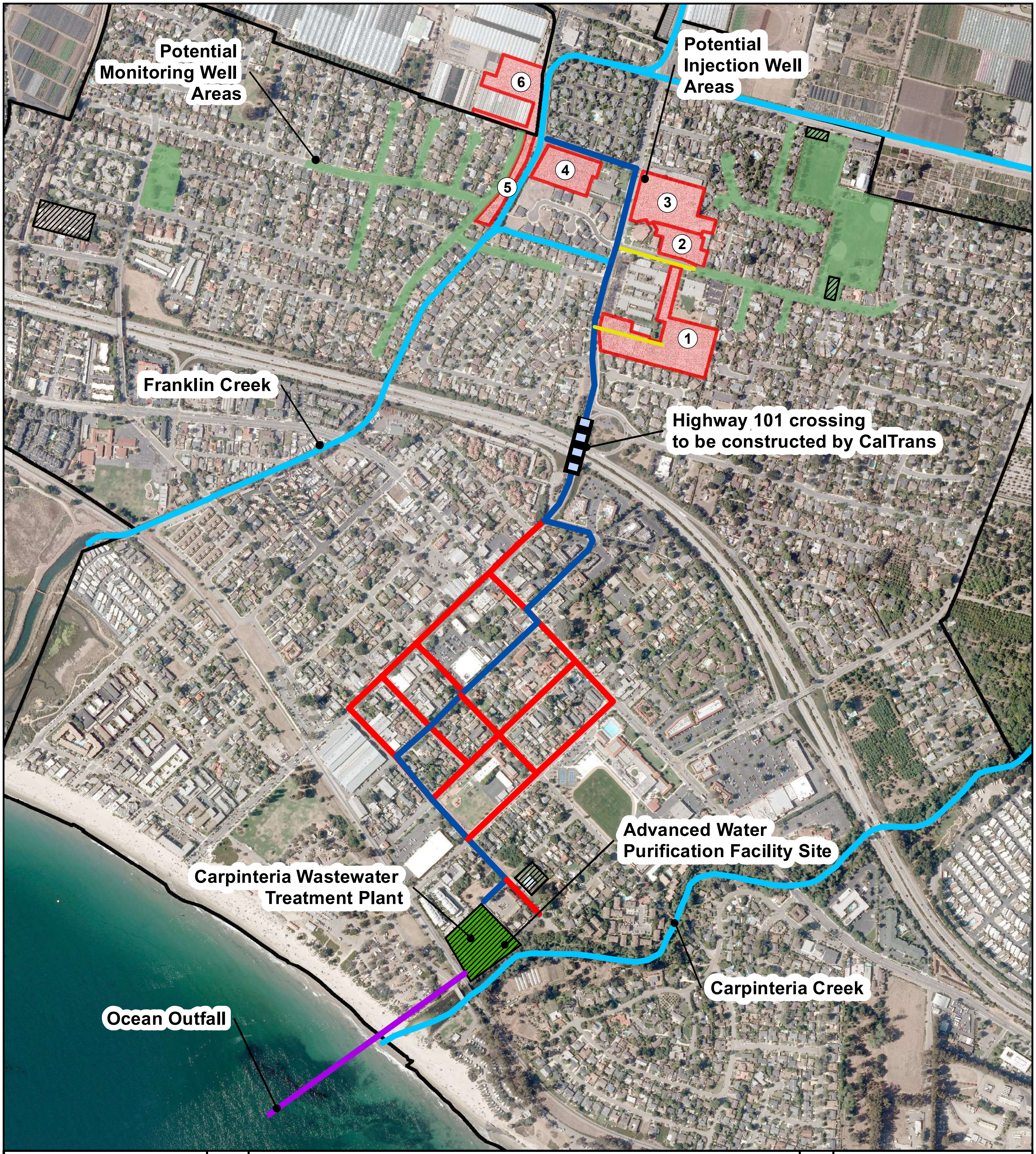
The input of the Barbareno/Ventureno Band of Mission Indians is important to CVWD's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish you consult on the proposed project. If you require any additional information or have any questions, please contact me at (805) 263-4826 or via e-mail at Bob@cvwd.net. Thank you for your assistance.

Sincerely,

Robert McDonald

Robert McDonald, P.E., MPA
General Manager
Carpinteria Valley Water District

Enclosure: Project Location Map



Proposed Project Facilities

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- Carpinteria City Boundary
- Potential Staging

N

0 0.0425 0.085 0.17 Miles

WOODARD & CURRAN

Project #: 0011246
Map Created: January 2019

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Carpinteria Valley Water District

1301 Santa Ynez Avenue • Carpinteria, CA 93013
Phone (805) 684-2816

February 11, 2019

Barbareno/Ventureno Band of Mission Indians
Raudel Banuelos
331 Mira Flores
Camarillo, CA 93012

RE: Assembly Bill 52 Consultation, Carpinteria Advanced Purification Project, Santa Barbara County, California

Dear Mr. Banuelos:

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Sincerely,

Robert McDonald

Robert McDonald, P.E., MPA
General Manager
Carpinteria Valley Water District

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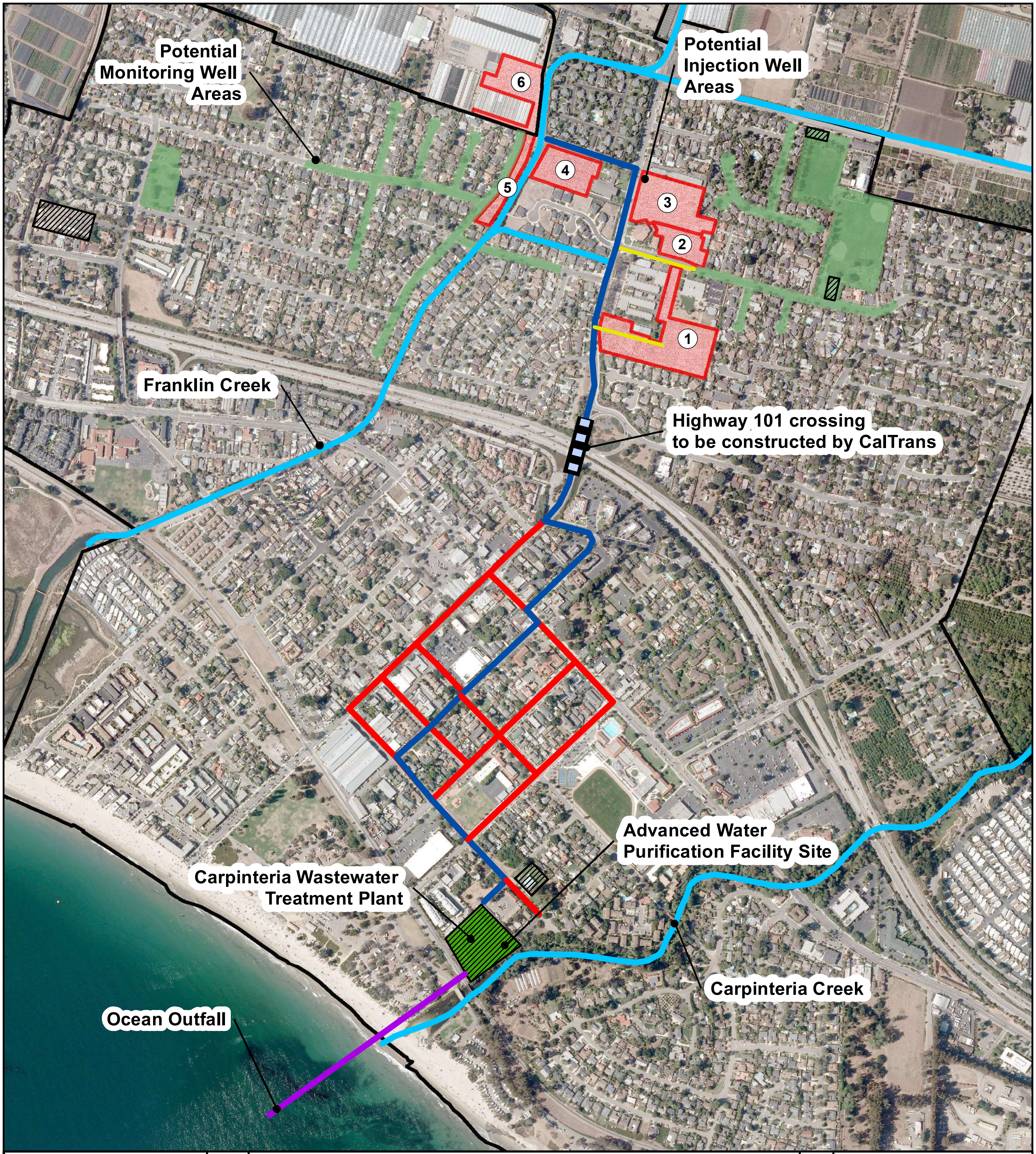

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WOODARD &CURRAN

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Carpinteria Valley Water District

1301 Santa Ynez Avenue • Carpinteria, CA 93013
Phone (805) 684-2816

BOARD OF DIRECTORS

Matthew Roberts
President
Shirley L. Johnson
Vice President
Korey L. Capozza
Polly Holcombe
Case Van Wingerden

GENERAL MANAGER

Robert McDonald, P.E. MPA

February 11, 2019

Barbareno/Ventureno Band of Mission Indians
Patrick Tumamait
992 El Camino Corto
Ojai, CA 93023

RE: Assembly Bill 52 Consultation, Carpinteria Advanced Purification Project, Santa Barbara County, California

Dear Mr. Tumamait:

Assembly Bill (AB) 52 of 2014 (California Public Resources Code § 21080.3.1) requires Local Agencies to extend an invitation to Native American groups to engage in consultation on proposed projects to assure that potential impacts to Native American cultural resources are adequately addressed.

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Sincerely,

Robert McDonald

Robert McDonald, P.E., MPA
General Manager
Carpinteria Valley Water District

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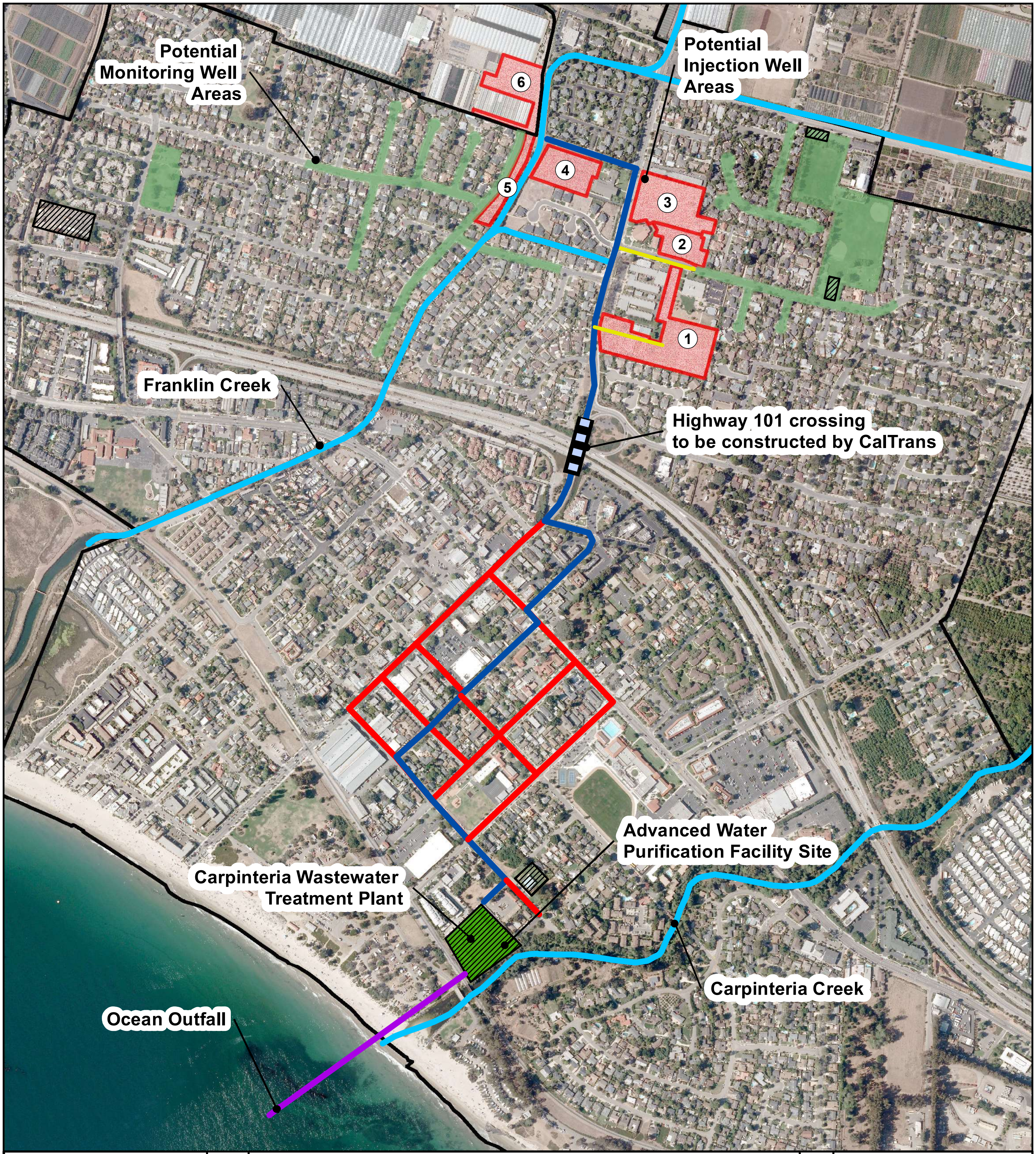

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N

0 0.0425 0.085 0.17 Miles

WOODARD & CURRAN

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Carpinteria Valley Water District

1301 Santa Ynez Avenue • Carpinteria, CA 93013
Phone (805) 684-2816

February 11, 2019

Barbareno/Ventureno Band of Mission Indians
Julie Tumamait-Stennslie, Chairperson
365 North Poli Ave
Ojai, CA 93023

RE: Assembly Bill 52 Consultation, Carpinteria Advanced Purification Project, Santa Barbara County, California

Dear Ms. Tumamait-Stennslie:

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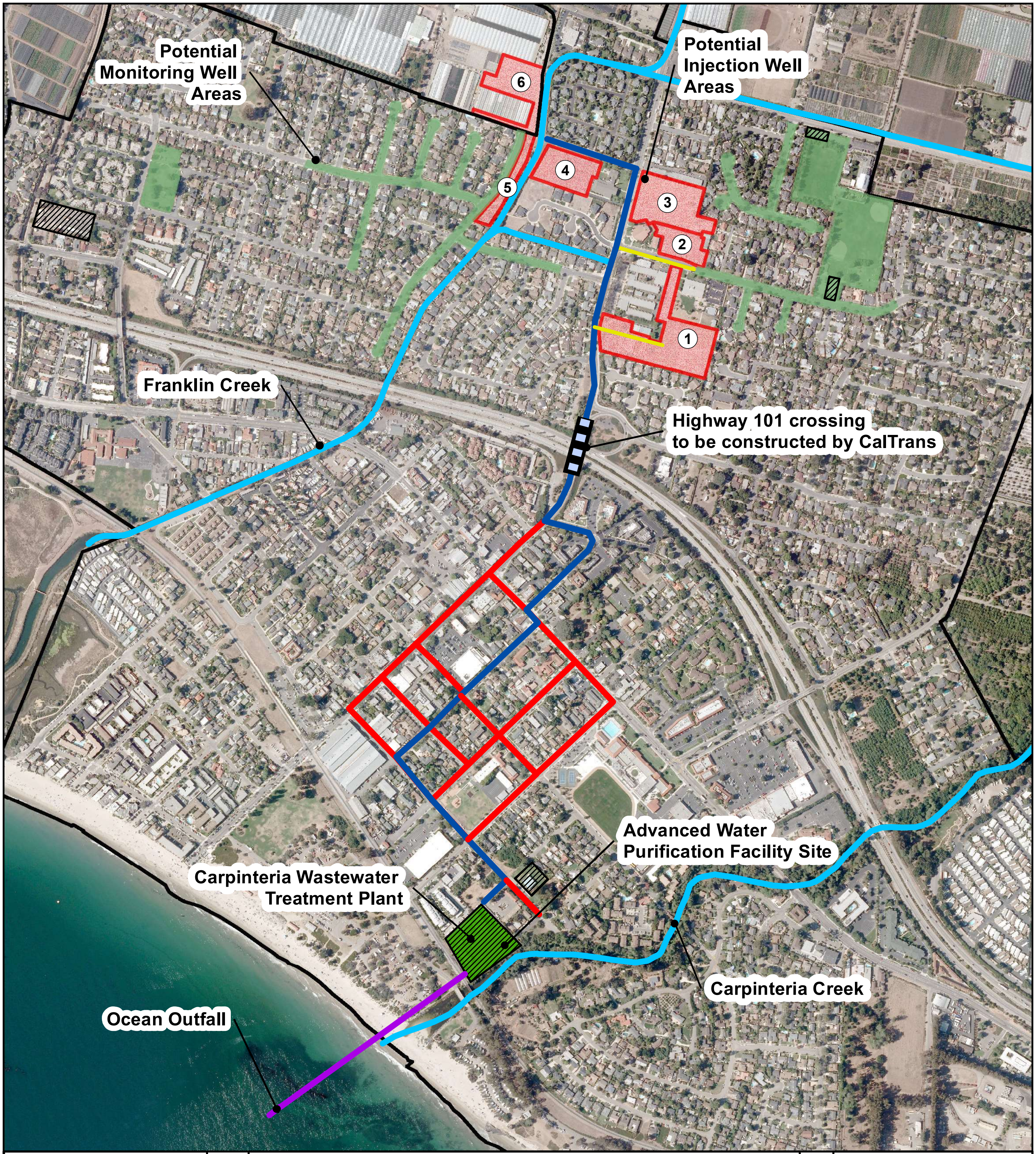
Sincerely,

Robert McDonald

Robert McDonald, P.E., MPA
General Manager
Carpinteria Valley Water District

Enclosure: Project Location Map



Proposed Project Facilities

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N

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WOODARD &CURRAN

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Carpinteria Valley Water District

1301 Santa Ynez Avenue • Carpinteria, CA 93013
Phone (805) 684-2816

February 11, 2019

Coastal Band of the Chumash Nation
Mia Lopez, Chairperson
24 S. Voluntario Street
Santa Barbara, CA 93101

RE: Assembly Bill 52 Consultation, Carpinteria Advanced Purification Project, Santa Barbara County, California

Dear Ms. Lopez:

Assembly Bill (AB) 52 of 2014 (California Public Resources Code § 21080.3.1) requires Local Agencies to extend an invitation to Native American groups to engage in consultation on proposed projects to assure that potential impacts to Native American cultural resources are adequately addressed.

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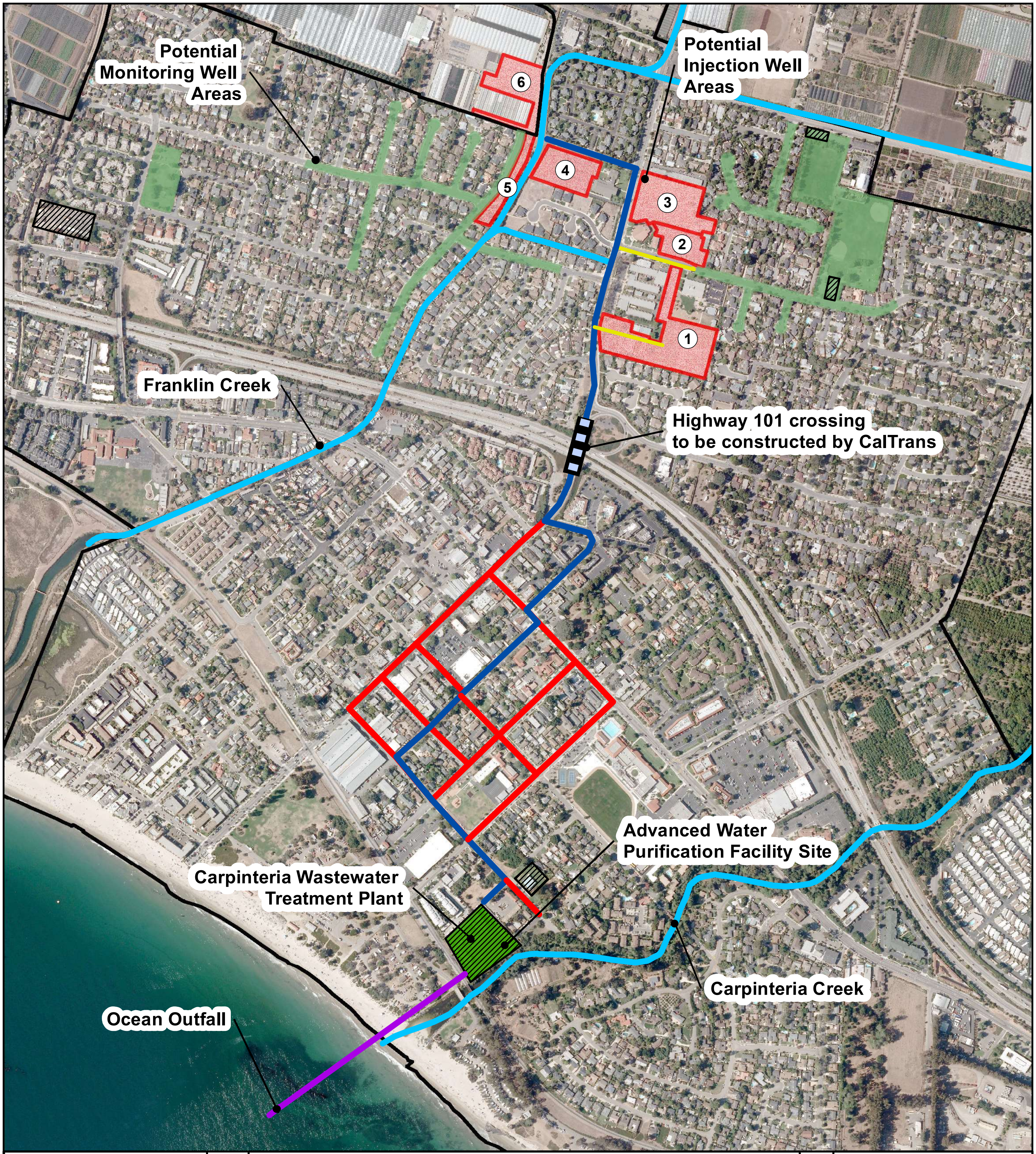
The input of the Coastal Band of the Chumash Nation is important to CVWD's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish you consult on the proposed project. If you require any additional information or have any questions, please contact me at (805) 263-4826 or via e-mail at Bob@cvwd.net. Thank you for your assistance.

Sincerely,

Robert McDonald

Robert McDonald, P.E., MPA
General Manager
Carpinteria Valley Water District

Enclosure: Project Location Map



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WOODARD & CURRAN

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Carpinteria Valley Water District

1301 Santa Ynez Avenue • Carpinteria, CA 93013
Phone (805) 684-2816

February 11, 2019

Chumash Council of Bakersfield
Julio Quair, Chairperson
729 Texas Street
Bakersfield, CA 93307

RE: Assembly Bill 52 Consultation, Carpinteria Advanced Purification Project, Santa Barbara County, California

Dear Mr. Quair:

Assembly Bill (AB) 52 of 2014 (California Public Resources Code § 21080.3.1) requires Local Agencies to extend an invitation to Native American groups to engage in consultation on proposed projects to assure that potential impacts to Native American cultural resources are adequately addressed.

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The input of the Chumash Council of Bakersfield is important to CVWD's planning process. Under AB 52, you have 30 days from receipt of this letter to respond in writing if you wish you consult on the proposed project. If you require any additional information or have any questions, please contact me at (805) 263-4826 or via e-mail at Bob@cvwd.net. Thank you for your assistance.

Sincerely,

Robert McDonald

Robert McDonald, P.E., MPA
General Manager
Carpinteria Valley Water District

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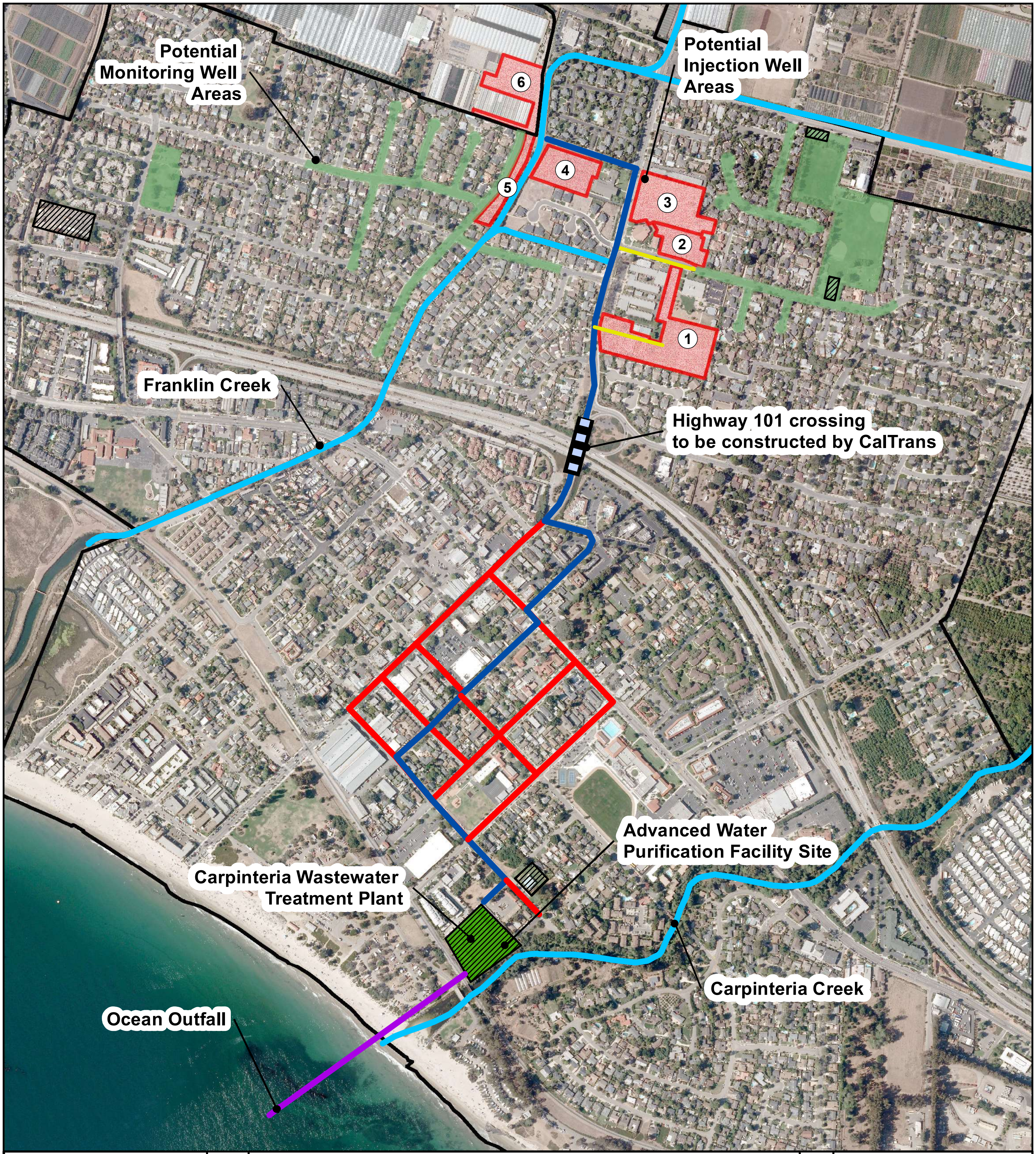

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WOODARD &CURRAN

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Carpinteria Valley Water District

1301 Santa Ynez Avenue • Carpinteria, CA 93013
Phone (805) 684-2816

February 11, 2019

Northern Chumash Tribal Council
Fred Collins, Spokesperson
P.O. Box 6533
Los Osos, CA 93412

RE: Assembly Bill 52 Consultation, Carpinteria Advanced Purification Project, Santa Barbara County, California

Dear Mr. Collins:

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Robert McDonald, P.E., MPA
General Manager
Carpinteria Valley Water District

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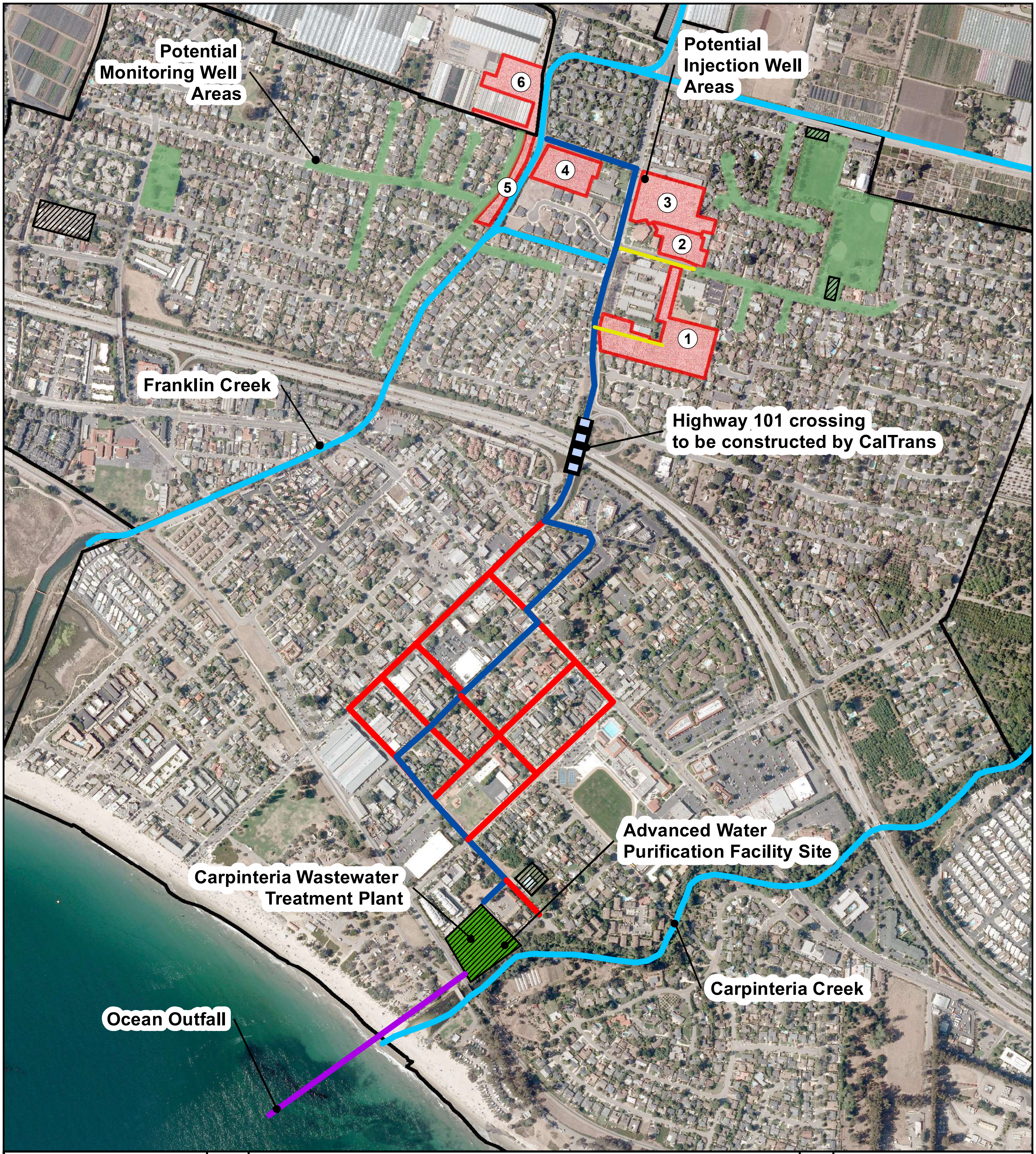

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Carpinteria Valley Water District

1301 Santa Ynez Avenue • Carpinteria, CA 93013
Phone (805) 684-2816

February 11, 2019

San Luis Obispo County Chumash Council
Mark Vigil, Chief
1030 Ritchie Road
Grover Beach, CA 93433

RE: Assembly Bill 52 Consultation, Carpinteria Advanced Purification Project, Santa Barbara County, California

Dear Mr. Vigil:

Assembly Bill (AB) 52 of 2014 (California Public Resources Code § 21080.3.1) requires Local Agencies to extend an invitation to Native American groups to engage in consultation on proposed projects to assure that potential impacts to Native American cultural resources are adequately addressed.

Carpinteria Valley Water District (CVWD), in cooperation with Carpinteria Sanitary District (CSD), is proposing construction and operation of the **Carpinteria Advanced Purification Project** (CAPP). CVWD hereby extends an invitation to consult on the review of the CAPP in order to assist with identifying, preserving and/or mitigating project impacts to Native American cultural places including, but not limited to:

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The proposed project is subject to the California Environmental Quality Act (CEQA). The proposed project must comply with AB 52, which requires local governments to conduct meaningful consultation with Native American tribes that have requested to be notified by lead agencies of proposed projects in the geographic area with which the tribe is traditionally and culturally affiliated.

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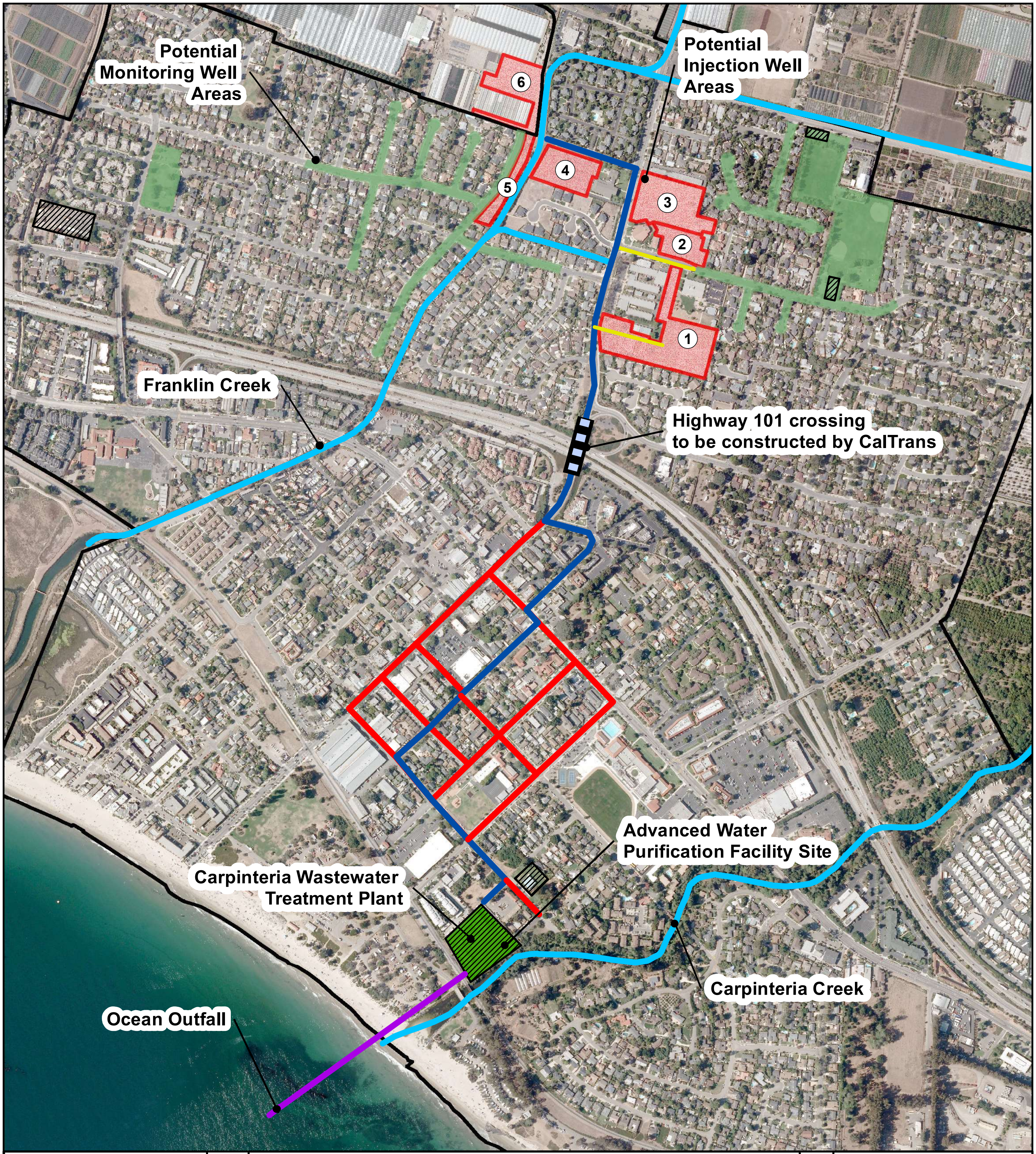
Sincerely,

Robert McDonald

Robert McDonald, P.E., MPA
General Manager
Carpinteria Valley Water District

Enclosure: Project Location Map



Proposed Project Facilities

Legend

- Primary Pipeline Alignment
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- Ocean Outfall
- Creeks
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- Carpinteria City Boundary
- Potential Staging

N

0 0.0425 0.085 0.17 Miles

WOODARD & CURRAN

Project #: 0011246
Map Created: January 2019

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Carpinteria Valley Water District

1301 Santa Ynez Avenue • Carpinteria, CA 93013
Phone (805) 684-2816

February 11, 2019

Santa Ynez Band of Chumash Indians
Freddie Romero
Tribal Elders Council Office
100 Via Juana Road
Santa Ynez, CA 93460

RE: Assembly Bill 52 Consultation, Carpinteria Advanced Purification Project, Santa Barbara County, California

Dear Mr. Romero:

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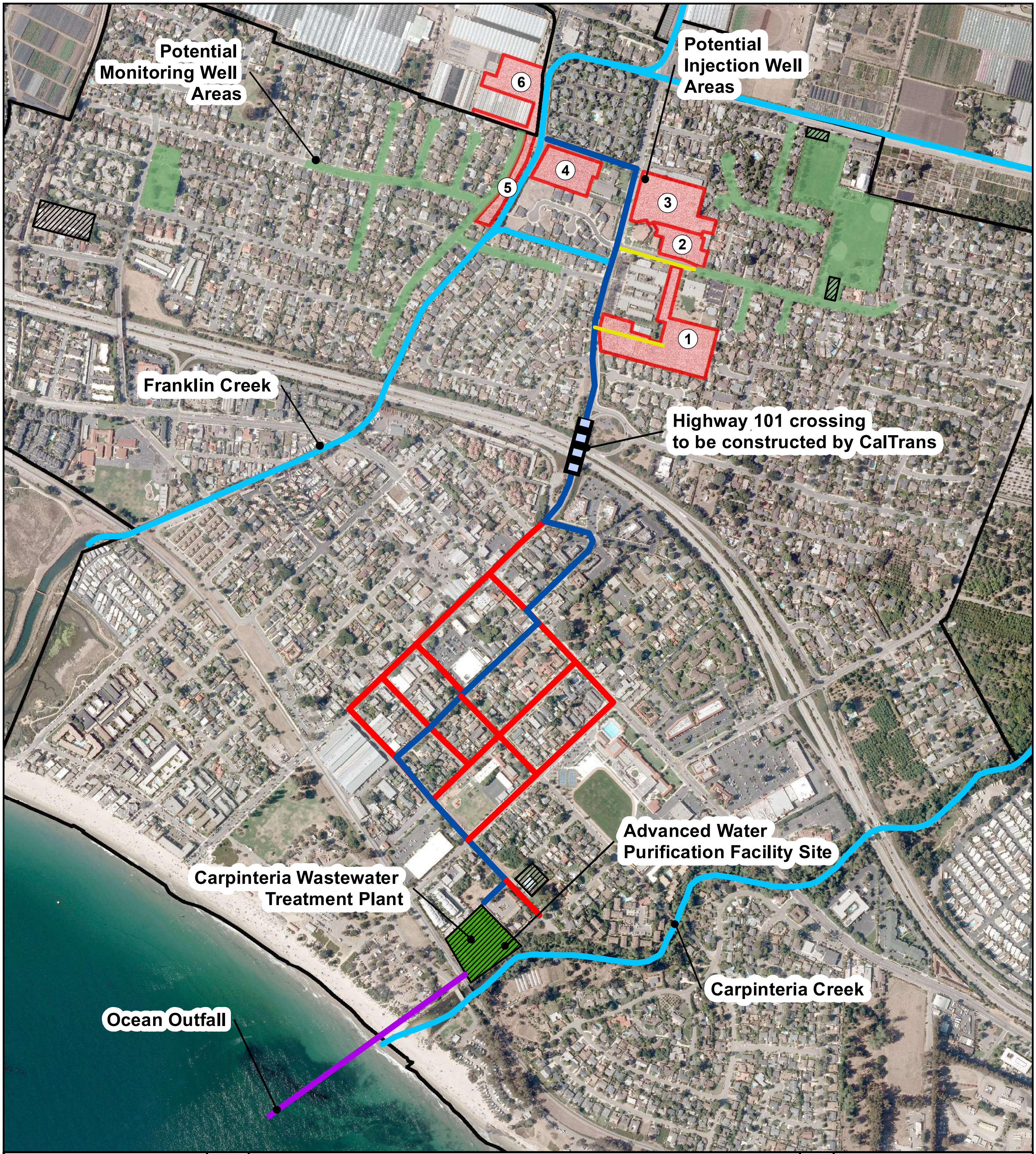

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Commented [RM1]: I assume this will be different for each letter sent to the various tribes?

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Robert McDonald, P.E., MPA
General Manager
Carpinteria Valley Water District

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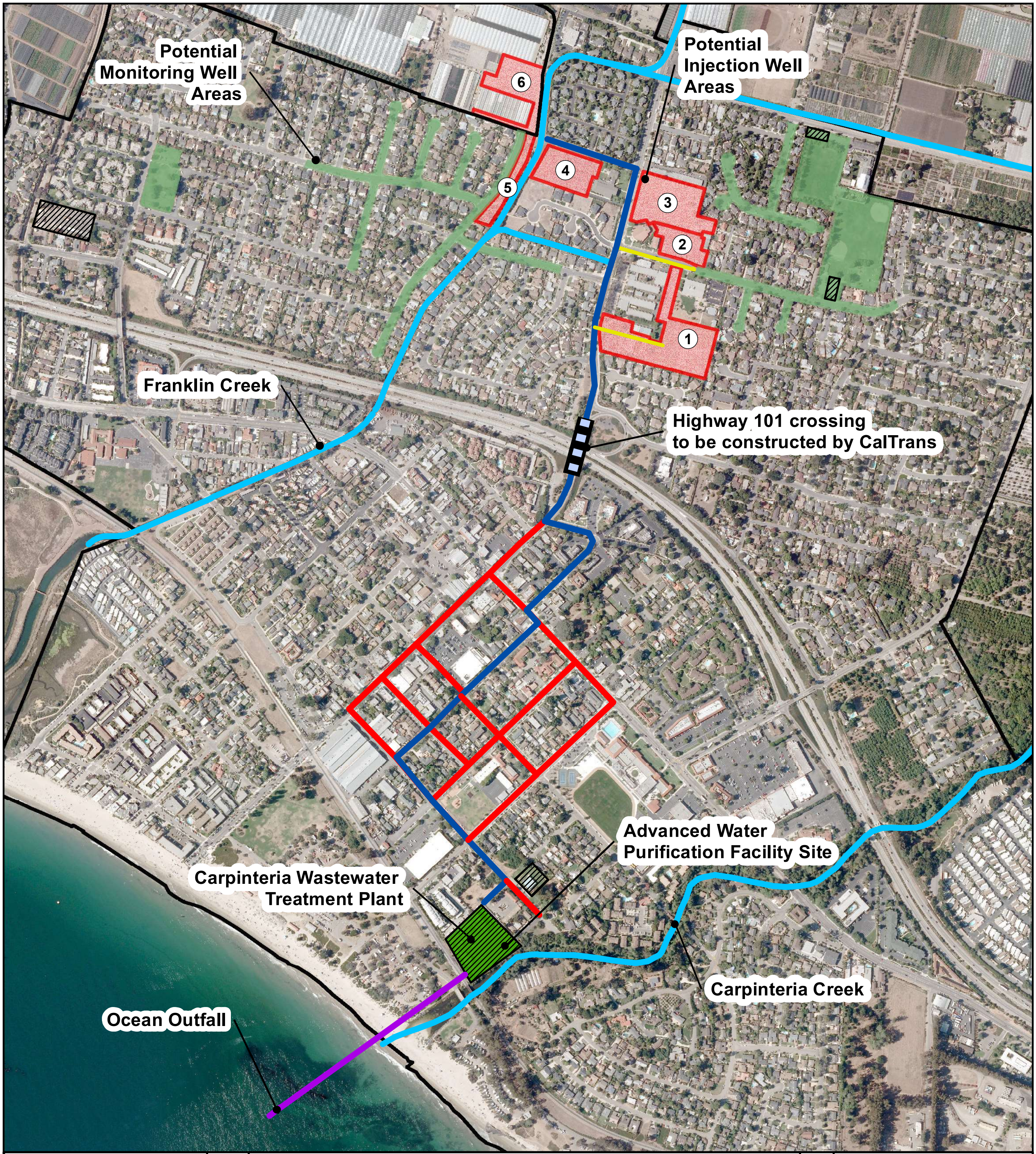

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Carpinteria Valley Water District

1301 Santa Ynez Avenue • Carpinteria, CA 93013
Phone (805) 684-2816

February 11, 2019

yak titʸu titʸu yak tiłhini – Northern Chumash Tribe
Mona Tucker, Chairperson
660 Camino Del Rey
Arroyo Grande, CA 93420

RE: Assembly Bill 52 Consultation, Carpinteria Advanced Purification Project, Santa Barbara County, California

Dear Ms. Tucker:

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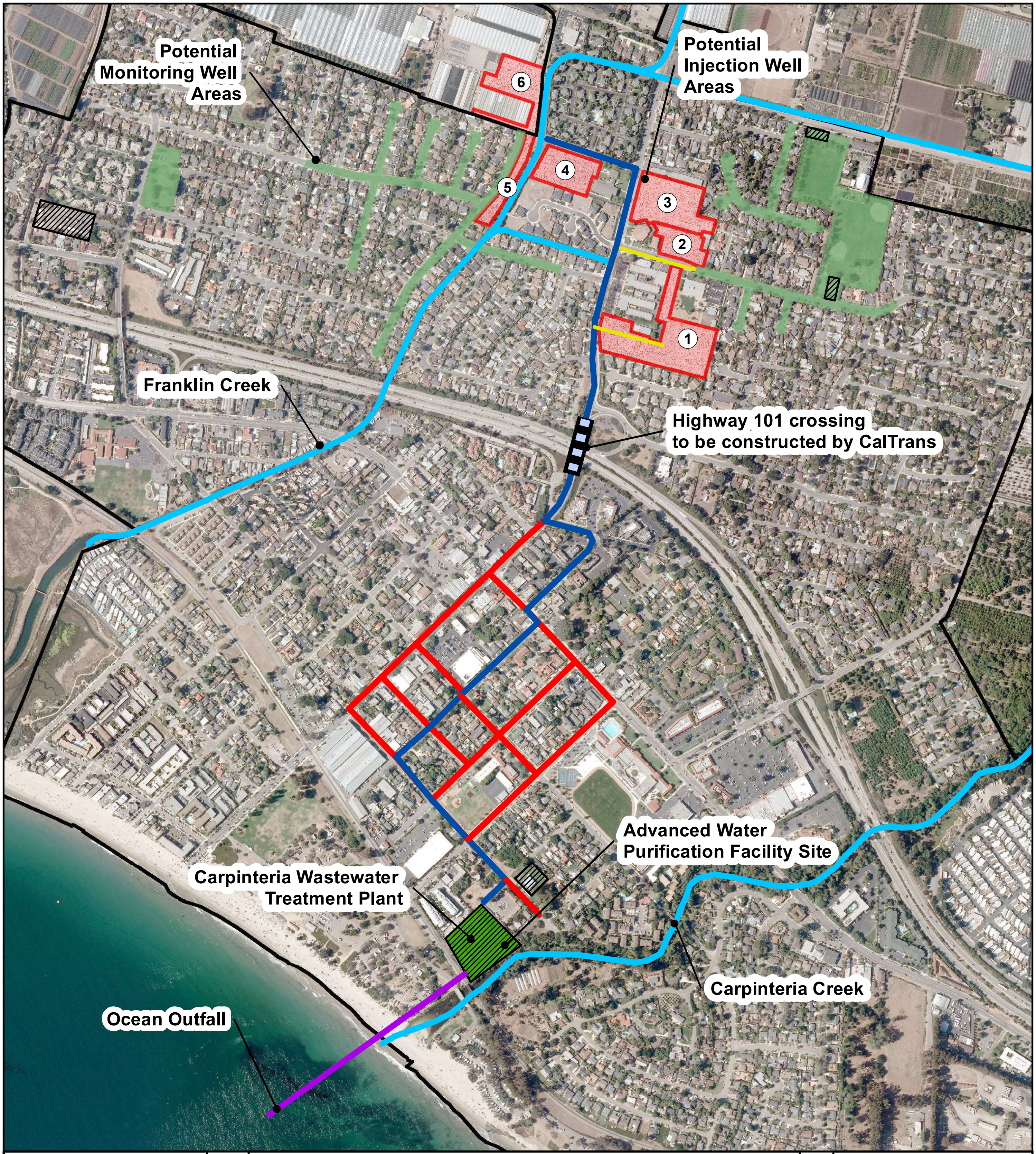

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Appendix C

Air Quality Technical Study

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AIR QUALITY TECHNICAL REPORT

Draft
May 2019

WOODARD & CURRAN

10509 Vista Sorrento Pkwy Ste 205
San Diego, CA 92121
800-426-4262

woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

Carpinteria Valley Water District
Carpinteria Advanced Purification Project

TABLE OF CONTENTS

ATTACHMENTS

1. INTRODUCTION

This report describes environmental and regulatory setting related to air quality in the proposed Carpinteria Advanced Purification Project (CAPP, or Proposed Project) area. The report then describes the methodology and thresholds relied upon to assess the impacts of the Proposed Project. Finally, it identifies the impacts of the Proposed Project. This report discusses the Proposed Project impacts associated with both criteria and toxic air pollutants, as well as emissions of greenhouse gases.

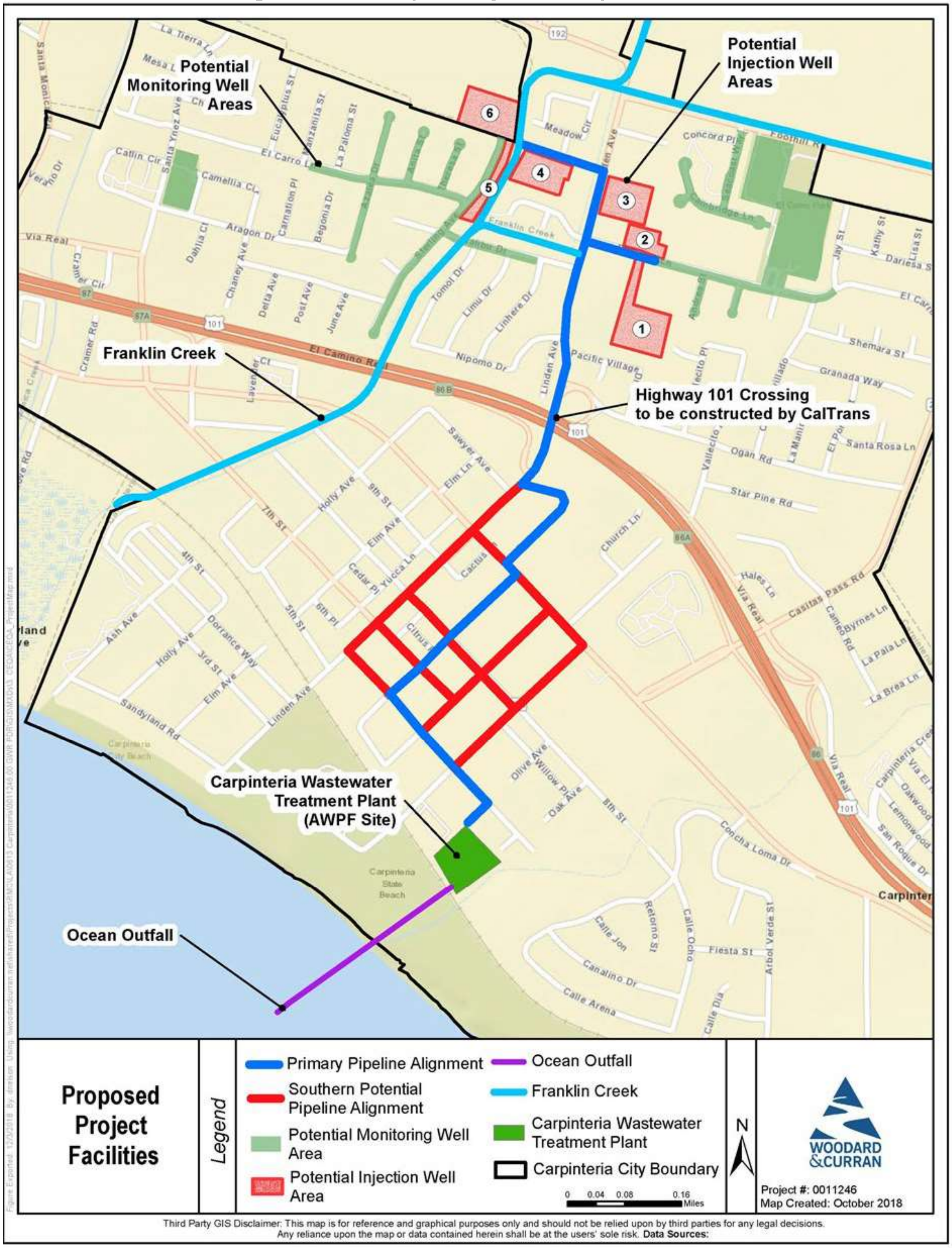
2. PROJECT DESCRIPTION

The Proposed Project includes installation of advanced treatment facilities at an existing wastewater treatment plant, conveyance, groundwater injection wells and backwash systems, groundwater monitoring wells, and ocean discharge infrastructure. The Proposed Project consists of producing approximately 1,100 acre-feet per year (AFY) (1.0 million gallons per day (MGD)) of purified water from the Carpinteria Sanitary District (CSD) Wastewater Treatment Plant (WWTP) for injection into the local groundwater basin, where it ultimately would be used for CVWD potable water supply. The ultimate Proposed Project assumes an expansion from 1.0 MGD to 1.2 MGD based on projected future increases in WWTP flows. The ultimate CAPP includes the following facilities:

- Advanced Water Purification Facility (AWPF) consisting of equalization tank, microfiltration (MF), reverse osmosis (RO), and an advanced oxidation process (AOP)
- Purified Water Pump Station (PWPS), to be located on the WWTP site
- 6,100 linear feet (LF) of 12-inch conveyance pipeline from the PWPS to a well lateral split point, including CalTrans installation for the Linden Avenue overpass over US Highway 101
- 2,000 LF of 8-inch conveyance pipeline from the well lateral split point to individual injection wells
- Three 14-inch injection wells with backwash pumps and 42,000-gallon tanks
- Either 1,400 LF of 12-inch well backwash discharge piping to existing sanitary sewers, or 600 LF of 12-inch piping to existing storm drain culverts.
- Six monitoring wells
- Existing CVWD production wells
- Modifications to the CSD WWTP ocean outfall

Figure 1 shows a proposed conceptual layout of the key facilities.

Figure 1: Conceptual Layout of Proposed Facilities



2.1 Construction

2.1.1 AWPF & Pump Station

All construction for the AWPF, purified water storage tank / clear well, and purified water pump station would occur on site at CSD WWTP. Construction of the AWPF would include, but not be limited to, civil site work and grading, construction of deep foundation system and concrete pad, structural concrete work, paving, metal walkway and railing construction, building construction, and installation of seismic anchors, yard piping, HVAC, electrical systems, instrumentation, controls, SCADA systems, and equipment. The Proposed Project would also include demolition of an existing storage building with a footprint of approximately 1,800 square feet.

2.1.2 Pipelines

The pipelines are proposed to be constructed primarily using open cut trenching. A pipe bridge to cross Franklin Creek may be needed if injection Well Sites five or six are selected. This analysis assumes an average of 150 LF of pipe constructed per day.

The majority of the pipelines would be constructed within existing roadways using open cut trench construction. After any pavement is removed, typically by saw cutting, a backhoe or excavator would be used to dig trenches for pipe and conduit installation. In general, trenches would have vertical side walls to minimize the amount of soil excavated. Soils excavated from the trenches, if of suitable quality, would be stockpiled alongside the trench or in staging areas for later reuse in backfilling the trench. If not reusable, the soil would be hauled off site for disposal. Disposal options include use as cover material at sanitary landfills and use as “clean fill” at other sites. In general, pipe trenches would be three to four feet wide, and three to six feet deep with largest pipe size being 12 inches in diameter. Native soil would be reused for backfill to the greatest extent possible; however, the soil may not be suitable, in which case imported material would be used. Dump trucks would be used to deliver imported, engineered backfill material to stockpiles near the trenching. During the installation of the pipe, there would be a surplus of native soil requiring off-site export.

After the pipe is installed, the ground surface would be restored. When the pipe is installed in a paved roadway, the pavement would be restored with new asphalt or concrete to match the surrounding road type. For asphalt repaving, a temporary asphalt material may be installed to allow traffic to use the roadway immediately after pipeline construction. A repaving crew would follow the pipe installation crew and prepare the road surface for repaving. Final repaving would be done after pipeline installation and testing is completed for a whole street width, lane width, or trench width.

In certain conditions, it may be more desirable to install sections of pipeline using horizontal directional drilling (HDD) or jack-and-bore technology. HDD involves establishing entry and exit pits, using a drill rig to establish an underground tunnel, and then stringing the pipeline through the hole. Jack and bore also employs entry and exit pits, but uses an auger to remove material and push a casing forward, then the pipeline is inserted in the casing.

The Franklin Creek crossing would be constructed in one of two ways: 1) open trench through the concrete channel or 2) via pipe bridge. Open trench construction across the concrete channel would cross Franklin Creek adjacent to Franklin Park, between Meadow View Lane and Sterling Avenue. The trench would be approximately 13 feet wide and would cross perpendicular to the channel. The concrete channel would be restored to pre-Project conditions after installation of the pipeline. Construction of the pipe span over Franklin Creek would be from the creek bank. Construction personnel would use small cranes, or excavators to raise and lower the pipe into place.

2.1.3 Injection Wells

Construction of the injection wells would include, but not be limited to, soil improvements, civil site work and grading, concrete construction, well drilling and installation, site piping, and installation of mechanical and electrical systems, instrumentation, controls, SCADA systems, and equipment. The final well areas would be 60-feet by 100-feet.

2.1.4 Ocean Outfall

To modify the outfall diffusers, divers and a support vessel would be required.

2.1.5 Construction Schedule

Construction is expected to begin in July 2021 and extend through September 2022. Construction would be limited to daytime, consistent with the City's allowed hours for construction. Construction of the AWPF, pipelines, and wells would all commence in July 2021. Construction of the wells would extend until June 2022, construction of the pipelines would extend through August 2022, and construction of the AWPF would extend until September 2022.

2.1.6 Equipment and Trips

To characterize and analyze potential construction impacts, maximum crew size, truck trips, and worker trips were estimated based on expected excavation volumes and quantities of imported materials. The main pieces of equipment that may be used at any given time during construction include:

- truck-mounted drill rigs
- excavators
- backhoes
- graders
- crane
- scrapers
- compactors
- dump trucks
- front-end loaders
- water trucks
- paver and roller
- flat-bed delivery trucks
- forklifts
- concrete trucks
- compressors/jack hammers
- diesel generators
- trenchless auger/drill rig
- truck-mounted suction-lift diesel pumps

It was assumed that construction could generate up to 40 round trips per day for work crews traveling to and from the site, including inspectors. In addition, during peak construction, the Proposed Project would require up to 10 round-trip concrete delivery and/or soil export truck trips per day (assuming up to 45 cubic yards per day). During construction, other materials would be delivered: process, mechanical, and electrical equipment; rebar for concrete; structural steel, concrete masonry unit blocks, wood trusses for buildings; and electrical conduit. Estimated materials delivery round trips are up to 16 per day.

2.1.7 Construction Best Management Practices

According to the Santa Barbara County Air Pollution Control District (SBCAPCD), the following measures are required by State law:

- All portable diesel-powered construction equipment shall be registered with the state's portable equipment registration program or shall obtain an SBCAPCD permit.
- Fleet owners of mobile construction equipment are subject to the California Air Resource Board (CARB) Regulation for In-Use Off-Road Diesel Vehicles (Title 13, California Code of Regulations (CCR), §2449), the

purpose of which is to reduce oxides of nitrogen (NO_x), diesel particulate matter (DPM), and other criteria pollutant emissions from in-use off-road diesel-fueled vehicles. Off-road heavy-duty trucks shall comply with the State Off-Road Regulation. For more information, see www.arb.ca.gov/msprog/ordiesel/ordiesel.htm.

- Fleet owners of mobile construction equipment are subject to the CARB Regulation for In-Use (On-Road) Heavy-Duty Diesel-Fueled Vehicles (Title 13, CCR, §2025), the purpose of which is to reduce DPM, NO_x and other criteria pollutants from in-use (on-road) diesel-fueled vehicles. On-road heavy-duty trucks shall comply with the State On-Road Regulation. For more information, see www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm.
- All commercial off-road and on-road diesel vehicles are subject, respectively, to Title 13, CCR, §2449(d)(3) and §2485, limiting engine idling time. Idling of heavy-duty diesel construction equipment and trucks during loading and unloading shall be limited to five minutes; electric auxiliary power units should be used whenever possible.

The following dust mitigation measures are required by SBCAPCD for all discretionary construction activities, regardless of the project size or duration.

- During construction, use water trucks or sprinkler systems to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this should include wetting down such areas in the late morning and after work is completed for the day. Increased watering frequency should be required whenever the wind speed exceeds 15 mph. Reclaimed water should be used whenever possible. However, reclaimed water should not be used in or around crops for human consumption.
- Minimize amount of disturbed area and reduce on site vehicle speeds to 15 miles per hour or less.
- If importation, exportation and stockpiling of fill material is involved, soil stockpiled for more than two days shall be covered, kept moist, or treated with soil binders to prevent dust generation. Trucks transporting fill material to and from the site shall be tarped from the point of origin.
- Gravel pads shall be installed at all access points to prevent tracking of mud onto public roads.
- After clearing, grading, earth moving or excavation is completed, treat the disturbed area by watering, or revegetating, or by spreading soil binders until the area is paved or otherwise developed so that dust generation will not occur.
- The contractor or builder shall designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holiday and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the Air Pollution Control District prior to grading/building permit issuance and/or map clearance.

2.2 Operation

The following describes briefly the operations and maintenance (O&M) for each of the Proposed Project's key facilities:

- *AWPF*:
  - Daily inspections and maintenance of UF/RO/UV/AOP treatment processes.
  - MF: Backflush for 60 to 120 seconds at 20- to 40-minute intervals; daily extended flux maintenance cleans; weekly to monthly chemical clean in place (CIP).
  - RO: Chemical CIP monthly; membranes estimated to be replaced every five years.
- *Pump stations*: daily inspections and routine pump maintenance

- *Pipelines*: periodic inspections of pipeline and exercising valves
- *Injection wells*: periodic backwash one time per week per well for approximately 60 minutes; backwash flowrate up to two times the injection flowrate, anticipated to be 700 gallons per minute. It was assumed the injection wells would have minimal amounts of landscaping for screening purposes, which would require irrigation.
- *Chemical delivery*: deliveries of AWPF chemicals, up to eight truck trips per month depending on chemical supplier and logistics.

Table 1 presents the estimated operational energy requirements of each of the proposed facilities, including the power and energy consumption. All energy demands would be met by electricity supplied by Southern California Edison; the Proposed Project would not consume natural gas.

Table 1: Energy Consumption

Facility Description	Qty	hp	hrs./day	kWh / yr.	Comments
AWPF feed pump station	2	8	24	104,000	
MF/UF Feed Pumps	2	20	24	261,400	
MF/UF Backwash Pump	1	20	5	27,300	
RO transfer pumps	2	10	24	130,700	
RO feed pumps	2	50	24	653,500	
UV reactors	1	20	24	130,500	
Ancillary AWPF facilities	8	10	24	522,800	See Note 1
PW pump station	3	40	24	783,900	
Well backwash	3	75	1	3,000	Assumes 1 hr. per week per well
Total Annual Power Consumption				**2,617,700**	

Notes:
1. Assumes less than 10 hp per pump: MF/UF and RO Neutralization Pump, MF/UF Blowers and Air Compressors, Interprocess Tank Transfer Pumps, MF/UF and RO CIP Pumps, Chemical Metering Pumps, RO Flush Pump, UV/AOP Transfer Pumps, Process Monitoring, Online Analyzers.

3. ENVIRONMENTAL SETTING

The environmental setting provides a baseline against which to measure a project's impact. The CAPP is located in the City of Carpinteria and unincorporated Santa Barbara County, California. Carpinteria is located approximately 12 miles south of the City of Santa Barbara, and approximately 80 miles north of the City of Los Angeles. The WWTP site is bounded by a railroad to the south, a live/work residential development to the west, the Carpinteria State Beach Park maintenance yard and employee housing to the north, and Carpinteria Creek to the east. South of the rail line is Carpinteria State Beach, which includes campgrounds, day use areas, and a playground immediately across the rail line from the site.

The injection well sites would be located approximately 0.8 to 1.0 miles north of the AWPF. Six potential injection well sites have been identified, though only three would be selected as design continues and property rights are acquired. The land uses surrounding the proposed well sites are a mix of agricultural (greenhouse), residential, State park, and institutional. Conveyance pipelines between the AWPF and the injection wells would generally run within the public roadway rights-of-way.

3.1 Physical Setting

This section describes the climatological, meteorological and topographical features that may influence the project's effects on local and regional air quality. The physical setting and baseline conditions reflect the emissions associated with existing facilities. This section also summarizes current air pollution problems within the county, and the effects of pollutants such as ozone precursors (nitrogen oxides [NO_x] and reactive organic compounds [ROC]), particulate matter (PM_{10}, $PM_{2.5}$) and PM_{10} precursors such as NO_x and sulfur oxides (SO_x).

The Proposed Project is located within the South Central Coast Air Basin. The region has a Mediterranean climate characterized by mild winters and warm, dry, summers. The Pacific Ocean forms the west and southern borders of the county. The Santa Ynez mountain range, which runs east/west parallel to the southern coast of the county is one of the predominant land features. The influence of the Pacific Ocean causes mild temperatures year-round along the coast, while inland areas experience a wider range of temperatures. Table 2 summarizes climatic data collected at the nearest weather stations.

Table 2: Climatic Data for the Study Area

Parameter	Santa Barbara Station	Ventura Station	Juncal Dam Station	Ojai Station
Annual Average Max. Temperature (F)	70.8	70.3	Insufficient data	77.9
Annual Average Min. Temperature (F)	50.2	49.1	Insufficient data	44.9
Annual Average Total Precipitation (in.)	17.73	14.67	29.72	21.21
Annual Average Total Snow Fall (in.)	0.2	0.0	0.4	0.1
Average Hourly Wind Speed, mph	5.9 to 8.5	N/A	N/A	N/A
Notes: Periods of record range from: 1/1/1893 to 6/9/2016. Sources: Western Regional Climate Center 2019; WeatherSpark.com				

Precipitation is confined primarily to the winter months. Annual precipitation varies widely over relatively short distances, primarily due to topographical effects. The long-term annual total precipitation is approximately 10 to 18 inches, with more substantial amounts in the higher elevations. On occasion, tropical air masses produce rainfall during the summer months.

The average hourly wind speed in Santa Barbara experiences mild seasonal variation over the course of the year. The windier part of the year lasts from November to June, with average wind speeds of more than 7.2 miles per hour. Historically, the windiest day of the year is April 26, with an average hourly wind speed of 8.5 miles per hour. The calmer time of year lasts from July to October. Historically, the calmest day of the year is August 9, with an average hourly wind speed of 5.9 miles per hour.

The regional climate is dominated by a strong and persistent high-pressure system, which frequently lies off the Pacific Coast (generally referred to as the East Pacific Subtropical High-Pressure Zone or Pacific High). The Pacific High shifts northward or southward in response to seasonal changes or the presence of cyclonic storms. In its usual position, the Pacific High produces an elevated temperature inversion in the Study Area. An inversion is characterized by a layer of warmer air aloft, and cooler air near the ground surface. The inversion traps the cooler air mass near the ground, preventing pollutants in the lower air mass from dispersing upward beyond the inversion layer. This phenomenon results in higher concentrations of pollutants trapped below the inversion. Inversions commonly form in the Study Area during the months of May to October. In winter, weak surface inversions occur, caused by radiation cooling of air in contact with the cold surface of the earth. During spring and summer, marine inversions occur when cool air from over the ocean intrudes under the warmer air that lies over the land. During summer, the Pacific High can also cause the air mass to sink, creating a subsidence inversion. Atmospheric stability is a primary factor affecting air quality in the study region. Atmospheric stability regulates the amount of air exchange (referred to as turbulent mixing) both horizontally and vertically. A high degree of atmospheric stability and low wind speeds are generally associated with higher pollutant concentrations. These conditions are typically related to temperature inversions that trap the pollutants emitted below or within them. Poor air quality is often associated with "air stagnation" (high stability/restricted air movement). Therefore, it is reasonable to expect a higher frequency of pollution events in the southern portion of the county where light winds are frequently observed, as opposed to the northern portion of the county where the prevailing winds are strong and persistent.

Airflow also plays an important role in the movement of pollutants. Regional winds are normally controlled by the location of the Pacific High and are generally light. This can contribute to higher levels of pollution because low wind speeds minimize dispersion of pollutants. During summer months, northwesterly winds are stronger and persist later into the night. When the Pacific High weakens, a Santa Ana condition can develop. Santa Ana winds are dry northeasterly winds that occur primarily during the fall and winter months. These are warm, dry winds that descend down the slopes of a mountain range. Wind speeds associated with Santa Ana conditions are generally 15-20 mph, though they can reach speeds in excess of 60 mph. During Santa Ana conditions, pollutants emitted in Santa Barbara, Ventura County, and the South Coast Air Basin (the Los Angeles region) are moved out to sea. These pollutants can then be moved back onshore into Santa Barbara County (via the Santa Barbara Channel) in what is called a "post Santa Ana condition." The post Santa Ana effects can be experienced throughout the county. However, not all post Santa Ana conditions lead to high pollutant concentrations.

Topography plays a significant role in affecting the direction and speed of winds. Year round, light onshore winds hamper the dispersion of primary pollutants, and the orientation of the inland mountain ranges interrupts air circulation patterns. Pollutants become trapped, creating ideal conditions for the production of secondary pollutants.

3.1.1 Current Air Pollution Conditions

Air quality is determined by measuring ambient concentrations of air pollutants, which are known to have adverse health effects. For regulatory purposes, criteria have been set for some of these air pollutants, and they are referred to as “criteria pollutants.” The six criteria pollutants for which the US Environmental Protection Agency has set standards are: particulate matter, ozone, nitrogen oxides, sulfur oxides, carbon monoxide, and lead. CARB has set standards for the same six pollutants, as well as for four additional pollutants - hydrogen sulfide, sulfate, vinyl chloride, and visibility reducing particles - and for about 200 toxic air contaminants. For most criteria pollutants, regulations and standards have been in effect, in varying degrees, for more than 25 years, and control strategies are designed to ensure that the ambient concentrations do no exceed certain thresholds.

Another class of air pollutants that is subject to regulatory requirements is hazardous air pollutants (HAPs) or air toxics. Substances that are especially harmful to health, such as those considered under the U.S. Environmental Protection Agency (EPA) hazardous air pollutant program or California’s AB 1807 and/or AB 2588 air toxics programs, are considered to be air toxics. There are 186 federal hazardous air pollutants. Toxic air contaminants (TACs) are air pollutants that may cause acute (immediate) or chronic (cumulative) adverse health effects, such as cancer or reproductive harm. Many companies have reduced their toxic emissions, either voluntarily or as a result of the implementation of the Air Toxics “Hot Spots” Information and Assessment Act of 1987 (AB 2588), air toxics control measures (ATCMs) developed and implemented by the CARB, and amendments and emission control rules passed by the SBCAPCD. There are generally no County-specific monitoring data for the majority of the air toxics or federal HAPs. Regulatory air quality standards are based on scientific and medical research and these standards establish minimum concentrations of an air pollutant in the ambient air that could initiate adverse health effects. For air toxics emissions, however, the regulatory process usually assesses the potential impacts to public health in terms of “risk,” such as the Air Toxics “Hot Spots” Program, or the emissions may be controlled by prescribed technologies, as in the Federal Clean Air Act approach for controlling hazardous air pollutants.

The degree of air quality degradation for criteria pollutants is determined by comparing the ambient pollutant concentrations to health-based standards developed by government agencies. Criteria pollutants and their relevant effects are summarized in Table 3. Ambient air quality monitoring for criteria pollutants is conducted at numerous sites throughout the state. Table 4 presents the relevant data from monitoring stations located in the Study Area. Ambient air quality in the County is generally good (i.e., within applicable ambient air quality standards), with the exception of particulate matter with an aerodynamic diameter of ten microns or less (PM_{10}) and ozone (O_3).

3.2 Sensitive Receptors

Sensitive receptors are typically defined as residences, schools (preschool – 12th grade), hospitals, resident care facilities, senior housing facilities, day care centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality. The AWPF site is bounded by a railroad to the south, a live/work residential development to the west, the Carpinteria State Beach Park maintenance yard and employee housing to the north, and Carpinteria Creek to the east. South of the rail line is Carpinteria State Beach, which includes campgrounds, day use areas, and a playground immediately across the rail line from the site. The land uses surrounding the proposed well sites are a mix of agricultural (greenhouse), residential, State park, and institutional. Well sites two and three would be located next to Saint Joseph Catholic Church. Well site 4 would be located on the property of the Church of Jesus Christ of Latter-day Saints. Conveyance pipelines between the AWPF and the injection wells would generally run within the public roadway rights-of-way.

Table 3: Common Air Pollutant Effects and Sources

Pollutant	Effects on Health and the Environment	Sources
Ozone (O_3)	• Respiratory symptoms • Worsening of lung disease leading to premature death • Damage to lung tissue • Crop, forest and ecosystem damage • Damage to a variety of materials, including rubber, plastics, fabrics, paint and metals	Ozone is formed in the atmosphere through chemical reactions between pollutants emitted from vehicles, factories and other industrial sources, fossil fuels, combustion, consumer products, evaporation of paints, and many other sources. Hydrocarbons and nitrogen oxide gases react in the presence of sunlight to form ozone. Hot, sunny, and calm weather promotes ozone formation.
$PM_{2.5}$ (particulate matter less than 2.5 microns in aerodynamic diameter)	• Premature death • Hospitalization for worsening of cardiovascular disease • Hospitalization for respiratory disease • Asthma-related emergency room visits • Increased symptoms, increased inhaler usage	PM_{10} and $PM_{2.5}$ often derive from different emissions sources, and also have different chemical compositions. Emissions from combustion of gasoline, oil, diesel fuel or wood produce much of the $PM_{2.5}$ pollution found in outdoor air, as well as a significant proportion of PM_{10}. PM_{10} also includes dust from construction sites, landfills and agriculture, wildfires and brush/waste burning, industrial sources, wind-blown dust from open lands, pollen and fragments of bacteria. PM may be either directly emitted from sources (primary particles) or formed in the atmosphere through chemical reactions of gases (secondary particles) such as sulfur dioxide (SO_2), nitrogen oxides (NO_X), and certain organic compounds. These organic compounds can be emitted by both natural sources, such as trees and vegetation, as well as from man-made (anthropogenic) sources, such as industrial processes and motor vehicle exhaust.
PM_{10} (particulate matter less than 10 microns in aerodynamic diameter)	• Premature death & hospitalization, primarily for worsening of respiratory disease • Reduced visibility and material soiling	
Nitrogen Oxides (NO_x)	• Lung irritation • Enhanced allergic responses	Although NO_2 can be directly emitted from combustion sources, much of the NO_2 in the ambient air is formed in the atmosphere through reactions between nitric oxide (NO) and other air pollutants that require the presence of sunlight (photochemical reactions). NO_2 contributes to formation of several other air pollutants, including ozone (O_3), nitric acid (HNO_3), and nitrate (NO_3-) -containing particles that also form through photochemical reactions. NO_2 levels in air vary with direct emission levels, as well as with changing atmospheric conditions, particularly the amount of sunlight.
Carbon Monoxide (CO)	• Chest pain in patients with heart disease • Headache	Carbon monoxide (CO) results from the incomplete combustion of carbon-containing fuels such as natural gas, gasoline, or wood, and is emitted by a wide variety of combustion sources, including motor vehicles, power plants, wildfires,

Pollutant	Effects on Health and the Environment	Sources
	• Light-headedness • Reduced mental alertness	and incinerators. Nationally and, particularly in urban areas, the majority of outdoor CO emissions to ambient air come from mobile sources. Carbon monoxide can also be formed through photochemical reactions in the atmosphere from methane and non-methane hydrocarbons, other volatile organic hydrocarbons in the atmosphere, and organic molecules in surface waters and soils. There are also a number of indoor sources of CO that contribute to total exposure.
Sulfur Oxides (SO_x)	• Worsening of asthma: increased symptoms, increased medication usage, and emergency room visits	SO_X, including SO_2, are emitted when sulfur-containing fuel is burned. Some examples of sources include motor vehicles, locomotives, ships, and off-road diesel equipment that are operated with fuels that contain high levels of sulfur. In addition, SO_2 and the other SO_X are emitted from some industrial processes, such as natural gas and petroleum extraction, oil refining, and metal processing. They are also released during volcanic activity and from geothermal fields.
Lead	• Impaired mental functioning in children • Learning disabilities in children • Brain and kidney damage	In the past, motor vehicle exhaust was the major source of lead emissions to the air. Since lead has been removed from gasoline air emissions of lead from the transportation sector, and particularly the automotive sector, have greatly declined. However, because it was emitted in large amounts from vehicles when leaded gasoline was used, lead is present in many soils (especially urban soils) and can get resuspended into the air. The major sources of lead emissions today are ore and metals processing, particularly lead smelters, and piston-engine aircraft operating on leaded aviation gasoline. Other stationary sources include waste incinerators, utilities, and lead-acid battery manufacturers.
Hydrogen Sulfide (H_2S)	• Nuisance odor (rotten egg smell) • At high concentrations: headache & breathing difficulties	The most common sources of H_2S emissions are oil and natural gas extraction and processing, and natural emissions from geothermal fields. It is also formed during bacterial decomposition of human and animal wastes and is present in emissions from sewage treatment facilities and landfills. Industrial sources include petrochemical plants, coke oven plants, and paper mills.
Sulfate	• Same as $PM_{2.5}$, particularly worsening of asthma and other lung diseases • Reduces visibility	In California, emissions of sulfur-containing compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. Sulfates are a sub-fraction of ambient particulate matter.
Vinyl Chloride	• Central nervous system effects, such as dizziness, drowsiness & headaches • Long-term exposure: liver damage & liver cancer	Most vinyl chloride is used in the process of making polyvinyl chloride (PVC) plastic and vinyl products, thus may be emitted from industrial processes. Vinyl chloride has been detected near landfills, sewage treatment plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents, although levels

Pollutant	Effects on Health and the Environment	Sources
		above the standard have not been measured in California since the 1970's. Today, vinyl chloride exposure is primarily an occupational concern.
Visibility Reducing Particles	• Reduced airport safety, scenic enjoyment, road safety, and discourages tourism	Visibility reducing particles come from a variety of natural and manmade sources. Some haze-causing particles are directly emitted to the air such as windblown dust and soot. Others are formed in the air from the chemical transformation of gaseous pollutants (e.g., sulfates, nitrates, organic carbon particles).
Toxic Air Contaminants (About 200 chemicals have been listed as toxic air contaminants)	• Cancer • Reproductive and developmental effects • Neurological effects	California controls air toxics from diesel activities, composite wood products, automobile coatings, residential waste burning, automotive maintenance and repair, dry cleaning, asbestos (naturally occurring), ocean-going ship onboard incineration, chrome plating & anodizing, benzene – retail service stations, and other sources.
Source: CARB 2019.		

In 2017, there were 17 monitoring stations operating in Santa Barbara County. Fifteen stations measure ambient air and meteorological conditions, while two stations only measure meteorological conditions. Eight were operated by the SBCAPCD. The remaining stations were operated by the CARB, and private industry. The monitoring stations are divided into two categories: State and Local Air Monitoring Stations (SLAMS) and Industrial Monitoring Stations (IMS). The SLAMS stations are designed to monitor the air in the urban areas of the county while the IMS stations are required by permit conditions in several facility permits to monitor for impacts to the air quality from the operation of these facilities. Seven stations collected PM_{10} data in 2017; four stations collected $PM_{2.5}$ data.

Table 4: Monitoring Results for Carpinteria Monitoring Station

Pollutant	Standard	2017	2016	2015
Ozone	State 1-hour (90 ppb)	72 ppb	72 ppb	84 ppb
	State 8-hour (70 ppb)	61 ppb	65 ppb	64 ppb
	Federal 8-hour (70 ppb)	60 ppb	64 ppb	63 ppb
Respirable Particulate Matter PM_{10}	State 24-hour (50 µg/m^3)	**144.8** µg/m^3	**68.8** µg/m^3	41.2 µg/m^3
	State Annual Average (20 µg/m^3)	**24.3** µg/m^3	16.8	17.3
	Federal 24-hour (150 µg/m^3)	**189.0** µg/m^3	67.9 µg/m^3	40.0 µg/m^3
Fine Particulate Matter $PM_{2.5}$	State Annual Average (12 µg/m^3)	7.2 µg/m^3	insufficient data	7.7 µg/m^3
	Federal 24-hour Average (35 µg/m^3)	**130.5** µg/m^3	30.9 µg/m^3	23.2 µg/m^3
	Federal Annual Average (12 µg/m^3) /	9.3 µg/m^3	7.0 µg/m^3	8.2 µg/m^3
NO_x	State 1-hour (180 ppb) / Federal 1-hour (100 ppb)	17 ppb	13 ppb	25 ppb
SO_x	State 1-hour (250 ppb) / Federal 1-hour (75 ppb)	2 ppb	3 ppb	2 ppb
CO	State 1-hour (20 ppm) / Federal 1-hour (35 ppm)	2.1 ppm	1.8 ppm	2.1 ppm

Notes: The majority of the exceedances for particulate matter in 2017 occurred during the Thomas Fire. The Carpinteria station does not collect particulate matter data; the next closest station was used (Lompoc-S H Street for Federal $PM_{2.5}$ in 2016; El Capitan Beach for State Annual Average PM_{10} in 2017; Santa Maria for State Annual Average $PM_{2.5}$; Goleta-Fairview for all other particulate matter values). El Capitan for 1-hour SO_x in 2015, 2016, 2017. Santa Barbara for 1-hour CO in 2015, 2016, 2017.
Sources: CARB iAdam: Air Quality Statistics; SBCAPCD Annual Reports.

3.2.1 Federal Designations

Santa Barbara County was designated unclassifiable/attainment for the 2008 federal 8-hour ozone standard on April 30, 2012. The U.S. EPA strengthened the 8-hour ozone standard from the 2008 level of 0.075 ppm to 0.070 ppm on December 28, 2015. The U.S. EPA has not made final designations of attainment status. CARB recommended that the County be designated attainment for the new federal ozone standard. The County is unclassifiable/ attainment for the federal $PM_{2.5}$ standard. Federal and State attainment statuses are summarized in Table 5.

3.2.2 State Designations

Santa Barbara County is currently designated nonattainment-transitional for the State 8-hour ozone standard. The California Office of Administrative Law finalized this change in designation on April 17, 2017. An air district is designated nonattainment-transitional if, during a single calendar year, the state standard is not exceeded more than three times at any one monitoring location within the district. To be designated attainment, an air district must show that the ozone standard is not violated for three consecutive years. The County violated the state standard for PM_{10} and is unclassified for the state $PM_{2.5}$ standard (based on monitored data from 2007 – 2009). Federal and State attainment status is summarized in Table 5.

Table 5: Attainment Status of Criteria Pollutants in the South Central Coast Air Basin

Pollutant	State	Federal
O_3 – 1-hour	Nonattainment- transitional	Revoked/ N/A
O_3 – 8-hour	Nonattainment- transitional	Unclassified/ Attainment
PM_{10}	Nonattainment	Unclassified
$PM_{2.5}$	Attainment	Unclassified/ Attainment
CO	Attainment	Unclassified/ Attainment
NO_2	Attainment	Unclassified/ Attainment
SO_2	Attainment	Unclassified/ Attainment
Lead	Attainment	Unclassified/ Attainment
All others (sulfates, hydrogen sulfide, visibility reducing particles)	Unclassified/ Attainment	Unclassified/ Attainment
Source: CARB 2018.		

3.2.3 Greenhouse Gases

Pollutants that are known to increase the greenhouse effect in the earth's atmosphere, thereby adding to global climate change impacts, are referred to as greenhouse gases (GHG). A number of pollutants have been identified as GHGs. The State of California definition of GHGs in the Health & Safety Code, Section 38505(g) includes carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Some greenhouse gases, such as carbon dioxide, occur naturally and are emitted to the atmosphere through natural processes. Other GHGs (e.g., fluorinated gases) are created and emitted solely through human activities. The most common GHGs that result from human activity are carbon dioxide, followed by methane and nitrous oxide.

- Carbon Dioxide (CO_2): Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- Methane (CH_4): Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- Nitrous Oxides (NO_2): Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- Fluorinated Gases: Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (i.e., CFCs, HCFCs, and halons). Fluorinated gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as high global warming potential gases (high GWP gases).
    - Hydrofluorocarbons are manmade chemicals that have historically replaced chlorofluorocarbons used in refrigeration and semi-conductor manufacturing.

- Perfluorocarbons are manmade chemicals that are by-products of aluminum smelting and uranium enrichment.
- Sulfur hexafluoride is a manmade chemical that is largely used in heavy industry to insulate high voltage equipment and to assist in the manufacturing of cable cooling systems.

The Global Warming Potential (GWP) was developed to allow comparisons of the global warming impacts of different gases. Specifically, it is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO_2). The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that time period. The time period usually used for GWPs is 100 years. GWPs provide a common unit of measure, which allows analysts to add up emissions estimates of different gases (e.g., to compile a national GHG inventory), and allows policymakers to compare emissions reduction opportunities across sectors and gases.

- CO_2, by definition, has a GWP of 1 regardless of the time period used, because it is the gas being used as the reference. CO_2 remains in the climate system for a very long time: CO_2 emissions cause increases in atmospheric concentrations of CO_2 that will last thousands of years.
- Methane (CH_4) is estimated to have a GWP of 28–36 over 100 years. CH_4 emitted today lasts about a decade on average, which is much less time than CO_2. But CH_4 also absorbs much more energy than CO_2. The net effect of the shorter lifetime and higher energy absorption is reflected in the GWP. The CH_4 GWP also accounts for some indirect effects, such as the fact that CH_4 is a precursor to ozone, and ozone is itself a GHG.
- Nitrous Oxide (N_2O) has a GWP 265–298 times that of CO_2 for a 100-year timescale. N_2O emitted today remains in the atmosphere for more than 100 years, on average.
- Chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), hydrochlorofluorocarbons (HCFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6) are sometimes called high-GWP gases because, for a given amount of mass, they trap substantially more heat than CO_2. (The GWPs for these gases can be in the thousands or tens of thousands.)

3.3 Regulatory Setting

This section discusses applicable federal, state, regional, and local rules and regulations, including emission standards and ambient air quality standards.

3.3.1 Federal Regulations – Air Quality

The Federal Clean Air Act of 1970 requires U.S. EPA to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants (also known as "criteria air pollutants"). NAAQS are currently set for carbon monoxide, lead, ground-level ozone, nitrogen dioxide, particulate matter, and sulfur dioxide. The Clean Air Act identifies two types of national ambient air quality standards. Primary standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. The current standards are listed below. Units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb) by volume, and micrograms per cubic meter of air ($\mu g/m^3$). Table 6 lists the Federal standards for criteria pollutants.

Table 6: National Ambient Air Quality Standards

Pollutant	Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)	Primary	8 hours	9 ppm	Not to be exceeded more than once per year
		1 hour	35 ppm	
Lead (Pb)	Primary and Secondary	Rolling 3-month average	0.15 $\mu g/m^3$	Not to be exceeded
Nitrogen Dioxide (NO_2)	Primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Primary and Secondary	1 year	53 ppb	Annual Mean
Ozone (O_3)	Primary and Secondary	8 hours	70 ppb	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particulate Matter ($PM_{2.5}$)	Primary	1 year	12.0 $\mu g/m^3$	Annual mean, averaged over 3 years
	Primary and Secondary	24 hours	35 $\mu g/m^3$	98th percentile, averaged over 3 years
Particulate Matter (PM_{10})	Primary and Secondary	24 hours	150 $\mu g/m^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)	Primary	1 year	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
Source: U.S. EPA 2019.				

3.3.2 State Regulations – Air Quality

California Air Resources Board (CARB)

In addition to the U.S. EPA standards, CARB has set air quality standards for the same criteria pollutants and four others: sulfates, hydrogen sulfide (H_2S), vinyl chloride (chloroethene, C_2H_3Cl), and visibility reducing particles. Table 7 lists California standards.

Comparison of the criteria pollutant concentrations in ambient air to the CAAQS determines State attainment status for criteria pollutants in a given region. CARB has jurisdiction over all air pollutant sources in the State; it has delegated to local air districts the responsibility for stationary sources and has retained authority over emissions from mobile sources. CARB, in partnership with the local air quality management districts within California, has developed a pollutant monitoring network to aid attainment of CAAQS. The network consists of numerous monitoring stations located throughout California that monitor and report various pollutants' concentrations in ambient air.

Table 7: California Ambient Air Quality Standards

Pollutant	Averaging Time	Concentration	Standard
Carbon Monoxide (CO)	1 hour	20 ppm (23 mg/m^3)	Not to be exceeded
	8 hours	9.0 ppm (10 mg/m^3)	
Lead (Pb) (1)	30 day average	1.5 µg/m^3	Not to be equaled or exceeded
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm (339 µg/m^3)	Not to be exceeded
	Annual Average	0.030 ppm (57 µg/m^3)	
Ozone (O_3)	1 hour	90 ppb (180 µg/m^3)	Not to be exceeded
	8 hours	70 ppb (137 µg/m^3)	
Fine Particulate Matter ($PM_{2.5}$)	Annual Average	12 µg/m^3	Not to be exceeded
Respirable Particulate Matter (PM_{10})	24 hours	50 µg/m^3	Not to be exceeded
	Annual Average	20 µg/m^3	
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm (655 µg/m^3)	Not to be exceeded
	24 hours	0.04 ppm (105 µg/m^3)	
Visibility Reducing Particles	8 hours, statewide	Extinction of 0.23 per kilometer	Not to be exceeded
Sulfates	24 hours	25 µg/m^3	Not to be equaled or exceeded
Hydrogen Sulfide	1 hour	0.03 ppm (42 µg/m^3)	Not to be equaled or exceeded
Vinyl Chloride(1)	24 hours	0.01 ppm (26 µg/m^3)	Not to be equaled or exceeded

Note: (1) CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
Source: CARB 2016.

California Clean Air Act

The California Clean Air Act (CCAA; California Health and Safety Code, Division 26) went into effect on January 1, 1989 and was amended in 1992. The CCAA mandates achieving the health-based CAAQS at the earliest practical date.

Air Toxics "Hot Spots" Information and Assessment Act (Assembly Bill 2588)

The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (Assembly Bill 2588; California Health & Safety Code, Division 26, Part 6) requires an inventory of air toxics emissions from individual facilities, an assessment of health risk, and notification of potential significant health risk.

The Calderon Bill (Senate Bill 1889)

The Calderon Bill (Senate Bill 1889; California Health & Safety Code Sections 25531–25543)These sections set forth changes in the following four areas: (1) provide guidelines to identify a more realistic health risk; (2) require high-risk facilities to submit an air toxic emission reduction plan; (3) hold air pollution control districts accountable for ensuring that the plans will achieve their objectives; and (4) require high-risk facilities to achieve their planned emission reductions.

California Diesel Fuel Regulations

With the California Diesel Fuel Regulations, CARB set sulfur limitations for diesel fuel sold in California for use in on-road and off-road motor vehicles. Under this rule, diesel fuel used in motor vehicles has been limited to 500-ppm sulfur since 1993. This sulfur limit was later reduced to 15-ppm, effective September 1, 2006.

3.3.3 Local Regulations – Air Quality

Local air pollution control districts in California have jurisdiction over stationary sources in their respective areas and must adopt plans and regulations necessary to demonstrate attainment of Federal and State air quality standards. As directed by the Federal and State Clean Air Acts, local air districts are required to prepare plans with strategies for attaining and maintaining State and Federal ozone standards. In the Study Area, air quality rules and regulations are promulgated by the SBCAPCD. In order to ultimately achieve the air quality standards, the rules and regulations limit emissions and permissible impacts from the Proposed Project. Some rules also specify emission controls and control technologies for each type of emitting source. The regulations also include requirements for obtaining an Authority to Construct (ATC) permit and a Permit to Operate (PTO).

Santa Barbara County Air Pollution Control District

The Santa Barbara County Air Pollution Control District (SBCAPCD) has jurisdiction over air quality attainment in the Santa Barbara County portion of the South Central Coast Air Basin. The SBCAPCD also has jurisdiction over Outer Continental Shelf sources located within 25 miles of the seaward boundaries of the State of California (Rule 903). Increases in emissions of any non-attainment pollutant or its pre-cursor from a new or modified project that exceed the thresholds which have been identified in the SBCAPCD Regulation VIII, New Source Review, are required to be mitigated.

As a wastewater treatment plant, the CSD WWTP has an existing SBCAPCD permit. applicable. Other applicable rules are:

- Rule 201: Permits Required – Specifies the permits required for construction or operation of equipment that emits air contaminants. Under Rule 201, the Proposed Project would be required to obtain an Authority to Construct.
- Rule 303: Nuisance – This rule prohibits air emissions that cause a nuisance.
- Rule 310: Odorous Organic Sulfides – This rule prohibits air emissions of hydrogen sulfide or organic sulfides over a certain concentration. Operation of the Proposed Project would be subject to the limitations in Rule 310 (0.06 ppm over a three minute averaging time; or 0.03 ppm over a one hour averaging time).
- Rule 323.1 Architectural Coating - sets limits on the VOC content in architectural coatings. Any architectural coatings applied by the Proposed Project would be subject to the VOC content limits in Rule 323.1.
- Regulation XIII: Part 70 Operating Permit Program
  - Rules 1301 through 1305 define criteria for Part 70 source applicability, and permit content and requirements for part 70 sources. The Proposed Project is considered a "Part 70 Source" because it is a stationary source with the potential to emit a regulated air pollutant or a hazardous air pollutant in quantities equal to or exceeding the thresholds defined in Rule 1301.
  - Rule 370: Potential to Emit – Limitations for Part 70 Sources – Specifies actual emission level criteria below which Part 70 sources are exempt from Part 70 permit requirements.
- Rule 802, New Source Review – For new or modified stationary sources, such as the Proposed Project, this rule specifies emission limits that would trigger emission offsets (150 lbs./day or 25 tons/year for CO-if

designated nonattainment, 25 tons/year for any non-attainment pollutants and precursors [except CO and $PM_{2.5}$], and 240 lbs./day for attainment pollutants and precursors [except CO and $PM_{2.5}$]) or trigger Best Available Control Technology (BACT) requirements (25 lbs./day for any non-attainment pollutant or its precursors [except CO], and 150 lbs./day for CO).

SBCAPCD Air Quality Attainment Plans

The 2016 Ozone Plan is the eighth triennial update to the initial state *Air Quality Attainment Plan* adopted by the SBCAPCD Board of Directors in 1991 (other updates were done in 1994, 1998, 2001, 2004, 2007, 2010, and 2013). It is the plan to attain the California 8-hour ozone standard. U.S. EPA and CARB develop and implement air quality standards using ambient air monitoring data collected at the 17 stations around the county, determine the attainment classification for Santa Barbara County, or whether the County's air is in attainment of certain air quality standards. The County's attainment classification drives the clean air planning process, identifying the required emissions reductions that must be obtained and determining the deadlines. As of the drafting of the most recent Ozone Plan, the County was designated unclassifiable/ attainment for the federal 8-hour ozone standard of 0.075 ppm, and therefore was not currently required to prepare any plans for the federal ozone standard. The 2016 Ozone Plan addressed the state ozone standard only. The 2016 Ozone Plan covers trends in air quality, population, and vehicle activity; quantifies a baseline emission inventory and forecasts ozone precursors in the years 2025 and 2035; and identifies measures to control emissions from stationary sources and transportation sources.

Air Quality Supplement of the Comprehensive Plan (County)

The Air Quality Supplement to the Santa Barbara County *Comprehensive Plan* amends the Land Use Element to ensure consistency between the County's land use plan and the County's air quality plan.

3.3.4 State Regulations – GHG

Executive Order (EO) S-3-05. The Governor issued Executive Order (EO) S-3-05 in 2005 which set GHG emission reduction targets: reduce GHG emissions to 2000 levels by 2010; reduce GHG emissions to 1990 levels by 2020; and reduce GHG emissions to 80% below 1990 levels by 2050.

Assembly Bill (AB) 32. In 2006, California passed the California Global Warming Solutions Act of 2006. It required CARB to design and implement emission limits, regulations, and other measures to reduce statewide GHG emissions to 1990 levels by 2020 (representing a 25% reduction in emissions). AB 32 establishes an enforceable statewide cap on global warming emissions and reduction measures phased in by 2012, and through discrete early action measures that could be made effective by 2010. AB 32 established a timeframe for CARB to adopt emissions limits, rules, and regulations, but did not provide thresholds or methodologies for analyzing a project's impacts on global climate change.

CARB Scoping Plan. CARB adopted the Scoping Plan in December 2008 and a Scoping Plan Update in December 2017. The State intends to achieve GHG reductions in California required by AB 32 and Senate Bill 32 (SB 32) (described below). The Scoping Plan contains the strategies California will implement to achieve reduction of 40% below 1990 levels by 2030 and 80% below 1990 levels by 2050. In the Scoping Plan, "CARB recommends that lead agencies prioritize on-site design features that reduce emissions, especially from vehicle miles travelled (VMT), and direct investments in GHG reductions within the project's region that contribute potential air quality, health, and economic co-benefits locally."

EO B-30-15 / Senate Bill 32. In April 2015, the Governor issued EO B-30-15 which sets the State's GHG emissions target for 2030 at 40% below 1990 levels. Similarly, SB 32 (2016) requires that CARB, in its next update to the AB 32 Scoping Plan, "ensure that statewide GHG emissions are reduced to at least 40% below the statewide GHG emissions limit no later than December 31, 2030."

3.3.5 Local Regulations – GHG

The County of Santa Barbara has supported and prioritized efforts to reduce greenhouse gas (GHG) emissions and prepare for climate change since it adopted the "Santa Barbara County Climate Change Guiding Principles" in 2009. The *Energy and Climate Action Plan* (ECAP) is a significant part of the County's demonstrated commitment to reducing GHG emissions while protecting the aesthetic qualities and unique resources of Santa Barbara County. The ECAP satisfies the requirements of Section 15183.5 of the CEQA Guidelines for a Qualified GHG Reduction Strategy, which provides a process to streamline the review of GHG emissions of specific projects.

4. METHODOLOGY

Air quality criteria pollutants and greenhouse gas (GHG) emissions from construction and operation of the Proposed Project were estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2, consistent with guidance from SBCAPCD (SBCAPCD 2017). Model inputs were developed based on information in the Project Description in the Initial Study (Woodard & Curran 2018), draft Project construction schedules developed by Woodard & Curran in March 2019, and default values from the CalEEMod computer program. It was assumed that construction of all Project components (i.e., the AWPF, pump station, wells, and pipelines) would all commence in July 2021 and proceed simultaneously for approximately 15 months. In reality, construction of the Project components may be phased and this assumption, therefore, represents a conservative “worst case” scenario. It was assumed that the Proposed Project would implement the measures noted in Chapter 1 that are required by state law, as well as the dust minimization measures described in Chapter 1 that are required by SBCAPCD for all discretionary construction activities, regardless of the project size or duration.

5. SIGNIFICANCE THRESHOLDS

The Study Area is within the boundaries of the City of Carpinteria and the boundaries of unincorporated Santa Barbara County. The City recognizes air quality as a regional issue and therefore relies on the standards developed by the SBCAPCD. The County has adopted significance thresholds for air quality and greenhouse gas impacts for land use projects within its jurisdiction, which are discussed in more detail below. The SBCAPCD’s thresholds of significance apply to all sources of air pollutants, including equipment and businesses not regulated by the SBCAPCD and motor vehicles. They are recommended to be used for CEQA review of projects in the county for which the SBCAPCD is a responsible agency or a concerned agency. SBCAPCD’s thresholds of significance are intended to address cumulative, basin-wide air pollutant impacts. Therefore, if a project’s emissions do not exceed the SBCAPCD significance thresholds, it can be assumed that it will not result in a cumulatively considerable net increase of a criteria pollutant for which the South Central Coast Air Basin is non-attainment.

The mission of the SBCAPCD is to protect the people and the environment of Santa Barbara County from the effects of air pollution. The SBCAPCD thresholds of significance are designed to evaluate impacts at a project level as they relate to the California and National Ambient Air Quality Standards. The SBCAPCD thresholds of significance ensure projects do not conflict with the latest adopted clean air plans, which are developed to ensure the County is on track to achieve compliance with Air Quality Standards. The Air Quality Standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Therefore, if a project is consistent with the latest adopted clean air plan and does not exceed the SBCAPCD significance thresholds, it can be assumed that it will not have a substantial adverse impact on public health.

5.1 Short-Term Impacts

The County and the SBCAPCD have not set quantitative thresholds of significance for short-term emissions. However, in the interest of public disclosure, the SBCAPCD recommends that construction-related NO_x, ROC, PM_{10} and $PM_{2.5}$

emissions from diesel and gasoline powered equipment, paving, and other activities, be quantified. Although there is not an established quantitative threshold for short-term, construction related PM_{10} (which is 50% of total dust), SBCAPCD and the County advise that fugitive dust impacts be discussed in all environmental documents for projects involving ground disturbance. The SBCAPCD requires standard dust control measures (see *Section 1.1.7 Construction Best Management Practices*, above).

Although the SBCAPCD does not have quantitative thresholds of significance in place for short-term or construction emissions for ozone precursors, it uses 25 tons per year for ROC and NOx as a guideline for determining the significance of construction impacts. The County has not established short-term thresholds for NO_x and ROC emissions from construction equipment because, in general, NOx emissions from construction are considered insignificant.[1]

Under SBCAPCD Rule 202 D.16, if the combined emissions from all construction equipment used to construct a stationary source which requires an Authority to Construct permit (which the Proposed Project would require) have the potential to exceed 25 tons of any pollutant, except carbon monoxide, in a 12-month period, the owner of the stationary source shall provide offsets under the provisions of Rule 804 and shall demonstrate that no ambient air quality standard will be violated. Although the Proposed Project would not introduce new emissions sources and therefore not require an ATC, the 25 tons per year standard provides a guideline for what would constitute a significant level of air pollutant emissions within the South Central Coast Air Basin.

5.2 Long-Term Impacts

Long-term emissions primarily stem from motor vehicles and from stationary sources (e.g., diesel generators, boilers and large water heaters, water treatment facilities).

According to the SBCAPCD, a project would have a significant impact on air quality, either individually or cumulatively, if operation would:

- Emit (from all project sources, mobile and stationary), less than the daily trigger for offsets or Air Quality Impact Analysis set in the SBCAPCD New Source Review Rule for any pollutant (240 lbs./day for ROC or NO_x; and 80 lbs./day for PM_{10}. There is no daily operational threshold of CO; it is an attainment pollutant); or
- Emit more than 25 lbs./day of ROC or NO_x from motor vehicle trips only; or
- Cause or contribute to a violation of any CAAQS or NAAQS; or
- Exceed the SBCAPCD health risk public notification threshold of 10 excess cancer cases in a million for cancer or a Hazard Index of more than one (1.0) for non-cancer risk; or
- Be inconsistent with the latest adopted federal and state air quality plans for Santa Barbara County.

Due to the relatively low background ambient CO levels in Santa Barbara County, localized CO impacts associated with congested intersections are not expected to exceed the CO health-related air quality standards. Therefore, CO "Hotspot" analyses are not required anymore (SBCAPCD 2017).

According to the SBCAPCD, a proposed stationary source project would have a significant GHG impact, if operation of the project would:

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[1] Emissions of NO_x from construction equipment in the County are estimated at 1,000 tons per year of NO_x. When compared to the total NO_x emission inventory for the County of approximately 17,000 tons per year, construction emissions comprise approximately six % of the 1990 county-wide emission inventory for NO_x.

- Emit more than 10,000 metric tons per year CO_2e; or
- Be inconsistent with an approved GHG emissions reduction plan or GHG mitigation program

5.3 General Conformity Regulations

Section 176(c) of the Federal Clean Air Act prohibits Federal entities from taking actions in nonattainment or maintenance areas which do not conform to the State implementation Plan (SIP) for the attainment and maintenance of the national ambient air quality standards (NAAQS). Therefore, the purpose of conformity is to (1) ensure Federal activities do not interfere with the budgets in the SIPs; (2) ensure actions do not cause or contribute to new violations, and (3) ensure attainment and maintenance of the NAAQS. Currently, SBCAPCD is in attainment of national ambient air quality standards, therefore general conformity analysis is not required for Federal or Federally-funded projects (SBCAPCD 2017).

6. PROJECT IMPACTS

6.1 Short-term Criteria Pollutant Emissions

Air emissions of criteria pollutants during construction would result from the use of construction equipment with internal combustion engines, and off-site vehicles to transport workers, deliver materials to the site, and haul export material from the site. Proposed Project construction would also result in fugitive dust emissions, which would be lessened through the implementation of the construction best management practices required by SBCAPCD, described in Chapter 1. Proposed Project construction emissions are summarized in Table 8 and Table 9. Consistent with SBCAPCD guidelines, daily maximum construction-related fugitive dust, NO_x, ROC, PM_{10}, and $PM_{2.5}$ emissions from grading, paving, and other activities have been quantified; however, these emissions have not been compared to quantitative thresholds of significance because such thresholds are not currently in place for short-term emissions.

Table 8: Proposed Project Maximum Daily Construction Emissions (lbs./day)

Emission Sources	NO_x	ROC	CO	SO_x	$PM_{2.5}$	PM_{10}
Construction equipment	57.6	29.5	43.9	0.1	2.6	2.8
Offsite emissions	4.3	0.4	3.1	<0.1	0.2	0.7
Fugitive dust (with required construction best management practices)	--	--	--	--	3.0	5.7
Total Maximum Daily Emissions	**61.9**	**29.6**	**47.1**	**0.1**	**5.4**	**8.6**
Note: Emissions represent the maximum of winter or summer. Numbers may not sum due to rounding. See CalEEMod output sheets in Attachment A. Values are taken from the "mitigated" CalEEMod output tables to represent emissions with standard dust control measures.						

As stated in Chapter 4, the SBCAPCD uses 25 tons per year for ROC and NOx as a guideline for determining the significance of construction impacts and, under SBCAPCD Rule 202 D.16, if the combined emissions from all construction equipment used to construct a stationary source which requires an Authority to Construct permit have the potential to exceed 25 tons of any pollutant, except carbon monoxide, in a 12-month period, the owner of the stationary source shall provide offsets under the provisions of Rule 804 and shall demonstrate that no ambient air quality standard will be violated.

Table 9: Proposed Project Annual Construction Emissions (tons/year)

Year	NO_x	ROC	CO	SO_x	$PM_{2.5}$	PM_{10}
2021	3.2	0.4	2.4	<0.1	0.3	0.4
2022	3.2	1.0	2.9	<0.1	0.3	0.4
Threshold	*25*	*25*	--	*25*	*25*	*25*
Significant?	No	No	No	No	No	No

The quantities presented in Table 8 and Table 9, above, represent the estimated emissions associated with construction of the AWPF and pump station, wells, and pipelines. Emissions would also be associated with the ocean outfall improvements; however, such emissions were assumed to be minimal and were not included in the quantitative analysis. The ocean outfall improvements would involve a boat and divers fitting the outfall with new valves on a single day.

As analyzed above, the Proposed Project would not exceed the applicable emissions standards during construction. Construction would be short-term and temporary. Therefore, construction of the Proposed Project would not result in a cumulatively considerable net increase of a criteria pollutant for which the South Central Coast Air Basin is non-attainment.

6.2 Long-term Criteria Pollutant Emissions

Long-term emissions of criteria pollutants would result from motor vehicle trips associated with maintenance and operation of the proposed facilities, ongoing energy consumption at the AWPF, and "area" sources such as landscaping and architectural coating. Calculated operational emissions are compared to SBCAPCD thresholds. The maximum daily long-term emissions of criteria pollutants are summarized in Table 10.

Table 10: Proposed Project Operational Emissions (lbs./day)

Emission Sources	NO_x	ROC	CO	SO_x	$PM_{2.5}$	PM_{10}
Mobile source emissions	<0.1	<0.1	0.1	<0.1	<0.1	<0.1
Energy and area source emissions	<0.1	1.4	<0.1	0	<0.1	<0.1
Total Emissions	**<0.1**	**1.4**	**0.1**	**<0.1**	**<0.1**	**<0.1**
Threshold (all sources)	*240*	*240*	--	--	--	*80*
Exceed threshold (all sources)?	No	No	No	No	No	No
Threshold (mobile sources only)	*25*	*25*	--	--	--	--
Exceed threshold (mobile sources)?	No	No	No	No	No	No

As shown in Table 10, operation of the AWPF, pump, wells, and pipelines would not exceed SBCAPCD emissions standards. Because emissions are below the significance levels, the Proposed Project would not result in a cumulatively considerable net increase of a criteria pollutant for which the South Central Coast Air Basin is non-attainment.

6.3 Other Emissions

SBCAPCD Rule 303, Nuisance, prohibits discharge from any source whatsoever air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety or any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. This rule covers generation of odors, and typical sources of odor complaints include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. Under the right meteorological conditions, some odors may still be offensive several miles from the source (CARB 2005).

Implementation of the Proposed Project would have the potential to generate objectionable odors through construction activities and during operation of certain components. Construction activities are not typical sources of nuisance odors, although construction could result in minor amounts of odors associated with diesel exhaust or evaporation of VOCs within architectural coatings. These smells are largely due to the presence of sulfur and creation of hydrocarbons during combustion. As shown in in Table 8 and Table 9, construction would not result in significant emissions of sulfur oxides. Additionally, construction would be temporary, and equipment would not be located in a single location throughout the construction period. Odorous hydrocarbons tend to dissipate quickly and would only affect receptors in the immediate vicinity, rather than a substantial number of people at any given time. Therefore, construction activities would not result in nuisance odors.

Operation of the Proposed Project, including the AWPF, pump, wells, and pipelines, is not expected to result in odor impacts. The CSD WWTP already treats and stores wastewater and recycled water, which requires operation of odor control measures to prevent objectionable odors. Addition of the AWPF facility with an improved level of treatment would not create odors because source water would be secondary effluent suitable for reuse and product water would be pure water suitable for groundwater replenishment, neither of which has associated odor. The AWFP would be designed and constructed in compliance with applicable regulations and standards relative to product water for groundwater replenishment. Potential impacts related to objectionable odors would be less than significant and no mitigation would be necessary.

6.4 Exposure of Sensitive Receptors to Substantial Pollutant Concentrations

Any project that has the potential to expose sensitive receptors to substantial pollutant concentrations, and/or exceed the SBCAPCD health risk public notification threshold of 10 excess cancer cases in a million for cancer or a Hazard Index of more than one (1.0) for non-cancer risk would have a potentially significant impact.

Sensitive receptors are located within the vicinity of the Proposed Project. As described in Section 6.1, the Proposed Project would not result in considerable pollutant levels during construction. Construction would be short-term and emissions of PM_{10} and $PM_{2.5}$, including particulate matter from diesel exhaust, would be below thresholds, which are designed to protect public health. The Proposed Project would also incorporate the construction BMPs required by SBCAPCD described in Section 2.1.7, which would further reduce dust emissions. As explained above in Section 5, the California and National Air Quality Standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. If a project is consistent with the latest adopted clean air plan and does not exceed the SBCAPCD significance thresholds, it can be assumed that it will not have a substantial adverse impact on public health. Operation of the Proposed Project would not result in long-term pollutant concentrations that exceed emissions standards. Therefore, neither construction nor operation of the Proposed Project are anticipated to expose sensitive receptors to substantial pollutant concentrations.

SBCAPCD prioritizes and categorizes facilities as required by the Air Toxics “Hot Spots” Information and Assessment Act of 1987 (AB 2588). Through the prioritization procedures, SBCAPCD determines which facilities may be causing significant offsite carcinogenic or noncarcinogenic health risks. This is done by developing “toxic scores” for each facility. These scores are used by the District to categorize each facility as high, intermediate, or low priority. High and intermediate priority facilities (and any other facilities designated by SBCAPCD) are required to submit a risk assessment to SBCAPCD to quantify the off-site carcinogenic and noncarcinogenic health risk due to their facility emissions. The risk assessments are used by SBCAPCD to determine which facilities have air toxics emissions that are causing significant health risks. These significant risk sources are required in order to provide notices to all exposed persons regarding the results of the risk assessment. In addition, SBCAPCD has prepared an annual report, commencing in 1991, which ranks and identifies facilities according to the degree of health risk posed by each facility (SBCAPCD 2019c). Since 1991, the number of significant risk facilities in Santa Barbara County has been reduced by 100%. In 1991 there were 51 significant risk facilities and now there are none. In addition to evaluating existing facilities in AB 2588, SBCAPCD evaluates health risk associated with new or modified facilities during the permit process when issuing new Authority to Construct permits. The goal for SBCAPCD's new source review health risk program is to prevent a new or modified facility from creating a significant risk to the community (using the significance criteria established by the AB 2588 program). With this program, no additional significant risk facilities have been created since 1991.

The existing WWTP facilities do not generate substantial sources of toxic air contaminant emissions that could pose or contribute to a health risk. The Proposed Project would construct facilities that would be similar to existing facilities at the site. Furthermore, the Proposed Project would comply with SBCAPCD new source review program in that emissions from the Proposed Project would be lower than the limits that would trigger emission offsets or trigger BACT requirements (see Section 6.2). The Proposed Project would not introduce new sources of air pollutant emissions which would trigger the need to obtain an ATC permit; therefore, the Proposed Project would comply with SBCAPCD health risk review. Therefore, the Proposed Project is not anticipated to result in a new, significant source of toxic air contaminants.

As noted in Section 5, due to the relatively low background ambient CO levels in Santa Barbara County, localized CO impacts associated with congested intersections are not expected to exceed the CO health-related air quality standards. Therefore, CO "Hotspot" analyses are no longer required, and it is assumed the Proposed Project would have a less than significant impact related to CO "Hotspots."

6.5 Greenhouse Gas Emissions

The Proposed Project would emit GHGs during construction, which is assumed to start in July 2021 and last approximately 18 months. Construction-related GHG emissions are associated with operation of off-road construction equipment, worker and vendor vehicle trips, and hauling trips.

The Proposed Project is expected to be operational in 2022. Long-term emissions of GHGs would result from motor vehicle trips associated with maintenance and operation of the proposed facilities, ongoing energy consumption, and "area" sources such as landscaping and architectural coating. In addition, long-term emissions of GHGs would result from the facilities' water consumption. Operational GHG emissions are associated with the proposed changes at the WWTP site; in other words, the GHG emissions analyzed herein do not include emissions from existing energy consumption or mobile sources associated with current site operations. Annual GHG emissions are summarized in Table 11.

Table 11: Proposed Project GHG Emissions ($MTCO_2e$/year)

Source	$MTCO_2e$
Energy (electricity)	675
Mobile	4.1
Water, Area sources	0.1
Amortized Construction Emissions	34
Total	**679**
Threshold	*10,000*
Significant?	No

The results of the inventory for construction and operational emissions, as shown in the CalEEMod output tables in Attachment A, are presented in Table 11. Amortized emissions from construction over a hypothetical 30-year lifetime of the Proposed Project have been added to the overall annual operational emissions. As shown in Table 11, GHG emissions from the Proposed Project would be below SBCAPCD thresholds of significance. The Proposed Project would not generate GHG emissions, directly or indirectly, that may have a significant impact on the environment and no mitigation would be necessary.

6.6 Consistency with Air Quality Plans

6.6.1 SBCAPCD 2016 Ozone Plan

The 2016 Ozone Plan is the current SBCAPCD Board-adopted Ozone Plan for the County and addresses local plans to attain the California 8-hour ozone standard. The baseline emissions inventory incorporates information from every type of emissions source in the base year, 2012, including emissions from stationary sources (e.g., larger facilities that are subject to SBCAPCD permitting requirements) such as the CSD WWTP. For example, the 2012 base year stationary source emissions are calculated with annual data that facilities, including the CSD WWTP, would have reported to the SBCAPCD. The largest sources of ozone precursor emissions from stationary sources in the County stem from coating and solvent operations, oil and gas production, and food and agricultural processing; sewage treatment accounts for a very small amount of County-wide ROC and NO_x.

The 2012 inventory is then projected into the future, which estimates the future inventories in Santa Barbara County based on County growth data and currently adopted local, state, and federal rules that are planned for implementation, in the years 2025 and 2035. In the 2016 Ozone Plan, the growth factors are based on information collected from reputable sources such as the California Energy Commission and the Department of Finance, then projected using various economic models called REMI (Regional Economic Models, Inc.). The Proposed Project is consistent with the information that forms the basis of the 2016 Ozone Plan emission inventories, both baseline and future. Therefore, any emissions of ozone precursors would be consistent with the 2016 Ozone Plan.

The 2016 Ozone Plan identifies control measures to reduce ROC and NO_x emissions from stationary sources of air pollution. The measures are classified as adopted (measures SBCAPCD has formally adopted), proposed (measures SBCAPCD plans to adopt), and further study (measures SBCAPCD plans to investigate further before adoption). Measures that could apply to the Proposed Project include Rule 323.1 Architectural Coating, which sets limits on the VOC content in architectural coatings. The Proposed Project would comply with all applicable SBCAPCD rules and would therefore be consistent with the 2016 Ozone Plan.

6.6.2 CARB 2017 Climate Change Scoping Plan

The 2017 Climate Change Scoping Plan focuses primarily on reducing GHG emissions that result from mobile sources and land use development. The Proposed Project would not involve a considerable increase in new vehicle trips or land use changes that would result in an increase in vehicle trips, such as urban sprawl. The 2017 Climate Change Scoping Plan also recognizes that about 2% of the total energy used in the state is related to water conveyance; it calls for, "increased water conservation and efficiency, improved coordination and management of various water supplies, greater understanding of the water-energy nexus, deployment of new technologies in drinking water treatment, groundwater remediation and recharge, and potentially brackish and seawater desalination." By augmenting local water storage, the Proposed Project would offset energy demands associated with imported water supplies. The Proposed Project would not, therefore, conflict with an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions. Impacts would be less than significant, and no mitigation would be required.

6.6.3 County of Santa Barbara ECAP

One of the proposed injections well sites is within the boundaries of the County of Santa Barbara. The *Energy and Climate Action Plan* (ECAP) is a significant part of the County's demonstrated commitment to reducing GHG emissions while protecting the aesthetic qualities and unique resources of Santa Barbara County. The ECAP includes 53 actions, referred to as emissions reduction measures, which are aggregated into 11 core strategies. The majority of the actions support reducing single-passenger vehicle trips and increasing energy efficiency of the built environment. The injection well would not conflict with these goals. As shown in Table 11, emissions from mobile sources and energy consumption would be lower than thresholds. Impacts would be less than significant, and no mitigation would be required.

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ATTACHMENT A: CALEEMOD OUTPUT SHEETS

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.3184	3.1346	2.3703	4.9100e-003	0.4177	0.1439	0.5616	0.2172	0.1340	0.3512	0.0000	430.8458	430.8458	0.1088	0.0000	433.5646
2022	0.9141	3.1083	2.8519	5.8400e-003	0.4121	0.1381	0.5501	0.2130	0.1290	0.3421	0.0000	510.4268	510.4268	0.1242	0.0000	513.5306
Maximum	**0.9141**	**3.1346**	**2.8519**	**5.8400e-003**	**0.4177**	**0.1439**	**0.5616**	**0.2172**	**0.1340**	**0.3512**	**0.0000**	**510.4268**	**510.4268**	**0.1242**	**0.0000**	**513.5306**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.3184	3.1346	2.3703	4.9100e-003	0.2057	0.1439	0.3497	0.1026	0.1340	0.2366	0.0000	430.8453	430.8453	0.1088	0.0000	433.5642
2022	0.9141	3.1083	2.8519	5.8400e-003	0.2089	0.1381	0.3470	0.1023	0.1290	0.2314	0.0000	510.4262	510.4262	0.1242	0.0000	513.5300
Maximum	**0.9141**	**3.1346**	**2.8519**	**5.8400e-003**	**0.2089**	**0.1439**	**0.3497**	**0.1026**	**0.1340**	**0.2366**	**0.0000**	**510.4262**	**510.4262**	**0.1242**	**0.0000**	**513.5300**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**50.03**	**0.00**	**37.34**	**52.36**	**0.00**	**32.49**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	7-20-2021	10-19-2021	1.9155	1.9155
2	10-20-2021	1-19-2022	1.8408	1.8408
3	1-20-2022	4-19-2022	1.6080	1.6080
4	4-20-2022	7-19-2022	1.3845	1.3845
5	7-20-2022	9-30-2022	0.7228	0.7228
		Highest	1.9155	1.9155

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	0.2524	1.0000e-005	8.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.6900e-003	1.6900e-003	0.0000	0.0000	1.8000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	671.9353	671.9353	0.0277	5.7400e-003	674.3392
Mobile	1.5200e-003	5.9200e-003	0.0165	4.0000e-005	4.1100e-003	4.0000e-005	4.1500e-003	1.1000e-003	4.0000e-005	1.1400e-003	0.0000	4.0637	4.0637	2.0000e-004	0.0000	4.0687
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	0.0558	0.0558	0.0000	0.0000	0.0560
Total	**0.2540**	**5.9300e-003**	**0.0173**	**4.0000e-005**	**4.1100e-003**	**4.0000e-005**	**4.1500e-003**	**1.1000e-003**	**4.0000e-005**	**1.1400e-003**	**0.0000**	**676.0565**	**676.0565**	**0.0279**	**5.7400e-003**	**678.4656**

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	0.2524	1.0000e-005	8.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.6900e-003	1.6900e-003	0.0000	0.0000	1.8000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	671.9353	671.9353	0.0277	5.7400e-003	674.3392
Mobile	1.5200e-003	5.9200e-003	0.0165	4.0000e-005	4.1100e-003	4.0000e-005	4.1500e-003	1.1000e-003	4.0000e-005	1.1400e-003	0.0000	4.0637	4.0637	2.0000e-004	0.0000	4.0687
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	0.0558	0.0558	0.0000	0.0000	0.0560
Total	**0.2540**	**5.9300e-003**	**0.0173**	**4.0000e-005**	**4.1100e-003**	**4.0000e-005**	**4.1500e-003**	**1.1000e-003**	**4.0000e-005**	**1.1400e-003**	**0.0000**	**676.0565**	**676.0565**	**0.0279**	**5.7400e-003**	**678.4656**

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

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	6.2642	61.9309	46.8712	0.1032	13.0192	2.7690	15.5096	6.7972	2.5803	9.0898	0.0000	9,972.3956	9,972.3956	2.5362	0.0000	10,035.8015
2022	29.6288	45.2263	39.7381	0.0840	6.6992	1.9907	8.6899	3.4927	1.8600	5.3528	0.0000	8,097.9283	8,097.9283	1.9679	0.0000	8,147.1250
Maximum	**29.6288**	**61.9309**	**46.8712**	**0.1032**	**13.0192**	**2.7690**	**15.5096**	**6.7972**	**2.5803**	**9.0898**	**0.0000**	**9,972.3956**	**9,972.3956**	**2.5362**	**0.0000**	**10,035.8015**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	6.2642	61.9309	46.8712	0.1032	6.0791	2.7690	8.5694	3.1195	2.5803	5.4121	0.0000	9,972.3956	9,972.3956	2.5362	0.0000	10,035.8015
2022	29.6288	45.2263	39.7381	0.0840	3.3532	1.9907	5.3439	1.6647	1.8600	3.5247	0.0000	8,097.9283	8,097.9283	1.9679	0.0000	8,147.1250
Maximum	**29.6288**	**61.9309**	**46.8712**	**0.1032**	**6.0791**	**2.7690**	**8.5694**	**3.1195**	**2.5803**	**5.4121**	**0.0000**	**9,972.3956**	**9,972.3956**	**2.5362**	**0.0000**	**10,035.8015**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**52.17**	**0.00**	**42.51**	**53.51**	**0.00**	**38.12**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.3836	9.0000e-005	9.6900e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0207	0.0207	5.0000e-005		0.0221
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	8.5900e-003	0.0313	0.0879	2.5000e-004	0.0231	2.4000e-004	0.0233	6.1900e-003	2.2000e-004	6.4100e-003		25.0888	25.0888	1.1800e-003		25.1184
Total	**1.3922**	**0.0314**	**0.0976**	**2.5000e-004**	**0.0231**	**2.7000e-004**	**0.0233**	**6.1900e-003**	**2.5000e-004**	**6.4400e-003**		**25.1095**	**25.1095**	**1.2300e-003**	**0.0000**	**25.1405**

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	1.3836	9.0000e-005	9.6900e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0207	0.0207	5.0000e-005		0.0221
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	8.5900e-003	0.0313	0.0879	2.5000e-004	0.0231	2.4000e-004	0.0233	6.1900e-003	2.2000e-004	6.4100e-003		25.0888	25.0888	1.1800e-003		25.1184
Total	**1.3922**	**0.0314**	**0.0976**	**2.5000e-004**	**0.0231**	**2.7000e-004**	**0.0233**	**6.1900e-003**	**2.5000e-004**	**6.4400e-003**		**25.1095**	**25.1095**	**1.2300e-003**	**0.0000**	**25.1405**

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

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	6.3000	61.9391	47.0638	0.1029	13.0192	2.7696	15.5100	6.7972	2.5808	9.0902	0.0000	9,937.944 9	9,937.944 9	2.5399	0.0000	10,001.44 16
2022	29.6394	45.2300	39.8962	0.0837	6.6992	1.9912	8.6904	3.4927	1.8605	5.3532	0.0000	8,067.091 4	8,067.091 4	1.9711	0.0000	8,116.3695
Maximum	**29.6394**	**61.9391**	**47.0638**	**0.1029**	**13.0192**	**2.7696**	**15.5100**	**6.7972**	**2.5808**	**9.0902**	**0.0000**	**9,937.944 9**	**9,937.944 9**	**2.5399**	**0.0000**	**10,001.44 16**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	6.3000	61.9391	47.0638	0.1029	6.0791	2.7696	8.5698	3.1195	2.5808	5.4125	0.0000	9,937.944 9	9,937.944 9	2.5399	0.0000	10,001.44 16
2022	29.6394	45.2300	39.8962	0.0837	3.3532	1.9912	5.3444	1.6647	1.8605	3.5252	0.0000	8,067.091 4	8,067.091 4	1.9711	0.0000	8,116.369 5
Maximum	**29.6394**	**61.9391**	**47.0638**	**0.1029**	**6.0791**	**2.7696**	**8.5698**	**3.1195**	**2.5808**	**5.4125**	**0.0000**	**9,937.944 9**	**9,937.944 9**	**2.5399**	**0.0000**	**10,001.44 16**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**52.17**	**0.00**	**42.50**	**53.51**	**0.00**	**38.12**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.3836	9.0000e-005	9.6900e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0207	0.0207	5.0000e-005		0.0221
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	8.4600e-003	0.0324	0.0936	2.4000e-004	0.0231	2.4000e-004	0.0233	6.1900e-003	2.2000e-004	6.4100e-003		24.5482	24.5482	1.2200e-003		24.5787
Total	**1.3921**	**0.0325**	**0.1033**	**2.4000e-004**	**0.0231**	**2.7000e-004**	**0.0233**	**6.1900e-003**	**2.5000e-004**	**6.4400e-003**		**24.5690**	**24.5690**	**1.2700e-003**	**0.0000**	**24.6008**

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	1.3836	9.0000e-005	9.6900e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0207	0.0207	5.0000e-005		0.0221
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	8.4600e-003	0.0324	0.0936	2.4000e-004	0.0231	2.4000e-004	0.0233	6.1900e-003	2.2000e-004	6.4100e-003		24.5482	24.5482	1.2200e-003		24.5787
Total	**1.3921**	**0.0325**	**0.1033**	**2.4000e-004**	**0.0231**	**2.7000e-004**	**0.0233**	**6.1900e-003**	**2.5000e-004**	**6.4400e-003**		**24.5690**	**24.5690**	**1.2700e-003**	**0.0000**	**24.6008**

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

Appendix D

Biological Resources Assessment

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Carpinteria Valley Water District Carpinteria Advanced Purification Project

Biological Resources Assessment

prepared for

Woodard & Curran
Rosalyn Prickett, AICP
10509 Vista Sorrento Parkway, Suite 205
San Diego, California 92121
Via email: rprickett@woodardcurran.com

prepared by

Rincon Consultants, Inc.
180 North Ashwood Avenue
Ventura, California 93003

March 2019

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
rinconconsultants.com

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Executive Summary

Rincon Consultants, Inc. has prepared this Biological Resources Assessment to document existing conditions and provide a basis for evaluation of potential impacts to special status biological resources during the Carpinteria Valley Water District Carpinteria Advanced Purification Project. The proposed project would achieve the following objectives: create a new, drought-proof; reliable supply of local water; produce approximately 1,100 acre feet per year (AFY) of advanced treated water suitable for groundwater recharge and potable reuse (at 1.0 million gallons per day [MGD] capacity), with the ability to expand to up to 1,650 AFY (at 1.5 MGD capacity); and reduce Carpinteria Valley Water District's reliance on imported water and storage at Lake Cachuma.

The project is specifically located in the city of Carpinteria, and a portion of the project also occurs in unincorporated Santa Barbara County. The proposed project is south of State Route 192, west of Carpinteria Creek, east of Santa Ynez Avenue, and extends into the Pacific Ocean.

The project is defined by an area of potential effects (APE) which centers on the proposed project footprint, and includes the terrestrial and marine study area and generally all areas that are expected to be affected by the proposed project. The study area within the APE encompasses a 50-foot survey buffer for the terrestrial component and a 1,000-foot survey buffer for the marine component. The terrestrial portion of the APE is dominated by developed, disturbed and landscaped areas consisting of buildings, residential development, and other infrastructure, and paved or graded dirt areas with little to no vegetation. The marine portion of the APE is defined by the existing ocean outfall, which is approximately 1,600-feet long with the last 93-feet having 16 diffuser ports spaced evenly every 6-feet. The outfall terminates offshore in a depth of approximately 25-feet of sea water.

No special status plant species have potential to occur within the APE. Five special status terrestrial wildlife species have a high or moderate potential to occur within the APE. These species include the monarch - California overwintering population (*Danaus plexippus* pop. 1), tidewater goby (*Eucyclogobius newberryi*), steelhead – Southern California Distinct Population Segment (DPS) (*Oncorhynchus mykiss* pop. 10), western snowy plover (*Charadrius nivosus nivosus*), and yellow warbler (*Setophaga petechial*). Vegetation within and adjacent to the APE offers potential nesting habitat for bird species protected under California Fish and Game Code 3503 and the federal Migratory Bird Treaty Act.

Nineteen special status marine species have potential to occur within the APE. Of the 19 species, 12 have a high or moderate potential to occur. These species include the black abalone (*Haliotis cracherodii*), pink abalone (*Haliotis corrugata*), green abalone (*Haliotis fulgens*), white shark (*Carcharodon carcharias*), garibaldi (*Hypsypops rubicundus*), California grunion (*Leuresthes tenuis*), northern elephant seal (*Mirounga angustirostris*), harbor seal (*Phoca vitulina*), California sea lion (*Zalophus californianus*), gray whale (*Eschrichtius robustus*), common bottlenose dolphin (*Tursiops truncatus*) and green sea turtle (*Chelonia mydas*).

Federally designated critical habitat for southern California steelhead DPS occurs within the APE. Direct and indirect impacts to this species and critical habitat are not expected with proposed avoidance and minimization measures incorporated into the project. Recommendations incorporated herein include measures for avoidance of special status species.

The City of Carpinteria (2003) General Plan/Local Coastal Land Use Plan & Environmental Impact Report identifies areas of rocky points and intertidal areas, subtidal reef, kelp beds, marine mammal rookeries and hauling grounds, and critical habitat for southern California steelhead DPS as Environmentally Sensitive Habitat Area (ESHA). These ESHA designations are in place to protect local waters and the sensitive species within the habitat (California Coastal Act 1976). The APE is also within essential fish habitat and has the potential to support at least one life stage of economically important species included in fishery management plans (Magnuson-Stevens Fishery Conservation and Management Act 1976). No impacts to ESHA or other sensitive habitats are anticipated with implementation of proposed avoidance and minimization measures.

Four potentially jurisdictional hydrologic features are present within the APE: Franklin Creek, Carpinteria Creek, a roadside stormwater drain, and the Pacific Ocean. Franklin Creek, Carpinteria Creek, and the roadside stormwater drain are potentially subject to the United States Army Corps of Engineers jurisdiction pursuant to Section 404 of the Clean Water Act, the Regional Water Quality Control Board pursuant to Section 401 of the Clean Water Act and the California Water Code (Porter-Cologne Water Quality Control Act), and California Department of Fish and Wildlife pursuant to California Fish and Game Code 1600. The Pacific Ocean is a navigable water of the United States protected under Section 10 of the Rivers and Harbors Act and subject to the plans and policies outlined in the Water Quality Control Plan for Ocean Waters of California. Direct or indirect impacts to potentially jurisdictional features are not expected with proposed avoidance and minimization measures incorporated into the project.

1 Introduction

Rincon Consultants, Inc. (Rincon) prepared this Biological Resources Assessment (BRA) report to document the current existing conditions and to evaluate the potential for impacts to biological resources during implementation of the Carpinteria Valley Water District Carpinteria Advanced Purification Project (project). This BRA has been prepared to address both terrestrial and marine components of the project. The Carpinteria Valley Water District (CVWD) is the project's lead agency under the California Environmental Quality Act (CEQA).

1.1 Project Location

The project is located in the city of Carpinteria (city), and a portion of the project occurs in unincorporated Santa Barbara County (County) (Figure 1). Carpinteria is located approximately 12 miles southeast of the city of Santa Barbara and approximately 15 miles northwest of the city of Ventura. The project is primarily within Carpinteria's municipal boundaries, with the exception of potential injection well #6 and the associated pipeline, which occur within unincorporated Santa Barbara County. The proposed project is south of State Route (SR) 192, west of Carpinteria Creek, east of Santa Ynez Avenue, and extends into the Pacific Ocean.

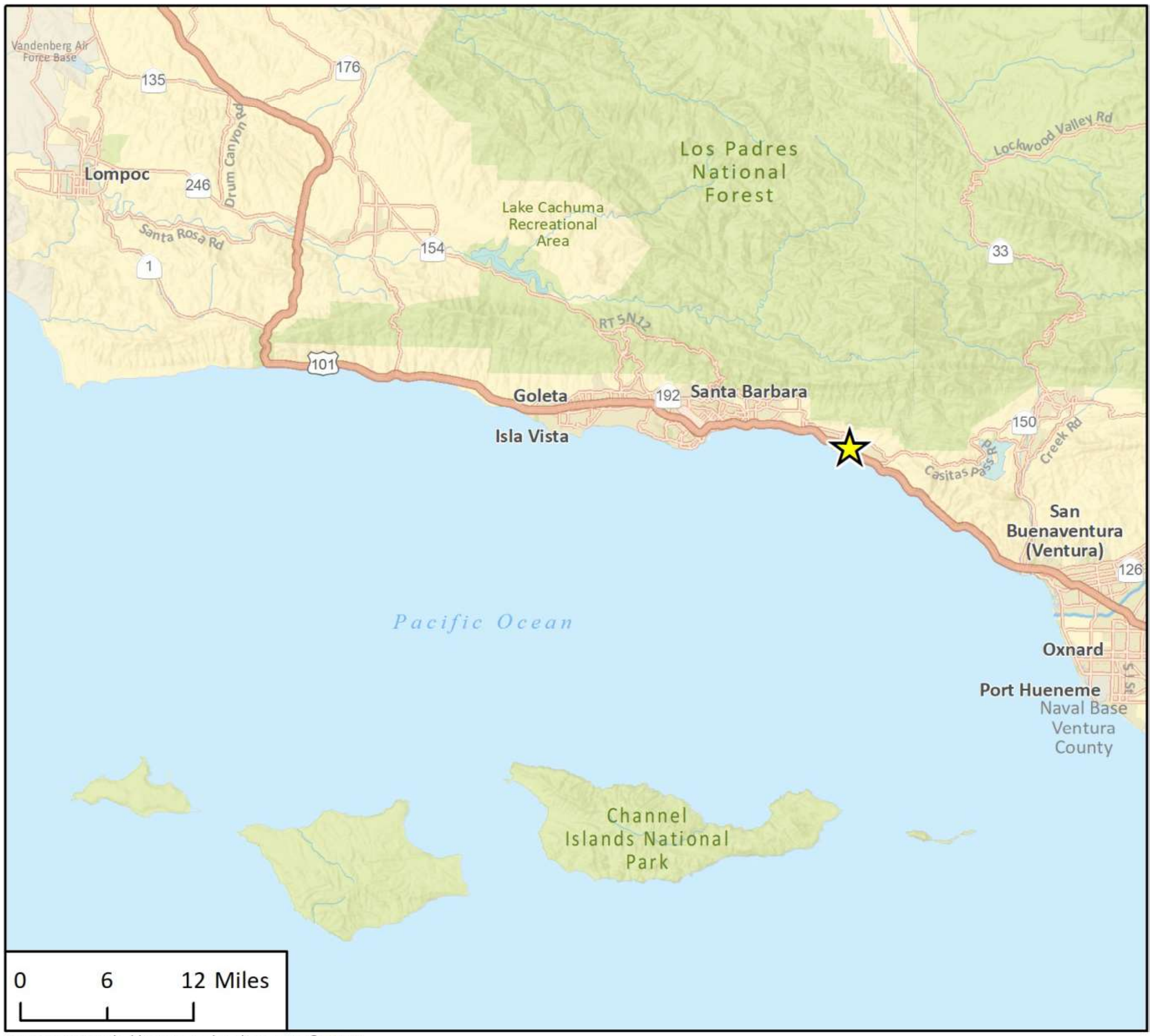
The Advanced Water Purification Facility (AWPF) component of the project would be located within the existing Carpinteria Wastewater Treatment Plant (WWTP) site, at 5351 6th Street. The WWTP is approximately 0.1 mile north of the Pacific Ocean and is bordered by Carpinteria Creek to the east.

The injection and monitoring well areas[1] would be located approximately 0.7 to 1.0 mile north of the AWPF. Six potential injection well sites have been identified, though only three would be selected as design continues and property rights are acquired. The potential monitoring well areas are proposed in various streets between Santa Ynez Avenue and Jay Street. The land uses surrounding these proposed areas are a mix of residential, commercial, recreational areas, agricultural (e.g., greenhouse), and institutional. Conveyance pipelines between the AWPF and the injection wells would generally run within the public roadway right-of-ways (ROWs). The pipeline would cross U.S. Highway 101 at the Linden Street overpass. This crossing is currently being constructed by the California Department of Transportation (Caltrans) during upgrades to the bridge, and has CEQA coverage under the Environmental Impact Report for the Linden Avenue & Casitas Pass Road Interchanges Project (SCH# 2008041158) (Caltrans 2010).

The offshore component of the project consists of an existing ocean outfall located in the nearshore coastal areas of the Santa Barbara Channel (SBC). The SBC extends from Point Conception to Point Mugu, and is bordered by the four northern Channel Islands – San Miguel, Santa Rosa, Santa Cruz, and Anacapa. The ocean outfall runs underground initiating at the WWTP and terminating approximately 1,000-feet offshore of Carpinteria State Beach. All proposed project components are located within the United States Geological Survey (USGS; 2015) Carpinteria, California 7.5-minute

[1] Injection and monitoring well areas displayed in Figure 2 show entire parcels or segments within which a well may be located. Wells would occupy only a small fraction of the sites displayed.

Figure 1 Regional Location Map



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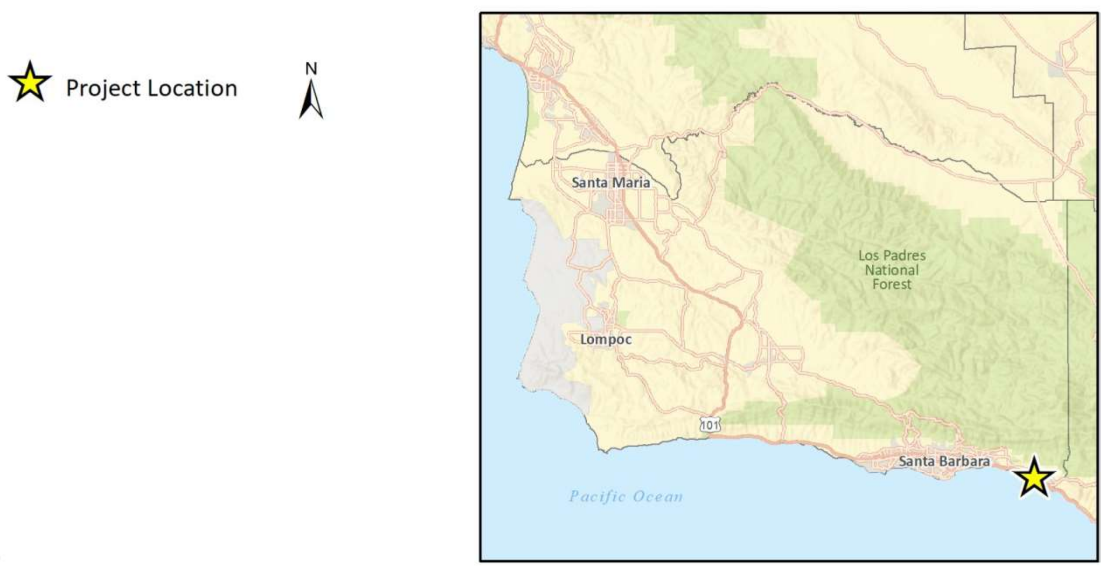


topographic quadrangle, and the Public Land Survey System depicts the project within Township 4N, Range 25W, San Bernardino Meridian (Earth Point 2018).

1.2 Project Description

The proposed project includes construction of an AWPF, injection wells, conveyance pipelines, backwash pipelines, pump station, monitoring wells, and modifications to the existing ocean outfall. Existing production wells would be used to extract the purified water back out of the groundwater basin for use in the potable supply. Detailed descriptions of each project component are provided below.

Advanced Water Purification Facility

The AWPF would be constructed at the existing WWTP with an initial production capacity of 1.0 million gallons per day (MGD) and ultimate production capacity of 1.5 MGD. The AWPF would be constructed east of the disinfection basins and west of the Storage Building and Maintenance Building, within an existing paved area. The total AWPF footprint would be approximately 10,900 square feet. An existing storage building in the east portion of the property may be demolished concurrently with the proposed project.

Secondary effluent from the WWTP would be used to feed the AWPF process. The AWPF would consist of microfiltration (MF) or ultrafiltration (UF), reverse osmosis, advanced oxidation processes, with ultraviolet and free chlorine. An equalization basin would be constructed to provide a consistent flow of secondary effluent to the AWPF.

A backwash line would also be constructed along the existing north utility corridor and main utility corridor to the WWTP influent pump station for MF/UF backwash, membrane cleaning waste flows, and off-spec water (water that does not meet the permit requirements [non-compliant water]). Stormwater would be fully contained within the AWPF and WWTP site and diverted to the WWTP for treatment. There would be no stormwater runoff from the proposed project.

Purified Water Pump Station

The AWPF product water would be stored in a purified water clearwell adjacent to the Purified Water Pump Station (PWPS); located near to the AWPF. The purified water clearwell would be approximately 920 square feet (23-feet by 40-feet). The footprint of the PWPS including associated above grade piping, surge tank, and miscellaneous equipment would be 2,000 square feet (33-feet by 60-feet).The PWPS would entail a concrete pad and roof decking over a below grade concrete clearwell. The PWPS would not be housed inside a building and would be uncovered.

Conveyance Pipelines to Injection Wells

The PWPS and piping conveyance system would be constructed to serve up to three injection wells. A majority of the pipeline alignments are proposed to be constructed via open cut trench within road ROWs; however, in some cases they may be constructed via trenchless technologies. Several small sections of the alignment may necessitate an easement. The pipeline would cross U.S. Highway 101 at the Linden Street Overpass, which is currently being constructed by Caltrans during upgrades to the bridge. Approximately 6,100 linear feet (LF) of 12-inch diameter common pipeline would convey the purified water to the well lateral split. Three 8-inch diameter pipeline extensions, totaling approximately 1,500 LF, would be used to distribute the water to individual injection wells.

The only segment proposed for construction that may use trenchless construction is the segment to serve the injection well at Franklin Park, which must cross Franklin Creek, if injection well #5 or #6 is selected. If open cut trenching is not selected for the Franklin Creek crossing, a pipe bridge would be used, similar to an existing pipe bridge over Franklin Creek. The existing pipe bridge spans the creek, adjacent to a pedestrian bridge between Meadow View Lane and Sterling Avenue. The 8-inch pipe bridge would span the creek and support itself; no external pipe supports of permanent loading of the pedestrian bridge would be required. The pipe span across Franklin Creek would be approximately 25-feet. Because Franklin Creek is concrete lined, it is not anticipated a pipe bridge would be required.

Table 1 below provides a summary of the proposed street alignments and construction methods for each pipe segment of the preferred pipeline alignment. There may be a need to use a trenchless technology for some portions of some segments; however, these segments are not yet determined.

Table 1 Conveyance Pipelines and Preferred Alignment

Street[1]	Length (linear feet)	Diameter (inches)	Proposed Construction Method
Olive Avenue	250	12	Open cut trench, paved City street
6th Street	1,100	12	Open cut trench, paved City street
Maple Avenue	1,300	12	Open cut trench, paved City street
Carpinteria Avenue	100	12	Open cut trench, paved City street
Eugenia Place	700	12	Open cut trench, paved City street
Easement between Eugenia Pl and Linden Ave	350	12	Open cut trench, paved City street
Linden Avenue[2]	1,100	12	Open cut trench, paved City street
US 101-Linden Avenue Overcrossing	1,200	-	Installed by Caltrans
Linden Avenue	250	8	Open cut trench, paved City street
Meadow View Lane	600	8	Open cut trench, paved City street
Laterals to Wells	650	8	Open cut trench, paved City street
Total – Preferred Alignment	**7,600**		
Total – Maximum	**8,700**		

[1]Alternative alignments between Palm Ave and Linden Ave, or 6th Street and Carpinteria Ave could be selected for the final alignment of the 12-in pipeline. However, choosing one of these alternative alignments would not change the total length of the 12-in pipeline. The segments would be constructed via open cut trench in paved City streets.

[2]Approximately 1,200 LF of the 2,300 LF 12-inch pipeline installed on Linden Ave would be installed by Caltrans as part of the U.S. 101-Linden Avenue Overcrossing project.

Injection Wells

Injection wells are proposed at six potential areas located north of U.S. Highway 101. In total, three injection wells are planned for construction. Two will be constructed in the first phase of the project for the 1.0 MGD AWPF, with one well on either side of Linden Avenue. A third injection well would be constructed when the AWPF is expanded to its ultimate capacity of 1.5 MGD. The injection wells would be constructed utilizing below-grade vaults or above-grade with the well head facilities placed in screened cages or behind fences. Injection wells would be single-completion wells having one borehole with casing and screening in aquifers. The wellheads would include injection supply lines, flow meters, air release valves, pressure-regulating valves, and controls for down-hole flow control valves. An electric/pneumatic control panel would be installed next to the wellhead and piping. Each well, including backwash water holding tank, is anticipated to have a footprint of 6,000 square feet (60-feet by 100-feet). During construction, the impacted area would be approximately 10,000 square feet to accommodate the drill rig, laydown, support equipment, and groundwater treatment tanks. The locations of the well, backwash water holding tank, and associated equipment have not been selected within the available sites.

Well backwash would be required to keep the well operating at peak performance and is part of normal maintenance. A dedicated backwashing pump at each well site would be used for regular cleaning of the well screens. A single 42,000-gallon tank would be required to temporarily store water produced during well backwash events for all three wells. The stored backwash water would be discharged either into the sewer system or storm drain system via a nearby connection. In the case of the sewer system, the backwash water would be slowly discharged into the sewer system at a low flow rate to prevent surcharging the sewer collection system. In the case of the storm drain system, the water would be slowly discharged into the storm drain system after allowing any solids accumulated during backwash to be settled out in the backwash holding tank.

Well Backwash Discharge Pipelines

Backwash water would either be disposed of to the WWTP sewer system or to the local storm drainage system. Discharge locations are located adjacent to the potential injection well parcels except for well #4.

Sewer disposal includes construction of up to 1,400 LF of new 12-inch pipe for connection to the existing sanitary sewer; all sewer flows return to the WWTP. Drainage disposal includes construction of 600 LF of new 12-inch pipe for direct drainage to Franklin Creek or to existing drainage culverts owned by the City of Carpinteria; all drainage ultimately flows to Franklin Creek. Drainage backwash piping is proposed to be constructed via open cut trench within roadway ROWs.

Monitoring Wells

Four monitoring well locations are proposed north of U.S. Highway 101. The locations selected for monitoring wells would be dependent on the injection well locations selected. The monitoring wells would include either three nested PVC casings or three individual monitoring wells on each site. For the nested monitoring well, three, 3-inch diameter casings in each monitoring well would be nested in a 24-inch borehole and equipped with a sampling pump. For individual monitoring wells, 3-inch casings would be installed for each aquifer at different depths. During construction, the impacted area would be approximately 5,000 square feet to accommodate the drill rig, laydown, support equipment, and groundwater treatment tanks. Once installed, aboveground facilities would include a small circular vault lid (up to 3-feet in diameter) enclosing a belowground vault containing the nested well or three monitoring wells at different depths. During periodic sampling, temporary piping or hosing to a gutter or storm drain inlet would be required for discharge.

Ocean Outfall Modifications

The WWTP currently discharges effluent through a single 24-inch diameter concrete-coated, welded steel outfall at a depth of 21 to 24-feet below mean sea level. The outfall is approximately 1,600-feet long with the last 93-feet having 16 diffuser ports spaced evenly every 6-feet on the main barrel of the outfall and one diffuser port on the flanged end of the pipeline. The diffusers consist of a 4-inch diameter pipe riser with a 90-degree elbow on the end. The discharge direction of the diffusers alternates along the pipeline and has a downward discharge trajectory of 30-degrees from horizontal. With the proposed project, the amount of effluent conveyed by the outfall would be reduced during periods of high demand. The reduced flow means the furthest diffusers would not have any discharge through them which would allow seawater, sediment, and marine life to enter the outfall. To prevent the fouling of the interior of the outfall, duckbill valves would be installed on each diffuser. The valves remain closed when there is little to no flow on the inside of the valve, but open once the flow increases. The diffuser port on the pipe end would have a duckbill valve installed.

To make the modifications to the outfall diffusers, divers and a support vessel would be required. The duckbill valves would be mounted to the outfall in the same alternating configuration as the existing diffusers. For existing diffusers in good condition, the duckbill valve could potentially be mechanically attached to the existing plate and nipple. Based on recent observations, it is likely existing diffuser plates would be removed and new fabricated diffuser plates with risers, elbows and flanged duckbill valves would be affixed to the outfall over the existing ports. The tools required will be typical of underwater tools used for minor marine construction (e.g., pneumatic drivers, drills).

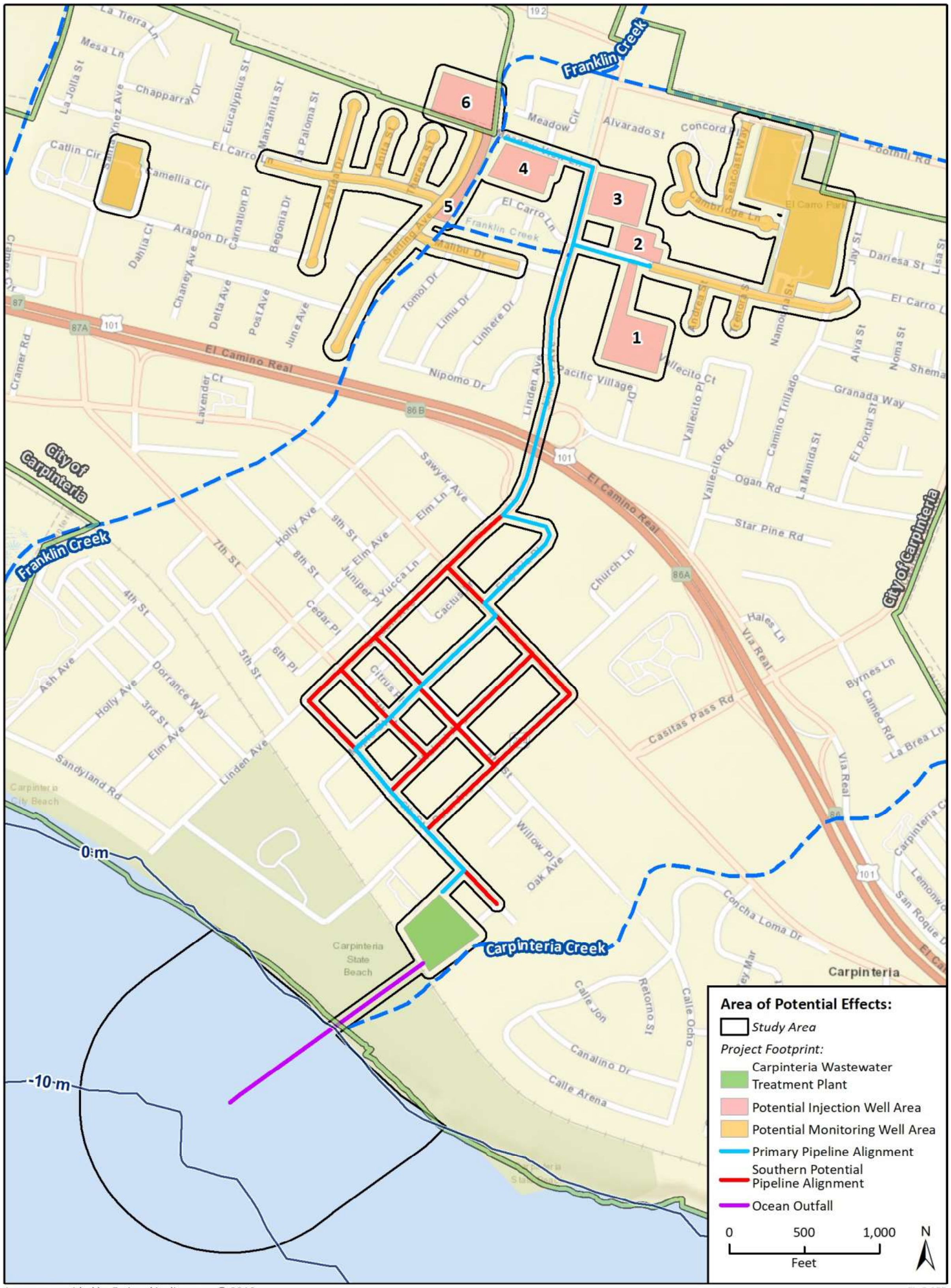
1.3 Area of Potential Effects

The area of potential effects (APE)[2] centers on the proposed project footprint described in Section 1.2, Project Description, the terrestrial and marine study area, and generally all areas expected to be affected by the proposed project. The study area within the APE encompasses a 50-foot survey buffer for the terrestrial component and a 1,000-foot survey buffer for the marine component. The study area for the marine component was extended to address potential impacts from the ocean outfall, construction-related sediment discharges and underwater noise from construction. The mean higher high water (MHHW)[3] line was utilized as the dividing line between the terrestrial and marine evaluation. The location of the APE is depicted in Figure 2.

[2] For the purpose of this BRA, the term APE refers to the project footprint plus the terrestrial and marine study area. Whereas the term project footprint refers to the proposed project components. The terrestrial study area refers to a 50-foot survey buffer and a 1,000-foot survey buffer for the marine component.

[3] The MHHW is defined by the average higher high water height of each tidal day observed over the National Tidal Datum Epoch. The National Tidal Datum Epoch is the specific 19-year period adopted by the National Ocean Service as the official time segment over which tide observations are taken and reduced to obtain mean values for tidal datums.

Figure 2 Area of Potential Effect



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2 Methodology

2.1 Regulatory Overview

Regulated or sensitive resources studied and analyzed herein include special status plant and animal species, nesting birds and raptors, sensitive plant communities, jurisdictional waters and wetlands, wildlife movement, and locally protected resources, such as protected trees and locally designated environmentally sensitive habitat areas (ESHA. Regulatory authority over biological resources is shared by federal, state, and local authorities. Primary authority for regulation of general biological resources lies within the land use control and planning authority of local jurisdictions (in this instance, the City of Carpinteria and County of Santa Barbara).

CVWD is the lead agency for this project under the CEQA. This study has been completed in accordance with the requirements of CEQA as well as federal regulations in the case a federal nexus is established during the course of project execution. A federal nexus may be established if federal funding is acquired and/or federal permitting is necessary. Compliance with both federal and state regulations allows the lead agency to apply the results of this technical study should a federal nexus be established at a later time.

2.2 Environmental Statutes

For the purpose of this report, potential impacts to biological resources were analyzed based on the following statutes (Appendix A):

Terrestrial and Marine

- California Environmental Quality Act
- Federal Endangered Species Act (FESA)
- California Endangered Species Act (CESA)
- Clean Water Act (CWA)
- California Fish and Game Code (CFGC)
- Porter-Cologne Water Quality Control Act
- California Coastal Act
- City of Carpinteria General Plan/Local Coastal Land Use Plan & Environmental Impact Report (Carpinteria GP/LCP & EIR)
- Santa Barbara County Article II Coastal Zoning Ordinance

Terrestrial

- Migratory Bird Treaty Act (MBTA)
- The Bald and Golden Eagle Protection Act

Marine

- Rivers and Harbors Act of 1899
- Magnuson-Stevens Fishery Conservation and Management Act
- Marine Mammal Protection Act
- Coastal Zone Management Act
- National Marine Sanctuaries Act
- National Invasive Species Act
- Marine Life Protection Act
- Marine Life Management Act
- California Ocean Plan
- Marine Invasive Species Act

2.3 Guidelines for Determining CEQA Significance

Determination of impacts is done on a project-by-project basis. Because of the complexity of biological resource issues, substantial variation can occur between projects. Impact assessment must account for both short-term and long-term impacts. Impacts are classified as significant or less than significant, depending on the size, type, and timing of the impact and the biological resources involved. Disturbance to habitats and/or species are considered significant if they substantially affect significant biological resources using the CEQA Guidelines Appendix G Checklist Initial Study Checklist for biological resources outlined below.

CEQA Guidelines Appendix G

a) Have substantial adverse effects, either directly or through habitat modifications, on any species identified as a candidate, sensitive or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service.

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

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

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan.

2.4 Literature Review

Rincon staff reviewed a variety of literature to obtain baseline information about the biological resources with potential to occur within the APE and in the surrounding area. The literature review included information from standard biological reference materials and regionally applicable regulatory guiding documents including (but not limited to) the following: Bowers et al. 2004; Burt and Grossenheider 1980; Holland 1986; Baldwin et al. 2012; Sawyer et al. 2009; Stebbins 2003; American Ornithologists Union 2018; and United States Army Corps of Engineers (USACE) 2008. Site-specific and project vicinity programmatic biological studies were reviewed, including Santa Barbara Coastal Long Term Ecological Research (2019), Southern California Coastal Ocean Observing System (2019), Partnership for Interdisciplinary Studies of Coastal Oceans (2015), Multi-Agency Rocky Intertidal Network (MARINe 2019), and Southern California Coastal Water Research Project (Bight 2019).

Several documents from the City of Carpinteria and County of Santa Barbara were also reviewed including: Carpinteria GP/LCP & EIR; and Santa Barbara County Article II Coastal Zoning Ordinance

Other sources of information about the site included aerial photographs, topographic maps, bathymetric charts, geologic maps, climatic data, and project plans. Rincon also conducted queries of several relevant scientific databases which provide information about occurrences of sensitive biological resources: the California Department of Fish and Wildlife (CDFW; formerly the California Department of Fish and Game) Biogeographic Information and Observation System (CDFW 2019a) and California Natural Diversity Data Base (CNDDB) (CDFW 2019b); the United States Fish and Wildlife Service (USFWS) Critical Habitat Portal (USFWS 2018a) and Information, Planning, and Conservation System Query (USFWS 2018b); United States National Wild and Scenic Rivers Program Map (United States National Wild and Scenic Rivers System 2018); National Wetlands Inventory (NWI) (USFWS 2018c); the United States Department of Agriculture, Natural Resource Conservation Service (USDA NRCS) Web Soil Survey (NRCS 2019), Essential Fish Habitat Mapper (National Oceanic and Atmospheric Administration [NOAA] 2019b) and the California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants of California (CNPS 2019). The queries included the *Carpinteria* California USGS 7.5-minute topographic quadrangles and the other six USGS quadrangles that surround it (*Santa Barbara, Little Pine Mtn., Hildreth Peak, Old Man Mountain, White Ledge Peak, Pitas Point*)[4]. The Rare Plants of Santa Barbara County list was also reviewed (Central Coast Center for Plant Conservation 2005).

In addition to the literature review mentioned above, Rincon marine scientists reviewed state and federal marine protected areas including Channel Islands National Marine Sanctuary (NOAA 2019b), Rockfish Conservation Areas (NOAA 2019b), and Marine Protected Areas (CDFW 2019) established to protect ecosystems and/or sustain fisheries production. Specific species regulated through the goals, objectives, policies, and mandates of the Marine Life Management Act (MLMA) were also reviewed.

Rincon compiled a complete list of special status species previously documented within a five-mile radius of the project site from the CNDDB query and additional sources (Appendix D). Then an analysis to determine which of these special status species have the potential to occur within the APE was conducted. The habitat requirements for each regionally occurring special status species

[4] A 7-quad search was performed as a result of the APE in close proximity to the Pacific Ocean.

were assessed and compared to the type and quality of habitats observed on-site during the terrestrial and marine field reconnaissance survey. Conclusions regarding which special status species have the potential to occur were based not only on background research and literature review previously mentioned; but also on the data collected in the field during the site survey. Several regionally occurring special status species were eliminated due to lack of suitable habitat within the APE, range in elevation, and/or geographic distribution. Special status species determined to have the potential to occur within the APE are discussed in Section 4. Special status species determined not to have potential to occur within the APE are not discussed further in this BRA.

2.5 Field Reconnaissance Survey

For the purpose of this BRA, the extent of the APE was surveyed and evaluated. The APE consists of the proposed project footprint and the terrestrial and marine study area. The study area within the APE encompasses a 50-foot survey buffer for the terrestrial component and a 1,000-foot survey buffer for the marine component. The MHHW was utilized as the dividing line between the terrestrial and marine evaluation.

Terrestrial

Rincon Senior Biologist Lindsay Griffin and Associate Biologist Monica Jacinto conducted a reconnaissance survey of the APE on January 24, 2019. The survey was conducted between the hours of 1045 and 1415. Weather was sunny with a temperature of approximately 70 degrees Fahrenheit and winds approximately 3 to 5 miles per hour.

The reconnaissance survey consisted of the biologists driving and walking the extent of the project footprint, documenting general site conditions and habitats, recording the plants and animals observed (Appendix C), and evaluating for potential jurisdictional waters and streambeds within the APE. For areas that were inaccessible within the APE (e.g., private property), the biologists visually inspected those areas with binoculars (10x42). Wildlife species were identified by direct observation, vocalization, or by sign (e.g., tracks, scat, burrows). Plant species nomenclature and taxonomy followed The Jepson Manual: Vascular Plants of California, second edition (Baldwin et al. 2012). The vegetation classification used for this analysis is based on (Sawyer et al. 2009), but it has been modified as needed to most accurately describe the existing vegetation communities on site. Refer to Appendix B for site representative photographs.

Marine

The marine field reconnaissance survey evaluated the existing conditions of marine species and habitats of the offshore portion of the APE using SCUBA equipment and by foot along the intertidal area. A survey of the intertidal portions of the APE was conducted by Rincon Marine Biologists on January 22, 2019 to document the existing biological conditions. The biologists walked meandering transects throughout the intertidal portion of the APE approximately 1,000-feet upcoast and 1,000-feet downcoast from the outfall pipe transition across the beach. The survey was conducted during a negative tide, -1.71-feet at 4:49 pm, for NOAA tide station 9411270, Rincon Island. Table 2 documents survey details. The low tide conditions allowed for access to the broad rocky intertidal bench in the eastern portion of the APE as well as full access to beach habitat and the mouth of Carpinteria Creek. Biologists surveyed the extent of habitat types in the intertidal area noting dominant communities, special status species, and physical attributes of the substrates. A list of species observed during the survey is discussed in Section 3.2.4 Invertebrates.

Table 2 Intertidal Existing Conditions Survey

Date	Personnel	Time	Weather Conditions	Survey Type
1/22/2019	Derek Lerma Jaime McClain	1600-1700	65-68°F, winds 1-3 mph, 0% cloud cover, -1.7 tide	Existing Conditions Survey

The subtidal diving survey was conducted on January 30, 2019 during the hours of 0900-1500 by Rincon scientific divers. Table 3 documents survey details. The divers surveyed the outfall pipe and surrounding area by surveying 10-feet (3 meters [m]) either side of the length of the pipe from the most inshore diffuser port to the terminus of the outfall pipe. Scientific divers conducted eight, 100-foot (30m) transects perpendicular to the outfall pipe near the location of each diffuser port or approximately every 15-feet (5m). Survey transects were conducted in both the upcoast (west) and downcoast (east) directions. The scientific divers worked in teams with each diver surveying 6-feet (2m) on either side of each transect. Scientific divers used weighted meter tapes and underwater slates to record substrate and species observations. Due to the consistency of the habitat throughout the subtidal portions of the APE and limited visibility during the diver survey, aerial imagery and bathymetry was used to survey the areas outside of the area covered by the diver survey. Baseline water quality data was collected at the outfall discharge point using an YSI Pro Plus handheld multi-parameter instrument cast vertically from the surface to the ocean bottom immediately adjacent to the outfall pipe and near the central effluent discharge location. The instrument collected data every second from two locations, repeated twice. Benthic collections were conducted at ten locations adjacent to the diffuser ports 7-feet (2m) from the outfall pipe by the divers licensed with a CDFW Sport Fishing License[5]. Divers used a cylindrical core (10-centimeter [cm] diameter) taken to a depth of 20 cm and sieved through an aperture of 1.5 millimeter (mm) mesh.

Table 3 Subtidal Existing Conditions Survey

Date	Personnel	Time	Weather Conditions	Survey Type
1/30/2019	Derek Lerma Jaime McClain Doug Simpson	0900-1500	60-70°F, winds 3-5 mph SE, 0% cloud cover	Existing Conditions Survey

[5] License Provisions: Any person who is 16 years of age or older mush have a sport fishing license to take any kind of fish, mollusk, invertebrate, amphibian, or crustacean in California, except when taken form a public pier in ocean or bay waters. A sport fishing license is required to take reptiles, except for rattlesnakes. License number: D-0025203073-2

3 Existing Conditions

This section summarizes the results of the reconnaissance survey effort and provides further analysis of the data collected in the field. Discussions regarding the general environmental setting, vegetation communities present, plant and wildlife species observed, special status species issues, and other biological resource constraints on-site are presented below. Representative photographs of the project site are provided in Appendix B and a complete list of all the plant and wildlife species observed on-site during the biological field survey is presented as Appendix C.

3.1 Terrestrial Environment

Physical Characteristics

Within the portion of the city and county where the project is proposed, much of the coastal plain between the Santa Ynez Mountains and Pacific Ocean is developed or has been historically disturbed by agricultural uses. Native vegetation within the APE is limited and fragmented, but includes and is not limited to coast live oak (*Quercus agrifolia*), California sycamore (*Platanus racemosa*), Menzies' goldenbush (*Isocoma menziesii*), arroyo willow (*Salix lasiolepis*), and California blackberry (*Rubus ursinus*).

The project site is located within the South Coast region of Santa Barbara County, along the western portion of the Transverse Range Mountains. The project site is within the South Coast subregion of the Jepson ecoregion system, which extends from Point Conception to the west southward to Mexico, along the immediate coast in Santa Barbara County, but also extending inland to the San Gabriel and San Bernardino mountains farther east and south (Baldwin et al. 2012).

The weather in the Carpinteria area is typical of a Mediterranean climate. Summers are warm and dry while the winters are cool and often wet. Approximately 90% of the annual runoff occurs in less than 30 days, with over 80% of that coming in January, February, and March (Cachuma Resource Conservation District & the Carpinteria Creek Watershed Coalition 2005). Most of the annual precipitation and corresponding runoff occurs in only a few large storms, resulting in high peak flows and rapid return to near baseflow conditions (Beighley et al. 2004). Although rainfall is highly seasonal and varies significantly from year to year, the USDA NRCS National Water and Climate Center for Carpinteria, reports mean annual precipitation as approximately 20 inches (USDA NRCS 2018a).

Watershed and Drainages

Two creeks were observed to be within the APE, Franklin Creek and Carpinteria Creek. The northern component of the proposed project includes potential impacts to Franklin Creek if injection well area #5 or #6 is chosen. Franklin Creek consists of a concrete lined flood control channel. The channel receives runoff water from the surrounding residential and agricultural (e.g., nursery) developments, and lacks vegetation. The channel was mostly dry during the reconnaissance survey, but had a low level of standing water present in some areas. An existing pipe bridge spans the creek, adjacent to a pedestrian bridge between Meadow View Lane and Sterling Avenue. Franklin Creek originates in the Santa Ynez Mountains, continues through the foothills and coastal terrace areas, and then connects to Santa Monica Creek west of the APE before reaching the Pacific Ocean. The NWI defines Franklin Creek as an intermittent creek where surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years.

Carpinteria Creek occurs within a small portion of the APE adjacent to and east of the WWTP. Carpinteria Creek originates in the Santa Ynez Mountains, continues through foothills and coastal terrace areas, then reaches the Pacific Ocean. During the reconnaissance survey, Carpinteria Creek contained low levels of flowing water and consisted of riparian habitat on the eastern bank, which was located outside of the APE. Carpinteria Creek is distinct from other creeks within 100 miles north and south, as it is one of the few perennially flowing streams, even in drought years (City of Carpinteria 2003). This creek is located in the Carpinteria Creek watershed, which is one of approximately 50 sub-watersheds that comprise the South Coast Watershed. The South Coast Watershed is the southernmost hydrologic unit within the Central Coast Basin. The Carpinteria Creek watershed is located in the southeastern portion of the South Coast Watershed and extends approximately seven miles from the Pacific Ocean to the ridge of the Santa Ynez Mountains. The Carpinteria Lagoon begins 50-feet above the ocean and extends approximately 650-feet along the Carpinteria Creek corridor to the railroad tracks. Carpinteria Creek occurs directly east of the existing WWTP, just past the lagoon.

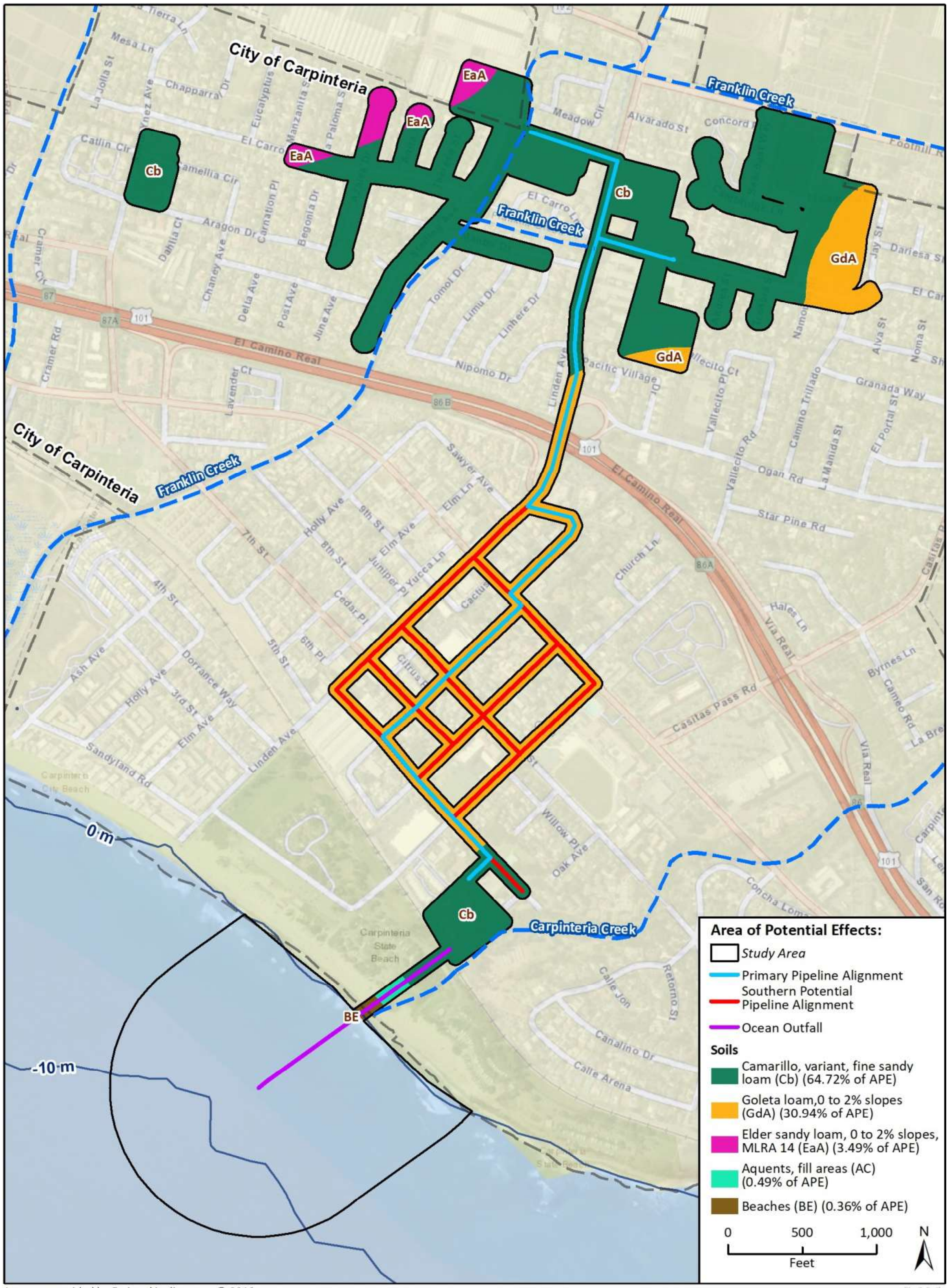
Both Franklin Creek and Carpinteria Creek are listed on the State Water Resources Control Board (SWRCB) 303(d) list of impaired water bodies requiring development of Total Daily Maximum Loads (TMDLs). Franklin Creek is listed for sodium, pH, fecal coliform, and toxicity. The *TMDL for Nitrogen and Phosphorus Compounds in Streams of the Franklin Creek Watershed* was adopted by the Central Coast Regional Water Quality Control Board (RWQCB) in March 2018. Carpinteria Creek is listed for E. coli, fecal coliform, toxicity, chloride, sodium, nitrate and dissolved oxygen. Carpinteria Creek contains breeding populations of listed wildlife species such as the federally listed endangered tidewater goby (*Eucyclogobius newberryi*) and Southern California steelhead trout (*Oncorhynchus mykiss irideus*) DPS, as well as other species of federal, state, and local concern (further discussed in Section 4).

A roadside stormwater drain was observed along the east side of Linden Avenue, between the Linden Avenue southbound off ramp and the Linden Avenue U.S. Highway 101 overpass. The drain is concrete lined and drains into a second roadside stormwater drain along the southern side of U.S. Highway 101 (second drain is located outside of APE) which then flows to the channelized portion of Franklin Creek west of the APE. Non-native ruderal vegetation and ornamental landscaping was observed along either side of the drain. Runoff water resulting from the surrounding development activities was observed to be entering the drain during the reconnaissance survey. As a result, a low level of water was present.

Soils

Information about the soil types present within the APE was obtained from the NRCS Online Web Soil Survey (USDA NRCS 2019). Elevations on-site range from zero to 40-feet above mean sea level, and the topography of the APE is primarily flat. Based on data from the Online Web Soil Survey, Camarillo, variant, fine sandy loam (Cb) underlies the majority of the APE (64.72%), Goleta loam, 0 to 2% slopes (GdA) underlies the next greatest percentage of the APE (30.94%), Elder sandy loam, 0 to 2% slopes, MLRA 14 (EaA) comprises the third greatest portion of the APE (3.49%), Aquents, fill areas (AC) follows (0.49%), and the smallest proportion of the APE consist of Beaches (BE; 0.36%). A map illustrating soil locations is presented as Figure 4.

Figure 3 Soils Map



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Additional data provided by USDA NRCS SSURGO, 2018.

Camarillo, variant, fine sandy loam is classified as a poorly drained soil formed in alluvium derived from calcareous sedimentary rock, as a farmland of statewide importance, and as a hydric soil. These soils are also present in floodplains with a slope of 0 to 2% and an elevation range of ten to fifty feet. Unnamed minor components make up 15% of this soil type.

Goleta loam, 0 to 2 percent slopes is classified as a well-drained soil formed in alluvium derived from sedimentary rock and as prime farmland if irrigated. These soils are present in valleys with a slope of 0 to 2% and an elevation range of twenty to five hundred feet. Minor components make up 15% of this soil type and include Elder, Metz, and two unnamed components. This soil is not hydric.

Elder sandy loam, 0 to 2 percent slopes, MLRA 14 consists of well drained soils formed in alluvium and are classified as prime farmland if irrigated. These soils are present on alluvial fans and floodplains that have slopes of 0 to 2% and an elevation range of 0 to 1,920-feet. Minor components make up 15% of this soil type and include: Arroyo Seco; Gorgonio; Elkhorn, sandy loam; San Emigdio, sandy loam; Metz, loamy sand; Xerofluvents, sand; Baywood, loamy sand; and Watsonville, loam. This soil is not hydric.

Aquents, fill areas are disturbed soil areas where the original soil material has been removed, repositioned, or fill has been added. These areas are the result of human activities and are often associated with urban development. Aquent soil areas are typically sparsely vegetated and are variable in composition. Texture is usually dependent on the parent material and the type of fill material used, if present. This soil is not hydric.

Beaches are sandy soils that formed in sandy or stony alluvium sources. Beach soils are typically found on beaches at between sea level and 10-feet in elevation, and are considered a hydric soil. These soils are not prime farmland and generally contain sparse vegetation due to wave action and tidal flows. The soil is poorly drained and does not have a typical depth to restrictive features. Flooding is frequent.

Vegetation and Other Land Cover

Vegetation communities and land cover types documented within the APE during the reconnaissance survey include: developed/disturbed/landscaped, arroyo willow thicket, and beach shoreline. These general vegetation/land cover types can be further categorized across vegetation alliances as described in A Manual of California Vegetation, Second Edition (Sawyer et al. 2009).

Table 4 summarizes the vegetation communities and land cover types along with associated acreages within the APE. A map illustrating terrestrial vegetation communities and land cover types is presented as Figure 4.

Table 4 Summary of Vegetation and Land Cover Types within the APE

Habitat Type	Approximate Acreage	Approximate Percent Area
Developed/Disturbed/Landscaped	107.66	0.992%
Arroyo Willow Thicket	0.28	0.003%
Beach Shoreline	0.55	0.005%
Total	**108.49**	**100%**

Figure 4 Vegetation Communities

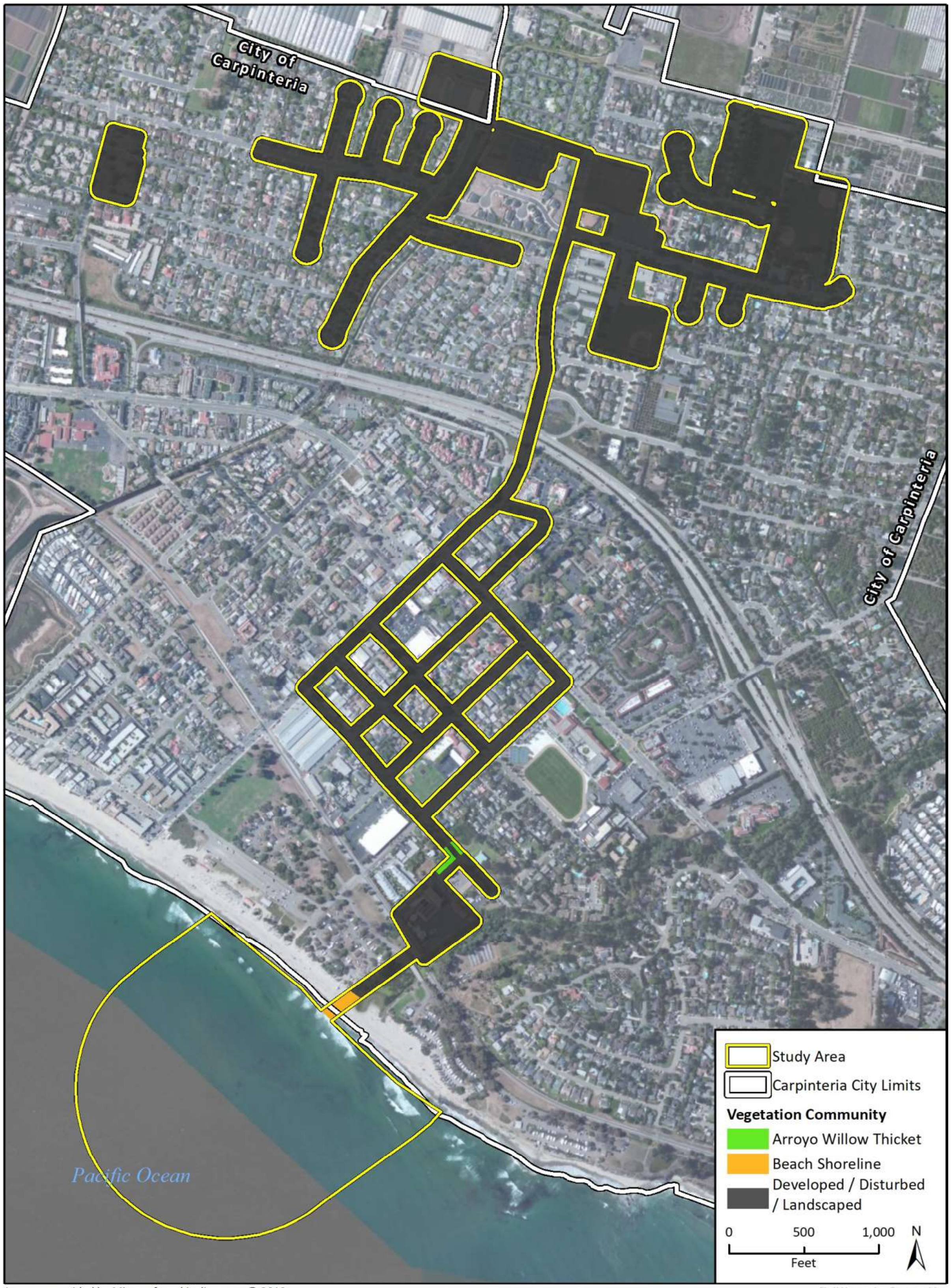

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Fig X Vegetation Communities

Developed/Disturbed/Landscaped

The dominant land cover type throughout the APE is characterized as developed/disturbed/ landscaped. These areas consist of buildings, residential development, and other infrastructure, paved or graded dirt areas with little to no vegetation, or planted ornamental landscape species. The proposed injection and monitoring well areas occur within developed and/or disturbed areas (e.g., ROWs, parking lots, schools, and community parks) north of U.S. Highway 101. The proposed location of injection well #5 consists of young, recently planted coast live oak trees. The proposed southern potential pipeline alignment occurs within the disturbed areas of Olive Avenue, 6th Street, Maple Avenue, Carpinteria Avenue, Eugenia Place, Linden Ave, Meadow View Lane, and El Carro Lane. Linden Avenue also contains various mature eucalyptus (*Eucalyptus* sp.) trees, while the majority of the streets south of U.S. Highway 101 consisted of mature coast live oaks. The AWPF will be constructed within the existing WWTP facility. The APE is also made up of landscaped and ruderal vegetation, dominated by species such as turf grasses, various aloe species typically used in landscaping, oleander (*Nerium oleander*), Russian thistle (*Salsola tragus*), mustard (*Brassica* sp.), giant reed (*Arundo donax*), castor bean (*Ricinus communis*), pine trees (*pinus* sp.), and ornamental trees such as sweetgum (*Liquidambar styraciflua*), queen palms (*Syagrus romanzoffiana*), Canary island date palms (*Phoenix canariensis*), and black poiu (*Jacaranda mimosifolia*).

Arroyo Willow Thicket

Riparian vegetation was limited in the APE. Riparian vegetation was observed to cover a small area at the intersection of Olive Avenue and 6th Street, northwest of the WWTP, and adjacent to where the primary pipeline alignment is proposed. The dominant species in this community was arroyo willow.

In the *Salix lasiolepis* Shrubland Alliance, arroyo willow is dominant or co-dominant in the tall shrub or low tree canopy with other willow species and additional native vegetation. Arroyo willow is typically found in stream banks and benches, slope seeps, and stringers along drainages. The USFWS NWI recognizes arroyo willow as a facultative wetland plant (USFWS 2016).

Beach Shoreline

The southern portion of the APE overlies the shoreline at Carpinteria State Beach. This area consists of railroad tracks, campgrounds, and day use areas which then slopes down to a sandy beach shoreline consisting of ice plant and Menzies’ goldenbush.

General Wildlife

The APE contains habitat suitable for wildlife species that commonly occur in southern California suburban areas. Wildlife observed within the APE include bird species such as American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), California towhee (*Melozone crissalis*), California scrub-jay (*Aphelocoma californica*), and house finch (*Haemorhous mexicanus*). Wildlife not observed, but likely to occur include Virginia opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), mourning dove (*Zenaida macroura*), and a variety of other song birds. A complete list of all the plant and wildlife species observed on-site during the biological field survey is presented as Appendix C.

3.2 Marine Environment

Oceanographic Characteristics

The APE consists primarily of semi-protected intertidal and subtidal nearshore habitat in the central portion of the SBC, in the Pacific Ocean. The bathymetric depth contours range from 0 at the MHHW to -15 meters where the 1,000-foot APE terminates offshore. The shoreline faces a southwest direction and is somewhat protected from large open ocean wave events by Point Conception to the north and the Channel Islands to the south. Changes to the physical components of the nearshore habitat are seasonally altered by sand movement that follows typical longshore transport spatial and temporal patterns within the Santa Barbara littoral cell. The balance between the volumes of sand entering and leaving the littoral cell over the long-term governs the amount of hard bottom substrate (rocky reef) exposed annually as well as the long-term width of the beach within the cell. Typically, the beach widens during the summer and fall and narrows during the winter and spring.

The physical water characteristics of the APE are similar to general SBC water quality parameters with water temperatures ranging from 61 to 66°F (16 to 19°C) on and around September and are at their minimum in spring ranging from 54 to 59°F (12 to 15°C). Sea surface temperatures can vary by several degrees close to shore compared to those of the open ocean water averages. Long periods of strong offshore winds can cause seasonal upwelling, which transports surface water away from the coastline and allows for cool, high-salinity, nutrient-rich water to rise up the water column into the biologically rich euphotic zone (less than 120 meters from the surface). The waters within the APE are driven by the mixing of the cool northern California Current and warm Southern California Countercurrent (National Marine Fisheries Service [NMFS] 2017). Table 5 summaries water quality data collected from vertical casts conducted during the field survey on January 30, 2019; the results displayed no stratification and low variability of the measured parameters.

Table 5 Water Quality Results

	pH	Salinity[1] (ppt)	Temperature[2] (°F)	Turbidity[3] (FNU)	DO[4] (mg/l)
Average	8.18	32.16	60.27	3.24	8.33
STD	0.01	0.18	0.32	1.98	0.04
Min	8.16	31.80	59.80	1.79	8.25
Max	8.19	32.50	60.60	9.13	8.41

[1]Salinity is the measure of the quantity of dissolved salts in water in parts per thousand (ppt).

[2]Temperture is measured in Fahrenheit (°F)

[3]Turbidity measures scattered light at a 90-degree angle from the incident light beam and is reported in Formazin Nephelometric Units (FNU).

[4]Dissolved oxygen is a measure of how much oxygen is dissolved in the water and reported in milligrams per liter (mg/l).

The relatively shallow depth of the outfall pipe promotes mixing from consistent wave action readily blending the freshwater effluent with the nearshore water mass. Divers visibly observed freshwater plumes adjacent to individual diffuser ports approximately 6-feet in diameter. Salinity averaged 32.16 ppt with a stand deviation (STD) of 0.18 throughout the water column. Turbidity was attributed to wave action during the falling tide with the highest measurement occurring at depth adjacent to the seabed. Dissolved oxygen (DO) averaged 8.33 milligrams per liter (mg/l), with an STD of 0.04 mg/l.

According to the WWTP Facilities Plan (SWRCB 2016), in 2014 the average flow rate of secondary-treated effluent water was 1.2 MGD into the Pacific Ocean and may range from 1.8 to 2.5 MGD depending on the season. The salinity of the current effluent is estimated at 1.5 ppt. The treatment process consists of screening, grit removal, primary sedimentation, aeration, secondary clarification, and chlorine disinfection. Sodium bisulfite is used to dechlorinate effluent prior to discharge into the Pacific Ocean. All effluent from the WWTP is currently discharged into the Pacific Ocean in approximately 25-feet of water through a 1,000-foot dedicated outfall pipe (SWRCB 2016). The RWQCB issued National Pollutant Discharge Elimination System (NPDES) permit Order No. R3-2011-0003 NPDES CA0047364 requires annual waste water testing and reporting as well as receiving water testing. No exceedances or impacts to water quality of the receiving waters has been documented or reported in previous annual reports (ABC 2013).

Habitat Types

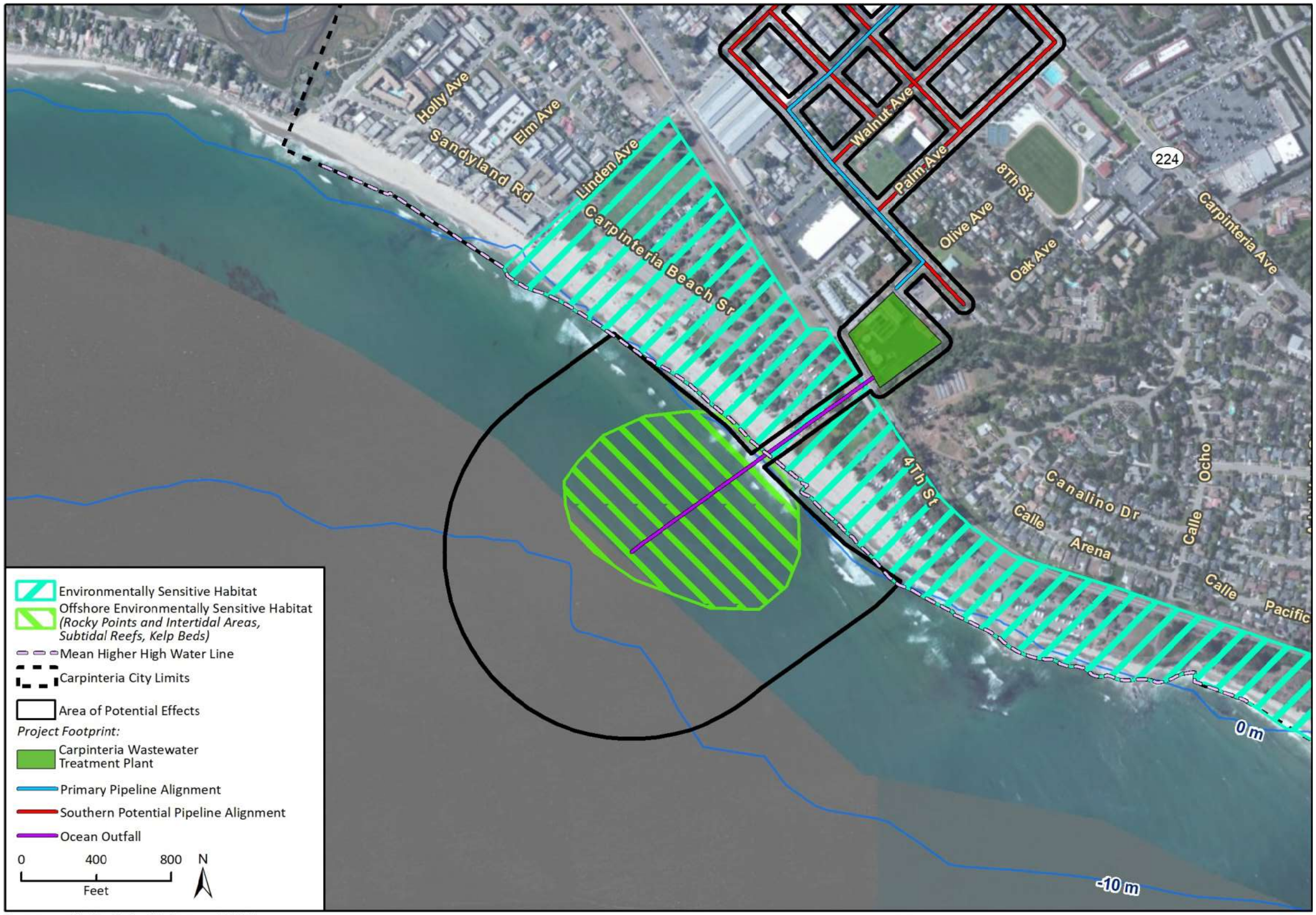
Soft Substrate

The soft substrate in the APE is characterized as a gently sloping sandy seafloor. The soft substrate habitat consists primarily of sandy or stony alluvium material originating from floodplain deposits composed of silty sands to sandy gravels (USDA NRCS 2019). Bottom sediments characterized in the Carpinteria Sanitary District Receiving Water Monitoring Report (2013) were reported as 100% sand (ABC 2013). Rincon diver observations reported primarily coarse to medium grain sand on either side of the outfall pipe and to the extent of the diving field survey. No notable changes in soft substrate sediment were observed and soft substrate sediments appear to be consistent throughout the APE based on results of the receiving water monitoring data collected at 100, 300, and 2,000-feet from the outfall pipe (ABC 2013). Approximately 70% of the APE is composed of soft sand substrate based on ESHA identified in the Carpinteria GP/LCP & EIR. The location of ESHA within the APE is depicted in Figure 5.

Hard Substrate

Rocky bedrock outcroppings comprise the majority of hard substrate in the APE and are composed of primarily low lying (< 3-feet) rocky reef hard substrate. The spatial extent of the rocky reef hard substrate varies annually and seasonally dependent on sand movement. The bedrock is composed of rock, fossil mollusk shells, and marine sands and gravels (USDA NRCS 2019). The rocky reef substrate observed in the intertidal zone appeared consistent with substrate observed throughout the subtidal zone and consistent with physical attributes reported from intertidal and subtidal regional monitoring near the APE. Some unconsolidated cobble and boulders hard substrate is present along the beach and within the shallow nearshore deposited from high water flows from Carpinteria Creek. Hard substrate conservatively represents approximately 30% of the APE. Hard substrate rocky reef habitat supports a moderately diverse group of organisms including marine algae, invertebrates, fish and wildlife species further described below. The intertidal zone of the APE is within the Carpinteria State Beach which is surrounded on three sides by the city of Carpinteria.

Figure 5 Environmentally Sensitive Habitat Areas



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Phytoplankton, Marine Algae, and Seagrasses

Phytoplankton is the foundation of the marine food web and seasonal blooms regularly occur in the SBC when optimal conditions for each species (e.g., temperature, nutrient concentrations, salinity) develop. The phytoplankton productivity in the SBC supports a productive pelagic ecosystem with large populations of fishes, seabirds and marine mammals (Fiedler et al., 1998). An indicator of the amount of photosynthetic phytoplankton is the total concentration of chlorophyll present in the ocean. Chlorophyll concentration data was reviewed from global satellite measurements by the SeaWiFs and MODIS-Aqua projects of the National Aeronautics and Space Administration (NASA). On average, the California Current which runs south along the western coast of North America contains a chlorophyll concentration of 0.53 milligrams per cubic meter (mg/m^3), making the waters within the SBC a zone of enhanced phytoplankton growth (NASA Earth Observations 2019). Comparisons of species and chlorophyll distributions indicate marine species including cetaceans are more abundant in the productive coastal waters than in offshore oceanic waters (Smith et. al 1986). Some phytoplankton referred to as Harmful Algal Blooms (HABs) can form populations so dense when they decay they deplete the oxygen from the water which can be harmful for fish and invertebrates (SCCOOS 2019). The two major groups with representative HAB species in California are diatoms and dinoflagellates.

Common zooplankton in the SBC include *Calanus pacificus*, a species of copepod which reproduces year-round in surface waters by part of the population, while another part of the populations remains dormant in deeper waters through the winter. Other common zooplankton consists of fish larvae and fish eggs (NOAA 2019).

The rocky reef areas within the APE provide both intertidal and subtidal habitat for the three (3) main seaweed phylum: green algae (Phylum Chlorophyta), brown algae (Phylum Phaeophyceae), and red algae (Phylum Rhodophyta) and the marine flowering plant, surfgrass (*Phyllospadix* spp.). The APE hosts locally common algal species attached to rocks in the rocky intertidal bench in the eastern portion of the shoreline including: sea lettuce (*Ulvoid* spp.), *Cladophora graminea*, turfweed (*Endocladia muricata)*, *Mazzaella affinis*, nori (*Porfyra* spp.), *Prionitis* spp., and *Corallina* spp., which were observed during the intertidal survey and commonly recorded annually in fixed monitoring plots established in 2004 at Carpinteria Reef by the Multi Agency Rocky Intertidal Network (MARINe) (https://www.marine.gov/). Common brown algae species noted during the intertidal and subtidal survey included feather boa kelp (*Egregia menziesii*)*,* *Dictyota* spp., and chainbladder kelp (*Cystoseria osmundacea*). Surfgrass is an abundant and dominant vascular plant species throughout the intertidal and shallow subtidal rocky habitat in the APE. Refer to Appendix B for site representative photographs. Surfgrass meadows provide a complex biotic community and nursery for fishes and crustaceans (NOAA 2015).

During the field surveys, the APE was representative of a “winter” beach regime where sand has been mobilized offshore covering most of the low lying (< 3-feet) bedrock and the attached algal species. Review of data from Santa Barbara Coastal Long Term Ecological Research and aerial imagery of the APE documents persistent beds of giant kelp (*Macrocystis pyriferia*) in the summer months when the APE transforms from the “winter” beach to a “summer” beach and sand slowly returns to the upper beach. At the time of the subtidal survey, no giant kelp was observed within 1,000-feet of the site but was common northwest of the APE near the Santa Barbara Coastal Long Term Ecological Research site. During the diving survey, various red algae species were observed including encrusting coralline algae (*Bossiella orbigniana*), *Gracilaria* spp., *Prionitis* spp., *Rhodymenia* spp., *Nienburgia andersoniana,* and unidentified red turf species. A list of all algae species observed is included in Appendix C.

Invertebrates

Common subtidal and intertidal invertebrate species within the APE include representatives of polychaete worms, crustaceans, and mollusks. Invertebrates include both sessile and motile species and are typically segregated into infauna, sessile, and motile invertebrates. During the 2013 NPDES sediment monitoring survey a total of 6,665 individuals, consisting of 208 benthic infauna species were collected at five stations near the WWTP outfall (ABC 2013). Sessile and motile invertebrates observed during the intertidal field survey included the aggregating anemone (*Anthopluera elegantissima*), acorn barnacle (*Chthamalus* spp.), California mussel (*Mytilus californianus*), gooseneck barnacle (*Pollicipes polymerus*), owl limpet (*Lottia gigantea*), limpets (*Lottia* spp. and *Acmea* spp.), sandcastle worm (*Phragmatopoma californica*), turban snail (*Tegula* spp.) and wavy turban snail (*Megastrea undosa*) consistent with monitoring results from fixed monitoring plots at Carpinteria Reef surveyed annually by MARINe. The diver survey noted additional species including sponges, hydroids, tunicates, snails, clams and barnacles. Lists of species observed during both marine surveys are included in Appendix C. The APE provides habitat for the commercially fished red urchins (*Strongylocentrotus franciscanus*), spiny lobster (*Panulirus interruptus*), wavy turban snail (*Megastrea undosa*), Kellet's whelks (*Kelletia* kelletii), warty sea cucumber (*Parastichopus parvimensis*), and recreationally fished owl limpet (*Lottia gigantea*).

Fishes and Marine Mammals

Shallow water nearshore marine fishes including rockfish (*Sebastes* spp.), surfperch (*Embiotoca* spp.), flatfish (*Paralichthys* spp.), and coastal pelagic species may occur within the APE. During the field survey, topsmelt (*Atherinops affinis*) were observed feeding in the immediate vicinity of the outfall discharge location. California grunion (*Leuresthes tenuis*), a regionally important species, has been documented to occur on Carpinteria State Beach during grunion runs in which the fish beach themselves to lay their eggs. When stands of giant kelp are present there is potential for other fish to occur. The APE contains habitat suitable for marine fish species defined as those regulated through the goals, objectives, policies, and mandates of the MLMA by the CDFW Nearshore Fishery Management Plan (CA-NFMP); the Pacific Fishery Management Council's Groundfish Management Plan (GMP); and the Pacific Fishery Management Council's Coastal Pelagic Species Fishery Management Plan (CPSMP). The species regulated by the MLMA include:

- Black and yellow rockfish (*Sebastes chrysomelas*); kelp rockfish (*Sebastes atrovirens*); olive rockfish (*Sebastes serranoides*); blue rockfish (*Sebastes mystinus*); brown rockfish (*Sebastes auriculatus*); treefish (*Sebastes serriceps*); cabezon (*Scorpaenichthys marmoratus*); and California scorpionfish (*Scorpaena guttata*): CA-NFMP and GMP regulated
- Pacific sanddab (*Citharichthys sordidus*); lingcod (*Ophiodon elongatus*); leopard shark (*Triakis semifasciata*): GMP regulated
- White seabass (*Atractoscion nobilis*): CDFW White Seabass Fishery Management Plan regulated
- California sheephead (*Semicossyphus pulcher*): CA-NFMP regulated
- Pacific sardine (*Sardinops sagaz*); northern anchovy (*Engraulis mordax*); Pacific mackerel (*Scomber japonicas*); and jack mackerel (*Trachurus symmetricus*): CPSMP regulated
- Southern California DPS steelhead trout; federally endangered and state endangered; federally regulated by the Pacific Fishery Management Council's Salmon Management Plan

Marine mammals with potential to occur within the APE include species of seals and sea lions in the group known as pinnipeds, and whales and dolphins in the group of cetaceans comprised of both toothed and baleen species. Portions of the Carpinteria State Beach are a known seal sanctuary where the harbor seal (*Phoca vitulina*) uses the beach to pup from December through May and year-round as a haul-out site to rest. Other marine mammal species may frequent the APE during yearly migrations or year-round to forage.

4 Sensitive Biological Resources

Local, state, and federal agencies regulate special status species and other sensitive biological resources. For the purpose of this analysis, sensitive resources include special status plant and animal species, vegetation communities, potentially jurisdictional streams and wetlands, wildlife corridors, locally protected resources such as native trees, and areas of special designation such as ESHA.

This section discusses the general presence or potential for special status biological resources to occur within the APE. 'Potential to occur' is based on the presence or absence of suitable habitat for each special status species reported in the scientific database queries conducted for the proposed project.

Assessments for the potential occurrence of special status species are based upon known ranges, habitat preferences for the species, species occurrence records from the CNDDB, species occurrence records from other sites near the APE, previous reports for the project (i.e., Woodard & Curran 2018; ABC 2013), and the results of the terrestrial and marine surveys for the project. As discussed in Section 2.2, an analysis was conducted to determine which of the regionally occurring special status species have potential to occur within the APE (Appendix D). The potential for each special status species to occur in the APE was evaluated according to the following criteria:

- **Not Expected.** Habitat on and adjacent to the site is clearly unsuitable for the species requirements (e.g., foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime), and species would have been identifiable on-site if present (e.g., oak trees).
- **Low Potential.** Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.
- **Moderate Potential**. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.
- **High Potential.** All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.
- **Present.** Species is observed on the site or has been recorded (e.g., CNDDB, other reports) on the site recently (within the last five years).

Plant or animal taxa may have "special status" due to declining populations, vulnerability to habitat change, or because they have restricted ranges. Some are listed as threatened or endangered by the USFWS or by the CDFW and are protected by the FESA and CESA. Others have been identified as sensitive or as special status species by the USFWS, the CDFW, or by private conservation organizations, including the CNPS. Unlisted special status species do not have formal state or federal status.

For the purpose of this BRA, special status species are those plants and animals listed, proposed for listing, or candidates for listing as Threatened or Endangered by the USFWS and NMFS under the

FESA; those listed or candidates for listing as Rare, Threatened, or Endangered by the CDFW under the CESA or Native Plant Protection Act; those recognized as Species of Special Concern (SSC) by the CDFW; and plants occurring on lists 1 and 2 of the CNPS California Rare Plant Rank system, per the following definitions:

- **Rank 1A** = Plants presumed extinct in California
- **Rank 1B.1** = Rare or endangered in California and elsewhere; seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat)
- **Rank 1B.2** = Rare or endangered in California and elsewhere; fairly endangered in California (20-80% occurrences threatened)
- **Rank 1B.3** = Rare or endangered in California and elsewhere, not very endangered in California (<20% of occurrences threatened or no current threats known)
- **Rank 2** = Rare, threatened or endangered in California, but more common elsewhere

In addition, special status species are ranked globally (G) and subnationally (S) 1 through 3 based on NatureServe's (2010) methodologies:

- **G1 or S1** - Critically Imperiled Globally or State-wide
- **G2 or S2** - Imperiled Globally or State-wide
- **G3 or S3** - Vulnerable to extirpation or extinction Globally or State-wide

Plant communities are also considered special status biological resources if they have limited distributions, have high value for sensitive wildlife, contain special status species, or are particularly susceptible to disturbance. The CDFW ranks special status communities as "threatened" or "very threatened" and keeps records of their occurrences in the CNDDB.

4.1 Terrestrial Species and Communities

Special Status Plant Species

Rincon biologists determined the APE does not contain suitable habitat for any special status plant species (Appendix D). While 31 special status plant species have been previously documented within a five-mile radius by the CNDDB and/or within the CNPS 7-quad search, the APE does not contain suitable habitat for these species based on a variety of factors, including the disturbance history of the site, lack of suitable soils, elevation of the site, inappropriate hydrologic conditions, or absence of appropriate vegetation communities.

Special Status Animal Species

Special status wildlife species are animals listed, proposed for listing, or candidates for listing as threatened or endangered by the USFWS or NMFS under the FESA; those listed or proposed for listing as rare, threatened, or endangered by the CDFW under the CESA; animals designated as "Fully Protected" and SSC by the CDFW; and species on the *Special Animals List* (CDFW 2018). CEQA Guidelines, Section 15125(a), also directs that special emphasis should be placed on resources that are rare or unique to the region.

Based on the database and literature review, 20 special status wildlife species are known or have the potential to occur within the vicinity; known occurrences within five miles of the APE were considered in this analysis (Appendix D). Of these 20 species, two have a high potential to occur, three have a moderate potential, and one has a low potential (Table 6). The remaining 14 special status species are not expected to occur based on the criteria presented above. This includes some bird and bat species previously documented near the APE, but are likely to be only transient through the area during limited foraging or migratory movements, and for which no suitable nesting or roosting habitat is present. The species that can be reasonably anticipated to occur were determined based on the published ranges of the species, and the type, extent, and condition of habitat available at the site. No special status wildlife species were observed within the APE during the survey effort.

Special status species or other protected species with moderate or high potential to occur within or adjacent to the APE are discussed below, and, if applicable evaluated under Section 5. Species with a low potential to occur are only included if further discussion is warranted.

Table 6 Terrestrial Special Status Wildlife Species with Potential to Occur in the APE

Species	Low	Moderate	High
Monarch - California overwintering population (*Danaus plexippus* pop. 1)		X	
Tidewater goby (*Eucyclogobius newberryi*)			X
Steelhead- southern California DPS (*Oncorhynchus mykiss irideus* pop. 10)			X
California legless lizard (*Anniella pulchra*)	X		
Western snowy plover (*Charadrius alexandrinus nivosus*)		X	
Yellow warbler (*Setophaga petechia*)		X	

Monarch – California Overwintering Population

The monarch - California overwintering population is a City and County local sensitive species with moderate potential to occur within and adjacent to the APE. This population consists of winter roost sites extending along the coast from northern Mendocino to Baja California, Mexico. The monarch butterfly aggregates in California coastal woodlands between October and March. Monarchs typically aggregate in eucalyptus groves, Monterey cypress, Monterey pines, and coast live oaks. They first collect in smaller numbers in autumn, then in much larger aggregations when cold weather and storms begin. The large aggregations are typically in groves that offer wind protection, slightly warmer temperatures, and basking sites. Large aggregations are fairly predictable as monarchs typically use the same sites each year (Meade 1999). Elements of suitable habitat (e.g., eucalyptus trees) were observed throughout the APE, particularly along Linden Avenue where the primary and southern potential pipeline alignment is proposed. No winter roost sites have been identified throughout the APE; however, the closest known roosting colony was recorded approximately 700-feet northeast of the WWTP, along Carpinteria Creek (City of Carpinteria 2003).

Tidewater Goby

Tidewater goby is a federally endangered (FE) fish and a state SSC with a high potential to occur in the southern portion of the APE. This is an estuarine/lagoon-adapted species that is endemic to the California coast, mainly in small lagoons and near stream mouths in the uppermost brackish portion of larger bays (Moyle 2002; USFWS 2005). Tidewater gobies inhabit discrete lagoons, estuaries, or stream mouths separated by mostly marine conditions, and are generally absent from areas where the coastline is steep and streams do not form lagoons or estuaries (USFWS 2005). They feed mainly on small animals, usually mysid shrimp (*Mysidopsis bahia*), gammarid amphipods (*Gammarus* *roeseli*), and aquatic insects, particularly the chironomid midge (*Family Chironomidae*) larvae (Swift et al. 1989; Swenson 1995; Moyle 2002).

Reproduction begins in spring, usually late April or May, and continues into the fall, although usually the greatest numbers of offspring are produced in the first half of this time period. The reproductive period is generally associated with the closure and filling of the estuary (late spring – fall). Breeding occurs in slack, shallow waters of seasonally disconnected or tidally muted lagoons, estuaries, and sloughs. Tidewater goby was found in lower Carpinteria Creek during surveys conducted in 1995 and 1999 (USFWS 2005).

Southern California Coast Steelhead DPS

The steelhead – Southern California DPS is a FE fish and a state SSC with a high potential to occur in the southern portion of the APE. Steelhead trout occurring in this geographic area are considered part of the southern California steelhead DPS. The DPS includes those runs from the Santa Maria River south to the Tijuana River (NMFS 2005). This DPS is listed as endangered under the FESA, and designated critical habitat includes Carpinteria Creek (NMFS 2005). A portion of the APE occurs in the South Coast Hydrologic Unit (3315), and Hydrologic Sub-area 331534 of designated critical habitat. This reach of the creek is within the Conception Coast Biogeographic Population Group of the southern California steelhead recovery plan (NMFS 2012a).

Steelhead is the term used to denote the anadromous life-history form of rainbow trout (*O. mykiss*); because both anadromous and resident *O. mykiss* may potentially occur in the watershed, the term *O. mykiss* is used in situations where distinguishing juvenile steelhead from resident rainbow trout would be problematic. Preservation of both life-history forms is considered a high priority in the *Southern Steelhead Recovery Plan* (NMFS 2012b).

Carpinteria Creek is designated critical habitat for southern California steelhead, and is known to support this species. An adult female steelhead and juvenile steelhead were reported from Carpinteria Creek in 2000 (Stoecker et al. 2002). Other fish species known to occur in Carpinteria Creek (mostly the estuary) include prickly sculpin (*Cottus asper*), Pacific lamprey (*Lampetra tridentata*), staghorn scuplin (*Leptocottus armatus*), California killifish (*Fundulus parvipinnis*), arrow goby (*Clevelandia ios*), and topsmelt (*Atherinops affinis*).

California Legless Lizard

The California legless lizard is a state SSC with low potential to occur within the APE. This species requires a habitat composed of sandy or loose loamy soils under sparse vegetation. Soils with high moisture content are essential (California Herps 2018). Often locally abundant, specimens are found in coastal sand dunes and a variety of interior habitats, including sandy washes and alluvial fans (Stebbins and McGinnis 2012). In a study conducted in coastal Central California, California legless lizard density was high near shrubs and where soil moisture was greater, but lower in disturbed soils and in iceplant (Kuhnz et al. 2005). Papenfuss and Parham (2013) described four new species of California legless lizard (*Anniella pulchra*) and described the lineage that occurs throughout Southern California and into Baja California as the Southern California legless lizard (*Anniella stebbinsi*). Suitable habitat is present within the southern portion of the APE; however, CNDDB records are historical (before 1983) and significant development along Carpinteria State Beach has occurred since then.

Western Snowy Plover

The western snowy plover is a FT bird and a state SSC with moderate potential to occur within the southern portion of the APE. This small shorebird is about six inches long, with a thin dark bill, pale brown to gray upper parts, white or buff colored belly, and darker patches on its shoulders and head, and white forehead and eyebrow. The Pacific coast population of the western snowy plover breeds primarily on coastal beaches from southern Washington to southern Baja California, Mexico. The population breeds above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely-vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries (USFWS 2018d).

Carpinteria State Beach provides suitable foraging and roosting habitat for western snowy plover; however, no suitable nesting habitat is present due to development along the beach and human disturbance. The 62-acre Carpinteria State Beach is a highly developed recreational beach containing a campground, picnic areas, and a visitor’s center. Carpinteria State Beach is monitored irregularly by volunteers and Channel Coast District staff. Occasionally, western snowy plover are observed roosting and/ or foraging along Carpinteria State Beach and have been known to use the beach as a stopover during migration (California State Parks 2013). According to the California State Parks (2014) Western Snowy Plover Annual Report, western snowy plovers do not nest in Carpinteria State Beach. As such, western snowy plovers have a moderate potential to roost and forage within the southern portion of the APE.

Yellow Warbler

The yellow warbler is a state SSC bird with a moderate potential to occur within the riparian habitat identified within the APE and surrounding areas. The yellow warbler is a small (approximately 4.7-5.1 inches long) uniformly yellow songbird with a medium-length tail, rounded head, and a straight thin bill. Males are a bright, egg-yolk yellow with reddish streaks on the underparts. Both sexes flash yellow patches in the tail. The face is unmarked, accentuating the large black eye. Yellow warblers are frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders (Rodewald 2015). Elements of suitable habitat (e.g., riparian vegetation) were observed at the intersection of Olive Avenue and 6th Street within the APE. Carpinteria Creek, which is east and primarily outside of the APE, also provides potential foraging and nesting habitat for this species.

Nesting Birds

The APE contains habitat that can support regulated nesting birds, including raptors, protected under the CFGC Section 3503 and the MBTA (16 United States Code §§ 703–712). Potential nesting locations for raptors were observed throughout the APE with the most suitable locations being native and non-native mature trees (e.g., sycamore, eucalyptus, pine) in the potential injection and monitoring well areas and pipeline alignment areas. No active nests were observed during the reconnaissance survey; however, one previously occupied semi-large stick nest was observed on a sycamore tree at El Carro Park, which is a potential monitoring well site.

Sensitive Plant Communities

Plant communities are considered sensitive biological resources if they have limited distributions, have high wildlife value, include sensitive species, or are particularly susceptible to disturbance. CDFW ranks sensitive communities as “threatened” or “very threatened” and keeps records of their occurrences in CNDDB. Similar to special status plant and wildlife species, vegetation alliances are ranked 1 through 5 based on NatureServe's (2010) methodology, with those alliances ranked globally (G) or statewide (S) as 1 through 3 considered sensitive. In addition, the City of Carpinteria considers certain habitats to be of significant ecological and biological value (i.e., ESHA).

According to the CNDDB, one sensitive plant community, southern coastal salt marsh, has been documented within 5 miles of the project (Carpinteria Salt Marsh); however, no CNDDB sensitive plant communities were observed within the APE during the reconnaissance survey.

A small patch of riparian habitat was observed at the intersection of Olive Avenue and 6th Street adjacent to where the primary pipeline alignment is proposed. The riparian patch is located in a developed area with no direct linkage to additional riparian vegetation or a water source. The vegetation patch consisted of hydrophytic vegetation (e.g., arroyo willow) and hydric soils (USDA NRCS 2019), but lacked the presence of hydrology. These indicators meet the criteria requirements of ESHA for the City and of a coastal zone wetland. Arroyo willow thickets are also considered a sensitive natural community by CDFW (2018b).

Protected trees (e.g., coast live oak, eucalyptus, City landmarks) were observed throughout the APE that meet the City, County, and coastal zone tree protection policies and ordinances discussed below in Section 4.5.

Wild and Scenic Rivers

The project does not occur within or adjacent to any federally designated Wild and Scenic Rivers.

4.2 Marine Species and Communities

Special status marine species include those listed, proposed for listing, or candidates for listing as threatened, endangered or species of concern by the USFWS or NMFS under the FESA; those listed or proposed for listing as rare, threatened, or endangered by the CDFW under the CESA; animals designated as "Fully Protected" and SSC by the CDFW; and species on the *Special Animals List* (CDFW 2018). CEQA Guidelines, Section 15125(a), also directs special emphasis should be placed on resources that are rare or unique to the region. Additionally, species with potential to occur included in the World Conservation Union's Red List of Vulnerable Species (IUCN), protected under the Convention of International Trade in Endangered Species of Fauna and Flora (CITES), protected by the Convention on Migratory Species (CMS), and protected under the Marine Mammal Protection Act (MMPA) are also evaluated herein.

Based on the database and literature review, 25 special status marine species are known or have the potential to occur within the APE. Of these 25 species, six have a high potential to occur, six have a moderate potential, and seven have a low potential (Table 7). The remaining six are not expected to occur based on the criteria presented above. The species reasonably anticipated to occur were determined based on the published ranges of the species, and the type, extent, and condition of habitat available at the site. No special status wildlife species were observed within the APE during the survey effort.

Special status species or other protected species with moderate or high potential to occur within or adjacent to the APE that could be potentially affected are discussed below, and, if applicable, evaluated under Section 5. Species with a low potential to occur are only included if further discussion is warranted.

Table 7 Marine Special Status Wildlife Species with Potential to Occur within the APE

Species	Low	Moderate	High
Black abalone (*Haliotis cracherodii*)		X	
Pink abalone (*Haliotis corrugata*)		X	
Green abalone (*Haliotis fulgens*)		X	
White abalone (*Haliotis sorenseni*)	X		
White shark (*Carcharodon carcharias*)			X
Garibaldi (*Hypsypops rubicundus*)			X
Giant sea bass (*Stereolepis gigas*)	X		
California grunion (*Leuresthes tenuis*)			X
Northern elephant seal (*Mirounga angustirostris*)		X	
Harbor seal (*Phoca vitulina*)			X
California sea lion (*Zalophus californianus*)			X
Guadalupe fur seal (*Arctocephalus townsendi*)	X		
Humpback whale (*Megaptera novaeangliae*)	X		
Gray whale (*Eschrichtius robustus*)		X	
Common bottlenose dolphin (*Tursipos truncatus*)			X
Green sea turtle (*Chelonia mydas*)		X	
Loggerhead sea turtle (*Caretta caretta*)	X		
Leatherback sea turtle (*Dermochelys coriacea*)	X		
Olive Ridley sea turtle (*Lepidochelys olivacea*)	X		

Special Status Invertebrates and Fishes

Black, White, Pink, and Green Abalone

The nearshore waters of California are home to seven species of abalone, four of which have a potential to occur in the APE.

Black abalone (*Haliotis cracherodii*) is an FE species with a moderate potential to occur within the APE. Populations of black abalone currently remain very low throughout southern California after a drastic decline due to fishing and withering syndrome, an infectious disease (CDFW 2011). Black abalone have not been documented by MARINe during annual monitoring at Carpinteria Reef. However, black abalone have been observed for the first time in many years at several sites throughout southern California and have increased in numbers at a few locations (NOAA 2019).

White abalone (*Haliotis sorenseni*) was the first marine invertebrate to be federally listed as endangered. The species still remains at very depressed population levels throughout the Southern California Bight (SCB). White abalone has a low potential to occur in the APE due to the habitat depth requirement; the species is typically found at depths of 50 to 180-feet.

Pink abalone (*Haliotis corrugate*) and green abalone (*Haliotis fulgens*) are both federal species of concern. Both species have a moderate potential to occur within the APE and may occur on rocky substrate in the intertidal and subtidal habitats. No species of abalone were observed during the field surveys.

White Shark

White shark (*Carcharodon carcharias*) is included in the IUCN list of vulnerable species and protected by CITES and the CMS. The species has a high potential to occur within the APE and has been sighted off Carpinteria State Beach in recent years. White sharks utilize multiple habitats including, warm coastal waters in the SCB for nursery areas for young-of-the-year and juveniles. The use of coastal habitat varies seasonally, which may be due to temperature restrictions or availability of desired prey.

Garibaldi

Garibaldi (*Hypsypops rubicundus*) is state-protected under California State Marine Fish, Assembly Bill 77 (1995), with a high potential to occur within the APE. In 1995, the California Legislature designated the garibaldi as the Official State Marine Fish and banned any further commercial take. Garibaldi are one of the most common fish species documented in rocky reefs and kelp beds (CDFW 2011).

Giant Sea Bass

Giant sea bass (*Stereolepis gigas*) is a state-fully protected species and included in the IUCN list of vulnerable species with a low potential to occur within the APE. Once common inhabitants of southern California waters, the species supported both a commercial and sport fishery in the late 19th century. In 1981, a law was passed that prohibited the take of giant sea bass for any purpose, with the exception that commercial fishermen could retain and sell two fish per trip if caught incidentally in a gillnet or trammel net. Within California the species is rarely found north of Point Conception. Adult giant sea bass seem to prefer the edges of nearshore rocky reefs. These reefs are relatively shallow (35 to 130-feet) and often support thriving kelp beds (CDFW 2011).

California Grunion

The California grunion (*Leuresthes tenuis*) is not protected under the CESA or FESA, but garners a level of special status from regional regulations with respect to protection of beach spawning areas from March to September. The species utilizes the sandy beaches from Morro Bay (Mercieca and Miller 1969) to Central Baja California for spawning and have a high potential to occur in the APE. Known grunion runs are expected to occur on Carpinteria State Beach twice a month, at new and full moon between February/March and August or early September. During that time grunion come ashore during the two or three nights following the highest tide, eggs are deposited and then incubate in the sand during the lower tides, when they will not be disturbed by wave action. The eggs are kept moist by residual water in the sand. They hatch about 10 days later, during the next high tide series, when they are inundated with sea water and agitated by rising surf (CDFW 2016).

Special Status Marine Mammals

All marine mammals are protected under the MMPA, which prohibits the "take" of marine mammals, including harassment, hunting, capturing, collecting, or killing in U.S. waters and by U.S. citizens on the high seas.

Northern Elephant Seal, Harbor Seal, California Sea Lion, and Guadalupe Fur Seal

The northern elephant seal (*Mirounga angustirostris*) is state fully protected (FP) species and has a moderate potential to occur within the APE. They breed in the Channel Islands and give birth from December to March. Individuals may occur on land preferably on sandy or rocky areas along the coastline. A majority of their life is spent in the water diving and foraging for food (NOAA 2019c).

The harbor seal (*Phoca vitulina*) and California sea lion (*Zalophus californianus*) both have a high potential to occur within the APE. Both the harbor seal and California sea lion live in temperate coastal habitats along the coast of California. At the east end of the APE, a Seal Sanctuary for the harbor seal is present. The area is a rookery for the harbor seal and provides a specific area where animals gather each year to mate and raise young. The intertidal area within the APE provides a haul-out site where non-breeding animals can gather to rest.

The Guadalupe fur seal (*Arctocephalus townsendi*) is a FT and MMPA protected species. Their breeding grounds are almost entirely on Guadalupe Island, off the Pacific coast of Mexico but individuals have been documented traveling great distances from their breeding grounds. The species has a low potential to occur within the APE since it is rarely documented along the west coast of the U.S. On occasion adults will breed on San Miguel Island and in recent years pup stranding has been documented on southern California beaches (NOAA 2019e).

Humpback Whale

Humpback whale (*Megaptera novaeangliae)* is divided into 14 distinct population segments (DPS), four of which are listed as FE and one is listed as federally threatened (FT). The Central American DPS (FE) and Mexico DPS (FT) both feed and travel off the coast of California during the spring, summer, and fall (NOAA 2019d). The species is typically found in deeper water approximately one to five miles offshore of the APE. Migrations between winter regions and feeding areas off the coast of California do not follow a simple pattern therefore the species may have a low potential to occur within the APE (Calambokidis et al. 2001).

Gray Whale and Common Bottlenose Dolphin

The gray whale (*Eschrichtius robustus*) has a moderate potential to occur within the APE in the Fall when the species is migrating from its summer feeding grounds in the Bering and Chukchi Seas to the breeding lagoons of Baja California and again from mid-February to May migrating northward along the west coast of the U.S. The western North Pacific DPS gray whale is listed as FE and the eastern North Pacific DPS population was once listed but has successfully recovered and was delisted in 1994 (NOAA 2019e).

The common bottlenose dolphin (*Tursiops truncatus*) has a high potential to occur within the APE. The species is found throughout the world in both offshore and coastal waters. They are vulnerable to many stressors and threats including disease, biotoxin, pollution, habitat alteration, vessel collisions, human feeding of and activities causing harassment, interactions with commercial and recreational fishing, energy exploration and oil spills, and other types of human disturbance (such as underwater noise) (NOAA 2019e).

Other Protected Species (Sea Turtles)

Loggerhead, Green, Leatherback, and Olive Ridley Sea Turtles

The loggerhead sea turtle (C*aretta caretta*) is divided into nine DPS, five of which are protected as FE, and four of which are FT. The FE DPS has a low potential to occur within the APE. The species are circumglobal and occur throughout temperate and tropical regions of the Atlantic, Pacific, and Indian Oceans.

The green sea turtle (*Chelonia mydas*) is divided into 11 DPS, three of which are protected as FE, and eight of which are protected as FT. The FE DPS species has a moderate potential to occur within the APE. The species primarily nests in the Hawaiian Islands, U.S. Pacific Island territories, Puerto Rico, the Virgin Islands, and the east coast of Florida. Adults migrate from foraging areas to nesting beaches and may travel hundreds or thousands of kilometers each way. Green Sea Turtles are occasionally seen along the California Coast, often in El Niño years when the ocean temperature is higher than normal. The species has been documented in the SBC in recent years (NOAA 2019d).

The leatherback sea turtle (*Dermochelys coriacea*) is listed as FE throughout its range, with one Northwest Atlantic DPS a candidate for listing. The species has a low potential to occur within the APE. The species undertake long migrations between breeding and feeding areas and spend most of their lives in the ocean. The species feed off the Pacific coast of North America and migrate across the Pacific for nesting.

The olive Ridley sea turtle (*Lepidochelys olivacea*) is divided into two DPS, with the Pacific coast of Mexico DPS listed as FE and all other populations listed as FT. The FE species has a low potential to occur within the APE. The species occurs throughout the Pacific Islands and the southeast and west coasts of the United States.

Environmentally Sensitive Habitat Areas and Critical Habitats

The guiding policies for the protection of marine habitats in the coastal zone are set forth in the California Coastal Act which states marine resources shall be maintained, enhanced, and, where feasible, restored. Special protection is given to areas and species of special biological or economic significance. Uses of the marine environment must be carried out in a manner that will sustain the biological productivity of coastal waters and maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes. The Carpinteria GP/LCP & EIR outlines the following ESHA requiring protection against any significant disruption of habitat values, and only uses dependent on those resources are allowed within those areas.

Rocky Points and Intertidal Areas

The intertidal area within the APE consists of stretches of sandy beach broken up by rocky points. Rocky intertidal habitats provide a diversity of ecosystem benefits and provide food and shelter to an array of species including haul-outs for pinnipeds, forage areas for avian wildlife and a home for algae, sessile and motile invertebrates, and fish. The rocky points are distinctive habitat and provide shoreline protection, aesthetic qualities, and unique habitat complexity and species diversity. The rocky intertidal zone supports multiple species assemblages configured in tidal zones that span from the upper spray zone containing barnacles and snails to the lower tidal zones that support a diversity of marine algae, fish and larger motile invertebrates. California mussel beds are an important and prominent feature of the rocky intertidal that in many cases transitions to surfgrass.

Surfgrass is a flowering marine plant that attaches to low intertidal and shallow subtidal rock substrate. Surf grass beds provide nursery habitat for some commercially important species, including California spiny lobster, and surfgrass is adapted to the open coastal areas where it is exposed to wave action. Surf grass is relatively slow-growing and attaches directly to the rock substrate with exposed rhizomes. Damaged rhizomes increase the likelihood of additional surf grass being lost by wave action.

While sand beaches are not typically considered sensitive habitat areas as a whole, several species of migratory avian wildlife, California grunion, Pismo clam (*Tivela stultorum*) and eelgrass (*Zostera pacifica*) utilize or inhabit some portion of soft bottom sand beach habitat in the SBC. Avian wildlife, California grunion, and Pismo clams have been documented to occur in the intertidal sand beach areas of the APE and Pismo clams are a target species for recreational fisherman. No eelgrass beds have been documented to occur in or near the APE, but eelgrass is protected as special status aquatic vegetation and essential fish habitat (EFH) under NOAA/NMFS regulations.

Shallow Rocky Reefs and Kelp Beds

Subtidal rocky reef substrate provides fixed structure for the attachment of algae and invertebrates that form productive and complex ecosystems occupying different trophic levels. Macroalgae are primary producers that derive their nutrition from sunlight and dissolved nutrients, whereas sessile invertebrates are consumers nourished by filtering plankton and other organic matter from the water column (Mooney and Zavaleta 2015). Shallow rocky reefs and kelp forests facilitate complex trophic interactions at multiple levels that culminate in highly productive species-rich habitats in the shallow nearshore regions of California. Macroalgae develop surface coverage or canopy in various forms that provide food and shelter for a diversity of species. Kelp forests are formed by a variety of stipate macroalgae that grow to form floating surface canopy. Giant kelp is the dominant species throughout the SCB. Giant kelp (*Macrocystis pyrifera*) forms "forests" (beds) in water depths of up to 100-feet (30 m) along the California coast (CSA 1995a). Shallow rocky reefs and kelp beds provide a diversity of socio-economic and ecosystem contributions, both consumptive and non-consumptive, including the commercial and recreational harvest of kelp, fish and invertebrate species and an important conduit for cultural, recreational, and aesthetic benefits to users.

Marine Mammal Rookeries and Hauling Grounds

The area approximately 2,000-feet to the east of the APE is typically referred to as the Carpinteria Bluffs and provides one of four well established harbor seal rookeries and haul-out areas along the mainland southern coast of California (Marine Mammal Consulting Group 1995). No other marine mammal species are documented to maintain rookeries or haul-out areas near the APE. Significant marine mammal rookeries are located throughout the mainland of central and northern California, the offshore Channels Island, and various coastal islets. Harbor seals tend to habituate to repetitive and consistent levels of activity occurring at facilities, along roads or railways. However, haul-out harbor seals are not tolerant of human or dog activity along the beach, bluffs, or in the water, particularly when this activity is sudden or noisy.

Black Abalone Critical Habitat

The APE is not within black abalone critical habitat, but it is notable the critical habitat designation covers 242 square miles (390 square kilometers) of rocky habitat along the California coastline from the mean high water line down to 20-feet (6 m). The critical habitat designation area generally spans from Del Mar Landing in northern Sonoma County down to the entrance to Los Angeles

Harbor, including all of the offshore islands (NOAA 2019e). The subtidal areas within the APE are not defined as black abalone critical habitat, although there is potential for settlement of black abalone in the rocky intertidal habitat of the APE.

Steelhead Critical Habitat

The ocean outfall component of the project lies within federally designated critical habitat for southern California steelhead, as designated in September 2005.

4.3 Jurisdictional Waters and Wetlands

Areas potentially subject to the USACE pursuant to Section 404 of the Clean Water Act, the RWQCB pursuant to Section 401 of the Clean Water Act and the California Water Code (Porter-Cologne Water Quality Control Act), CDFW pursuant to California Fish and Game Code 1600, and the City of Carpinteria, the County of Santa Barbara, and the California Coastal Commission (coastal wetlands), were assessed during the literature review and reconnaissance survey. Results of the research and field visit determined four potential jurisdictional features occur within the APE: Franklin Creek, Carpinteria Creek, a roadside stormwater drain, and the Pacific Ocean.

Carpinteria Creek contains flows for at least three months out of most years and connects to the Pacific Ocean, which is defined as a traditional navigable water (TNW), and therefore subject to USACE, RWQCB, and CDFW jurisdiction. The creek is out of the project footprint and no physical disturbance to the creek is proposed.

Franklin Creek is an ephemeral stream that lacks relatively permanent flows and is a tributary to Santa Monica Creek which connects to the Pacific Ocean, and thus is also subject to USACE, RWQCB, and CDFW jurisdiction. The proposed project may cross Franklin Creek, depending on which well site is ultimately selected.

The concrete-lined roadside stormwater drain located along the east side of Linden Avenue is limited to flows during storm events and/or runoff and consisted of non-native vegetation on either side of the drain. Many roadside stormwater drains are artificially created, unconnected to natural waterways, and do not support protected habitat or important wetland functions. These drains are generally not subject to stream and wetland regulations. However, there are cases where drains are regulated: if the drain was originally a natural stream or connects to one; if the ditch meets the USACE definition of a wetland within the coastal zone (meets at least one of the three requirements: hydrophytic vegetation, hydric soils, hydrology); if the ditch supports native vegetation; or if the ditch has any connection to the tides. As such, the roadside stormwater drain may be subject to USACE, RWQCB, and CDFW jurisdiction.

The ocean outfall is within a TNW of the U.S., protected under Section 10 of the Rivers and Harbors Act (USACE), and subject to the plans and policies set forth in the Water Quality Control Plan for Ocean Waters of California (Ocean Plan).

4.4 Wildlife Movement

Wildlife movement corridors, or habitat linkages, are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning areas, or they may be regional in nature. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then subsequently return. Others may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

The habitats in the link do not necessarily need to be the same as the habitats that are being linked. Rather, the link merely needs to contain sufficient cover and forage to allow temporary inhabitation by ground-dwelling species. Typically, habitat linkages are contiguous strips of natural areas, though dense plantings of landscape vegetation can be used by certain disturbance-tolerant species. Depending upon the species using a corridor, specific physical resources (e.g., rock outcroppings, vernal pools, or oak trees) may need to be in the habitat link at certain intervals to allow slower-moving species to traverse the link. For highly mobile or aerial species, habitat linkages may be discontinuous patches of suitable resources spaced sufficiently close together to permit travel along a route in a short period of time.

Wildlife movement corridors can be both large- and small-scale. Overall, the APE is heavily developed and is divided by major roadways. At the regional/landscape level scale, the APE is not within any mapped landscape models, such as an Essential Connectivity Area or Natural Landscape block in the California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California (Spencer et al. 2010). Small scale habitat corridors are present within the APE and include drainages and other topographic features that facilitate movement, such as Franklin and Carpinteria Creeks. Carpinteria Creek also provides a means to facilitate regional connectivity for a number of species including, but not limited to the steelhead – Southern California DPS.

The Santa Ynez Mountains constitute a large, regional block of habitat to the north of the APE. Due to urban expansion, connectivity between the mountains and the project is limited to the narrow creek corridors present within the APE.

Franklin Creek is located within the northern component of the APE and could act as movement corridors for typical wildlife species adapted to urban environments. Fully developed properties are present adjacent to Franklin Creek and common wildlife adapted to urban and suburban areas (e.g., raccoon and striped skunk) could use the concrete-lined intermittent drainage for local movement. Wildlife species could also use the riverine habitat of Carpinteria Creek for local movement.

The offshore portion of the APE is located within designated EFH for finfish, krill (*Thysanoessa spinifera*, *Euphausia pacifica*, and other krill species), coastal pelagic species, and groundfish (NMFS 2019b). The offshore portion of the APE has the potential to support at least one life stage of economically important species included in the fishery management plans (FMP) listed in Section 3.2. Species covered under the FMPs for finfish, coastal pelagic species and groundfish include, but are not limited to, species such as northern anchovy, Pacific sardine, Pacific mackerel and jack mackerel. Coastal nearshore areas are identified as being important for one or multiple life stages (adult, juvenile, larva and egg) of a broad range species within the listed FMPs.

4.5 Resources Protected by Local Policies and Ordinances

The proposed project occurs within the limits of the city of Carpinteria, with the exception of potential injection well area #6 which occurs within unincorporated Santa Barbara County. Furthermore, the entire proposed project occurs within the local coastal zone. CVWD anticipates that the proposed project would be implemented generally consistent with the policies and ordinances established in the City's General Plan/Local Coastal Land Use Plan (excluding injection well area #6) and the County's Coastal Land Use Plan (only applicable to injection well area #6) to protect coastal biological resources. Below is discussion of resources protected by policies and ordinances for each jurisdiction.

City of Carpinteria General Plan/Local Coastal Land Use Plan & Environmental Impact Report

OSC-1 Protect, Preserve and Enhance Local Natural Resources and Habitats

ESHA within the city of Carpinteria is protected from development and preserved as natural open space or passive recreational areas. Any development on property including ESHA should be designed and conducted to protect the resources. Within environmentally sensitive habitat, only uses dependent upon those resources shall be allowed and the resources shall be protected against any disruption.

Known ESHA locations are identified in the ESHA Overlay map in the Carpinteria GP/LCP & EIR and include, but are not limited to Carpinteria Creek, Carpinteria Bluffs, Carpinteria Salt Marsh, seal rookery, Carpinteria reef, Pismo clam beds and the intertidal zones along the shoreline. Areas not identified in the map that meet the definition of ESHA (e.g., arroyo willow thickets) provided in Section 30107.5 of the Carpinteria GP/LCP & EIR, are also considered ESHA and afforded the same protections as formally designated areas.

Any activity proposed within an ESHA, including maintenance of property improvements such as weeding and brush clearing, tree trimming, and removal of dead or dying plant material ("maintenance"), shall not result in the significant disruption of habitat values and shall require approval from the City Biologist or a determination by the City that the proposed activity is consistent with the habitat management plan adopted by the City in the Carpinteria GP/LCP & EIR.

Additionally, all development adjacent to ESHA, in or adjacent to ocean-fronting parks or recreation areas, or contiguous to coastal waters, shall be regulated to prevent adverse impacts on habitat resources. Regulatory measures include, but are not limited to: setbacks, buffer zones, grading controls, noise restrictions, lighting restrictions, requirements for wildlife permeable fencing, and maintenance and establishment of native vegetation. Furthermore, development within ESHA would require a City development permit.

Carpinteria Creek and the small strand of riparian habitat (i.e., arroyo willow thicket) at the intersection of Olive Avenue and 6th Street were observed within the APE meet the City's ESHA definition. As such, this policy may be potentially relevant to these resources.

OSC-4 Preserve the Biological Diversity of Shoreline Habitats

The marine resources of the Carpinteria tidepools, reef, and other rocky reefs and intertidal areas shall be protected under this policy. Project activities should limit impacts on public beaches that include or are adjacent to rocky points and intertidal areas. If the project shows evidence of the depletion of these resources, CDFW shall be engaged to assess the extent of damage and implement mitigating measures, as needed. This policy is potentially relevant to project activities that may occur in rocky reefs and intertidal areas.

OSC-5 Protect the Harbor Seal Hauling Ground from Human Disturbance

This policy is set forth to protect the harbor seal hauling ground and project activities shall prohibit development and activity that could result in noise, vibration, or other disturbance that could result in the degradation of the seal hauling grounds. This policy is potentially relevant to project activities that may disturb harbor seals while present in hauling grounds.

OSC-6 Preserve the Natural Environmental Qualities of Creekways and Protect Riparian Habitat

Under this policy, support for the preservation of creeks and their corridors is directed to protect the community's water quality, wildlife diversity, aesthetic values, and recreation opportunities. Alterations to a creek within the City require Coastal Act approval. Creeks are protected by only allowing creek bank and creek bed alterations where no practical alternative solution is available, where the best mitigation measures feasible have been incorporated, and where any necessary state and federal permits have been issued. Creek alterations are advised to utilize natural creek alteration methods where possible (e.g., earthen channels and biotechnical stabilization).

Creek alterations under this policy require all permitted construction and grading within stream corridors to be performed in such a manner so as to minimize impacts on biological resources and water quality such as increased runoff, creek bank erosion, sedimentation, biochemical degradation, or thermal pollution. All natural drainage patterns and runoff rates/volumes shall also be preserved to the greatest degree feasible by minimizing changes to natural topography, and minimizing the areas of impervious surfaces created by new development. Furthermore, creek alterations shall be evaluated for potential adverse impacts to water quality and shall apply Best Management Practices (BMPs) to minimize polluted runoff and water quality impacts resulting from creek alterations. A 50-foot setback from top of the upper bank of creeks or existing edge of riparian vegetation (dripline), whichever is further, is required to be established and maintained for all development.

This policy is potentially relevant to Franklin Creek, Carpinteria Creek, and the small strand of riparian habitat (i.e., arroyo willow thicket) located at the intersection of Olive Avenue and 6th Street.

OSC-7 Conserve Native Plant Communities

Various native plant communities consisting of but not limited to oak woodlands, oak, walnut, sycamore, and other native trees, are located throughout the City and are protected through appropriate development standards. Under this policy, when sites are graded or developed, areas with significant amounts of native vegetation shall be preserved and structures shall be sited and designed to minimize the impact of grading, paving construction of roads, runoff and erosion on native vegetation. New development shall include measures to restore any disturbed or degraded habitat within the proposed project with native, drought-tolerant plant species consistent with the existing native vegetation on the site.

The arroyo willow thicket previously mentioned meets the City's ESHA requirements. Additionally, protected trees (e.g., coast live oak, eucalyptus, City landmarks) are located throughout the APE which meets the City, County, and coastal zone tree protection measures. As such, this policy may be potentially relevant to these resources.

OSC-8 Protect and Conserve Monarch Butterfly Tree Habitat

The purpose of this policy is to preserve and restore habitat used by sensitive, rare, threatened, and endangered species. New development in or adjacent to habitat used by special status species shall be set back sufficiently far as to minimize impacts to the habitat area. For nesting and roosting trees used by sensitive, rare, threatened, or endangered raptors on the Carpinteria Bluffs or on parcels adjacent to Carpinteria Creek, this setback shall be a minimum of 300 feet. Additions or alterations to existing development on parcels adjacent to Carpinteria Creek may be located within the applicable setback if a pre-construction survey by a qualified biologist determines the proposed development does not adversely affect the future use of the nesting or roosting trees. This policy also protects trees (e.g., eucalyptus) supporting (e.g., roosting) monarch butterfly populations.

Elements of suitable habitat (e.g., eucalyptus trees) were observed throughout the APE, particularly along Linden Avenue where the primary and southern potential pipeline alignment is proposed. No winter roost sites have been identified throughout the APE; however, the closest known roosting colony has been recorded approximately 700-feet northeast of the WWTP, along Carpinteria Creek (City of Carpinteria 2003). As such, this policy may be potentially relevant to these resources.

City Landmarks

The City identified the palm trees located on the parkway between 7th and 8th Streets, at the corner of Linden Avenue and 7th Street, as Carpinteria City Landmark #4. The palms were planted prior to 1912 and were incorporated into the development of the Palms Hotel. Additionally, a sycamore tree located at 5300 6th Street, approximately 600-feet east of Palm Avenue, is estimated to be approximately 200 years old and is designated as City Landmark #5. The tree stands approximately 70-feet tall and has a base trunk diameter of 69 inches. The proposed southern potential and primary pipeline alignment travel through these streets and this policy may be relevant to the palms.

Santa Barbara County Article II Coastal Zoning Ordinance

Pursuant to Public Resources Code Section 30500 of the California Coastal Act of 1976, Santa Barbara County was required to prepare a LCP for portions of the unincorporated areas of Santa Barbara County within the coastal zone. Part of the requirements for development of the County LCP includes the creation of a zoning ordinance. The following describes sections of the Santa Barbara County Article II Zoning Ordinance that may potentially be relevant to the proposed project component injection well area #6 and its associated pipeline.

Section 35-97.19 Development Standards for Stream Habitats

Under this ordinance, the minimum buffer strip for streams in urban areas, as defined by the Coastal Land Use Plan, is presumptively 50-feet. However, this minimum buffer may be adjusted upward or downward on a case-by-case basis. The buffer is established based on an investigation of the factors such as: soil type and stability of stream corridors; how surface water filters into the ground, slope of land on either side of the stream; and location of the 100-year flood plain boundary. In addition to these factors, consultation with CDFW and RWQCB is also required to protect the biological productivity and water quality of streams. Riparian vegetation is to also be protected in this buffer.

In addition, no structures are to be located within the stream corridor except: public trails, dams for necessary water supply projects, flood control projects where no other method for protecting existing structures in the flood plain is feasible and where such protection is necessary for public safety or to protect existing development; and other development where the primary function is for the improvement of fish and wildlife habitat. Culverts, fences, pipelines, and bridges (when support structures are located outside the critical habitat) may be permitted when no alternative route/location is feasible. This ordinance is potentially relevant to Franklin Creek.

Section 35-140 Tree Removal

The purpose of this ordinance is to regulate the removal of qualifying trees within the coastal zone. The intent is to preserve healthy trees that are important for the protection of habitat areas and the scenic and visual quality of the County. A Coastal Development Permit (CDP) is required for the removal of any qualifying tree. A qualifying tree is defined as a tree which is six inches or more in diameter measured four feet above the ground and six feet or more in height and which is 1) located in a County street right-of-way; or 2) located within 50-feet of any major or minor stream except when such trees are removed for agricultural purposes; or 3) oak trees; or 4) used as a habitat by the monarch butterflies. However, a CDP to remove trees in the coastal zone shall only be issued for reasons such as: the trees are dead; the trees prevent the construction of a project for which a CDP has been issued and project redesign is not feasible; the trees are diseased and pose a danger to healthy trees in the immediate vicinity; or the trees are so weakened by age, disease, storm, fire, excavation, removal of adjacent trees, or any injury so as to cause imminent danger to persons or property. Qualifying trees (i.e., six inches or more in diameter measured four feet above the ground and six feet or more in height, located within 50-feet of any major or minor stream) under this ordinance were observed within the proposed project component injection well area #6. However, the likelihood of a CDP approval for removal of these trees would be unlikely as they do not meet the CDP qualifying requirements.

Santa Barbara County Coastal Land Use Plan

The Santa Barbara County Coastal Land Use Plan was partially certified by the Coastal Commission on March 17, 1981 and is the Local Coastal Program for unincorporated Santa Barbara County. It details the rules and regulations of land use within Santa Barbara County's coastal areas. The following Santa Barbara County Coastal Land Use Plan policies may potentially be relevant to the proposed project component injection well area #6 and its associated pipeline.

Policy 9-37

This policy consists of the same guidelines discussed above in the Santa Barbara County Article II Zoning Ordinance *Section 35-97.19 Development Standards for Stream Habitats*. The minimum buffer strip for streams in urban areas, as defined by the Santa Barbara County Coastal Land Use Plan, is presumptively 50-feet. However, this minimum buffer may be adjusted upward or downward on a case-by-case basis. The buffer is established based on an investigation of the factors such as: soil type and stability of stream corridors; how surface water filters into the ground, slope of land on either side of the stream; and location of the 100-year flood plain boundary. In addition to these factors, consultation with CDFW and RWQCB is also required to protect the biological productivity and water quality of streams. Riparian vegetation is to also be protected in this buffer. This policy is potentially relevant to Franklin Creek.

Policy 9-38

This policy consists of the same guidelines discussed above in the Santa Barbara County Article II Zoning Ordinance *Section 35-97.19 Development Standards for Stream Habitats*. No structures are to be located within the stream corridor except: public trails, dams for necessary water supply projects, flood control projects where no other method for protecting existing structures in the flood plain is feasible and where such protection is necessary for public safety or to protect existing development; and other development where the primary function is for the improvement of fish and wildlife habitat. Culverts, fences, pipelines, and bridges (when support structures are located outside the critical habitat) may be permitted when no alternative route/location is feasible. This policy is potentially relevant to Franklin Creek.

4.6 Habitat Conservation Plans

The proposed project does not occur within any Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, conservation plans are not addressed further within this analysis.

5 Impact Analysis and Mitigation Measures

The criteria used to evaluate potential project-related impacts to biological resources are presented in Section 2.1. This section discusses the possible adverse impacts to biological resources that may occur from implementation of the project and includes recommended avoidance, minimization, and mitigation measures that would reduce impacts to less than significant levels.

For each impact identified in this report, a statement of the level of significance of the impact is provided. Impacts are categorized in one of the following categories:

- No impact would result when no adverse change in the environment is expected; no mitigation would be required.
- A beneficial impact would result when the proposed project would have a positive effect on the natural or human environment and no mitigation would be required.
- A less than significant impact would not cause a substantial change in the environment, although an adverse change in the environment may occur; only compliance with standard regulatory conditions would be required.
- A significant (but mitigable) impact would have a substantial adverse impact on the environment, but could be reduced to a less-than-significant level through successful implementation of identified mitigation measures.
- A significant unavoidable impact would cause a substantial adverse effect on the environment, and application of all feasible mitigation measures would not reduce the impact to a less-than-significant level (Class I).

5.1 Special Status Species

According to the CEQA Appendix G checklist, the proposed project would have a significant effect on biological resources if it would:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

Special Status Plant Species

No special status plant species have potential to occur within the APE. Special status plant species have specialized habitat requirements, including plant community types, soils, and other components. The project footprint generally lacks these requirements. In addition, none of the species analyzed were documented in the APE during the January 24, 2019 survey. Based on the lack of suitable habitat within the APE, no special status plants are expected to occur within the APE. Therefore, there would be no potential impacts to special status plant species.

Special Status Wildlife Species

No terrestrial special status wildlife species were observed or detected during the reconnaissance survey. Special status wildlife species were determined to occur within the APE based upon known ranges, habitat preferences for the species, species occurrence records from the CNDDB, and species occurrence records from other sites in the vicinity of the APE. The following special status terrestrial species were identified as having a moderate or high potential for occurrence within the APE: monarch, tidewater goby, southern California steelhead, western snowy plover, and yellow warbler.

The Monarch - California overwintering population is a City and County local sensitive species that has a moderate potential to occur within the APE. Elements of suitable habitat (e.g., eucalyptus trees) were observed throughout the APE, particularly along Linden Avenue where the primary and southern potential pipeline alignment is proposed. No roosting colonies have been identified within the APE; however, the closest known roosting colony has been recorded approximately 700-feet northeast of the WWTP, along Carpinteria Creek. Project activities along roadways could have potential indirect effects (e.g., noise, dust) to roosting monarchs. Implementation of mitigation measures BIO-1 and BIO-5 would help ensure impacts to roosting monarchs are avoided, thereby reducing indirect effects to monarch to a less than significant level.

Both tidewater goby and southern California steelhead trout have a high potential to occur within the southern portion the APE. The southern portion of the APE also falls within CDFW designated critical habitat for steelhead. No project activities are anticipated to directly impact both these species; however, implementation of measures BIO-1, BIO-2, BIO-10, and BIO-11 would reduce indirect effects to both these species to a less than significant level.

The California legless lizard is an SSC with a low potential to occur within the APE. Although elements of suitable habitat (e.g., sandy soils and sparse vegetation) are present within the southern portion of the APE (i.e., Carpinteria State Beach), the last known CNDDB occurrence of this species was before 1983. Since then, Carpinteria State Beach has been significantly developed. As no project activities are proposed within Carpinteria State Beach and this species is not expected to occur within the remainder of the APE, the proposed project is not expected to result in impacts to this species.

The western snowy plover is a FT and a state SSC that has a moderate potential to occur within the southern portion of the APE (i.e., Carpinteria State Beach). Carpinteria State Beach consists of elements of suitable habitat (e.g., sandy beaches), but is also a highly developed recreational beach with high human disturbance. The species has been known to use the beach for foraging, roosting, and as a stopover during migration; however, the species is not known to nest within Carpinteria State Beach (California State Parks 2014). In addition, no project activities are proposed within Carpinteria State Beach and this species is not expected to occur within the remainder of the APE. Therefore, the proposed project is not expected to impact the species.

The APE contains habitat that can support special status birds (e.g., yellow warbler) and nesting birds, including raptors, protected under the CFGC and the MBTA. The adjacent native trees and ornamental vegetation throughout the APE provide suitable nesting habitat for avian species. Specifically, the tall eucalyptus trees throughout the APE contain suitable habitat for raptor species. Also, the Franklin Creek bridge may provide habitat for mud-nesting birds such as black phoebe (*Sayornis nigricans*). The project could adversely affect raptors and other nesting birds if construction occurs while they are present within or adjacent to the project footprint, through direct mortality or abandonment of nests. The loss of a nest due to construction activities would be a violation of the MBTA and CFGC Section 3503. BIO-1 through BIO-4 are recommended for compliance with the MBTA and CFGC 3503 and to ensure special status/nesting birds are not impacted, thereby reducing indirect effects to a less than significant level.

Special Status Marine Species

No special status marine species were observed or detected during the reconnaissance surveys. Special status marine species were determined to occur within the APE based upon known ranges, habitat preferences for the species, species occurrence records from the CNDDB, and species occurrence records from other sites in the vicinity of the APE. The following special status marine species were identified as having a moderate or high potential for occurrence within the APE: black, pink and green abalone, white shark, garibaldi, California grunion, northern elephant seal, harbor seal, California sea lion, common bottlenose dolphin, gray whale and green sea turtle.

Black, pink and green abalone have a moderate potential to occur within the various intertidal and shallow rocky reef portions of the APE. The rocky points and shallow subtidal rocky reefs are identified as ESHA in the Carpinteria GP/LCP & EIR. No project activities are anticipated to directly impact any of the marine rocky points or reef areas considered potential habitat for abalone; however, implementation of BIO-1, BIO-2 and BIO-7 would reduce indirect effects to the species to a less than significant level.

The white shark and garibaldi have a high potential to occur; however, no project activities are anticipated to directly impact the white shark and garibaldi or have an adverse change to their environment. California grunion also have a high potential to occur on shore in sandy beaches within the APE, from March to September. No project activities are anticipated to directly impact the beaches, therefore no direct or indirect effects to the species would occur.

The APE contains habitat that supports resident, foraging and transiting special status marine mammals, including both pinnipeds and cetaceans protected under the MMPA. The waters of the APE are relatively shallow (< -25-feet) reducing the potential for the cetaceans (e.g., humpback whale) to occur. The California sea lion, harbor seal, northern elephant seal, common bottlenose dolphin and gray whale have a moderate to high potential to occur. Marine mammals exposed to high-intensity sound repeatedly or for prolonged periods can experience hearing threshold shift, which is the loss of hearing sensitivity at certain frequency ranges (Kastak et al. 1999; Schlundt et al. 2000; Finneran et al. 2002, 2005). A permanent threshold shift (PTS) is said to occur when the loss of hearing sensitivity is unrecoverable. Noise can also cause other forms of disturbance when marine mammals alter their normal patterns of behavior to move away from the source. Based on NMFS (2018) Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing a temporary threshold shift (TTS) of 6 dB is considered the minimum threshold shift clearly larger than the animal’s normal hearing ability. A TTS is a temporary, reversible increase in the threshold of audibility at a specified frequency or portion of an individual’s hearing range above a previously established reference level. The project activities propose only limited marine construction inclusive of pneumatic drivers and drills, which are not expected to impact marine mammals. BIO-1 and BIO-6 are recommended for compliance with the MMPA to reduce marine mammal disturbance, thereby reducing indirect effects to a less than significant level. Additionally, harbor seals may use the shoreline as a haul-out and proposed project activities along the project’s outfall pipe could have a potential indirect effect (e.g., noise, movement) on haul-out harbor seals. BIO-2 and BIO-3 would reduce potential impacts to a less than significant level.

Sea turtles, particularly the green sea turtle, have a moderate potential to occur within offshore areas of the APE. No project activities are anticipated to have an adverse change to their environment. However, if the species is present during in-water construction the species has a potential to be adversely affected. BIO-1 and BIO-6 are recommended to reduce sea turtle disturbance, thereby reducing indirect effects to a less than significant level.

BIO-1 Worker Environmental Awareness Program

Prior to initiation of all construction activities (including staging and mobilization), all personnel associated with project construction shall attend a Worker Environmental Awareness Program (WEAP) training, conducted by a qualified biologist, to assist workers in recognizing special status biological resources that may occur in the APE. This training will include information about southern California steelhead, tidewater goby, protected nesting birds, marine mammals, as well as other special status species potentially occurring in the APE.

The specifics of this program shall include identification of special status species and habitats, a description of the regulatory status and general ecological characteristics of special status resources, and review of the limits of construction and measures required to avoid and minimize impacts to biological resources within the work area. A fact sheet conveying this information shall also be prepared for distribution to all contractors, their employees, and other personnel involved with construction of the project. All employees shall sign a form provided by the trainer documenting they have attended the WEAP and understand the information presented to them. The crew foreman shall be responsible for ensuring crew members adhere to the guidelines and restrictions designed to avoid impacts to special status species. If new construction personnel are added to the project, the crew foreman shall ensure that the new personnel receive the WEAP training before starting work. The subsequent training of personnel can include videotape of the initial training and/or the use of written materials rather than in-person training by a biologist.

BIO-2 Trash Management

All food related trash shall be disposed of in closed containers and removed from the project site each day during the construction period. Construction personnel shall not feed or otherwise attract wildlife to the construction area. At project completion, all project-generated debris, vehicles, building materials, and rubbish shall be removed from the project footprint.

BIO-3 Night Construction and Night Lighting

Night-time construction should be avoided adjacent to Franklin Creek, Carpinteria Creek, and Carpinteria State Beach to avoid impacts to special status wildlife in and near these drainages and the beach. If construction must occur at night (between dusk and dawn), all lighting will be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties and to reduce impacts on local wildlife.

BIO-4 Nesting Bird Surveys

To avoid disturbance of nesting and special status birds, including raptor species protected by the MBTA and CFGC 3503, activities related to the project including, but not limited to, vegetation removal, ground disturbance, and construction and demolition shall occur outside of the bird breeding season for migratory birds (February 1 through August 31), if practicable.

If construction must begin during the breeding season, then a pre-construction nesting bird survey shall be conducted no more than seven days prior to initiation of ground disturbance and vegetation removal activities. The nesting bird pre-construction survey shall be conducted on foot inside the project footprint, including a 100-foot buffer (300-foot for raptors), and in inaccessible areas (e.g., private lands) from afar using binoculars to the extent practicable. The survey shall be conducted by a biologist familiar with the identification of avian species known to occur in southern California coastal communities. If nests are found, an avoidance buffer (dependent upon the species, the proposed work activity, and existing disturbances associated with land uses outside of the site) shall be determined and demarcated by the biologist with bright orange construction fencing, flagging, construction lathe, or other means to mark the boundary. All construction personnel shall be notified as to the existence of the buffer zone and to avoid entering the buffer zone during the nesting season. No ground-disturbing activities shall occur inside this buffer until the avian biologist has confirmed that breeding/ nesting is completed, and the young have fledged the nest. Encroachment into the buffer shall occur only at the discretion of the qualified biologist.

BIO-5 Avoidance of Monarch Butterfly Winter Roost Sites

To minimize indirect project impacts to potential monarch butterfly roosts, monarch butterfly roosts shall be avoided during all construction activities related to project activities, tree removal/trimming, vegetation clearing, and grading activities (collectively, "land clearing activities"). This can be accomplished by implementing either one of the following options:

1. Prohibit land clearing activities during the monarch wintering season (October 1 through March 1); or,
2. Conduct site-specific surveys prior to land clearing activities during the monarch wintering season (October 1 through March 1) and avoid monarch roosts.

If Option 2 is selected, surveys (described below) shall be conducted to identify any monarch roosts in the area proposed for disturbance. Monarch roosts shall be avoided during the wintering season by establishing a 50-foot buffer between land clearing activity and the roost.

An initial monarch survey shall be conducted of all potentially suitable habitat areas within the APE 30-days prior to the initiation of land clearing activities. The project site must continue to be surveyed on a weekly basis with the last survey completed no more than 7 days prior to the initiation of land clearing activities. The monarch butterfly survey must cover monarch wintering habitat within the APE. If monarch roosts are found, land clearing activities within 50-feet surrounding the roost shall be postponed or halted while the monarchs are present (typically October 1 through March 1). Construction activities may occur outside of the 50-foot setback areas during this time.

BIO-6 Avoidance Measures for Marine Mammal and Sea Turtle Species

To minimize disturbance to species status marine mammal and sea turtle species, general guidelines set forth in the MMPA shall be implemented. Vessels under power shall remain at least 100 yards (300 feet) away from whales and 50 yards (150 feet) from dolphins, porpoises, seals, sea lions and sea turtles. When encountering marine mammals the vessel shall slow down, operate at no-wake speed and the vessel shall be put in neutral to let the individual pass.

BIO-7 Subtidal Biological Survey

To minimize direct project impacts to special status abalone species and offshore ESHA including rocky points, intertidal areas, subtidal reefs and kelp beds, at least 45 days prior to the start of in-water project activities, a subtidal biological survey shall be completed by a qualified biologist to document areas of kelp, special status species, and rocky reef within the APE and a 100-foot buffer. If the survey identifies rocky reefs, kelp bed, or special status species, project activities shall avoid and anchor project-related vessels at least 50 feet away from special status species and habitat, if feasible. If the area cannot be avoided, the project shall utilize techniques that minimize turbidity (i.e. installation of a turbidity curtain), scarring on rocky habitat, and down cast sand excavated at or near the outfall into sand channels away from rocky habitat. For consistency with Policy *OSC 4*, a post construction survey shall be completed by a qualified biologist to document final conditions.

5.2 Sensitive Natural Communities

The proposed project would have a significant effect on biological resources if it would:

b) Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

The project proposes an open cut trench method along Olive Avenue, which is a developed public right-of-way, for the primary pipeline alignment. Open cut trenching and/or construction materials (e.g., stockpiled materials, construction equipment, and trash) have the potential to result in potentially significant indirect impacts to the arroyo willow thicket located in this area. The arroyo willow thicket meets the criteria for classification of ESHA, a coastal zone wetland, and a CDFW sensitive natural community. With implementation of BIO-1, BIO-2, and BIO-8, potential indirect impacts to the arroyo willow thicket would be reduced to a less than significant level.

The Carpinteria GP/LCP & EIR identifies areas of rocky points and intertidal areas, subtidal reef, kelp beds, and marine mammal rookeries and hauling grounds as ESHA. These ESHA designations are in place to protect local waters and the sensitive species within the habitat. Impacts to these areas may include degradation of water quality and removal of rocky habitat or species, such as giant kelp. Vessel anchoring, removal of kelp beds, and bottom disturbance which increases suspended sediment for an extended period may have a potential direct or indirect impact to ESHA and could result in a significant adverse impact to the environment. However, implementation of BIO-1, BIO-2, BIO-6 and BIO-7 would reduce potential impacts to sensitive habitats to a less than significant level. Additionally, BIO-9 through BIO-12 described below in Section 5.3 Jurisdictional Water and Wetlands would further reduce potential impacts.

BIO-8 Sensitive Habitat Fencing

Prior to project mobilization, where the project is adjacent to native habitat (i.e., ESHA, riparian habitat, wetland, sensitive natural communities); temporary construction fencing shall be erected by the contractor at the edge of the temporary construction easement to avoid impacts to the habitat throughout the duration of construction.

5.3 Jurisdictional Waters and Wetlands

The proposed project would have a significant effect on biological resources if it would:

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Carpinteria Creek and Franklin Creek

Impacts to Carpinteria Creek are not anticipated based on the proposed project; however, if injection well areas #5 or #6 are selected for construction, potential impacts to Franklin Creek may occur. The Franklin Creek crossing would be constructed in one of two ways: 1) open trench through the concrete channel, or 2) via pipe bridge. Open trench construction across the concrete channel would cross Franklin Creek adjacent to Franklin Park, between Meadow View Lane and Sterling Avenue. The trench would be approximately 13-feet wide and would cross perpendicular to the channel. This portion of Franklin Creek is a concrete-lined channel that does not support wetlands, riparian habitat, or vegetation and the concrete channel would be restored to pre-project conditions after installation of the pipeline. Construction of the pipe span over Franklin Creek would be from the creek bank. Construction personnel would use small cranes, or excavators to raise and lower the pipe into place. The purified water pipe would be routed above grade before spanning Franklin Creek and would use pipe support(s) mounted to the adjacent bridge or concrete channel wall. If the pipe penetrates through the concrete channel wall instead of using pipe supports to clear it, a small amount of new rebar reinforced concrete would be used to close the penetration and provide confinement for the purified water pipe.

Impacts to the roadside stormwater drain along the east side of Linden Avenue, where the primary pipeline alignment component is proposed, are not anticipated based on the proposed project description. Caltrans is currently performing upgrades to U.S. Highway 101 at the Linden Street overpass which includes the installation of a pipeline on the overpass. The proposed project would connect to this pipeline greater than 50-feet from the drain and therefore the proposed project is not expected to result in direct or indirect impacts this feature.

Project-related direct impacts (e.g., open cut trenching) to Franklin Creek are expected to be temporary and restored to pre-existing project conditions. Therefore, direct impacts would be less than significant. However, direct impacts from the proposed project would be potentially subject to USACE jurisdiction pursuant to Section 404 of the Clean Water Act, the RWQCB pursuant to Section 401 of the Clean Water Act and the California Water Code (Porter-Cologne Water Quality Control Act), and CDFW pursuant to California Fish and Game Code 1600. Indirect impacts from open cut trenching and/or construction materials (e.g., stockpiled materials, construction equipment, and trash) that may be stored on-site could adversely affect water quality (e.g., increased turbidity, altered pH, decreased dissolved oxygen levels, etc.) within the jurisdictional waters if runoff were to occur during storm events. Therefore, BIO-9 through BIO-11 and BIO-13 shall be implemented within 50-feet of Franklin Creek and Carpinteria Creek to avoid potential indirect impacts to water quality within these jurisdictional features. With implementation of these mitigation measures (and adherence to agency permits and existing regulations), potential indirect impacts to creeks would be reduced to a less than significant level.

Pacific Ocean

The outfall pipeline terminating offshore of Carpinteria State Beach will require modifications to the diffusers, involving light marine construction activities. This action may result in potential impacts to the course, location, or condition of the water body. The proposed project may alter the amount of effluent conveyed by the outfall and may result in an increased salinity and other constituents in the discharge. Navigable waters of the U.S. are regulated under Section 10 of the Rivers and Harbors Act and any structures or work outside the limits defined for navigable waters of the U.S. requires a Section 10 permit if the structure or work affects the course, location, or condition of the water body. No direct impacts to Carpinteria State Beach (on shore or off shore) are proposed. Off shore project activities would be completed by divers and a supporting vessel, require mounting of duckbill valves to the outfall, and potentially the removal of existing diffuser plates and installation of new fabricated diffuser plates with risers, elbows, and fanged duckbill valves. Tools required would be typical of underwater tools, including pneumatic drivers, drills, etc. Construction activities are expected to result in short-term and temporary increases in water column turbidity during sand excavation similar to, but less than, those generated by storm waves, therefore the project is not expected to increase seawater turbidity to a significant level. To minimize indirect impacts to water quality offshore of Carpinteria State Beach, BIO-9 through BIO-12 shall be implemented during offshore construction activities to reduce the potential indirect effects to water quality.

Changes to the volume and dilution properties of the project's ocean discharge were evaluated in detail by Flow Sciences (2019). The existing secondary waste water discharge from the project's ocean outfall ranges from 1.8 to 2.5 MGD dependent on the season and consists of primarily fresh water, salinity of 1.5 ppt. Implementation of the proposed project would reduce wastewater discharge by approximately 80%, reducing ocean discharge flow to approximately 0.3 MGD on average or 1.5 MGD during periods when the injection wells are off-line and all effluent is discharged to the Pacific Ocean. The proposed modifications to the ocean outfall diffusers maintain 16 alternating ports but include the inclusion of Tideflex "duckbill" check valves that direct discharge horizontally versus the preexisting downward -30 degree angle.

The analysis performed by Flow Sciences was a near-field dilution analysis, in which the dilution of the discharged effluent is computed within the "Zone of Initial Dilution" (ZID). The ZID is defined as the zone immediately adjacent to a discharge where momentum and buoyancy-driven mixing produces rapid dilution of the discharge (Flow Sciences 2019). In this analysis, the ZID ends at the point where the effluent plume reaches the water surface. Based on the dilution results developed by Flow Sciences, modifications to the diffuser ports will increase the average dilution ratio within the ZID by seven, 75:1 versus 68:1 for the cool season, compared to existing conditions, assuming the same flow rate (2.5 MGD). The proposed decrease in the flow rate to 1.5 MGD further increases the average dilution ratio within the ZID by an additional factor of 22 raising the ratio to 97:1. When the project is complete and discharge flow is reduced to 0.3 MGD and the resulting salinity increased to nine (9) ppt however the dilution ratio increases to 200:1. Overall, the slight rise in salinity and reduced flow rates anticipated to result from the project would increase dilution ratios, thus decreasing mixing times and the extent of the ZID based on model outcomes presented in the Flow Sciences dilution study report. Therefore, in both cases the resulting ocean discharge will mix with the overlying receiving waters more rapidly and over a smaller spatial area than existing conditions thus reducing impacts to water quality and the potential to impact species or habitats. Considering that no substantial changes to the properties of the ocean discharge are anticipated and the fact that previous Receiving Water Monitoring Reports (2013 and 2008), developed in compliance with the WWTP NPDES permit, documented no impacts to water quality or adjacent benthic habitat, the project's ocean discharge is expected to meet Ocean Plan water quality objectives at the edge of the ZID and have no impacts to water quality, species assemblages, or habitat.

Considering the low discharge volumes and distribution of diffuser ports, impacts due to shear stress caused by the discharge would be limited to plankton and the impacts would be less than significant because of the small percentage of plankton abundances potentially affected. Because of the small ZID no impacts are expected to benthic infauna or macrofauna populations that may cause upper trophic level impacts to fish, marine mammals, seabirds, or other species. Therefore, potential indirect impacts to jurisdictional waters subject to Section 10 of the Rivers and Harbors Act, including EFH, would be less than significant.

Impacts to water quality and the marine environment can include the spread of invasive species, notably *Caulerpa taxifolia*. *Caulerpa taxifolia* is an extremely invasive seaweed that can infest coastal water bodies in southern California. It is a fast-growing, hardy plant that out-competes native strains, and can reduce native plant and animal diversity and abundance. Implementation of

BIO-12 is recommended to reduce the potential spread of marine invasive species and reduce the impact to a less than significant level.

BIO-9 Disturbance Area and Staging

Areas of temporary disturbance shall be minimized to the extent practicable. Staging and laydown areas shall be limited to sites unvegetated, previously disturbed (e.g., ROW, parking lots), and community parks (areas consisting of ruderal vegetation, ornamental landscaping, and outside of the Tree Protection Zone [TPZ; dripline plus 6-feet] of protected trees).

BIO-10 Material Storage

Materials shall be stored on impervious surfaces or plastic ground covers to prevent any spills or leakage. Material storage shall be at least 50-feet from Franklin Creek, Carpinteria Creek, and Carpinteria State Beach. Any material/spoils from project activities shall be located and stored 50-feet from potential jurisdictional areas (Franklin Creek, Carpinteria Creek, and Carpinteria State Beach). Construction materials and spoils shall be protected from stormwater runoff using temporary perimeter sediment barriers such as berms, silt fences, fiber rolls, covers, sand/gravel bags, and straw bale barriers, as appropriate.

BIO-11 Construction Best Management Practices

To avoid and/or minimize potential indirect impacts to jurisdictional waters and water quality, the following Best Management Practices shall be implemented within 50-feet of Franklin Creek and Carpinteria Creek:

a. Prevent the off-site tracking of loose construction and landscape materials by implementing street sweeping, vacuuming, and rumble plates, as appropriate.
b. Prevent the discharge of silt or pollutants off of the site when working adjacent to potentially jurisdictional waters. Install BMPs (i.e., silt barriers, sand bags, straw bales) as appropriate.
c. Site washout areas shall be at least 50-feet from a storm drain, open ditch or surface water and ensure that runoff flows from such activities do not enter receiving water bodies.
d. All vehicles and equipment shall be in good working condition and free of leaks. The contractor shall prevent oil, petroleum products, or any other pollutants from contaminating the soil or entering a watercourse (dry or otherwise). When vehicles or equipment are stationary, mats or drip pans shall be placed below vehicles to contain fluid leaks.
e. All re-fueling, cleaning, and maintenance of equipment will occur at least 50-feet from potentially jurisdictional waters (Franklin Creek, Carpinteria Creek, and the roadside storm water drain).
f. Any spillage of material will be stopped if it can be done safely. The contaminated area will be cleaned, and any contaminated materials properly disposed. For all spills, the project foreman or other designated liaison will notify CVWD immediately.
g. Adequate spill prevention and response equipment shall be maintained on site and readily available to implement to ensure minimal impacts to the aquatic and marine environments.

BIO-12 Aquatic Invasive Species Spread

Prior to in-water construction, a survey for *Caulerpa taxifolia* shall occur. A qualified *Caulerpa* surveyor shall complete the survey 30 to 90 days prior to construction activities and during the high growth period of March 1- October 31, if feasible. If *Caulerpa* is identified within the project area prior, during, or within 120 days after completion of authorized construction activities, NOAA NMFS and CDFW shall be contacted within 24 hours of first noting the occurrence. Project activities shall not disturb the area in which *Caulerpa* is identified until the Southern California *Caulerpa* Action Team is notified.

BIO-13 Water Diversion Plan

Project activities within Franklin Creek shall be planned when surface water is absent. If surface water is present within the work area, a water diversion plan shall be prepared to avoid construction activities within flowing water and minimize potential adverse effects to water quality (e.g., increased turbidity, altered pH, decreased dissolved oxygen levels). The plan shall establish water quality thresholds consistent with the RWQCB Central Coastal Basin, Water Quality Control Plan (Basin Plan). The plan shall include measures for water quality monitoring upstream and downstream of the work area. If water quality thresholds established in the Basin Plan are exceeded, the monitor will inform the construction manager and shall be granted the authority to temporarily halt project activities until monitoring indicates the constituent measurements are within the Basin Plan thresholds.

5.4 Wildlife Movement

The proposed project would have a significant effect on biological resources if it would:

a) *Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites.*

Direct impacts to wildlife movement or EFH as a result of the proposed project would be less than significant. The completed project would not impede the movement of wildlife through the region nor alter EFH habitat. No direct impacts to marine rocky substrate are proposed. Due to their limited nature, marine construction activities are not expected to cause noise above disturbance thresholds and BIO-1, BIO-2 and BIO-6 are recommended for compliance with the MMPA to confirm marine mammals are not disturbed, thereby reducing indirect effects to a less than significant level. The indirect impacts to terrestrial species would also be less than significant and therefore no measures are recommended.

5.5 Local Policies and Ordinances

The proposed project would have a significant effect on biological resources if it would:

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

The Carpinteria GP/LCP & EIR policy *OSC-8 Protect and Conserve Monarch Butterfly Tree Habitat* requires new development in or adjacent to habitat used by special status species shall be set back sufficiently far as to minimize impacts to the habitat area. For nesting and roosting trees used by sensitive, rare, threatened, or endangered raptors on the Carpinteria Bluffs or on parcels adjacent to Carpinteria Creek, this setback shall be a minimum of 300 feet. However, additions or alterations to existing development on parcels adjacent to Carpinteria Creek may be located within the applicable setback if a pre-construction survey by a qualified biologist determines the proposed development does not adversely affect the future use of the nesting or roosting trees. This policy also protects trees (e.g., eucalyptus) supporting (e.g., roosting) monarch butterfly populations. Elements of suitable habitat (e.g., eucalyptus trees) were observed throughout the APE, particularly along Linden Avenue where the primary and southern potential pipeline alignment is proposed. No winter roost sites have been identified throughout the APE; however, the closest known roosting colony has been recorded approximately 700-feet northeast of the WWTP, along Carpinteria Creek (City of Carpinteria 2003). Proposed project activities along roadways (e.g., open cut trenching) could have potential indirect effects (e.g., noise, dust) to roosting monarchs. Implementation of mitigation measures BIO-1 and BIO-5 noted above would help ensure impacts to roosting monarchs are avoided, therefore the proposed project would be consistent with this policy.

Carpinteria GP/LCP & EIR policy *OSC-6 Preserve the Natural Environmental Qualities of Creekways and Protect Riparian* Habitat and Santa Barbara County Coastal Land Use Plan ordinance *Section 35-97.19 Development Standards for Stream Habitats* supports the preservation of creeks and their corridors. Under policy *OSC-6*, creek alterations require all permitted construction and grading within stream corridors to be performed in such a manner so as to minimize impacts on biological resources and water quality. Furthermore, a 50-foot setback from top of the upper bank of creeks or existing edge of riparian vegetation (dripline), whichever is further, is required to be established and maintained for all development. Under *Section 35-97.19*, a minimum buffer strip for streams in urban areas is presumptively 50 feet. However, this minimum buffer may be adjusted upward or downward on a case-by-case basis. The buffer is established based on an investigation of the factors such as: soil type and stability of stream corridors; how surface water filters into the ground, slope of land on either side of the stream; and location of the 100-year flood plain boundary.

The project proposes new AWPF components within the existing WWTP and greater than 50-feet from Carpinteria Creek. As such, this portion of the proposed project would be consistent with policy *OSC-6*.

Potential direct impacts from the project (e.g., open cut trench/pipe bridge over Franklin Creek, underground primary pipeline alignment along the intersection of Olive Avenue and 6th Street) within 50-feet of areas meeting the definition of policy *OSC-6* and ordinance *Section 35-97.19* (Franklin Creek, arroyo willow thicket) would be temporary because the creek would be restored to pre-existing project conditions and activities limited to existing developed areas (e.g., concrete lined/existing pipe bridge over Franklin Creek, public ROWs). In addition, the implementation of BIO-1, BIO-2, BIO-8, BIO-9 through BIO-11, and BIO-13 would reduce potential impacts to Franklin Creek and the arroyo willow thicket. Therefore, based on these factors the proposed project would not conflict with the policy and ordinance.

Carpinteria GP/LCP & EIR policy OSC-1, OSC-4 and OSC-5 supports the preservation of ESHA and marine resources including rocky reefs and intertidal areas. The policy protects those habitats and the species they support. As discussed above, BIO-1 through BIO-3, BIO-6, BIO-7 and BIO-9 through BIO-12 are recommended to reduce impacts to ESHA, shoreline and subtidal habitats, and marine mammals including harbor seal hauling grounds. With implementation of these measures, the project would not conflict with these policies.

Trees meeting the City (including City landmarks) and County tree protection standards, and relevant to *OSC-7* and *OSC-8*, were observed throughout the APE. The majority of the project alignment is located within developed public ROW which is lined sporadically with protected trees. Potential impacts to protected trees may include, but are not limited to, construction equipment compacting soil around the trees, disturbance of the canopy and the root zone, and trenching in the root zone. The following mitigation measure BIO-14 would reduce potential impacts to protected trees. With implementation of this measure, the proposed project would not conflict with *OSC-7 Conserve Native Plant Communities, OSC-8 Protect and Conserve Monarch Butterfly Tree Habitat, the City Landmarks policies #4 and #5,* and *Section 35-140 Tree Removal*.

BIO-14 Tree Protection Zone Restrictions

Components of the project footprint that occur within 20-feet of the canopy drip line of protected trees shall be subject to the following:

a. No ground disturbance, grading, trenching, construction activities or structural development shall occur within the tree protection zone (TPZ; dripline plus 6-feet).
b. No equipment, soil, or construction materials shall be placed within the TPZ. No oil, gasoline, chemicals, paints, solvents, or other damaging materials may be deposited within the TPZ or in drainage channels, swales or areas that may lead to the TPZ.
c. If work within the TPZ cannot be avoided, a qualified arborist shall monitor all activities within the TPZ of protected trees.
d. Unless otherwise directed by the arborist, all work within the TPZ, including brush clearance, digging, trenching and planting, shall be done with hand tools or small hand-held power tools that are of a depth and design that will not cause root damage.
e. Where trenching or digging within the TPZ is specifically permitted, the work shall be conducted in a manner that minimizes root damage, as directed by an arborist.
f. Grade changes outside of the TPZ shall not significantly alter drainage to protected trees. Grading within the TPZ shall use methods that minimize root damage and ensure that roots are not cut off from air. Where erosion may be a factor return and protect the original grade or otherwise stabilize the soil.
g. Protected trees shall not be used for posting signs, electrical wires or pulleys; for supporting structures; and shall be kept free of nails, screws, rope, wires, stakes and other unauthorized fastening devices or attachments.

5.6 Habitat Conservation Plans

The proposed project would have a significant effect on biological resources if it would:

> *f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.*

The project does not occur within any Habitat Conservation Plan, Natural Community Conservation Plan, Marine Protected Area, or other approved local, regional, or state habitat conservation plan areas. The proposed project would not conflict with the provisions of any such plans. Therefore, the proposed project would not conflict with a Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plans and no impact would occur.

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6 Limitations, Assumptions, and Use Reliance

This BRA has been performed in accordance with professionally accepted biological investigation practices conducted at this time and in this geographic area. The biological investigation is limited by the scope of work performed. Reconnaissance biological surveys for certain taxa may have been conducted as part of this assessment but were not performed during a particular blooming period, nesting period, or particular portion of the season when positive identification would be expected if present, and therefore, cannot be considered definitive. The biological surveys are limited also by the environmental conditions present at the time of the surveys. In addition, general biological (or protocol) surveys do not guarantee that the organisms are not present and will not be discovered in the future within the site. In particular, mobile wildlife species could occupy the site on a transient basis, or re-establish populations in the future. Our field studies were based on current industry practices, which change over time and may not be applicable in the future. No other guarantees or warranties, expressed or implied, are provided. The findings and opinions conveyed in this report are based on findings derived from site reconnaissance, jurisdictional areas, review of CNDDB RareFind5, and specified historical and literature sources. Standard data sources relied upon during the completion of this report, such as the CNDDB, may vary with regard to accuracy and completeness. In particular, the CNDDB is compiled from research and observations reported to CDFW that may or may not have been the result of comprehensive or site-specific field surveys. Although Rincon believes the data sources are reasonably reliable, Rincon cannot and does not guarantee the authenticity or reliability of the data sources it has used. Additionally, pursuant to our contract, the data sources reviewed included only those that are practically reviewable without the need for extraordinary research and analysis.

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8 List of Preparers

Rincon Consultants, Inc.

Primary Authors

- Monica Jacinto, Associate Biologist
- Jaime McClain, Associate Biologist

Secondary Authors

- Derek Lerma, Marine Resources Program Manager
- Yuling Huo, Associate Biologist

Technical Review

- Jennifer Haddow, Principal
- Steven J. Hongola, Principal
- Lindsay Griffin, Senior Biologist/Project Manager
- Derek Lerma, Marine Resources Program Manager

Graphics

- Erik Holtz, GIS Analyst
- Doug Carreiro, GIS Analyst

Production

- Debra Jane Seltzer, Lead Formatting and Production Specialist

Field Reconnaissance Surveys

- Lindsay Griffin, Senior Biologist/Project Manager
- Derek Lerma, Marine Resources Program Manager
- Monica Jacinto, Associate Biologist
- Jaime McClain, Associate Biologist
- Doug Simpson, Associate Biologist

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Appendix A

Regulatory Setting

Regulatory Setting

Special status habitats are vegetation types, associations, or sub-associations that support concentrations of special status plant or animal species, are of relatively limited distribution, or are of particular value to wildlife.

Listed species are those taxa that are formally listed as endangered or threatened by the federal government (e.g., U.S. Fish and Wildlife Service [USFWS]), pursuant to the Federal Endangered Species Act (FESA) or as endangered, threatened, or rare (for plants only) by the State of California (i.e., California Fish and Game Commission), pursuant to the California Endangered Species Act or the California Native Plant Protection Act. Some species are considered rare (but not formally listed) by resource agencies, organizations with biological interests/expertise (e.g., Audubon Society, CNPS, The Wildlife Society), and the scientific community.

The following is a brief summary of the regulatory context under which biological resources are managed at the federal, state, and local levels. Agencies with the responsibility for protection of biological resources within the project site include:

- U.S. Army Corps of Engineers (wetlands and other waters of the United States);
- Central Coast Regional Water Quality Control Board (waters of the State);
- U.S. Fish and Wildlife Service (federally listed species and migratory birds);
- California Department Fish and Wildlife (riparian areas, streambeds, and lakes; state-listed species; Species of Special Concern; nesting birds);

A number of federal and state statutes provide a regulatory structure that guides the protection of biological resources. These include:

Terrestrial and Marine

- California Environmental Quality Act (CEQA)
- Federal Endangered Species Act (FESA)
- California Endangered Species Act (CESA)
- Clean Water Act (CWA)
- California Fish and Game Code (CFGC)
- Porter-Cologne Water Quality Control Act
- California Coastal Act
- City of Carpinteria General Plan/Local Coastal Land Use Plan & Environmental Impact Report
- Santa Barbara County Article II Coastal Zoning Ordinance

Terrestrial

- Migratory Bird Treaty Act (MBTA)
- The Bald and Golden Eagle Protection Act

Marine

- Rivers and Harbors Act of 1899
- Magnuson-Stevens Fishery Conservation and Management Act
- Marine Mammal Protection Act
- Coastal Zone Management Act
- National Marine Sanctuaries Act
- National Invasive Species Act
- Marine Life Protection Act
- Marine Life Management Act
- California Ocean Plan
- Marine Invasive Species Act

The agencies and statutes bulleted above are described in greater detail below:

U.S. Army Corps of Engineers

Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers (USACE) has authority to regulate activities that could discharge fill of material into wetlands or other "waters of the United States." Perennial and intermittent creeks are considered waters of the United States if they are hydrologically connected to other jurisdictional waters (typically a navigable water). The USACE also implements the federal policy embodied in Executive Order 11990, which is intended to result in no net loss of wetland value or acres. In achieving the goals of the Clean Water Act, the USACE seeks to avoid adverse impacts and offset unavoidable adverse impacts on existing aquatic resources. Any fill of wetlands that are hydrologically connected to jurisdictional waters would require a permit from the USACE prior to the start of work. Typically, when a project involves impacts to waters of the United States, the goal of no net loss of wetland acres or values is met through avoidance and minimization to the extent practicable, followed by compensatory mitigation involving creation or enhancement of similar habitats.

Central Coast Regional Water Quality Control Board

The State Water Resources Control Board (SWRCB) and the local Regional Water Quality Control Board (RWQCB) have jurisdiction over "waters of the State," pursuant to the Porter-Cologne Water Quality Control Act, which are defined as any surface water or groundwater, including saline waters, within the boundaries of the State. The SWRCB has issued general Waste Discharge Requirements (WDRs) regarding discharges to "isolated" waters of the State (Water Quality Order No. 2004-0004-DWQ, Statewide General Waste Discharge Requirements for Dredged or Fill Discharges to Waters Deemed by the U.S. Army Corps of Engineers to be Outside of Federal Jurisdiction). The RWQCB administers actions under this general order for isolated waters not subject to federal jurisdiction, and is also responsible for the issuance of water quality certifications pursuant to Section 401 of the Clean Water Act for waters subject to federal jurisdiction.

United States Fish and Wildlife Service

The USFWS implements the Migratory Bird Treaty Act (16 United States Code [U.S.C.] Section 703-711) and the Bald and Golden Eagle Protection Act (16 U.S.C. Section 668). The USFWS and National Marine Fisheries Service (NMFS) share responsibility for implementing the Federal Endangered Species Act (FESA) (16 U.S.C. § 153 et seq.). Generally, the USFWS implements the FESA for terrestrial and freshwater species, while the NMFS implements the FESA for marine and anadramous species. Projects that would result in "take" of any federally threatened or endangered species are required to obtain permits from the USFWS or NMFS through either Section 7 (interagency consultation with a federal nexus) or Section 10 (Habitat Conservation Plan) of the FESA, depending on the involvement by the federal government in permitting and/or funding of the project. The permitting process is used to determine if a project would jeopardize the continued existence of a listed species and what measures would be required to avoid jeopardizing the species. "Take" under federal definition means to harass, harm (which includes habitat modification), pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Proposed or candidate species do not have the full protection of the FESA; however, the USFWS and NMFS advise project applicants that they could be elevated to listed status at any time.

California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW) derives its authority from the Fish and Game Code of California. The California Endangered Species Act (CESA) (Fish and Game Code Section 2050 et. seq.) prohibits take of state listed threatened or endangered. Take under CESA is restricted to direct mortality of a listed species and the law does not prohibit indirect harm by way of habitat modification. Where incidental take would occur during construction or other lawful activities, CESA allows the CDFW to issue an Incidental Take Permit upon finding, among other requirements, that impacts to the species have been minimized and fully mitigated.

The CDFW also enforces Sections 3511, 4700, 5050, and 5515 of the Fish and Game Code, which prohibits take of species designated as Fully Protected. The CDFW is not allowed to issue an Incidental Take Permit for Fully Protected species; therefore, impacts to these species must be avoided.

California Fish and Game Code sections 3503, 3503.5, and 3513 describe unlawful take, possession, or destruction of native birds, nests, and eggs. Section 3503.5 of the Code protects all birds-of-prey and their eggs and nests against take, possession, or destruction of nests or eggs. Section 3513 makes it a state-level office to take any bird in violation of the federal Migratory Bird Treaty Act. CDFW administers these requirements.

Species of Special Concern (SSC) is a category used by the CDFW for those species which are considered to be indicators of regional habitat changes or are considered to be potential future protected species. Species of Special Concern do not have any special legal status except that which may be afforded by the Fish and Game Code as noted above. The SSC category is intended by the CDFW for use as a management tool to include these species in special consideration when decisions are made concerning the development of natural lands. The CDFW also has authority to administer the Native Plant Protection Act (NPPA) (Fish and Game Code Section 1900 et seq.). The NPPA requires the CDFW to establish criteria for determining if a species, subspecies, or variety of native plant is endangered or rare. Effective in 2015, CDFW promulgated regulations (14 CCR 786.9) under the authority of the NPPA, establishing that the CESA's permitting procedures would be applied to plants listed under the NPPA as "Rare." With this change, there is little practical difference for the regulated public between plants listed under CESA and those listed under the NPPA.

Perennial, intermittent, and ephemeral streams and associated riparian vegetation, when present, also fall under the jurisdiction of the CDFW. Section 1600 *et seq*. of the Fish and Game Code (Lake and Streambed Alteration Agreements) gives the CDFW regulatory authority over activities that divert, obstruct, or alter the channel, bed, or bank of any river, stream or lake.

California Environmental Quality Act

CEQA, or the California Environmental Quality Act, is a statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible. CEQA applies to certain activities of state and local public agencies. A public agency must comply with CEQA when it undertakes an activity defined by CEQA as a "project." A project is an activity undertaken by a public agency or a private activity which must receive some discretionary approval (meaning that the agency has the authority to deny the requested permit or approval) from a government agency which may cause either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment.

Federal Endangered Species Act

The purpose of the ESA is to protect and recover imperiled species and the ecosystems upon which they depend. It is administered by the U.S. Fish and Wildlife Service (Service) and the Commerce Department's National Marine Fisheries Service (NMFS). The Service has primary responsibility for terrestrial and freshwater organisms, while the responsibilities of NMFS are mainly marine wildlife such as whales and anadromous fish such as salmon.

Under the ESA, species may be listed as either endangered or threatened. "Endangered" means a species is in danger of extinction throughout all or a significant portion of its range. "Threatened" means a species is likely to become endangered within the foreseeable future. All species of plants and animals, except pest insects, are eligible for listing as endangered or threatened. For the purposes of the ESA, Congress defined species to include subspecies, varieties, and, for vertebrates, distinct population segments.

California Endangered Species Act

The California Endangered Species Act (CESA) (Fish and Game Code Sections 2050-2116) sets forth procedures by which individuals, organizations, or the Department can submit petitions to the Fish and Game Commission requesting that a species, subspecies, or variety of plant or animal be added to, deleted from, or changed in status on the State lists of rare, threatened or endangered species. The factors that contribute to determining the need to list a species include the present or threatened modification or destruction of habitat, competition, predation, disease, overexploitation by collectors, or other natural occurrences or human-related activities. Procedures governing the submission and review of petitions for listing, uplisting, downlisting, and delisting of endangered and threatened species of plants and animals are described in Section 670.1, Title 14, California Code of Regulations.

Federal Clean Water Act

The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. “Clean Water Act” became the Act’s common name with amendments in 1972.

Under the CWA, EPA has implemented pollution control programs such as setting wastewater standards for industry. EPA has also developed national water quality criteria recommendations for pollutants in surface waters.

The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained. EPA’s National Pollutant Discharge Elimination System (NPDES) permit program controls discharges. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

California Fish and Game Code

Enacted in 1957, many of the Fish and Game Code provisions are derived from the 1947 former Fish and Game Code, as well as older statutes under the former Penal and Political Codes originally enacted in 1872. The new statutes relating to more modern topics, such as endangered specifies, were added later. This is a fluid code amending and adjusting older California game laws, for example, to comply with newer protected species lists and regulations.

California Coastal Act

In October 1972, the United States Congress passed Title 16 U.S.C. 1451-1464, which established a federal coastal zone management policy and created a federal coastal zone. By that legislation, the Congress declared a national interest in the effective management, beneficial use, protection and development of the coastal zone in order to balance the nation’s natural, environmental and aesthetic resource needs with commercial-economic growth. The Congress found and declared that it was a national policy “to encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone giving full consideration to ecological, cultural, historic, and aesthetic values as well as to the need for economic development (16 U.S.C. 1452b). As a result of that federal enactment, coastal states were provided a policy and source of funding for the implementation of federal goals.

The California Coastal Zone Conservation Act of 1972 (Proposition 20) was a temporary measure passed by the voters of the state as a ballot initiative. It set up temporary regional Coastal Commissions with permit authority and a directive to prepare a comprehensive coastal plan. The coastal commissions under Proposition 20 lacked the authority to implement the Coastal Plan but were required to submit the Plan to the legislature for “adoption and implementation.”

The California Coastal Act of 1976 is the permanent enacting law approved by the State legislature. The Coastal Act established a different set of policies, a different boundary line, and different permitting procedures than Proposition 20. Further, it provides for the transfer of permitting authority, with certain limitations reserved for the State, to local governments through adoption and certification of Local Coastal Programs (LCP) by the Coastal Commission.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Act is the principal law governing water quality regulation in California. It establishes a comprehensive program to protect water quality and the beneficial uses of water. The Porter-Cologne Act applies to surface waters, wetlands, and ground water and to both point and nonpoint sources of pollution. Pursuant to the Porter-Cologne Act (California Water Code section 13000 et seq.), the policy of the State is as follows:

- That the quality of all the waters of the State shall be protected,
- That all activities and factors affecting the quality of water shall be regulated to attain the highest water quality within reason, and
- That the State must be prepared to exercise its full power and jurisdiction to protect the quality of water in the State from degradation.

The Porter-Cologne Act established nine Regional Water Boards (based on hydrogeologic barriers) and the State Water Board, which are charged with implementing its provisions and which have primary responsibility for protecting water quality in California. The State Water Board provides program guidance and oversight, allocates funds, and reviews Regional Water Boards decisions. In addition, the State Water Board allocates rights to the use of surface water. The Regional Water Boards have primary responsibility for individual permitting, inspection, and enforcement actions within each of nine hydrologic regions. The State Water Board and Regional Water Boards have numerous NPS-related responsibilities, including monitoring and assessment, planning, financial assistance, and management.

National Environmental Policy Act

The National Environmental Policy Act (NEPA) was signed into law on January 1, 1970. NEPA requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions. The range of actions covered by NEPA is broad and includes:

- Making decisions on permit applications,
- Adopting federal land management actions, and
- Constructing highways and other publicly-owned facilities.

Using the NEPA process, agencies evaluate the environmental and related social and economic effects of their proposed actions. Agencies also provide opportunities for public review and comment on those evaluations. Section 102 in Title I of the Act requires federal agencies to incorporate environmental considerations in their planning and decision-making through a systematic interdisciplinary approach. Specifically, all federal agencies are to prepare detailed statements assessing the environmental impact of and alternatives to major federal actions significantly affecting the environment. These statements are commonly referred to as Environmental Impact Statements (EIS) and Environmental Assessments (EA).

Migratory Bird Treaty Act

The MBTA makes it illegal to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts*, nests, or eggs of such a bird except under the terms of a valid Federal permit. Migratory bird species protected by the Act are listed in 50 CFR 10.13. The U.S. Fish and Wildlife Service has statutory authority and responsibility for enforcing the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712). The MBTA implements

Conventions between the United States and four countries (Canada, Mexico, Japan and Russia) for the protection of migratory birds.

The Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), enacted in 1940, and amended several times since, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald or golden eagles, including their parts*, nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle... [or any golden eagle], alive or dead, or any part*, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

Rivers and Harbors Act of 1899

Section 9 of this Act, Rivers and Harbors Appropriation Act of 1899 (33 U.S.C. 403; Chapter 425, March 3, 1899; 30 Stat. 1151), commonly known as the Rivers and Harbors Act of 1899, prohibits the construction of any bridge, dam, dike or causeway over or in navigable waterways of the U.S. without Congressional approval. Administration of section 9 has been delegated to the Coast Guard. Structures authorized by State legislatures may be built if the affected navigable waters are totally within one State, provided that the plan is approved by the Chief of Engineers and the Secretary of Army (33 U.S.C. 401).

Under section 10 of the Act, the building of any wharfs, piers, jetties, and other structures is prohibited without Congressional approval, and excavation or fill within navigable waters requires the approval of the Chief of Engineers. Service concerns include contaminated sediments associated with dredge or fill projects in navigable waters.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (FCMA), as amended (16 U.S.C. 1801 et seq.) established:

- A fishery conservation zone between the territorial seas of the United States and 200 nautical miles offshore;
- An exclusive U.S. fishery management authority over fish within the fishery conservation zone (excluding highly migratory species);
- Regulations for foreign fishing within the fishery conservation zone through international fishery agreements, permits, and import prohibitions; and
- National standards for fishery conservation and management and eight regional fishery management councils to apply those national standards in fishery management plans.

Congress enacted the 1996 amendments to the Act, known as the Sustainable Fisheries Act (SFA) (P.L. 104-297), to address the substantially reduced fish stocks that declined as a result of direct and indirect habitat loss. The SFA requires that BOEM and other agencies consult with the National Oceanic and Atmospheric Administration's National Marine Fisheries Service concerning actions that may adversely impact Essential Fish Habitat (EFH).

In 2007, President Bush signed the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006. It mandates the use of annual catch limits and accountability measures to end overfishing, provides for fishery management by a limited access program, and calls for increased international cooperation.

Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) was enacted on October 21, 1972. All marine mammals are protected under the MMPA. The MMPA prohibits, with certain exceptions, the “take” of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S.

Jurisdiction for MMPA is shared by U.S. Fish and Wildlife Service (Service) and the National Marine Fisheries Service (NMFS). The Service’s Branch of Permits is responsible for issuing take permits when exceptions are made to MMPA.

Coastal Zone Management Act

The Coastal Zone Management Act (CZMA), passed in 1972 and administered by NOAA, provides for the management of the nation’s coastal resources, including the Great Lakes. The goal is to “preserve, protect, develop, and where possible, to restore or enhance the resources of the nation’s coastal zone.”

The CZMA outlines three national programs, the National Coastal Zone Management Program, the National Estuarine Research Reserve System, and the Coastal and Estuarine Land Conservation Program (CELCP). The National Coastal Zone Management Program aims to balance competing land and water issues through state and territorial coastal management programs, the reserves serve as field laboratories that provide a greater understanding of estuaries and how humans impact them, and CELCP provides matching funds to state and local governments to purchase threatened coastal and estuarine lands or obtain conservation easements.

National Marine Sanctuaries Act

The National Marine Sanctuaries Act (NMSA) authorizes the Secretary of Commerce to designate and protect areas of the marine environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archeological, educational or esthetic qualities as national marine sanctuaries.

Day-to-day management of national marine sanctuaries has been delegated by the Secretary of Commerce to NOAA’s Office of National Marine Sanctuaries. The primary objective of the NMSA is to protect marine resources, such as coral reefs, sunken historical vessels or unique habitats.

National Invasive Species Act

The Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, as amended by the National Invasive Species Act of 1996, was enacted to prevent and control infestations of the coastal inland waters of the United States by the zebra mussel and other nonindigenous aquatic nuisance species. The Act was also enacted to reauthorize the National Sea Grant College Program and for other purposes. The Act defines “nonindigenous species” as “any species or other viable biological material that enters an ecosystem beyond its historic range, including any such organisms transferred from one country into another.” “Aquatic nuisance species” is defined as “a nonindigenous species that threatens the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural or recreational activities dependent on such waters.”

Marine Life Protection Act

The Marine Life Protection Act of 1999 directs the state to redesign California's system of marine protected areas (MPAs) to function as a network in order to: increase coherence and effectiveness in protecting the state's marine life and habitats, marine ecosystems, and marine natural heritage, as well as to improve recreational, educational and study opportunities provided by marine ecosystems subject to minimal human disturbance. Six goals guided the development of MPAs in the MLPA planning process:

- Protect the natural diversity and abundance of marine life, and the structure, function and integrity of marine ecosystems
- Help sustain, conserve and protect marine life populations, including those of economic value, and rebuild those that are depleted
- Improve recreational, educational and study opportunities provided by marine ecosystems that are subject to minimal human disturbance, and to manage these uses in a manner consistent with protecting biodiversity
- Protect marine natural heritage, including protection of representative and unique marine life habitats in CA waters for their intrinsic values
- Ensure California's MPAs have clearly defined objectives, effective management measures and adequate enforcement and are based on sound scientific guidelines
- Ensure the State's MPAs are designed and managed, to the extent possible, as a network

To help achieve these goals, three MPA designations (state marine reserves, state marine parks and state marine conservation areas), one marine managed area (state marine recreational management area) and special closures were used in the MPA planning process. For the purposes of MPA planning, a public-private partnership commonly referred to as the MLPA Initiative was established, and the state was split into five distinct regions (four coastal and the San Francisco Bay) each of which had its own MPA planning process. All four coastal regions have completed these individual planning processes. As a result, the coastal portion of California's MPA network is now in effect statewide. Options for a planning process in the fifth and final region, the San Francisco Bay, have been developed for consideration at a future date.

Marine Life Management Act

The Marine Life Management Act (MLMA), which became law on January 1, 1999, established a fishery management system for four groups of fisheries:

- The nearshore finfish fishery and the white seabass fishery
- Emerging fisheries - new and growing fisheries that are not currently subject to specific regulation
- Those fisheries for which the Fish and Game Commission held some management authority before January 1, 1999. Future regulations affecting these fisheries will need to conform to the MLMA
- Those commercial fisheries for which there is no statutory delegation of authority to the Commission and Department. (In the case of these fisheries, CDFW may prepare, and the Commission may adopt, a fishery management plan, but that plan cannot be implemented without a further delegation of authority through the legislative process)

Borrowing from experience with federal fishery management law, the MLMA initiated a comprehensive approach to fisheries management. The primary vehicle for this approach is the development of fishery management plans for all of the State's major recreational and commercial fisheries.

California Ocean Plan

Ocean standards protect the beneficial uses of California's marine waters through establishing water quality objectives and implementation provisions in statewide water quality control plans and polices. Ocean standards plans and policies include: the Water Quality Control Plan for Ocean Waters of California (Ocean Plan); the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (California Thermal Plan); and the Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant cooling (Once-Through Cooling Policy).

The Ocean Standards Unit is responsible for developing and updating the statewide plans and policies involving marine waters, and providing scientific support and inter-agency coordination regarding marine pollution and resource management.

Marine Invasive Species Act

The Marine Invasive Species Program began in 1999 with the passage of California's Ballast Water Management for Control of Nonindigenous Species Act, which addressed the threat of species introductions from vessels arriving at California's ports. In 2003, the Marine Invasive Species Act was passed, reauthorizing and expanding the 1999 Act. Subsequent amendments to the Act and additional legislation further expanded the Program's scope.

The Marine Invasive Species Program seeks to reduce the risk of aquatic nonindigenous species introduction into California's waters through:

- The development, implementation, and enforcement of vessel biofouling and vessel ballast water management strategies and polices
- The use of best available technology and peer reviewed science
- Partnerships with stakeholders to improve awareness of invasive species issues and assess program efficacy

City of Carpinteria General Plan/Local Coastal Land Use Plan & Environmental Impact Report

The Carpinteria GP/LCP & EIR is the primary planning document for the City. It represents the community's collective vision for preserving and improving the quality of life in the Carpinteria Valley. State Planning and Zoning Law requires each city to adopt a comprehensive, long-term General Plan for the physical development of a city and any land outside its boundaries which, in its judgment, bears relation to its planning (i.e., sphere of interest). The General Plan is required to contain the following seven elements: Land Use, Circulation, Housing, Conservation, Open Space, Noise and Safety. The Carpinteria GP/LCP & EIR is organized into eight elements that address required and optional topics: Land Use; Community Design; Circulation; Housing; Open Space, Recreating & Conservation; Safety; Noise; and Public Facilities & Services. Each element includes a general discussion, identifies relevant issues, and provides objectives and policies to address these issues. Implementation policies are identified to provide direction for carrying out each element's objectives. The following policies were considered in this BRA:

- OSC-1: Protect, Preserve and Enhance Local Natural Resources and Habitats
- OSC-4: Preserve the Biological Diversity of Shoreline Habitats
- OSC-5: Protect the Harbor Seal Hauling Ground from Human Disturbance
- OSC-6: Preserve the Natural Environmental Qualities of Creekways and Protect Riparian Habitat
- OSC-7: Conserve Native Plant Communities
- OSC-8: Protect and Conserve Monarch Butterfly Tree Habitat
- City Landmarks

Santa Barbara County Article II Coastal Zoning Ordinance

Pursuant to Public Resources Code Section 30500 of the California Coastal Act of 1976, this County must prepare a local coastal program (LCP) for that portion of the unincorporated area of the County within the Coastal Zone. County's local coastal program must include: (1) the Land Use Plan (LUP), which is the local coastal element (Public Resources Code Section 30108.55) of the County's general plan (Public Resources Code Section 30108.5);(2) a zoning ordinance, which is this Article, and (3) zoning district maps which apply the regulations of this ordinance to property, which when taken together, meet the requirements of and implement the provisions and policies of the Coastal Act of 1976, Public Resources Code Section 30108.6.

On March 17, 1981, the California Coastal Commission, pursuant to Public Resources Code Section 30512(d), certified most of County's Land Use Plan. The next step required in the preparation of the Local Coastal Program is the preparation and adoption by County of this zoning ordinance, which will implement the certified Land Use Plan by classifying and regulating the uses of land, buildings, and structures within the Coastal Zone.

The purposes of this ordinance are to:

- Protect, maintain, and where feasible, enhance and restore the overall quality of the Coastal Zone environment and its natural and manmade resources.
- Assure orderly, balanced utilization and conservation of Coastal Zone resources taking into account the social and economic needs of the people of this County and of the State.
- Maximize public access to and along the coast and maximize public recreational opportunities in the Coastal Zone consistent with sound resource conservation principles and constitutionally protected rights of private property owners.
- Assure priority for coastal-dependent and coastal-related development over other development on the coast.
- Provide a definite plan for development so as to guide the future growth of the County within the Coastal Zone.
- Protect the character and stability (social and economic) of agricultural, residential, commercial, and industrial areas.

The following ordinances were considered in this BRA:

- Section 35-61: Beach Development
- Section 35-97.19: Development Standards for Stream Habitats

Santa Barbara County Coastal Land Use Plan

The Santa Barbara County Coastal Plan was originally adopted by the Board of Supervisors on January 7, 1980 (Resolution 80-12). Subsequently, the plan was submitted to the South Central Regional Coastal Commission and the California Coastal Commission for review and certification. During the course of the state hearings, the Board of Supervisors approved several amendments to the plan. These amendments are incorporated into this document. The Santa Barbara County Coastal Plan was partially certified by the Coastal Commission on March 17, 1981. Three issues then refused certification were as follows:

- The east urban/rural boundary in Summerland and the land use designation between Greenwell Avenue and the more easterly County proposed urban/rural boundary;
- The west urban/rural boundary in Goleta and the land use designation for the Haskell's Beach property; and
- The Channel Islands and Policy 8-9 pertaining to clustered residential development on the Islands.

The first of these subsequently was resolved by Board-approved and Commission certified amendments to this Plan (through the Summerland Community Plan). The latter two have not been resolved directly, but the possible significance of the Channel Islands issue has been greatly diminished through the establishment of Channel Islands National Park. The following ordinances were considered in this BRA:

- **Policy 9-37:** The minimum buffer strip for major streams in rural areas, as defined by the land use plan, shall be presumptively 100-feet, and for streams in urban areas, 50-feet. These minimum buffers may be adjusted upward or downward on a case-by-case basis. The buffer shall be established based on an investigation of the following factors and after consultation with the Department of Fish and Game and Regional Water Quality Control Board in order to protect the biological productivity and water quality of streams:
  1) Soil type and stability of stream corridors;
  2) How surface water filters into the ground;
  3) Slope of the land on either side of the stream; and
  4) Location of the 100-year flood plain boundary.

  Riparian vegetation shall be protected and shall be included in the buffer. Where riparian vegetation has previously been removed, except for channelization, the buffer shall allow for the reestablishment of riparian vegetation to its prior extent to the greatest degree possible. Riparian vegetation shall be protected and shall be included in the buffer. Where riparian vegetation has previously been removed, except for channelization, the buffer shall allow for the reestablishment of riparian vegetation to its prior extent to the greatest degree possible.
- **Policy 9-38:** No structures shall be located within the stream corridor except: public trails, dams for necessary water supply projects, flood control projects where no other method for protecting existing structures in the flood plain is feasible and where such protection is necessary for public safety or to protect existing development; and other development where the primary function is for the improvement of fish and wildlife habitat. Culverts, fences, pipelines, and bridges (when support structures are located outside the critical habitat) may be permitted when no alternative route/location is feasible. All development shall incorporate the best mitigation measures feasible.

Appendix B

Site Photographs

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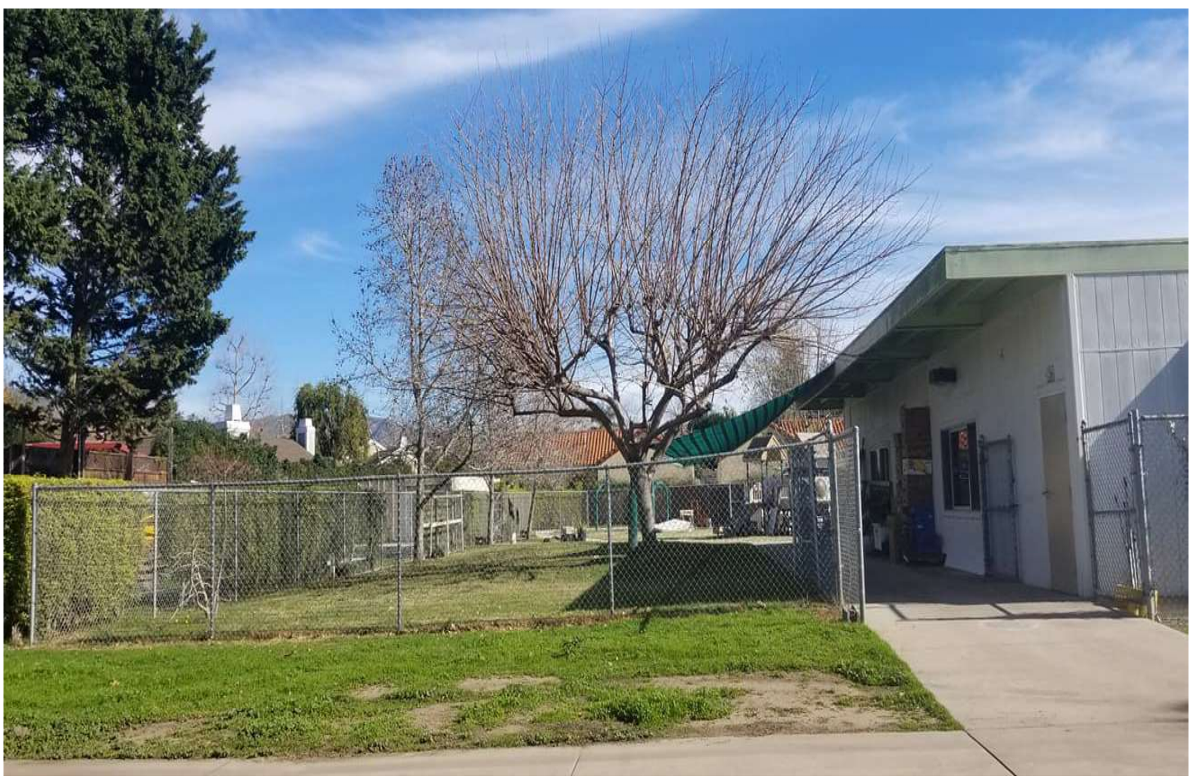
Photograph 1. View looking southwest, from 6th Street. Riparian vegetation was observed to cover a small area at the intersection of Olive Avenue and 6th Street, northwest of the WWTP, and adjacent to where the primary pipeline alignment is proposed.

Photograph 2. View looking northeast from Olive Avenue and 6th Street at the location to be used as a staging area.

Photograph 3. View facing southwest from the existing bridge that crosses over Franklin Creek. Franklin Creek is a concrete-lined flood control channel. Oak trees and sycamore trees occur on the west side of the channel within a potential injection well area.

Photograph 4. View facing east from Santa Ynez Avenue in Carpinteria Valley Memorial Park; a potential monitoring well area.

Photograph 5. View looking north from the northwest corner of El Carro Park; a potential location for monitoring well area #2.



Photograph 6. View facing east, from a potential injection well area #2 located off El Carro Lane. This site is currently in use as a daycare facility.

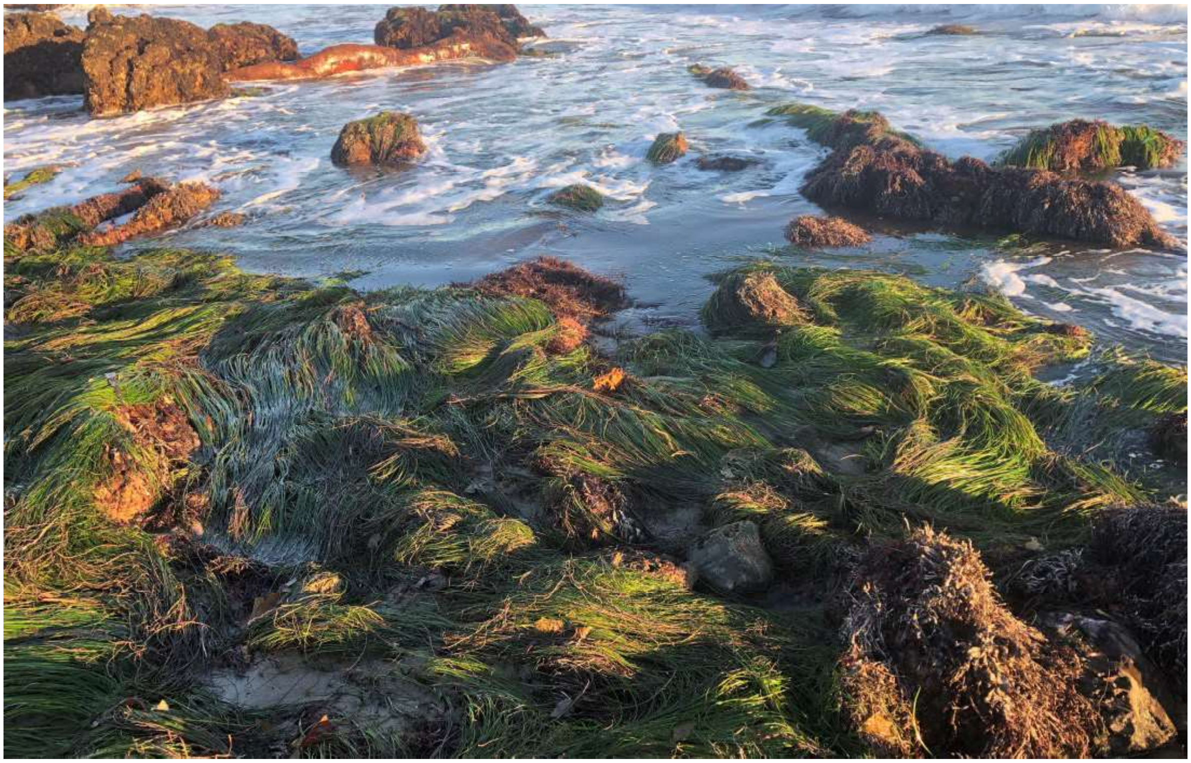
Photograph 7. View facing north from a potential injection well site #3 located east of Linden Avenue and north of El Carro Lane.

Photograph 8. View facing east from within a parking lot east of Franklin Creek. This parking lot is potential injection well area #4.

Photograph 9. View facing southwest from the west side of Franklin Creek at a potential injection well site #5 located east of Sterling Avenue.

Photograph 10. View facing north from the west side of Franklin Creek. This property is the site of potential injection well area #6.

Photograph 11. View looking south along ocean outfall alignment and Carpinteria Creek during negative -1.71 foot tide.



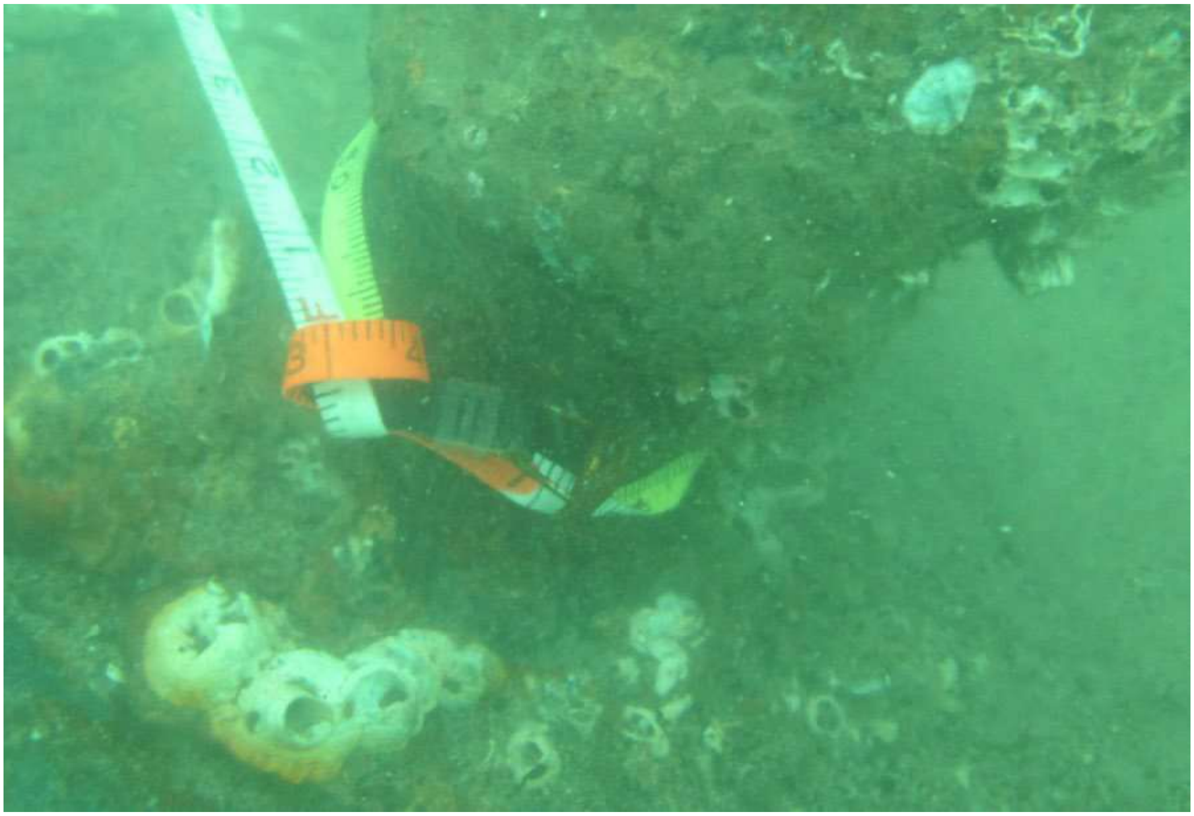
Photograph 12. View looking east at eastern end of APE. Note intertidal community and dense meadow of surfgrass.

Photograph 13. View east from Carpinteria State Park. Ocean outfall alignment is adjacent to Carpinteria Creek in background.

Photograph 14. Intertidal community adjacent to eastern end of APE.

Photograph 15. Ocean outfall diffuser. Note sand covering outfall pipe.

Photograph 16. Broken ocean outfall diffuser. Note diffuser actively discharging low saline water.



Photograph 17. Ocean outfall diffuser. Note section of pipeline exposed with invertebrate growth (*Serpulorbis arenarius*).

Photograph 18. Ocean outfall diffuser. Note diffuser actively discharging low saline water.

Photograph 19. Rocky subtidal invertebrate community within APE.

Photograph 20. Rocky subtidal invertebrate community within APE. Note sand burial on rocky habitat.

Photograph 21. Rocky subtidal algae community within APE. Note sand burial on rocky habitat.

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Appendix C

Floral and Faunal Compendium

Terrestrial Plant Species Observed Within the Study Area on January 24, 2019

Scientific Name	Common Name	Status	Native or Introduced
Shrubs			
Isocoma menziesii	Menzies' goldenbush	–	Native
Rubus ursinus	California blackberry	–	Native
Ricinus communis	castor bean	–	Introduced
Herbs			
Plantago lanceolata	ribwort	–	Introduced
Carpobrotus edulis	iceplant	–	Introduced
Salsola tragus	Russian thistle	–	Introduced
Brassica sp.	mustard sp.	–	Introduced
Trees			
Salix lasiolepis	arroyo willow	–	Native
Quercus agrifolia	coast live oak	–	Native
Platanus racemosa	California sycamore	–	Native
Phoenix canariensis	Canary island date palm	–	Introduced
Pinus sp.	pine sp.	–	Introduced
Eucalyptus sp.	eucalyptus species	–	Introduced
Jacaranda mimosifolia	black poui	–	Introduced
Nerium oleander	oleander	–	Introduced
Syagrus romanzoffiana	queen palm	–	Introduced
Liquidambar styraciflua	sweetgum	–	Introduced
Grasses			
Bromus sp.	brome species	–	Introduced
Arundo donax	giant reed	–	Introduced
Brassica sp.	mustard species	–	Introduced

Calflora. 2019. Information on wild California plants for conservation, education, and appreciation. Berkeley, CA. www.calflora.org (accessed January 2019).

California Native Plant Society. 2019. Inventory of Rare and Endangered Plants. V.7-08c-Interim 8-22-02. www.rareplants.cnps.org (accessed January 2019).

Animal Species Observed Within the Study Area on January 24, 2019

Scientific Name	Common Name	Status	Native or Introduced
Birds			
Ardea alba	great egret	–	Native
Buteo jamaicensis	red-tailed hawk	–	Native
Falco sparverius	western gull	–	Native
Calypte anna	Anna's hummingbird	–	Native
Dryobates pubescens	downy woodpecker	–	Native
Sayornis nigricans	black phoebe	–	Native
Tyannus vociferans	Cassin's kingbird	–	Native
Corvus brachyrhynchos	American crow	–	Native
Corvus corax	common raven	–	Native
Aphelocoma californica	California scrub-jay	–	Native
Psaltriparus minimus	bushtit	–	Native
Sialia mexicana	western bluebird	–	Native
Mimus polyglottos	northern mockingbird	–	Native
Melozone crissalis	California towhee	–	Native
Spinus psaltria	lesser goldfinch	–	Native
Carpodacus mexicanus	house finch	–	Native
Reptiles			
Sceloporus occidentalis	*western fence lizard*	–	Native

Rodewald, P. (Editor). 2015. The Birds of North America. Cornell Laboratory of Ornithology, Ithaca, NY. https://birdsna.org/Species-Account/bna/home (accessed January 2019).

California Herps. 2018. A Guide to the Amphibians and Reptiles of California. http://www.california herps.com/index.html (accessed January 2019).

Marine Species Observed Within the APE on January 22 and 30, 2019

Scientific Name	Common Name	Status	Native or Introduced
Algae			
Bossiella orbigniana	corraline algae	–	Native
Gracilaria spp.	–	–	Native
Rhodymenia spp.	–	–	Native
Prionitis spp.	–	–	Native
Nienburgia andersoniana	–	–	Native
Ulvoid spp.	sea lettuce	–	Native
Cladophora graminea	–	–	Native
Corallina spp.	–	–	Native
Dictyota spp.	–	–	Native
Cystoseria osmundacea	chain bladder kelp	–	Native
Phyllospadix spp.	surfgrass	–	Native
Egregia menziesii	feather boa kelp	–	Native

Scientific Name	Common Name	Status	Native or Introduced
Invertebrates			
Anthopluera elegantissima	aggregating anemone	–	Native
Chthamalus spp.	acorn barnacle	–	Native
Mytilus californianus	California mussel	–	Native
Pollicipes polymerus	gooseneck barnacle	–	Native
Lottia gigantea	owl limpet	–	Native
Lottia spp.	–	–	Native
Acmea spp.	–	–	Native
Phragmatopoma californica	sandcastle worm	–	Native
Tegula spp.	turban snails	–	Native
Megastrea undosa	wavy turban snail	–	Native
Kelletia kelletii	Kellet's whelk	–	Native
Styela montereyensis	stalked tunicate	–	Native
Eudistylia polymorpha	feather duster worm	–	Native
Olivella biplicata	purple olive shell	–	Native
Spirobranchus giganteus	Christmas tree worm	–	Native
Serpulorbis arenarius	–	–	Native
Parapholas californica	piddock clam	–	Native
Hydractinia spp.	hydroid	–	Native
Membranipora fusca	encrusting bryozoan	–	Native
Thalamoporella californica	–	–	Native
Chama arcana	jewel oyster	–	Native
Strongylocentrotus purpuratus	purple urchin	–	Native
Chaetopterus spp.	parchment tube worm	–	Native
Thelepus crispus	terebellid worm	–	Native
Crisia spp.	–	–	Native
Unidentified spones	–	–	Native
Unidentified bryozoans	–	–	Native
Unidentified tunicates	–	–	Native
Fish			
Atherinops affinis	topsmelt	–	Native
Neoclinus blanchardi	sarcastic fringehead	–	Native
Urolophus halleri	round ray	–	Native

Miller, Daniel J., Lea, Robert N., Guide to the Coastal Marine Fishes of California. State of California the Resources Agency Department of Fish and Game. 1972

Gotshall, Daniel W., Guide to Marine Invertebrates Alaska to Baja California. Sea Challengers, Inc. Monterey, California. 1994

Source: Abbott, Isabella A., Hollenberg, George J., Marine Algae of California. Stanford University Press. 1992

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Appendix D

Special Status Species Evaluation Tables

Special Status Plant and Animal Species in the Regional Vicinity of the APE

Scientific Name Common Name	Status[1]	Habitat Requirements	Potential for Occurrence/ Basis for Determination
Plants			
Amsinckia douglasiana Douglas' fiddleneck	G4/S4 4.2	Valley and foothill grassland, oak woodland. Monterey shale; dry habitats. 0-1950 m. annual herb. Blooms Mar-May	**Not Expected.** No suitable habitat present in APE.
Astragalus didymocarpus var. *milesianus* Miles' milk-vetch	G5T2/S2 1B.2	Coastal scrub. Clay soils. 50-385 m. annual herb. Blooms Mar-Jun	**Not Expected.** No suitable habitat (coastal scrub) present in APE. Project is also outside the of the species' known elevation range.
Atriplex coulteri Coulter's saltbush	–	Coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland. Ocean bluffs, ridgetops, as well as alkaline low places. Alkaline or clay soils. 2-460 m. perennial herb. Blooms Mar-Oct	**Not Expected**. Historical record (1927) shows species occurrence throughout APE; however, no suitable habitat (coastal bluff scrub, coastal dunes, soils) was observed to be present during the reconnaissance survey on January 24, 2019.
Atriplex serenana var. *davidsonii* Davidson's saltscale	G5T1/S1 1B.2	Coastal bluff scrub, coastal scrub. Alkaline soil. 0-460 m. annual herb. Blooms Apr-Oct	**Not Expected.** No suitable habitat (coastal bluff scrub, coastal scrub, soils) present in APE.
Calochortus catalinae Catalina mariposa-lily	G3G4/S3S4 4.2	Valley and foothill grassland, chaparral, coastal scrub, cismontane woodland. In heavy soils, open slopes, openings in brush. 15-700 m. perennial bulbiferous herb. Blooms (Feb)Mar-Jun	**Not Expected.** No suitable habitat (coastal scrub) present in APE.
Calochortus fimbriatus late-flowered mariposa-lily	G3/S3 1B.3	Chaparral, cismontane woodland, riparian woodland. Dry, open coastal woodland, chaparral; on serpentine. 270-1435 m. perennial bulbiferous herb. Blooms Jun-Aug	**Not Expected.** No suitable habitat present in APE. Project is also outside the of the species' known elevation range.
Calochortus palmeri var. *palmeri* Palmer's mariposa-lily	G3T2/S2 1B.2	Meadows and seeps, chaparral, lower montane coniferous forest. Vernally moist places in yellow-pine forest, chaparral. 485-2500 m. perennial bulbiferous herb. Blooms Apr-Jul	**Not Expected.** No suitable habitat present in APE. Project is also outside the of the species' known elevation range.
Calystegia sepium ssp. *binghamiae* Santa Barbara morning-glory	G5TXQ/SX 1A	Marshes and swamps (coastal). 0-30 m. perennial rhizomatous herb. Blooms Aug	**Not Expected.** No suitable habitat (marshes and swamps) present in APE.
Centromadia parryi ssp. *australis* southern tarplant	G3T2/S2 1B.1	Marshes and swamps (margins), valley and foothill grassland, vernal pools. Often in disturbed sites near the coast at marsh edges; also in alkaline soils sometimes with saltgrass. Sometimes on vernal pool margins. 0-975 m. annual herb. Blooms May-Nov	**Not Expected.** No suitable habitat (marshes, swamps, soils) present in APE.

Scientific Name Common Name	Status[1]	Habitat Requirements	Potential for Occurrence/ Basis for Determination
Cercocarpus betuloides var. *blancheae* island mountain-mahogany	G5T4/S4 4.3	Chaparral, closed-cone coniferous forest. 30-600 m. perennial evergreen shrub. Blooms Feb-May	**Not Expected.** No suitable habitat present in APE. Project is also outside the of the species' known elevation range.
Chloropyron maritimum ssp. *maritimum* salt marsh bird's-beak	FE/SE G4?T1/S1 1B.2	Marshes and swamps, coastal dunes. Limited to the higher zones of salt marsh habitat. 0-10 m. annual herb (hemiparasitic). Blooms May-Oct(Nov)	**Not Expected.** No suitable habitat (marshes and swamps) present in APE. One species occurrence (several plants) recorded in 2013 approximately 0.6 mile west of APE.
Chorizanthe polygonoides var. *longispina* long-spined spineflower	G5T3/S3 1B.2	Chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, vernal pools. Gabbroic clay. 30-1540 m. annual herb. Blooms Apr-Jul	**Not Expected.** No suitable habitat present in APE. Project is also outside the of the species' known elevation range.
Convolvulus simulans small-flowered morning-glory	G4/S4 4.2	Chaparral, coastal scrub, valley and foothill grassland. Wet clay, serpentine ridges. 30-700 m. annual herb. Blooms Mar-Jul	**Not Expected.** No suitable habitat (coastal scrub, chaparral) present in APE.
Deinandra paniculata paniculate tarplant	G4/S4 4.2	Coastal scrub, valley and foothill grassland, vernal pools. Usually in vernally mesic sites. Sometimes in vernal pools or on mima mounds near them. 25-940 m. annual herb. Blooms (Mar)Apr-Nov	**Not Expected.** No suitable habitat (coastal scrub, vernal pools) present in APE.
Fritillaria ojaiensis Ojai fritillary	G3/S3 1B.2	Broadleafed upland forest (mesic), chaparral, lower montane coniferous forest, cismontane woodland. Usually loamy soil. Sometimes on serpentine; sometimes along roadsides. 100-1140 m. perennial bulbiferous herb. Blooms Feb-May	**Not Expected.** No suitable habitat (upland forest, coniferous forest) present in APE.
Hordeum intercedens vernal barley	G3G4/S3S4 3.2	Valley and foothill grassland, vernal pools, coastal dunes, coastal scrub. Vernal pools, dry, saline streambeds, alkaline flats. 5-1000 m. annual herb. Blooms Mar-Jun	**Not Expected.** No suitable habitat (coastal dunes, coastal scrub) present in small areas of APE.
Lasthenia conjugens Contra Costa goldfields	FE G1/S1 1B.1	Valley and foothill grassland, vernal pools, alkaline playas, cismontane woodland. Vernal pools, swales, low depressions, in open grassy areas. 1-450 m. annual herb. Blooms Mar-Jun	**Not Expected.** No suitable habitat present in APE.
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields	G4T2/S2 1B.1	Coastal salt marshes, playas, vernal pools. Usually found on alkaline soils in playas, sinks, and grasslands. 1-1375 m. annual herb. Blooms Feb-Jun	**Not Expected.** No suitable habitat present in APE.
Lilium humboldtii ssp. *ocellatum* ocellated Humboldt lily	G4T4?/S4? 4.2	Chaparral, coastal scrub, cismontane woodland, lower montane coniferous forest, riparian forest. Yellow-pine forest or openings, oak canyons. 30-1800 m. perennial bulbiferous herb. Blooms Mar-Jul(Aug)	**Not Expected.** No suitable habitat (coastal scrub, chaparral) present in APE.

Scientific Name Common Name	Status[1]	Habitat Requirements	Potential for Occurrence/ Basis for Determination
Lonicera subspicata var. *subspicata* Santa Barbara honeysuckle	G5T2?/S2? 1B.2	Chaparral, cismontane woodland, coastal scrub. 5-825 m. perennial evergreen shrub. Blooms May-Aug(Dec-Feb)	**Not Expected.** No suitable habitat (coastal scrub, chaparral) present in APE.
Malacothrix saxatilis var. *arachnoidea* Carmel Valley malacothrix	G5T2/S2 1B.2	Chaparral, coastal scrub. Rock outcrops or steep rocky roadcuts. 30-1040 m. perennial rhizomatous herb. Blooms (Mar)Jun-Dec	**Not Expected.** No suitable habitat (coastal scrub, chaparral) present in APE.
Monardella hypoleuca ssp. *hypoleuca* white-veined monardella	G4T3/S3 1B.3	Chaparral, cismontane woodland. Dry slopes. 50-1280 m. perennial herb. Blooms (Apr)May-Aug(Sep-Dec)	**Not Expected.** No suitable habitat (chaparral) present in APE. Project is also outside the of the species' known elevation range.
Nasturtium gambelii Gambel's water cress	FE/ST G1/S1 1B.1	Marshes and swamps. Freshwater and brackish marshes at the margins of lakes and along streams, in or just above the water level. 5-330 m. perennial rhizomatous herb. Blooms Apr-Oct	**Not Expected.** No suitable habitat (marshes and swamps) present in APE.
Phacelia hubbyi Hubby's phacelia	G4/S4 4.2	Chaparral, coastal scrub, valley and foothill grassland. Gravelly, rocky areas and talus slopes. 0-1000 m. annual herb. Blooms Apr-Jul	**Not Expected.** No suitable habitat (coastal scrub, chaparral) present in APE.
Phacelia ramosissima var. *austrolitoralis* south coast branching phacelia	G5?T3Q/S3 3.2	Chaparral, coastal scrub, coastal dunes, coastal salt marsh. Sandy, sometimes rocky sites. 5-300 m. perennial herb. Blooms Mar-Aug	**Not Expected.** Some suitable habitat (sandy sites) present in small area of APE; however, no coastal scrub/coastal dunes present.
Piperia michaelii Michael's rein orchid	G3/S3 4.2	Coastal bluff scrub, coastal scrub, cismontane woodland, chaparral, closed-cone coniferous forest, lower montane coniferous forest. Mudstone and humus, generally dry sites. 3-915 m. perennial herb. Blooms Apr-Aug	**Not Expected.** No suitable habitat (coastal scrub, chaparral) present in APE.
Quercus dumosa Nuttall's scrub oak	G3/S3 1B.1	Closed-cone coniferous forest, chaparral, coastal scrub. Generally on sandy soils near the coast; sometimes on clay loam. 15-640 m. perennial evergreen shrub. Blooms Feb-Apr (May-Aug)	**Not Expected.** No suitable habitat (closed-cone coniferous forest, coastal scrub, chaparral) present in APE. Historical record (1929) shows species occurrence throughout APE; however, the exact location of the species is unknown and was mapped in the general vicinity of the City of Carpinteria.
Ribes amarum var. *hoffmannii* Hoffmann's bitter gooseberry	G4?T3/S3 3	Chaparral, riparian woodland. 5-1190 m. perennial deciduous shrub. Blooms Mar-Apr	**Not Expected.** No suitable habitat (chaparra) present in APE.

Scientific Name Common Name	Status[1]	Habitat Requirements	Potential for Occurrence/ Basis for Determination
Sanicula hoffmannii Hoffmann's sanicle	G3/S3 4.3	Broadleafed upland forest, coastal scrub, coastal bluff scrub, chaparral, cismontane woodland, lower montane coniferous forest. Cool slopes in deep soil, often in moist shaded serpentine soils, or in clay soils. 30-300 m. perennial herb. Blooms Mar-May	**Not Expected.** No suitable habitat (coastal scrub, chaparral) present in APE. Project is also outside the of the species' known elevation range.
Scrophularia atrata black-flowered figwort	G2?/S2? 1B.2	Closed-cone coniferous forest, chaparral, coastal dunes, coastal scrub, riparian scrub. Sand, diatomaceous shales, and soils derived from other parent material; around swales and in sand dunes. 10-445 m. perennial herb. Blooms Mar-Jul	**Not Expected.** No suitable habitat present in APE.
Suaeda taxifolia woolly seablite	G4/S4 4.2	Coastal bluff scrub, coastal dunes, marshes and swamps. Margins of salt marshes. 0-50 m. perennial evergreen shrub. Blooms Jan-Dec	**Not Expected.** No suitable habitat (coastal scrub, marshes) present in APE.
Invertebrates			
Cicindela hirticollis gravida sandy beach tiger beetle	G5T2/S2	Inhabits areas adjacent to non-brackish water along the coast of California from San Francisco Bay to northern Mexico. Clean, dry, light-colored sand in the upper zone. Subterranean larvae prefer moist sand not affected by wave action.	**Not Expected.** Elements of suitable habitat (freshwater creek, dry light sand) are present at the southern end of APE. However, CNDDB records indicate only one historical record (1979) along Carpinteria State Beach. No specific location indicated. The area in which this species was observed, within Carpinteria State Beach, has been significantly developed since the observation and the species is considered extirpated in this area.
Coelus globosus globose dune beetle	G1G2/S1S2	Inhabitant of coastal sand dune habitat; erratically distributed from Ten Mile Creek in Mendocino County south to Ensenada, Mexico. Inhabits foredunes and sand hummocks; it burrows beneath the sand surface and is most common beneath dune vegetation.	**Not Expected.** Historical record (1934) shows species occurrence throughout the southern portion of the APE; however, no suitable habitat (coastal sand dune) was observed to be present during the reconnaissance survey on January 24, 2019.

Scientific Name Common Name	Status[1]	Habitat Requirements	Potential for Occurrence/ Basis for Determination
Danaus plexippus pop. 1 monarch – California overwintering population	G4T2T3/S2S3	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	**Moderate Potential.** Suitable habitat (eucalyptus) observed throughout the APE where eucalyptus trees are present. CNDDB record from 1990-91 show species occurrence along Carpinteria Creek, southeastern of the APE. Species not observed during the reconnaissance survey on January 24, 2019.
Branchinecta lynchi Vernal pool fairy shrimp	FT G3/S2S3	Endemic to the grasslands of the Central Valley, central Coast Mountains, and South Coast Mountains. Inhabits, small clearwater sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	**Not Expected.** No suitable habitat present within the APE.
Panoquina errans wandering (=saltmarsh) skipper	G4G5/S2	Southern California coastal salt marshes. Requires moist saltgrass for larval development.	**Not Expected.** No suitable habitat (coastal salt marsh) present within APE. One species occurrence (4 females) in 2007 within 0.5 miles west of APE.
Haliotis cracherodii black abalone	FE SC (NMFS) P IUCN	Primarily found in rocky intertidal and shallow subtidal reefs along the coast.	**Moderate Potential.** Suitable rocky reef and intertidal habitat present. Species not observed during field survey.
Haliotis corrugata pink abalone	SC (NMFS) P	Occurs on rocky substrate in intertidal and subtidal habitats along California coast.	**Moderate Potential.** Suitable rocky reef habitat present. Species not observed during field survey.
Haliotis fulgens green abalone	SC (NMFS) P	Occurs on rocky substrate in intertidal and subtidal habitats along California coast.	**Moderate Potential.** Suitable rocky reef and intertidal habitat present. Species not observed during field survey.
Haliotis sorenseni white abalone	FE P	Primarily found in rocky substrates alongside sand channels within coastal waters, typically at depths of 50-180 feet	**Low Potential.** The APE extends into approximately 30 feet of water. The species is not expected to occur in shallow depths.
Fish			
Eucyclogobius newberryi tidewater goby	FE G3/S3 SSC	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	**High Potential.** Suitable habitat (Carpinteria Creek) present at southern end of APE. CNDDB record in 1995 shows species occurrence along Carpinteria Creek within 0.5 miles of APE.

Scientific Name Common Name	Status[1]	Habitat Requirements	Potential for Occurrence/ Basis for Determination
Oncorhynchus mykiss irideus pop. 10 steelhead - southern California DPS	FE G5T1Q/S1	Federal listing refers to populations from Santa Maria River south to southern extent of range (San Mateo Creek in San Diego County). Southern steelhead likely have greater physiological tolerances to warmer water and more variable conditions.	**High Potential.** The project is within federally-designated critical habitat for this species.
Carcharodon carcharias white shark	P IUCN, CITES, CMS	Temperate oceans of the world. Found in shore waters near the surface up to depths of 1000 meters.	**High Potential.** The outfall pipeline is in suitable habitat for the species and sightings have been seen off Carpinteria Beach in recent years.
Hypsypops rubicundus garibaldi	P	Occurs from Monterey Bay to Baja California in rocky reefs, ranging from shallow sub-tidal to a depth of 95 feet.	**High Potential.** The outfall pipeline is in suitable habitat for the species and the species is common in southern California rocky reefs.
Stereolepis gigas giant sea bass	P IUCN	Rarely occurring north of Point Conception. Prefer edges of nearshore rocky reefs that are shallow, at 35-130 feet deep.	**Low Potential.** Adults are generally found in 10 to 40 meters of water. The project does not provide suitable habitat. There is a low potential for juveniles to occur within the APE due to the habitat requirement of shallow water depths ranging from 6 to 10 meters.
Amphibians			
Rana draytonii California red-legged frog	FT G2G3/S2S3 SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	**Not Expected.** No suitable habitat (deep water, dense riparian vegetation) present within APE. Although a small strand of riparian habitat was identified west of the WWTP, it lacks water and access to estivation habitat.
Anaxyrus californicus Arroyo toad	FE SSC G2G3/S2S3	Semi-arid regions near washes or intermittent streams, including valley-foothill and desert riparian, desert wash, etc. Rivers with sandy banks, willows, cottonwoods, and sycamores; loose, gravelly areas of streams in drier parts of range.	**Not Expected.** No suitable habitat present within APE. Although a small strand of riparian habitat was identified west of the WWTP, it lacks the presence of other suitable habitat elements (e.g., rivers with sandy banks, cottonwoods, loose, gravelly areas of streams in drier parts of range).

Scientific Name Common Name	Status[1]	Habitat Requirements	Potential for Occurrence/ Basis for Determination
Reptiles			
Anniella pulchra California legless lizard	G3/S3 SSC	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with high moisture content.	**Low Potential.** Suitable habitat (sandy soils, sparse vegetation) present at southern end of APE. CNDDB indicates three historical (before 1983) species occurrences along Carpinteria State Beach within 0.5 miles of APE. The area in which this species was observed, within Carpinteria State Beach, has been significantly developed since the observations. Species not observed during the reconnaissance survey on January 24, 2019.
Chelonia mydas green sea turtle	FE	Adult and juvenile green turtles live are generally found nearshore as well as in bays and lagoons, on reefs, and especially in areas with seagrass beds.	**Moderate Potential.** The species is highly migratory and may be present within the APE during warm water years or summer months.
Caretta caretta loggerhead sea turtle	FT	They are circumglobal, occurring throughout the temperate and tropical regions of the Atlantic, Pacific, and Indian Oceans. Loggerheads are the most abundant species of sea turtle found in U.S. coastal waters.	**Low Potential.** The species is highly migratory and has a low potential to occur within the APE.
Dermochelys coriacea leatherback sea turtle	FE	The Eastern Pacific leatherback subpopulation nests along the Pacific coast of the Americas from Mexico to Ecuador, and marine habitats extend from the coastline westward.	**Low Potential.** The species is not expected to occur within the APE but it is highly migratory and transits in offshore waters of California on occasion.
Lepidochelys olivacea olive Ridley sea turtle	FE	The olive Ridley sea turtle is considered the most abundant sea turtle in the world and can be found in the Pacific Islands, Southeast, and the West Coast.	**Low Potential.** The species is highly migratory and has a low potential to occur within the APE.
Birds			
Charadrius nivosus nivosus western snowy plover	FT G3T3/S2S3 SSC	Sandy beaches, salt pond levees & shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	**Moderate Potential**. Suitable habitat (sandy beaches) present at southern end of APE; however, 1978 CNDDB record determined suitable habitat is no longer present due to development. Carpinteria State Beach may be used for foraging and roosting, but not nesting.
Passerculus sandwichensis beldingi Belding's savannah sparrow	SE G5T3/S3	Inhabits coastal salt marshes, from Santa Barbara south through San Diego County. Nests in Salicornia on and about margins of tidal flats.	**Not Expected.** No suitable habitat (coastal salt marsh) present within APE. CNDDB record (2001) estimated 75 pairs within 0.5 miles west of APE.

Scientific Name Common Name	Status[1]	Habitat Requirements	Potential for Occurrence/ Basis for Determination
Rallus obsoletus levipes light-footed Ridgway's rail	FE/SE G5T1T2/S1 FP	Found in salt marshes traversed by tidal sloughs, where cordgrass and pickleweed are the dominant vegetation. Requires dense growth of either pickleweed or cordgrass for nesting or escape cover; feeds on molluscs and crustaceans.	**Not Expected.** No suitable habitat (salt marsh, pickleweed, cordgrass) present within APE.
Setophaga petechia yellow warbler	G5/S3S4 SSC	Riparian plant associations in close proximity to water. Also nests in montane shrubbery in open conifer forests in Cascades and Sierra Nevada. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.	**Moderate Potential.** A small stand of riparian habitat occurs in the APE to the west of the WWTP. Carpinteria Creek, to the east and mainly outside of the APE, also consists of suitable riparian habitat (riparian plant associates near water). The riparian habitat within the APE may be utilized for foraging; however, the habitat is limited in size and sparse and therefore the species is not likely to nest in this location.
Gymnogyps californianus California condor	FE/SE FP G1/S1	Require vast expanses of open savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude. Deep canyons containing clefts in the rocky walls provide nesting sites. Forages up to 100 miles from roost/nest.	**Not Expected.** No suitable habitat (open savannah, grasslands, foothill chaparral) present within APE.
California least tern *Sterna antillarum browni*	FE/SE G4T2T3Q/S2 FP	Nests along the coast from San Francisco Bay south to northern Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, landfills, or paved areas.	**Not Expected.** Elements of suitable habitat are present in the southern portion of the APE (sand beaches); however, the species is not known to nest, forage, or roost within Carpinteria State Beach.
Least Bell's vireo *Vireo bellii pusillus*	FE/SE G5T2/S2	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	**Not Expected.** A small stand of riparian habitat occurs in the APE to the west of the WWTP. Carpinteria Creek, to the east and mainly outside of the APE, also contains riparian habitat. However, the habitat is limited in size and sparse, and the species is more closely associated with the Santa Ynez River in Santa Barbara County.
Marbled murrelet *Brachyramphus marmoratus*	FT/SE G3G4/S1	Feeds near-shore; nests inland along coast from Eureka to Oregon border and from Half Moon Bay to Santa Cruz. Nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas-fir.	**Not Expected.** No suitable habitat (old-growth redwood-dominated forests) present within APE.

Scientific Name Common Name	Status[1]	Habitat Requirements	Potential for Occurrence/ Basis for Determination
Southwestern willow flycatcher *Empidonax traillii extimus*	FE/SE G5T2/S1	Riparian woodlands in Southern California.	**Not Expected.** A small stand of riparian habitat occurs in the APE to the west of the WWTP. Carpinteria Creek, to the east and mainly outside of the APE, also consists of riparian habitat. However, the species is not likely to nest due to the limited extent and low riparian habitat density within the APE.
Mammals			
Corynorhinus townsendii Townsend's big-eared bat	G3G4/S2 SSC	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	**Not Expected.** Some suitable habitat (buildings) present throughout APE; however, human disturbance is high throughout the APE.
Mirounga angustirostris northern elephant seal	FP MMPA	Breeding occurs in Channel Islands and birth occurs from December to March. May occur on land in sandy or rocky areas along coastline. Ocean dive depths can be up to 300-800 meters.	**Moderate Potential**. Animals may occur transiting through the APE, however the small APE and high frequency of humans and dogs along the beach greatly reduces potential occurrences
Phoca vitulina harbor seal	MMPA	Temperate coastal habitats along the coast of California. Rest on rocks, reefs, beaches.	**High Potential.** Habitat is present within the APE and animals frequent rocky points along the adjacent bluffs, however human disturbance is high throughout the APE
Zalophus californianus California sea lion	MMPA	Shallow waters in temperate coastal habitats along the coast of California. Rest on beaches, docks, buoys, and jetties. Prefer sandy beaches or rocky coves for breeding and haul-out sites.	**High Potential.** Some foraging habitat is present in the APE, however human disturbance and the limited extent of the APE reduces the potential for occurrences
Arctocephalus townsendi Guadalupe fur seal	FT MMPA	Guadalupe fur seals live in the waters off southern California and the Pacific coast of Mexico. During the breeding season, they are found in coastal rocky habitats and caves. Little is known about their whereabouts during the non-breeding season.	**Low Potential.** Some foraging habitat is present throughout APE; however, human disturbance is high and animals are likely to avoid populated areas based on behavioral tendencies
Eschrichtius robustus gray whale	MMPA	Breeding occurs in lagoons in Baja California in the fall. Migration occurs northward along the west coast from mid-February to May.	**Moderate Potential.** Animals may occur transiting through the APE however the limited extent and shallow nature of the APE reduces the potential for occurrences

Scientific Name Common Name	Status[1]	Habitat Requirements	Potential for Occurrence/ Basis for Determination
Megaptera novaeangliae humpback whale	FE MMPA	Feeding and migration occurs off the coast of California during spring, summer, and fall.	**Low Potential.** Animals may occur transiting through the APE; however, the limited extent and shallow nature of the APE reduces the potential for occurrences
Tursipos truncatus Common bottlenose dolphin	MMPA	Bottlenose dolphins are found in temperate and tropical waters around the world. They inhabit a wide variety of habitats, including harbors, bays, gulfs, and estuaries, as well as nearshore coastal waters, deeper waters over the continental shelf, and even far offshore in the open ocean.	**High Potential.** Animals are likely to occur transiting through the APE however and the limited extent of the APE and reduces the potential for occurrences
Balaenoptera musculus blue whale	FE	Blue whales migrate seasonally between summer feeding grounds and winter breeding grounds They prefer deep waters to shallow coastal waters. The North Pacific blue whales live off the California coast and migrate to waters off the coast of Mexico and Central America in winter.	**Not Expected.** No suitable habitat present within APE.
Balaenoptera physalus fin whale	FE	Primarily found in deep, offshore waters of all major oceans, primarily in temperate to polar latitudes. Most migrate from the Arctic and Antarctic feeding areas in the summer to tropical breeding and calving areas in the winter.	**Not Expected.** No suitable habitat present within APE.
Eubalaena japonica northern Pacific right whale	FE	Although migration patterns are unknown, it is thought the whales spend the summer in far northern feeding grounds and migrate south to warmer waters, such as southern California, during the winter. Nursery areas are in shallow, coastal waters.	**Not Expected.** No suitable habitat present within APE.
Balaenoptera borealis sei whale	FE	Found in subtropical, temperate, and subpolar waters, however, temperate waters in the mid-latitudes are preferred. They are typically observed in deeper waters far from the coastline.	**Not Expected.** No suitable habitat present within APE.
Physeter microcephalus sperm whale	FE	Primarily found in deep, offshore waters. In some mid-latitudes, sperm whales seem to generally migrate north and south depending on the seasons, moving toward the poles in the summer. However, in tropical and temperate areas, there appears to be no obvious seasonal migration.	**Not Expected.** No suitable habitat present within APE.

Scientific Name Common Name	Status[1]	Habitat Requirements	Potential for Occurrence/ Basis for Determination
Orcinus orca southern resident killer whale		During the spring, summer, and fall, the range of Southern Resident killer whales includes the inland waterways of Washington State and the transboundary waters between the United States and Canada. Less is known about their winter movements and range. They have been spotted as far south as central California during the winter months and as far north as Southeast Alaska.	**Not Expected.** No suitable habitat present within APE.
Sensitive Natural Communities			
Southern Coastal Salt Marsh	G2/S2.1	–	**Not Expected.** Not observed during the reconnaissance survey on January 24, 2019.

[1] Notes:

Regional Vicinity refers to within a 5 mile and a 7-quad search radius of site.

FE = Federally Endangered FT = Federally Threatened FC = Federal Candidate Species

SE = State Endangered ST = State Threatened SC = State Candidate SR = State Rare

FP = CDFW Fully Protected SSC = CDFW Species of Special Concern P= State Protected Species

SC (NFMS)= Species of concern by the National Marine Fisheries Service

IUCN= Included in the World Conservation Union's Red List of Vulnerable Species CITES= Protected under the Convention of International Trade in Endangered Species of Fauna and Flora CMS= Protected by the Convention on Migratory Species

MMPA= Protected under the Marine Mammal Protection Act

CNPS California Rare Plant Rank

1A=Presumed Extinct in California

1B=Rare, Threatened, or Endangered in California and elsewhere

2A=Plants presumed extirpated in California, but more common elsewhere

2B=Plants Rare, Threatened, or Endangered in California, but more common elsewhere

California Rare Plant Rank Threat Code Extension

.1=Seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat)

.2=Fairly endangered in California (20-80% occurrences threatened)

.3=Not very endangered in California (<20% of occurrences threatened)

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Appendix E

Cultural Resources Assessment

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Carpinteria Advanced Purification Project

Cultural Resources Assessment Report

prepared by

Woodard & Curran
10509 Vista Sorrento Parkway, Suite 205
San Diego, California 92121
Contact: Rosalyn Prickett, AICP

prepared with the assistance of

Rincon Consultants, Inc.
180 North Ashwood Avenue
Ventura, California 93001

March 2019

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Merrick, D, H. Haas, and T. Clark

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Executive Summary

Rincon Consultants, Inc. (Rincon) was retained by Woodard & Curran, on behalf of the Carpinteria Valley Water District (WWTP), to perform a cultural resources assessment for the Carpinteria Advanced Purification Project (project) in Santa Barbara County, California. The purpose of this report is to document the tasks conducted by Rincon; specifically, delineation of an Area of Potential Effect (APE), a cultural resources records search, Native American outreach, local historic group consultation, and a field survey. This study has been completed in accordance with the requirements of the California Environmental Quality Act (CEQA). This report has also been prepared to conform to the requirements of Section 106 of the National Historic Preservation Act (NHPA) in case a federal nexus (i.e., federal funding and/or permitting) is established during the course of the project.

The results of the cultural resources assessment indicate the mapped boundary of one previously recorded archaeological resource (CA-SBA-7) extends into the project APE in the vicinity of the Carpinteria Wastewater Treatment Plant (WWTP). A review of the extant data obtained from archaeological investigations conducted at CA-SBA-7 over the last 70 years suggests the site's substantial cultural deposits are concentrated on the eastern side of Carpinteria Creek outside of the APE. Test excavations conducted adjacent to the APE determined deposits west of the creek were limited to isolated shell fragments; no prehistoric artifacts or organic-rich midden deposits indicative of long-term use were identified by these studies.

Discussions with CVWD personnel indicate the sediments underlying the WWTP have also been extensively disturbed up to 20 feet below current ground surface by the construction and reconstruction of plant facilities Based on these findings, it may be concluded even if cultural deposits associated with CA-SBA-7 were once present, it is likely these remains have been destroyed.

Results of the cultural resources assessment indicate no historic period built-environment resources are located within the APE. Although the WWTP was originally constructed over 50 years ago, it has since been completely rebuilt. Therefore, no buildings or structures on the property qualify for evaluation for the NRHP or CRHR.

Due to levels of previous disturbance throughout the APE, including in areas reportedly containing portions of CA-SBA-7, Rincon does not recommend any further work related to cultural resources. However, unanticipated discoveries are a possibility during ground disturbance. Rincon recommends a finding of ***less than significant impact with mitigation to historical and unique archaeological resources*** and presents the following recommendation in case of unanticipated discovery of cultural resources during project development. The project is also required to adhere to regulations regarding the unanticipated discovery of human remains, detailed below.

Previous studies indicate the deposits from CA-SBA-7 are located along the creek margins opposite the current APE. Previous testing along the APE also indicated only some shell fragments were noted subsurface in the vicinity of the APE. Based on the results of the current study and past testing results, Rincon recommends a finding of ***no effect to historic properties*** under Section 106 of the NHPA. Rincon recommends no further work be required under Section 106. Rincon assumes the

State Historic Preservation Office will concur with this finding and will not require additional archaeological testing due to the amount of previous testing conducted in and near the project APE.

Unanticipated Discovery of Cultural Resources

If cultural resources are encountered during ground-disturbing activities, work in the immediate area must halt and an archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for archaeology (National Park Service 1983) should be contacted immediately to evaluate the find. If the discovery proves to be significant under the NHPA and/or CEQA, additional work such as data recovery excavation and Native American consultation may be warranted to mitigate any significant impacts/adverse effects.

Human Remains

The discovery of human remains is always a possibility during ground disturbing activities. If human remains are found, the State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the County Coroner must be notified immediately. If the human remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission, which will determine and notify a most likely descendant (MLD). The MLD has 48 hours from being granted site access to make recommendations for the disposition of the remains. If the MLD does not make recommendations within 48 hours, the land owner shall reinter the remains in an area of the property secure from subsequent disturbance.

1 Introduction

Rincon Consultants, Inc. (Rincon) was retained by Woodard & Curran, on behalf of the Carpinteria Valley Water District (CVWD), to perform a cultural resources assessment for the Carpinteria Advanced Purification Project (CAPP; project) in Santa Barbara County, California. The purpose of this report is to document the tasks conducted by Rincon; specifically, the delineation of the Area of Potential Effect (APE), a cultural resources records search, Native American outreach, local historic group consultation, and a field survey. Rincon understands the project is subject to the California Environmental Quality Act (CEQA). In case a federal nexus is established, this report has also been prepared to conform to the requirements of Section 106 of the National Historic Preservation Act (NHPA).

1.1 Project Description

The proposed project includes construction of an Advanced Water Purification Facility (AWPF), injection wells, conveyance pipelines, backwash pipelines, pump station, monitoring wells, and modifications to the existing ocean outfall. Existing production wells would be used to extract the purified water back out of the groundwater basin for use in the potable supply. A detailed description of each project component is provided below.

1.1.1 Advanced Water Purification Facility

The AWPF is proposed to be constructed at the existing Carpinteria Wastewater Treatment Plant (WWTP). The AWPF would be built east of the disinfection basins and west of the Storage Building and Maintenance Building, within an existing paved area. The total AWPF footprint would be approximately 10,900 square feet. An existing storage building in the east portion of the property may be demolished concurrently with the proposed project. A backwash line would also be constructed along the existing north utility corridor and main utility corridor to the WWTP influent pump station.

1.1.2 Purified Water Pump Station

A Purified Water Pump Station (PWPS) would be constructed near the AWPF. The footprint of the PWPS, which includes associated above grade piping, surge tank, and miscellaneous equipment, would be 2,000 square feet (33 feet by 60 feet). The PWPS would entail the construction of a concrete pad and roof decking over a below grade concrete clearwell. The below grade concrete clearwell would be used to temporarily store purified water before being pumped to the injection wells. The clearwell would require excavation of approximately 345 cubic yards of soil to a depth of 14 feet below ground surface.

1.1.3 Conveyance Pipelines to Injection Wells

The PWPS and piping conveyance system would be constructed to serve up to three injection wells. A majority of the pipeline alignments would be installed via open cut trench within roadway rights-of-way (ROWs). In some cases, pipeline segments may be constructed via trenchless technologies. Approximately 6,100 linear feet (LF) of 12-inch diameter common pipeline would convey the purified water to the well lateral split. Three 8-inch diameter pipeline extensions, totaling approximately 2,000 LF, would be used to distribute the water to individual injection wells.

A segment proposed for construction which may not use open cut trench or use trenchless construction is the segment to serve the injection well at Franklin Park, which must cross Franklin Creek. If open cut trenching is not selected for the Franklin Creek crossing, a pipe bridge would be used, similar to an existing pipe bridge over Franklin Creek. The existing pipe bridge spans the creek, adjacent to a pedestrian bridge between Meadow View Lane and Sterling Avenue. The 8-inch pipe would span the creek and support itself; no external pipe supports of permanent loading of the pedestrian bridge would be required. The pipe span across Franklin Creek would be approximately 25 feet.

Additionally, the portion of the pipeline segment on Linden Avenue crossing U.S. Highway 101 will be installed as a pipeline casing by CalTrans as part of the U.S. Highway 101-Linden Avenue Overcrossing project.

Table 1 provides a summary of the proposed street alignments and construction methods for each pipe segment. There may be a need to use a trenchless technology for portions of some segments; however, these segments are not yet determined.

Table 1 Conveyance Pipelines and Preferred Alignment

Street[1]	Length (linear feet)	Diameter (inches)	Proposed Construction Method
Olive Avenue	220	12	Open cut trench, paved City street
6th Street	1,100	12	Open cut trench, paved City street
Maple Avenue	1,300	12	Open cut trench, paved City street
Carpinteria Avenue	120	12	Open cut trench, paved City street
Eugenia Place	680	12	Open cut trench, paved City street
Easement between Eugenia Place and Linden Avenue	340	12	Open cut trench, paved City street
Linden Avenue[2]	2,340	12	Pipeline casing within U.S. Highway 101 Overcrossing
Linden Avenue	125	8	Open cut trench, paved City street
Meadow View Lane	720	8	Open cut trench, paved City street
El Carro Lane	535	8	Open cut trench, paved City street

[1]Alternative alignments between Palm Ave and Linden Ave, or 6th Street and Carpinteria Ave could be selected for the final alignment of the 12-inch pipeline. Choosing one of these alternative alignments would not change the total length of the 12-in pipeline. The segments would be constructed via open cut trench in paved City streets.

[2]Approximately 1,250 LF of the 2,340 LF, 12-inch pipeline installed on Linden Ave would be installed by Caltrans as part of the U.S. Highway 101-Linden Avenue Overcrossing project

1.1.4 Injection Wells

Injection wells are proposed at six potential sites. In total, three injection wells are planned for construction. The injection wells would be constructed utilizing below-grade vaults or above-grade with the well head facilities placed in screened cages or behind fences. A 42,000-gallon tank would be constructed at each of the injection well sites. Individual well sites, including a backwash water holding tank, would have an approximate footprint of 6,000 square feet (60 feet by 100 feet). During construction, the impacted area would encompass approximately 10,000 square feet to accommodate the drill rig, laydown, support equipment, and groundwater treatment tanks. The exact locations of the selected well, backwash water holding tank, and associated equipment have not been selected within the available sites.

1.1.5 Well Backwash Discharge Pipelines

The disposal of backwash discharge associated with the cleaning of the well screens would require the construction of up to 1,400 LF of new 12-inch pipe for connection between the well sites and the existing sanitary sewer. Drainage disposal includes construction of 600 LF of new 12-inch pipe for direct drainage to Franklin Creek or to existing drainage culverts owned by the City of Carpinteria. Drainage backwash piping is proposed to be constructed via open cut trench within roadway ROWs.

1.1.6 Monitoring Wells

Four monitoring well locations are proposed for the project. The locations selected for monitoring wells would be dependent on the selected injection well locations. The monitoring wells would include either three nested PVC casings or three individual monitoring wells on each site. For the nested monitoring well, three, 3-inch diameter casings in each monitoring well would be nested in a 24-inch borehole and equipped with a sampling pump. For individual monitoring wells, 3-inch casings would be installed for each aquifer at different depths. During construction, the area affected would be approximately 5,000 square-feet to accommodate the drill rig, laydown, support equipment, and groundwater treatment tanks. Once installed, above-ground facilities would include a small circular vault lid (up to 3 feet in diameter) enclosing a below-ground vault containing the nested well or three monitoring wells at different depths.

1.1.7 Ocean Outfall Modifications

The WWTP currently discharges effluent through a single 24-inch diameter concrete-coated, welded steel outfall at a depth of 21 to 24 feet below mean sea level. The outfall is approximately 1,600 feet long with the last 93 feet having 16 diffuser ports spaced evenly every 6 feet on the main barrel of the outfall and one diffuser port on the flanged end of the pipeline. The diffusers consist of a 4-inch diameter pipe riser with a 90-degree elbow on the end. As part of the proposed project, duckbill valves would be installed on each diffuser. No other modifications to the ocean outfall are proposed for the project.

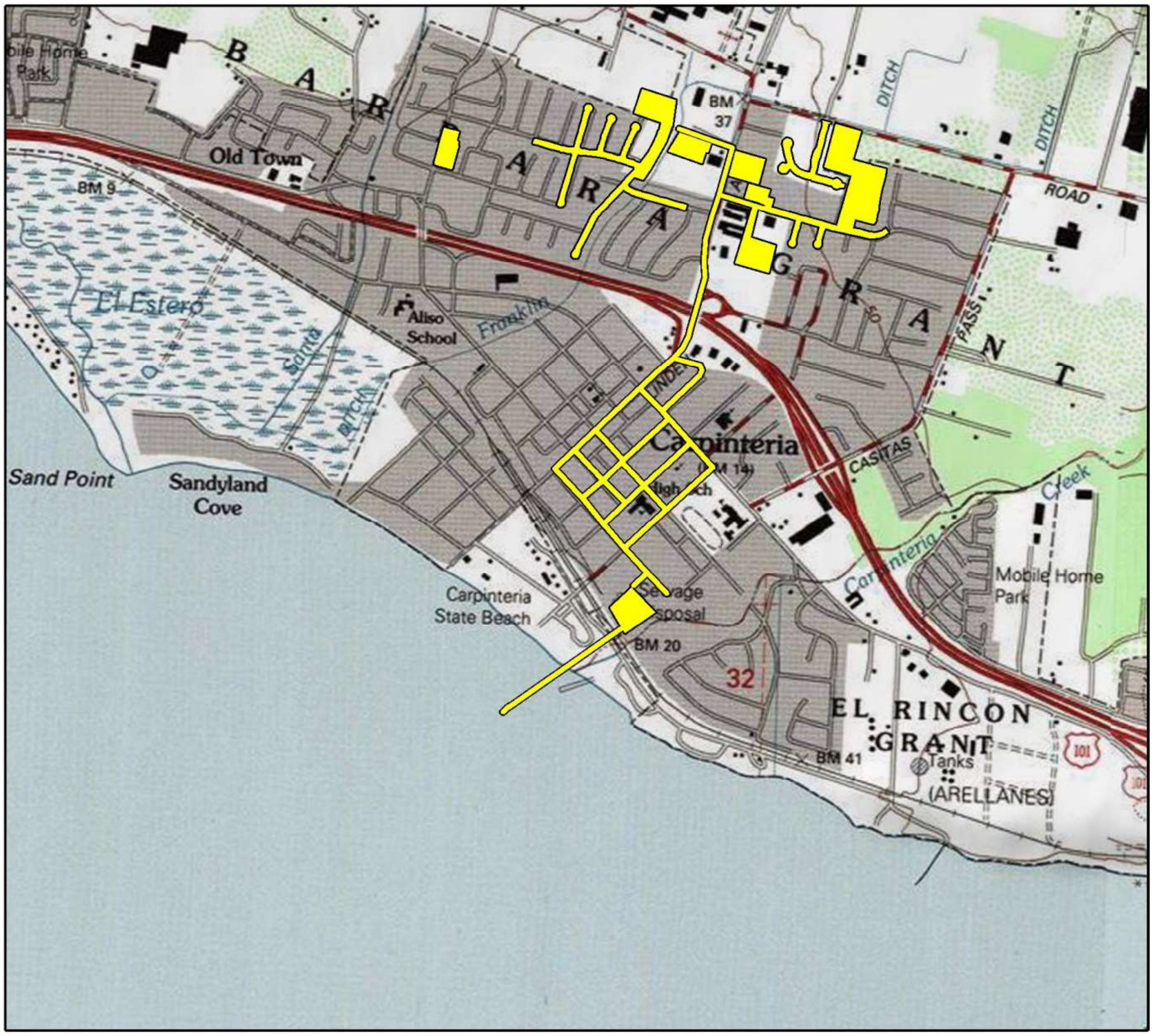
1.2 Project Location

The project is located in the city of Carpinteria and in unincorporated Santa Barbara County, California. As depicted in Figure 1, the project lies within the United States Geological Survey (USGS; 2015) *Carpinteria, California 7.5-minute topographic quadrangle*. The Public Land Survey System depicts the project area within Township 4N, Range 25W, San Bernardino Meridian (Earth Point 2018).

Carpinteria is located approximately 12 miles south of the city of Santa Barbara and approximately 80 miles north of the city of Los Angeles. The project is primarily within Carpinteria's municipal boundaries, with the exception of one potential injection well area and associated pipeline which lie in unincorporated Santa Barbara County. The proposed project is south of U.S. Highway 192, west of Carpinteria Creek, and east of Santa Ynez Avenue. The western boundary of the project site extends into the Pacific Ocean.

The AWPF component of the project is proposed to be located within the existing WWTP site, located at 5351 6th Street. The WWTP is approximately 0.1 mile northeast from the Pacific Ocean.

Figure 1   Project Location Map

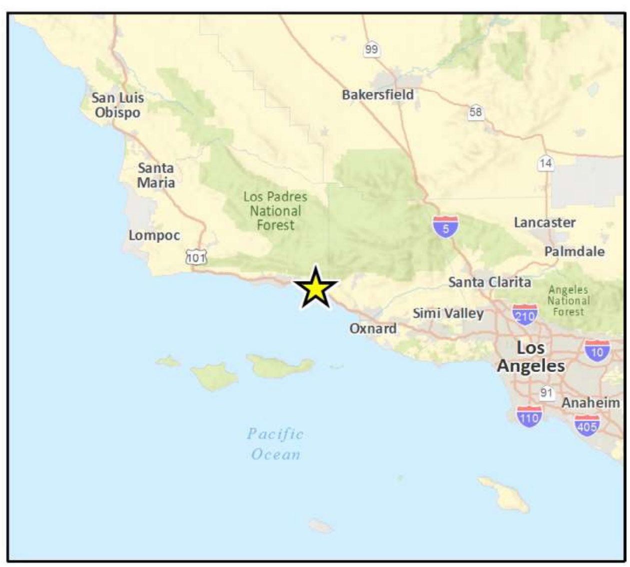


Imagery provided by National Geographic Society, Esri and its licensors © 2019. Carpinteria Quadrangle. T04N R25W S20,21,28,29,32. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may havechanged since the original topographic map was assembled.

Area of Potential Effects

0   1,000   2,000 Feet

N



CRFig 1 Proj Loca Map

The WWTP is bordered on the east by Carpinteria Creek and on the south by the Union Pacific Railroad (UPRR).

The injection and monitoring well areas would be located approximately 0.7 to 1.0 mile north of the AWPF. Six potential injection well sites have been identified, though only three would be selected as design continues and property rights are acquired. The potential monitoring well areas are proposed in various streets between Santa Ynez Avenue and Jay Street. The land uses surrounding these proposed areas are a mix of residential, commercial, institutional, recreational, and agricultural. Conveyance pipelines between the AWPF and the injection wells would generally run within the public roadway ROW. The pipeline would cross U.S. Highway 101 at the Linden Street overpass.

The offshore component of the project consists of an existing ocean outfall located in the nearshore coastal areas of the Santa Barbara Channel (SBC). The SBC extends from Point Conception to Point Mugu and is bordered by the four northern Channel Islands – San Miguel, Santa Rosa, Santa Cruz and, Anacapa. The ocean outfall begins underground initiating at the WWTP, running under Carpinteria State Beach to the shallow subtidal at which point it lies exposed on the seafloor to its terminus approximately 1,000 feet offshore (approximately 22 feet below mean lower low water). Coastal processes seasonally bury and expose the outfall pipeline with sand throughout its subtidal nearshore extent.

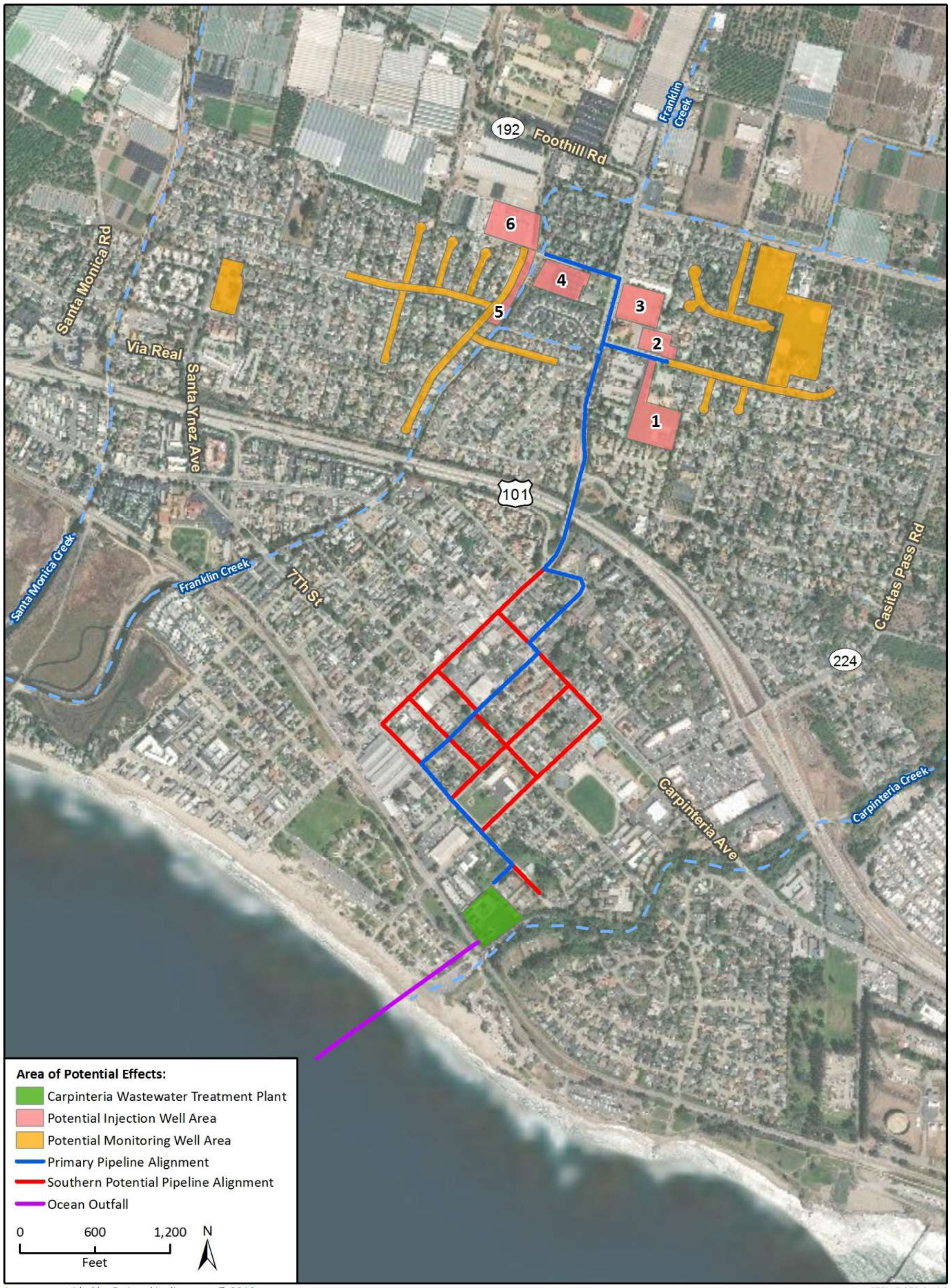
1.3 Area of Potential Effects

The APE of a project is defined in 36 Code of Federal Regulations (CFR) 800.16(d) as the "geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such property exists." The APE generally depicts all areas expected to be affected by the proposed project, including staging and construction areas (Figure 2). As defined for this project, the APE encompasses the proposed project footprint described above.

The APE must additionally be considered as a three-dimensional space and include any ground disturbance associated with the project. The maximum depth of ground disturbance for the majority of the project is expected to be roughly 20 feet, with the exception of the wells, which would be drilled to a maximum depth of approximately 1,220 feet. Therefore, the vertical depth of the APE varies, but is not expected to exceed 20 feet in all areas except the well locations, where it would extend to 1,220 feet.

No indirect effects (i.e., visual, auditory, or atmospheric) are anticipated for the project. The AWPF and PWPS would be constructed within the existing WWTP. An examination of historical aerial images indicates none of the buildings or structures surrounding this portion of the APE are over 50 years of age (HistoricAerials.com 2019). The conveyance pipelines, monitoring wells, and ocean outfall components of the project would be constructed at- or below-grade. As such, the project does not have the potential to indirectly affect cultural resources. Finally, the proposed injection wells may be constructed above-grade and will include one 42,000-gallon well backwash storage tank. Three of the proposed well location sites (Well Sites #4, #5, and #6) are surrounded by recent development and do not have the potential to indirectly affect cultural resources. The remaining three proposed well locations sites (Well Sites #1, # 2, and #3) are located adjacent to several single-family residences, the Carpinteria Family School, and the Saint Joseph Catholic Church, each of which is over 50 years of age. Land use in the immediate vicinity of these buildings has significantly changed over the last 50 years as the area has transformed from largely agricultural to residential use. Due to these changes, the setting of the project area has been dramatically altered. Given these alterations, the construction of above-grade injection wells and/or the well backwash storage tank does not have the potential to indirectly affect cultural resources.

Figure 2 APE Map



Imagery provided by Esri and its licensors © 2019.

CRFig 2 APE Aerial

1.4 Personnel

Rincon Archaeologist Hannah Haas, MA, RPA provided management oversight for this cultural resources study. Rincon Senior Archaeologist Tiffany Clark, PhD, RPA, served as Principal Investigator for this study. Dr. Clark meets the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeology (National Park Service 1983). Archaeologist Dustin Merrick conducted the Native American outreach, cultural resources records search, field survey, and is the primary author of this report. Architectural Historian Susan Zamudio-Gurrola, MHP conducted the local historic group consultation. Geographic Information Systems Analyst Jon Montgomery prepared the figures found in this report. Principals Christopher Duran, MA, RPA, and Jennifer Haddow, PhD, reviewed this report for quality control.

2 Regulatory Setting

This section includes a discussion of the applicable state and local laws, ordinances, regulations, and standards governing cultural resources that should be adhered to before and during implementation of the proposed project.

2.1 Federal Regulations

The proposed project is considered a federal undertaking due to the potential for federal funding and is subject to Section 106 of NHPA. Section 106 applies when a project, activity, or program is funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; and those requiring a federal permit, license or approval. Cultural resources are considered during federal undertakings chiefly under Section 106 of NHPA of 1966 (as amended) through one of its implementing regulations, 36 CFR 800 (Protection of Historic Properties), as well as the National Environmental Policy Act. Properties of traditional, religious, and cultural importance to Native Americans are considered under Section 101 (d) (6) (A) of NHPA, and Section 106 36 CFR 800.3-800.10. Other federal laws include the Archaeological Data Preservation Act of 1974, the American Indian Religious Freedom Act of 1978, the Archaeological Resources Protection Act of 1979, and the Native American Graves Protection and Repatriation Act of 1989, among others.

Section 106 of NHPA (16 United States Code 470f) requires federal agencies to take into account the effects of their undertakings on historic properties and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings (36 CFR 800.1). Under Section 106, the significance of any adversely affected historic property is assessed and mitigation measures are proposed to reduce any impacts to an acceptable level. Historic properties are those significant cultural resources that are listed in or are eligible for listing in the NRHP per the criteria listed below (36 CFR 60.4).

The quality of significance in American, state, and local history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and meet one or more of the following criteria:

A. Are associated with events that have made a significant contribution to the broad patterns of our history
B. Are associated with the lives of persons significant in our past
C. Embody the distinctive characteristics of a type, period, or method of installation, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction
D. Have yielded, or may be likely to yield, information important in prehistory or history

Ordinarily, cemeteries, birthplaces, or graves of historic figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; and properties that are primarily commemorative in nature are not considered eligible for the NRHP, unless they satisfy certain conditions. In general, a resource must be 50 years of age to be considered for the NRHP, unless it satisfies a standard of exceptional importance.

2.2 State Regulations

CEQA requires a lead agency to determine whether a project may have a significant effect on historical resources (Public Resources Code [PRC], Section 21084.1) or tribal cultural resources (PRC Section 21074[a] [1] [A]-[B]). A historical resource is a resource listed, or determined to be eligible for listing in the California Register of Historical Resources (CRHR); a resource included in a local register of historical resources; or an object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant (State CEQA Guidelines, Section 15064.5[a] [1-3]).

A resource shall be considered historically significant if it meets any of the following criteria:

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

Generally, a cultural resource must be at least 50 years of age to be considered for listing on the CRHR. Resources that have achieved significance within the past 50 years may also be eligible for inclusion in the CRHR, provided that enough time has lapsed to obtain a scholarly perspective on the events or individuals associated with the resource (Office of Historic Preservation N.d.:3).

In addition, if it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that resources cannot be left undisturbed, mitigation measures are required (PRC Section 21083.2[a], [b]).

PRC Section 21083.2(g) defines a unique archaeological resource as an artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person

As of July 1, 2015, California Assembly Bill 52 (AB 52) was enacted and expands CEQA by defining a new resource category called tribal cultural resources (TCRs). AB 52 establishes "a project with an effect that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment" (PRC Section 21084.2). It further states the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a TCR, when feasible (PRC Section 21084.3).

PRC Section 21074(a)(1)(A) and (B) defines TCRs as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe" and meets either of the following criteria:

1. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources, as defined in PRC Section 5020.1(k)
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 PRC 5024.1. In applying these criteria, the lead agency shall consider the significance of the resource to a California Native American tribe

AB 52 also establishes a formal consultation process for California tribes regarding TCRs. The consultation process must be completed before a CEQA document can be certified. Under AB 52, lead agencies are required to "begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project." Native American tribes to be included in the process are those that have requested notice of projects proposed within the jurisdiction of the lead agency.

2.3 Local Regulations

Information regarding the cultural resources policies and programs contained in the City of Carpinteria General Plan is provided here for informational purposes and to provide a context for related work in the project vicinity. The General Plan is not directly applicable to the current project. The General Plan includes cultural resource goals and policies in its Open Space, Recreation, and Conservation Element. Policy OSC-16a requires a careful review of any development which may disturb significant cultural resources and includes implementation policies to that end, including an exploration of all available measures to avoid development on archaeological sites. Implementation Policy OSC-16a.78 requires a qualified archaeologist and Native American monitor observe all grading activities in the vicinity of identified archaeological resources.

3 Setting

The project APE is located in southern Santa Barbara County less than 0.1 mile east of the Pacific Ocean at a maximum elevation of 10 meters (34 feet) above mean sea level. The APE is in an urbanized area containing both residential and commercial development. Vegetation, where present, consists primarily of non-native grasses and trees.

3.1 Prehistoric setting

The APE is located in what has been defined as the Northern California Bight (Northern Bight) archaeological region, one of eight organizational divisions of the state (Moratto 1984; Glassow et al. 2007; Moratto and Chartkoff 2007). The Northern Bight archaeological region encompasses the area from Vandenberg Air Force Base on the coast, south to Point Conception, including the Channel Islands, south along the coast to Rancho Palos Verdes, into the Los Angeles Basin, and north to the “northern margins of Ventura and Santa Barbara Counties” (Glassow et al. 2007:191).

3.1.1 Paleo-Coastal Tradition (ca. 10,000 – 7000 BCE)

The Paleo-Indian Period, also referred to as the Paleo-Coastal Tradition, defines the earliest human occupation of the Northern Bight, and describes the cultural trends and subsistence strategies of prehistoric populations from approximately 10,000 to 7000 BCE (Glassow et al. 2007). The Paleo-Indian Period in North America is largely recognized by projectile points associated with extinct large mammal remains, such as mammoth, bison, and dire wolves, particularly in the Southwest and Plains regions (Reed 1992; Slaughter et al. 1992; Huckell 1996; Erlandson et al. 2007). These projectile points have been classified as the Clovis style, which exhibit a lanceolate shape with a flute initiated from the base that extends as far as the midline (Justice 2002; Hollenshead 2007).

The earliest accepted dates for human occupation in California were recovered from archaeological sites on two of the Northern Channel Islands, located off the southern coast of Santa Barbara County. The earliest radiocarbon dates known for the region, calibrated to approximately 11,000 years before present (B.P.), were derived from human remains and rodent bones recovered from within the same deposits on Santa Rosa Island (Johnson et al. 2002; Erlandson et al. 2007; Glassow et al. 2007). Archaeological deposits from the Daisy Cave site on San Miguel Island establishes the presence of people in this area approximately 10,000 years ago (Erlandson 1991; Erlandson et al. 2007). In San Luis Obispo County, archaeological sites CA-SLO-1764 (Lebow et al. 2001), Cross Creek (CA-SLO-1797; Fitzgerald 2000), and CA-SLO-832 (Jones et al. 2001) yielded radiocarbon dates from approximately 9,000 years ago (Jones and Ferneau 2002).

Recent data from Paleo-Indian sites in southern California indicate the economy was a diverse mix of hunting and gathering, with a major emphasis on aquatic resources in many coastal areas (e.g., Jones and Ferneau 2002; Erlandson et al. 2007). Archaeological deposits at the Daisy Cave site yielded an assemblage of “the oldest known fishhooks in the Americas” (Erlandson et al. 2007:57). Shell middens discovered on the mainland of California have also yielded dates from 8000 to 7000 BCE (Erlandson et al. 2007).

A fluted projectile point fragment was recovered from site CA-SBA-1951 on the Santa Barbara Channel coastal plain (Erlandson et al. 1987; Erlandson 1994). Another fluted projectile point was reportedly found on the surface in Nipomo, San Luis Obispo County (Mills et al. 2005; Rondeau et al. 2007). Large side-notched projectile points of the Central Coast Stemmed series in this area date to as early as 8,000 years ago (Justice 2002) suggesting some overlap with the Clovis type. Central Coast Stemmed projectile points have been recovered along the Central Coast, which is located immediately north of the Northern Bight region. These sites include Diablo Canyon (CA-SLO-2; Greenwood 1972), Cross Creek (CA-SLO-1797; Fitzgerald 2000), Little Pico Creek (CA-SLO-175; Jones and Waugh 1995), and the Honda Beach site (CA-SBA-530; Glassow 1997), among others. At the Metcalf site (CA-SCL-178), in southern Santa Clara Valley, Hildebrandt (1983) recovered two large side-notched points associated with charcoal dates ranging from 9,960 – 8,500 years ago.

3.1.2 Millingstone Horizon (ca. 7000 – 5000 BCE)

It is generally accepted human occupation of California originated from small, dispersed occupations during the Paleo-Indian period. Populations increased from the Paleo-Indian Period to the Millingstone Horizon, possibly as a result of an ecological adaptation to collecting plant resources. Rogers (1929) originally identified the Millingstone Horizon along the Santa Barbara Channel. Wallace (1955, 1978) further defined the period, noting the appearance and abundance of milling implements in archaeological sites from this period. The milling implements, including milling stones (e.g., metates, milling slabs) and hand stones (e.g., manos, mullers), are associated with the horizontal motion of grinding small seeds and nuts, and lend to the name Millingstone Horizon (Desautels and Leach 1978; Glassow et al. 2007).

These milling implements are particularly noted in archaeological sites along the coast of California and become even more prevalent near the end of the horizon (Wallace 1955, 1978; Warren 1968; Desautels and Leach 1978). Excavations at the Tank Site (CA-LAN-1) in Topanga Canyon from 1947 to 1948 confirmed the presence of a significant number of milling implements that correspond with the Millingstone Horizon (Treganza and Bierman 1958). Although the milling implements suggest an emphasis on seed and nut gathering, Millingstone populations likely employed a mixed food procurement strategy which included hunting. Flaked stone assemblages, which include crude core and cobble-core tools, flake tools, large side-notched projectile points, and pitted stones (Desautels and Leach 1978; Glassow et al. 2007; Jones et al. 2007), shell middens, and faunal remains in coastal Millingstone Period sites point to broad-spectrum hunting and gathering of shellfish, fish, birds, and mammals. This mixed food procurement strategy demonstrates adaptation to regional and local environments, lending to population increase.

3.1.3 Early Period (ca. 5000 – 2000 BCE)

The Early Period of the Northern Bight is marked by a lower frequency of radiocarbon dated archaeological sites as well as changes in artifact forms. Differences in artifact forms, particularly in ground stone implements, likely represent changes in subsistence (Glassow et al. 2007). The material culture recovered from Early Period sites within the Northern Bight region provides evidence for continued exploitation of inland plant and coastal marine resource as well as the incorporation of "newly important food resources" found in specific habitats (Glassow et al. 2007:197). In addition to the use of metates and manos, prehistoric populations began to use mortars and pestles, such as those recovered from the Sweetwater Mesa (CA-LAN-267) and Aerophysics (CA-SBA-53) sites (Glassow et al. 2007).

Artifact assemblages recovered from Early Period sites also include bipointed bone gorge hooks used for fishing, *Olivella* beads, bone tools, and pendants made from soapstone. The frequency of projectile points in Early Period assemblages also increased, while the style began to change from lanceolate forms to side-notched forms (Glassow et al. 2007). This projectile point style trend, first identified by David Banks Rogers in 1929, was confirmed by Greenwood (1972) at Diablo Canyon. The projectile point trend has become apparent at numerous sites along the California coast as well as a few inland sites (e.g., CA-SBA-210 and CA-SBA-530). In many cases, manifestations of this trend are associated with the establishment of new and larger settlements, such as at the Aerophysics site (Glassow et al. 2007; Jones et al. 2007).

3.1.4 Middle Period (ca. 2000 BCE – CE 1)

The Middle Period describes a pronounced trend toward greater adaptation to regional or local resources as well as the development of socioeconomic and political complexity in prehistoric populations (Glassow et al. 2007). The remains of fish, land mammals, and sea mammals are increasingly abundant and diverse in archaeological deposits along the coast.

Coastal populations developed shell fishhooks, and projectile points changed from side-notched dart points to contracting stem styles. Flaked stone tools used for hunting and processing—such as large side-notched, stemmed, lanceolate or leaf-shaped projectile points, large knives, edge modified flakes, and drill-like implements—occurred in archaeological deposits in higher frequencies and are more morphologically diversified during the Middle Period. Bone tools, including awls, are more numerous than in the preceding period, and the use of asphaltum adhesive became common. Circular fish hooks which date from between 1000 and 500 BCE, compound bone fish hooks which date between CE 300 and 900, notched stone sinkers, and the tule reed or balsa raft, indicative of complex maritime technology, became part of the toolkit during this period (Kennett 1998; King 1990; Arnold 1995; Jones and Klar 2005; Glassow et al. 2007).

Populations continued to follow a seasonal settlement pattern until the end of the Middle Period; large, permanently occupied settlements with formal architecture, particularly in coastal areas, appear to have been the norm by the end of the Middle Period (Kennett 1998; Glassow et al. 2007). Prehistoric populations began to bury the deceased in formal cemeteries with artifacts that may represent changes in ideology and the development of ritual practices (Glassow et al. 2007).

3.1.5 Middle – Late Transition Period (ca. CE 1 – 1000)

The Middle-Late Transition period is marked by major changes in settlement patterns, diet, and interregional exchange. Prehistoric populations continued to occupy more permanent settlements, with the continued use of formal, though crowded cemeteries and the burial of goods with the deceased. Burials are normally flexed, placed face down, and oriented toward the north or west (Warren 1968). The interments are typically marked by vertical pieces of whalebone, and have abundant grave goods, such as ornaments, effigies, and utensils.

After CE 500, a wealth of ornaments, ceremonial, and artistic items characterize the Northern Bight "Chumash Tradition" along the central coast and offshore islands (Warren 1968). Ground stone items include bowls, mortars and pestles, balls, grooved stones, doughnut stones, stone beads, pendants, pipes, tubes, and mammal effigies. Projectile points, both large and small, were typically non-stemmed and leaf-shaped, with convex or concave bases. Chipped stone implements also included drills and scrapers. Utilitarian objects were made from bone (e.g., awls, fishhooks, whistles, and tubes) and shell (e.g., fishhooks and abalone shell dishes). Shell beads and ornaments were abundant, and bowls, pestles, pipes, and stone tubes were inlaid with shell beads and engraved. Bowls, pipes, and ornaments were commonly manufactured from steatite.

The manufacture of the plank canoe, called *tomol*, allowed coastal prehistoric populations to catch larger fish that occupied deeper sea waters (Glassow et al. 2007). Following the introduction of the *tomol*, which was lined with naturally occurring asphaltum, populations began to use harpoons, hooks and lines, and nets to catch deep sea fish and mammals (Van Horn 1979). The plank canoe appears to have influenced “commerce between the mainland coast and the Channel Islands,” and fish remains indicate “a noticeable increase in the acquisition of large deep-sea fish such as tuna and swordfish” (Glassow et al. 2007:204).

Projectile points diagnostic of both the Middle and Late periods are found in Northern Bight archaeological sites (Glassow et al. 2007). These projectile points include large, contracting-stemmed types typical of the Middle Period, as well as small, leaf-shaped Late Period projectile points, which likely reflect the introduction of the bow and arrow. Middle-Late Transition Period sites indicate populations replaced *atlatl* (dart) technologies with the bow and arrow, which required smaller projectile points.

Mortars and pestles became more common during this transitional period, gradually replacing manos and metates as the dominant milling equipment. Many archaeologists believe this change in milling stones signals a change from the processing and consuming of hard seed resources to the increasing reliance on acorn (e.g., Glassow et al. 1988; True 1993).

3.1.6 Late Period (ca. CE 1000 – Historic Contact)

Late Period archaeological sites indicate sociopolitical and economic complexity among populations in the Northern Bight. Glassow et al. (2007:205) notes between 1200 and 1300 a social stratification becomes clear archaeologically. Climatic change may have stimulated the development of specialized crafts, regional trade, and changes in food procurement. Unlike the large Middle period shell middens, Late Period sites are more frequently single-component deposits. There are also more inland sites, with fewer and less visible sites along the Pacific shore during the Late Period. The settlement pattern and dietary reconstructions indicate a lesser reliance on marine resources than observed for the Middle and Middle-Late Transition periods, as well as an increased preference for deer and rabbit (Jones 1995). An increase in the number of sites with bedrock mortar features that date to the Late Period suggests nuts and seeds began to take on a more significant dietary role in Late Period populations.

Late Period sites are distinguished by small, finely-worked projectile points and temporally diagnostic shell beads. These shell beads were used as monetary currency to trade with inland populations. Trade brought many maritime goods, such as fish, shellfish, and steatite bowls to inland locations, such as CA-SBA-3404, CA-SBA-485, and CA-SBA-2358, particularly during the latter part of the Late Period. Small, finely-worked projectile points are typically associated with bow and arrow technology, which is believed to have been introduced to the area by the Takic migration from the deserts into southern California.

3.2 Ethnographic Context

The APE lies within Chumash ethnographic territory, which extends from the current city of Malibu, north beyond San Luis Obispo, and inland as far as 68 kilometers (42 miles) (Glassow 1996). The Chumash also inhabited the northern Channel Islands. The Chumash spoke six closely related languages, divided into two broad groups – Northern Chumash, consisting of only Obispeño, and

Southern Chumash, including Purisimeño, Ineseño, Barbareño, Ventureño, and Island Chumash (Mithun 1999). The Chumash are divided into three main groups, including Interior, Coastal, and Northern Channel Islands Chumash. The coastal Barbareño Chumash referred to themselves as the Wal-wa-ren-na, and "occupied the narrow coastal plain from Point Conception to Punta Gorda in Ventura County" (Grant 1978b:509).

Chumash villages generally ranged between 30 and 200 people, with the largest settlements numbering anywhere from 500 to 800 people (Glassow 1996:14). Grant (1978b) describes a typical Chumash village along the Santa Barbara Channel as consisting of "several houses, a sweathouse, store houses, a ceremonial enclosure, gaming area, and a cemetery usually placed well away from the living area." Archaeological investigations have recognized separate areas within cemeteries for elites and non-elites (King 1969).

Permanent Chumash villages included hemispherical or rounded mud-covered (insulated) pole and thatch dwellings arranged in close groups (Brown 2001). Thatching was made from tule, Carrizo grass, wild alfalfa, and fern (Grant 1978b). Smaller Chumash groups correspondingly occupied short-term special-purpose camps throughout the year to acquire seasonal resources (Glassow 1996). Cooking fires were centered within the dwelling to allow smoke to ventilate through a hole in the roof (Grant 1978b).

The Chumash are well-known for their wooden plank canoe, or *tomol*. The *tomol* facilitated the procurement of marine resources and the trade network between the mainland and the Channel Islands. Sea mammals were hunted with harpoons, while deep-sea fish were caught using nets and hooks and lines. In addition to marine resources, the Chumash subsistence focused on acorns, pine nuts, prickly pear cactus, and other plant resources, and land animals such as mule deer, antelope, quail, dove, and other waterfowl (Brown 2001). The Chumash also manufactured various other utilitarian and non-utilitarian items. Eating utensils, ornaments, fishhooks, harpoons, and other items were made using bone and shell. Olivella shell beads were especially important for trade.

Spanish explorers first arrived in the Santa Barbara Channel region in 1542. Contact had much more of an impact starting in 1770 with the establishment of the missions. Mission life led to severe population decline and culture loss (Johnson 1987). Although the Chumash languages are no longer commonly spoken (Timbrook 1990), many descendants of the Chumash still live in the region and a cultural revitalization has been ongoing since the twentieth century (Glassow et al. 2007). Today, the Santa Ynez Band of Chumash Indians, whose reservation is approximately 32 kilometers (20 miles) northwest of the APE, is the only federally recognized tribe.

3.3 History

Post-European contact history for the state of California is generally divided into three periods: the Spanish Period (1769–1822), the Mexican Period (1822–1848), and the American Period (1848–present). The following provides a general discussion of the history of California following European contact.

3.3.1 Spanish Period (1769 – 1822)

The Santa Barbara Channel region was first visited by the Cabrillo Expedition in October of 1542 (Chesnut 1993). A second Spanish expedition, consisting of two ships under the command of Sebastian Vizcaino, arrived in the Santa Barbara area in 1602. For more than 200 years, Cabrillo, Vizcaino and other Spanish, Portuguese, British, and Russian explorers sailed the Alta (upper)

California coast and made limited inland expeditions, but they did not establish permanent settlements (Bean 1968; Rolle 2003).

The Spanish began to permanently occupy Alta California in the late eighteenth century. While the Spanish funded expeditions to claim Alta California for the Spanish government, Franciscan missionaries traveled to proselytize and convert the local populations to Catholicism. Gaspar de Portolá established the first Spanish settlement, a military fort named El Presidio Reál de San Diego, in Alta California in May 1769. The Presidio of San Diego was the first of four presidios established throughout Alta California for the Spanish government. A year later, in June 1770, Portolá established the El Presidio Real de San Carlos de Monterrey, a bay originally identified by the Spanish explorer Sebastian Vizcaino in the early seventeenth century. Juan Bautista de Anza established El Presidio Real de San Francisco in June 1776. The Spanish established El Presidio de Santa Bárbara, the fourth and final presidio, in Alta California in 1782. The presidio was a temporary structure until construction of a permanent adobe structure began in 1784.

Franciscan Father Junípero Serra founded Mission San Diego de Alcalá in June 1769. The San Diego Mission was the first of 21 missions founded by the Franciscans in the late eighteenth and early nineteenth centuries. Misión Santa Barbara is the tenth mission founded by the Spanish, and was founded in 1786, four years after the establishment of the presidio. The Chumash that lived in the vicinity of the project APE came under the control of the Spanish at Mission Santa Barbara. Other missions established along the central coast include Misión San Luis Obispo de Tolosa, founded in 1772, and Misión La Purisima Concepción, founded in 1787 (Weber 1992).

Mission Santa Barbara was reconstructed twice to enlarge the church in 1789 and 1793. The Spanish began to rebuild the church again in 1812 following damage from a major earthquake. The presidio and the mission were constructed using large adobe bricks shaped by a form and then sun dried. Large ceramic roof tiles called *tejas* were created by molding the clay on timbers until fully dried, creating the long, rounded shape seen at both the presidio and mission. Some floors were lined with clay tiles called *ladrillos* formed from the same clay used for the roof tiles, but mostly remained dirt. Mission Santa Barbara benefitted from construction of a dam and aqueduct system that diverted water from Mission Canyon. The Spanish relied on Chumash labor to construct the buildings, dam, and aqueduct system. Spanish families began to settle the area, becoming Pueblo Santa Barbara. These settlers began to use the Goleta Valley for ranching and agriculture, and Pueblo Santa Barbara became an epicenter for hide and tallow trade.

Mission life led to severe population decline and culture loss among the Chumash. The Spanish brought with them diseases for which the Chumash had no immunity. Living and working in close proximity spread diseases throughout the native populations and killed many. The Spanish also introduced domestic plants and animals for labor and food. These non-native species vastly altered the landscape, forcing the Chumash to adopt new foods and lifeways.

3.3.2 Mexican Period (1822 – 1848)

Mexico’s revolution against Spain achieved success in 1821. News of the victory reached California in 1822, marking the beginning of the Mexican period. The hallmarks of the Mexican period are the secularization of the missions, completely accomplished by 1836, and a greater distribution of private land grants to prominent citizens, including retired military personnel. The Secularization Act of 1833 enabled Mexican governors in California to distribute former mission lands to individuals in the form of land grants. "The intention of the secularization of the California missions in 1834 was to transform the mission centers into Pueblos; the Indians, with their knowledge of trade and agriculture, would become Mexican citizens in these Pueblos," Grant (1978a:507) explains. Mexican governors made more than 700 land grants between 1833 and 1846, putting most of the state's lands into private ownership for the first time (Shumway 2007). Forty land grants were issued in Santa Barbara County, where its fertile valleys were ideal for the ranching and agriculture prevalent during this period (Avina 1976; Tompkins 1976, 1987; Chesnut 1993).

Although Pueblo Santa Barbara thrived on hide and tallow trade, ranchers soon identified a more prosperous market in providing beef for the growing gold-mining population. Daniel Hill applied for a land grant in the mid-1840s and was granted the land he would name Rancho La Goleta after the adjacent Goleta Slough, an estuary that historically formed an island (Mescaltitlan) surrounded by wetlands and marshes. Modugno (2015) explains "the area around the east side of the slough had already been nicknamed La Goleta, or the schooner, because some schooners had run aground in that area, and at least one schooner had been built there." The Map of the Rancho La Goleta, published in the 1840s, indicates a wreck at the mouth of the slough just south of the rancho (University of California Berkeley N.d.). The project APE lies within the former boundary of Rancho La Goleta, which was bordered on the east by Rancho Santa Barbara Pueblo and Rancho Las Positas Y La Calera and on the west by Rancho Dos Pueblos (Office of the County Surveyor 2008).

3.3.3 American Period (1848 – Present)

The discovery of gold in northern California in 1848 led to the California Gold Rush, despite the first California gold being discovered in Placerita Canyon in 1842 (Guinn 1915). Southern California remained dominated by cattle ranches in the early American period, though droughts and increasing population resulted in farming and a growth in urban professions that increasingly supplanted ranching through the late nineteenth century. By 1853, the population of California exceeded 300,000. Thousands of settlers and immigrants continued to immigrate into the state, particularly after the completion of the transcontinental railroad in 1869.

The American Period officially began with the signing of the Treaty of Guadalupe Hidalgo in 1848, in which the United States agreed to pay Mexico $15 million for the conquered territory of California, Nevada, Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming. In 1850, several months before California was admitted as the 31st state, the County of Santa Barbara was incorporated. Following the admittance of California to the union, the Goleta Valley became an agricultural center and was known as a prominent walnut, avocado, and lemon-growing region. Oil and gas extraction also took place in the area, with multiple wells established near the project APE by the 1930s (State of California, Department of Conservation 2017).

By 1860 Daniel Hill had acquired an additional 1,000 acres of land from the adjacent Rancho Dos Pueblos for his cattle ranch. Cattle grazed on the surrounding foothills, decimating much of the vegetation in the area. Heavy rains in late 1861 through early 1862, in conjunction with the loss of vegetation from cattle grazing, caused substantial erosion and deposition of sediment and debris in the slough. A severe drought followed, and cattle ranching became less lucrative. Hill sold his remaining cattle, filed a homestead claim, and sold the remainder of his lands for farming and estate development.

3.3.4 Carpinteria

Carpinteria received its name originally from the Spanish explorer Gaspar de Portolá when he was on his way to find what is now known as Monterey Bay is in 1769. He and his crew named the area "La Carpintería" (the workshop) after they noticed Native Americans in the area constructing several *tomols*. Like much of the Central Coast, local Native American groups in the Carpinteria area were significantly and irrevocably affected by the European colonization of California and their integration into the Franciscan mission system. The mission system created a dramatic reduction of quality of life and introduced diseases that significantly reduced the native population. As part of the secularization of the mission, the Carpinteria Valley was split into two land grants, bisected by Carpinteria Creek. West of the creek was granted to several families who each received huge tracts of land. East of the creek was granted to Teodoro Arellanes on October 1, 1835. These grants remained until the Mexican-American War when California was purchased from Mexico as part of the Treaty of Guadalupe-Hidalgo. As part of this agreement and the California Land Act of 1851, the Arellanes land grant had to be proven legitimate for the family to keep their 4,469-acres of land. After 20 years and appealing all the way to the Supreme Court, the appeal was granted and the Arellanes family was able to keep their land. In addition to ranching and agriculture, Carpinteria saw early development in mining for natural resources such as asphalt. The development of these mines created small towns in the Carpinteria Valley that boomed then declined towards the twentieth century until most were abandoned or their claim was forfeited in the early 1900's. The current Carpinteria State Beach was acquired in 1932 for $106,010. Carpinteria remains one of the many tourist locations in Southern California with many local attractions such as the California Avocado Festival.

4 Background Research

Background research for the cultural resources assessment included record searches, a review of historical maps and aerial photographs, Native American outreach, and historical group consultation. A summary of findings of each of these efforts is provided below.

4.1 Cultural Resources Record Search

On January 23, 2019, Rincon conducted a search of the California Historical Resources Information System at the Central Coastal Information Center (CCIC) located at University of California, Santa Barbara. The search was conducted to identify any previously recorded cultural resources and previously conducted cultural resources studies within the APE and a 0.5-mile radius surrounding it. The records search also included a review of the NRHP, the CRHR, and the Historic Resources Inventory (Appendix A).

4.1.1 Previous Studies

The CCIC records search identified 86 previously conducted cultural resources studies within a 0.5-mile radius of the APE, listed in Appendix A. Eleven of these prior cultural resource studies encompassed portions of the APE and are detailed below. The remaining studies are listed in Appendix A.

4.1.1.1 SR-00026

Report SR-00026 is a positive survey report conducted by Larry R. Wilcoxon in 1977 for the City of Carpinteria Public Works Department for a proposed storm drainage system. The survey was conducted on portions of Fifth Street, Holly Avenue, Sawyer Avenue, and Elm Street. During the survey, shellfish remains were discovered, and three auger holes were excavated to a maximum depth of 107 centimeters below ground surface. No subsurface remains were discovered during testing. The author concluded the area is located within the 100-year flood zone and the shellfish remains are likely not cultural in origin.

4.1.1.2 SR-00850

Report SR-00850 is a positive survey report conducted by Larry R. Wilcoxon in 1974 for the United States Department of Agriculture Soil Conservation Service as part of the proposed Carpinteria Valley Watershed Project. The survey resulted in the discovery of two archaeological sites, both of which are located outside of the current project’s record search radius.

4.1.1.3 SR-01011

Report SR-01011 is a report for a cultural resources survey of a proposed fiber optic cable project. The report was conducted by Dames & Moore for US Sprint Communications Company in 1988. The survey found a number of sites within or adjacent to the 96-mile-long project area. Five of these archaeological resources were documented within Carpinteria, three (CA-SBA-6, CA-SBA-7, and CA-SBA-2177) of which are located near the current APE. The author recommended CA-SBA-6 and CA-

SBA-7 either be avoided or data recovery be conducted. The author recommended no further action to mitigate impacts to CA-SBA-2177.

4.1.1.4 SR-01032

Report SR-01032 is a California Department of Transportation (Caltrans) report conducted in 1991 for a proposed widening of the existing four lanes of U.S. Highway 101 in Santa Barbara County to add an additional two lanes starting at Bailard Avenue in Carpinteria and extending to Milpas Street in Santa Barbara. No cultural resources were observed during the study but records search results indicated 20 cultural resources were within or adjacent to the project boundary.

4.1.1.5 SR-01937

Report SR-01937 is a cultural resources study conducted by California State Parks in 1995 for the construction of a proposed bicycle trail through Carpinteria State Beach. The survey of the bike path alignment identified portions of CA-SBA-7 within Carpinteria State Beach, outside of the current APE. The author determined the project would have no impact on the site because the project would be built on fill and the bike trail would follow already existing informal trails. It was recommended a monitor to be present for work occurring near the site.

4.1.1.6 SR-02615

Report SR-02615 is an Historic Property Survey Report conducted by Caltrans in 2000 for the improvements of U.S. Highway 101 between Post Miles 2.2 and 3.3 in Carpinteria. No cultural resources were identified during a field study or archival research, and no historic properties were identified within the project APE.

4.1.1.7 SR-02619

Report SR-02619 was a negative Historic Property Survey Report conducted by Terry Joslin in 2005. The proposed project was for minor repairs to U.S. Highway 101 from the intersection of U.S. Highway 101 and State Route 150 in Carpinteria north to Milpas Street in Santa Barbara. The study did not identify any cultural resources within the project APE.

4.1.1.8 SR-02938

Report SR-02938 is a Historic Property Survey Report conducted by Caltrans for the U.S. Highway 101 Six-Lane Project in Carpinteria. Records search and survey results indicated ten prehistoric sites (one with an historic component), one isolate, ten sensitive areas (stream crossings), and three historically sensitive areas within or adjacent to the APE. None of the sites or sensitive areas described in Report SR-02938 are located within the current project's APE.

4.1.1.9 SR-04058

Report SR-04058 is a cultural resource investigation by SWCA Environmental Consultants in 2006 for the maintenance of fiber optic cable for Qwest Communications International, Inc. The project involved 1,431 linear miles of fiber optic cable extending from Oregon to the Arizona border, including California. The investigation included literature searches, Sacred Lands File searches, pedestrian survey, relocation of previously recorded sites, and monitoring of routine maintenance.

No previously unknown cultural resources were identified during the fieldwork within the records search area for the current project.

4.1.1.10 SR-04111

Report SR-04111 was a monitoring report for the Long Haul Fiber Optic Running Line, San Luis Obispo to Burbank, California. The project involved the installation of a 205-mile-long, buried fiber optic cable system. Cultural resource monitoring for the project was conducted by TRC Companies, Inc. The study also included testing at CA-SBA-6 and CA-SBA-7, which identified intact portions of the sites outside the current APE.

4.1.1.11 SR-04262

Report SR-04262 is a Phase 1 cultural resources investigation conducted by Conejo Archaeological Consultants in 2007 and updated in 2010 for the construction of a new well and improvements to the Carpinteria Valley Water District's Central Zone pipeline in Carpinteria. The study did not result in the identification of cultural resources within the current APE.

4.1.2 Recorded Resources

The CCIC records search identified 23 previously recorded cultural resources within a 0.5-mile radius of the APE, listed in Table 2 Previously Recorded Cultural Resource within 0.5 Mile of the APE. These include twelve historic buildings, five historic period archaeological sites, four prehistoric archaeological sites, and two prehistoric isolated artifacts. Of those resources, one prehistoric archaeological site (CA-SBA-7), is mapped as extending into the current APE, specifically in the area of the proposed AWPF and PWPS. A description of CA-SBA-7 is provided below.

4.1.2.1 CA-SBA-7

CA-SBA-7 is a large prehistoric/ethnohistoric village site first documented by D.B. Rogers in 1929. Rogers recorded the site as running for almost a mile southeast from the southern bank of Carpinteria Creek. Rogers suggested the site may represent the remains of the Chumash village of *Mishopshow*. Also known by its Spanish name La Carpintería, *Mishopshow* was visited by Fray Juan Crespí during the Gaspar de Portolá Expedition.

In 1948, University of California, Berkeley archaeologists excavated part of the site near Concha Loma Drive south of Carpinteria Creek, removing a large amount of groundstone and an unidentified number of burials. Additional archaeological investigations were conducted at CA-SBA-7 by L. Spanne (1968), who updated the site record based on his findings. He noted the boundary of CA-SBA-7 was farther south than Rogers' original descriptions. In the late 1980s, Dames & Moore (Haley and York 1988) conducted archaeological testing both west and east of Carpinteria Creek within the UPRR ROW. The findings of their study indicate while cultural materials were present in the area, these deposits had been extensively disturbed. The most intact portion of the site has been identified along a terrace in Carpinteria State Beach. CA-SBA-7 was tested again in 2000 by Chambers Group (Luhnow and Mason 2000), who excavated a series of shovel test pits (STPs) and identified a small area of intact deposits east of Carpinteria Creek.

In 2001, Ivan Strudwick documented an extension of CA-SBA-7 north of Carpinteria Creek within the current project APE. Strudwick excavated a series of six STPs in the vicinity of the UPRR ROW and Palm Avenue. Strudwick's resource record update describes the prehistoric cultural component in this area as “nearly non-existent,” represented by less than five grams of shell recovered from two STPs. Strudwick noted the deposits in this area were highly disturbed with historic period and modern materials recovered below the marine shell.

Although the archaeological investigations by Haley and York (1988) and Strudwick (2001) found cultural remains west of Carpinteria Creek, evidence for the presence of CA-SBA-7 in the vicinity of the current APE remains questionable. As noted above, Strudwick’s (2001) excavations identified very small amounts of shell and recovered no artifacts in the STPs excavated along Palm Avenue and the UPRR ROW. Similarly, Haley and York (1988) also found cultural deposits west of Carpinteria Creek were limited to a low density of shell scatter at the base of the filled railway bank. The shell fragments were presumed to be archaeological, though no artifacts were found to be associated with the recovered remains.

A 2004 site record update prepared by Cheryle Hunt provides an evaluation of CA-SBA-7 for CRHR listing. Hunt identified the site as eligible under Criterion A for its association with Spanish exploration and as a major archaeological site where aspects of prehistory were defined and Criterion D for its contribution of significant data. No other NRHP or CRHR evaluation information is provided in the site record. The site is also listed as California Historical Landmark #535. Landmarks preceding Number 770 are not automatically eligible for listing in the CRHR; therefore, it remains unlisted but likely eligible.

Table 2 Previously Recorded Cultural Resource within 0.5 Mile of the APE

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	NRHP/CRHR Status	Relationship to APE
P-42-000006	CA-SBA-6	Prehistoric Site	Habitation and Burial Site	1929 (David Ranks Rogers); 1968 (L. Spanne); 1988 (R. Haley and A. York); 2001 (Ivan Strudwick); 2002 (Howard C. Higgins); 2011 (Shane James and Karen Osland); 2016 (John M. Foster)	Presumed Eligible	Outside
P-42-000007	CA-SBA-7	Prehistoric Site	Chumash Village	1929 (David B. Rogers); 1983 (Jim Woodward); 1988 (Brian Haley and A. York); 2001 (Ivan Strudwick); 2003 (Shannon Gilbert and Cheryle Hunt)	California Historical Landmark	**Within**
P-42-000129	CA-SBA-000129	Prehistoric Site	Sparse Shell Midden	1960 (Jay Ruby)	Unknown	Outside
P-42-002177	CA-SBA-002177	Historic Site	Refuse Scatter	1988 (B. Hayley and A. York)	Unknown	Outside
P-42-003622	CA-SBA-003622	Historic Site	Highway 192	1999 (M. Darcangelo and S. Mikesell); 2005 (B. Larson, A. Walters and A. Rischel)	Ineligible for National Register	Outside
P-42-003734	CA-SBA-003734H	Historic Site	Oil Well Platform	2003 (Shannon Gilbert)	Unknown	Outside
P-42-003735	CA-SBA-003735H	Historic Site	Las Conchas Mine Site	2003 (Shannon Gilbert)	Unknown	Outside
P-42-003736	CA-SBA-003736H	Historic Site	Trash Deposit	2004 (Shannon Gilbert and Cheryle Hunt)	Unknown	Outside
P-42-003942	CA-SBA-003942	Prehistoric Site	Shellfish Scatter	2008 (William Hildebrandt and Michael Darcangelo)	Unknown	Outside
P-42-038777	–	Prehistoric Isolate	Handstone	2008 (W. Hildebrandt and M. Darcangelo)	Appears Ineligible	Outside
P-42-038778	–	Prehistoric Isolate	Handstone	2008 (W. Hildebrandt and M. Darcangelo)	Appears Ineligible	Outside
P-42-040779	–	Historic Building	OHP Property Number – 114220	Unknown	Unknown	Outside
P-42-040780	–	Historic Building	Mildred N. Crawford House	Unknown	Unknown	Outside

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	NRHP/CRHR Status	Relationship to APE
P-42-040781	–	Historic Building	Gordon E. Hall House	1989 (G. Scott)	Recommended Ineligible	Outside
P-42-040782	–	Historic Building	C.O. Anderson House Hernandez House	1989 (G. Scott)	Recommended Ineligible	Outside
P-42-040783	–	Historic Building	Harry A. Lintz House	1989 (G. Scott)	Recommended Ineligible	Outside
P-42-040784	–	Historic Building	Odett House	1989 (G. Scott)	Recommended Ineligible	Outside
P-42-040785	–	Historic Building	Jones House Caudillo House	1989 (G. Scott)	Recommended Ineligible	Outside
P-42-040786	–	Historic Building	1151 Linden	1989 (G. Scott)	Recommended Ineligible	Outside
P-42-040787	–	Historic Building	Braley House Garcia House	1989 (G. Scott)	Recommended Ineligible	Outside
P-42-040788	–	Historic Building	Ayala House	1989 (G. Scott)	Recommended Ineligible	Outside
P-42-040789	–	Historic Building	Manuel C. Castillo House	1989 (G. Scott)	Recommended Ineligible	Outside
P-42-041015	–	Historic Building	SCE Carpinteria Substation	2012 (Wendy L. Tinsley Becker)	Ineligible for National Register	Outside

Source: CCIC 2019

4.2 Historical Imagery Review

A review of historical aerial photographs indicates the WWTP was present as early as 1967, though it has been drastically altered since that time and was completely reconstructed in the 1990s (NETR online 2018). The roads through which the conveyance pipelines would be constructed south of U.S. Highway 101 have each been present and surrounded by development since as early as 1947. The area of the project north of U.S. Highway 101, including the locations of injection wells, monitoring wells, and conveyance pipelines, was largely undeveloped in 1947. By 1967, the Carpinteria Family School, St. Joseph's Catholic Church, and several single-family residences were constructed in the general vicinity of the project APE, though the area remained relatively rural and retained numerous orchards and other agricultural uses. By 1994, the entire vicinity of the APE north of U.S. Highway 101 was developed with numerous single-family residences.

4.3 Native American Outreach

Rincon assisted CVWD in fulfilling its Native American consultation efforts as part of the Section 106 process. Towards this end, Rincon contacted the Native American Heritage Commission (NAHC) on January 16, 2019 to request a Sacred Lands File (SLF) search of the APE and a 0.5-mile radius surrounding it. As part of this request, Rincon asked the NAHC to provide a list of Native American groups and/or individuals culturally affiliated with the area who may have knowledge of cultural resources within the APE. The NAHC responded on January 22, 2019 stating the results of the SLF search were positive with instructions to contact the relevant local Native American groups. Rincon sent letters to the NAHC-listed contacts on February 8, 2019 and followed up with contacts by telephone on February 12, 2019 (Appendix B).

On February 12, 2019, Patrick Tumamait of the Barbareño/ Ventureño Band of Mission Indians stated he advised cultural resource monitoring due to the extreme sensitivity of the area.

On February 12, 2019, Mona Tucker of the yak tityu tityu yak tiłhini – Northern Chumash Tribe stated she would defer to the local Native American group.

On February 12, 2019, Freddie Romero of the Santa Ynez Chumash stated an Extended Phase l study should be conducted. If that was not possible, he stated he wanted monitoring conducted.

4.4 Local Historic Consultation

On February 8, 2019, Rincon contacted three local historic groups to request input on potential or known historic resources within the APE or vicinity. These groups included: the Carpinteria Valley Historical Society/Museum of History, the Gledhill Library at the Santa Barbara Historical Museum, and the City of Carpinteria Community Development Department. Rincon followed up with these groups by email on February 18, 2019.

Steve Goggia at the City of Carpinteria Community Development Department responded via telephone on February 19, 2019 stating he and his colleague Nick Bobroff had responded to the project's notice of preparation (NOP) with cultural resources concerns about the project. Mr. Goggia provided a copy of the letter which stated depending upon the findings of the Phase I assessment, subsurface investigation or construction monitoring may be warranted. The letter also requested the list of landmarks within the city be updated to include Tar Pits Park (outside of the APE) and the Carpinteria Valley Baptist Church (outside but adjacent to the APE). Mr. Goggia did not identify any cultural resources within or near the APE that would be affected by the proposed project.

Nick Bobroff at the City of Carpinteria Community Development Department responded via email to provide information on previously evaluated historical resources in the City of Carpinteria near the APE. The following resources were identified adjacent to pipeline segments, but are outside of the APE and will not be impacted by the project:

- 750 Palm Ave: eligible for listing at local level
- 607 Walnut Ave: eligible for listing at local, state and national levels
- 908 Walnut Ave: eligible for listing at local level, may be eligible for listing at state or national levels
- 924 Walnut Ave: eligible for listing at local, state and national levels
- 800 Maple Ave: eligible for listing at local, state and national levels
- 5157 Eighth St (wall only): eligible for listing at local level
- 550 Linden Ave/5045 Sixth St: eligible for listing at local, state and national levels
- 686 Linden Ave: eligible for listing at local level
- 789 Linden Ave: eligible for listing at local level
- 890 Linden Ave: eligible for listing at local and state level

On February 25, 2019, Rincon made follow-up calls and left messages for both the Gledhill Library and the Carpinteria Valley Historical Society/Museum of History. David Griggs, director and curator of the Carpinteria Valley Museum of History, replied via telephone on February 26, 2019. He expressed concern for potential damage to the Portola Sycamore tree east of the plant and to the former Alcatraz Refinery Company site near the shore Both the Portola Sycamore tree and the former Alcatraz Refinery Company site are near but outside the APE and will not be affected by the project. Mr. Griggs asked how he could stay informed about the project's progress; Rincon provided him with the contact information.

As of the date of this report no response has been received from the Gledhill Library (Appendix C).

5 Field Survey

5.1 Methods

On January 30, 2019, Rincon Cultural Resources Specialist Dustin Merrick performed a field survey of the APE. The APE was surveyed using a combination of windshield and pedestrian survey methods to fully examine all exposed ground surface and document conditions. Mr. Merrick carefully examined all areas of exposed ground surfaces for artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, ceramics, fire-affected rock), ecofacts (marine shell and bone), soil discoloration that might indicate the presence of a cultural midden, soil depressions, and features indicative of the former presence of structures or buildings (e.g., standing exterior walls, postholes, foundations) or historic debris (e.g., metal, glass, ceramics). Ground disturbances such as burrows and drainages were also visually inspected. Transect spacing throughout the exposed surfaces of the APE was no less than 15 meters.

5.2 Results

The entirety of the APE is developed and lacks ground visibility, with the exception of the ocean outfall alignment, which traverses an unpaved area of Santa Cruz Campground at Carpinteria State Beach (Figure 3). Close attention was paid in this area for any indication of archaeological deposits that may be associated with CA-SBA-7. No artifacts or cultural remains were observed on the ground surface in this portion of the APE.

The WWTP is completely paved and developed with modern structures and does not contain any above-ground cultural resources (Figure 4). Per discussions with Mark Bennett of the Carpinteria Sanitation District, construction of past and existing WWTP facilities have greatly disturbed the underlying soils. Mr. Bennett indicated some of the components of the plant were constructed below grade, though the depth of disturbance is unclear (Mark Bennett, personal communication, January 30, 2019). Additionally, Craig Murray, the Carpinteria Sanitation District General Manager has indicated multiple instances of earth disturbance from plant construction and reconstruction activities up to a depth of 15-20 feet below current ground surface throughout the WWTP (personal communication, March 25, 2019).

The injection well areas are each either paved or landscaped and lack ground visibility. Injection Parcel 1 is located on the Carpinteria Family School property and covered primarily by portable buildings used as classrooms, pavement, and a baseball field. Prior to construction of the school, the area was in use as an agricultural field (HistoricAerials.com 2019). The parcel has been previously graded for installation of existing facilities and past agricultural activities and is unlikely to contain subsurface archaeological resources. No cultural resources were identified during the pedestrian survey of the Injection Parcel 1 area.

Injection Parcels 2 and 4 are each covered by parking lots and were likely graded for that purpose. Prior to being paved, both areas were in use for agricultural purposes. A small portion of Parcel 4 remains unpaved and was fully surveyed (Figure 5). No evidence of archaeological resources was identified in the unpaved area during the survey.

Injection Parcel 3 is an unpaved and vacant lot. The lot is surrounded by lighting indicating recreational use as a sports field. Ground visibility on this parcel was fair (roughly 70%) with minor obstruction caused by scattered grasses. No evidence of cultural resources was identified on Injection Parcel 3.

Figure 3 Area of Ocean Outfall Pipeline Alignment, Facing Southwest

Figure 4 View of WWTP, Facing Northwest

Figure 5 Injection Well Location 4, Facing South

Injection Parcel 5 encompasses Franklin Park, situated along the edge of a channelized Franklin Creek. The area is unpaved but likely represents fill placed during creek channelization. No evidence of cultural resources was identified during the pedestrian survey of this parcel.

Injection Parcel 6 has remained in use for agricultural purposes since as early as 1947 (HistoricAerials.com 2019). The property is currently occupied by large greenhouses and was therefore not able to be fully surveyed (Figure 6). However, spoil piles visible from historical aerials and the edges of the property indicate the property has been highly disturbed.

The proposed monitoring well locations are located primarily within paved roadways and were windshield surveyed. Monitoring wells may also be located in El Carro Park, which was surveyed on foot (Figure 7). The entirety of the park is covered with landscaped grass and lacked ground visibility. No cultural resources were identified in any of the monitoring well locations.

Areas where shell was reported on the north side of Carpinteria Creek were completely paved during the current survey and thus could not be carefully examined. Finally, the proposed pipeline alignments within existing roadways were fully developed and lacked any exposed ground surfaces (Figure 8).

Figure 6 Injection Well Location 6, Facing Northeast

Figure 7 Monitoring Well Location in El Carro Park, Facing South

Figure 8 Pipeline Alignment on the Intersection of Carpinteria Avenue and Walnut Avenue, Facing Northwest

6 Findings and Recommendations

The cultural resources records search, Native American outreach, historic group consultation, and field survey resulted in the identification of one previously recorded archaeological resource (CA-SBA-7), whose mapped boundary is adjacent to the project APE in the vicinity of the WWTP. A review of the extant data obtained from archaeological investigations conducted at CA-SBA-7 over the last 70 years indicates the site's substantial cultural deposits are concentrated on the eastern side of Carpinteria Creek outside of the APE. This finding is supported by test excavations conducted by Strudwick (2001) and Haley and York (1988) along the UPRR ROW, which found deposits west of the creek were limited to isolated shell fragments; no prehistoric artifacts or organic-rich midden deposits indicative of long-term use were identified by these studies in the vicinity of the project APE.

Discussions with CVWD personnel indicate the sediments underlying the WWTP have also been extensively disturbed up to 20 feet below current ground surface by the construction and reconstruction of plant facilities Based on these findings, it may be concluded even if cultural deposits associated with CA-SBA-7 were once present, it is likely these remains have been destroyed.

Results of the cultural resources assessment indicate no historic period built-environment resources are located within the APE. Although the WWTP was originally constructed over 50 years ago, it has since been completely rebuilt. Therefore, no buildings or structures on the property qualify for evaluation for the NRHP or CRHR.

Due to levels of previous disturbance throughout the APE, including in areas reportedly containing portions of CA-SBA-7, Rincon does not recommend any further work related to cultural resources. However, unanticipated discoveries are a possibility during ground disturbance. Rincon recommends a finding of ***less than significant impact with mitigation to historical and unique archaeological resources*** and presents the following recommendation in case of unanticipated discovery of cultural resources during project development. The project is also required to adhere to regulations regarding the unanticipated discovery of human remains, detailed below.

Previous studies indicate the deposits from CA-SBA-7 are located along the creek margins opposite the current APE. Previous testing along the APE also indicated only some shell fragments were noted subsurface in the vicinity of the APE. Based on the results of the current study and past testing results, Rincon recommends a finding of ***no effect to historic properties*** under Section 106 of the NHPA. Rincon recommends no further work be required under Section 106. Rincon assumes the State Historic Preservation Office will concur with this finding and will not require additional archaeological testing due to the amount of previous testing conducted in and near the project APE.

6.1 Unanticipated Discovery of Cultural Resources

If cultural resources are encountered during ground-disturbing activities, work in the immediate area must halt and an archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for archaeology (National Park Service 1983) should be contacted immediately to evaluate the find. If the discovery proves to be significant under the NHPA and/or

CEQA, additional work such as data recovery excavation and Native American consultation may be warranted to mitigate any significant impacts/adverse effects.

6.2 Human Remains

The discovery of human remains is always a possibility during ground disturbing activities. If human remains are found, the State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the County Coroner must be notified immediately. If the human remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission, which will determine and notify a most likely descendant (MLD). The MLD has 48 hours from being granted site access to make recommendations for the disposition of the remains. If the MLD does not make recommendations within 48 hours, the land owner shall reinter the remains in an area of the property secure from subsequent disturbance.

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Appendix F

Paleontological Resources Assessment

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Rincon Consultants, Inc.
209 East Victoria Street
Santa Barbara, California 93101
805 319 4092 OFFICE AND FAX
info@rinconconsultants.com
www.rinconconsultants.com

March 26, 2019
Rincon Project No: 17-05223

Rosalyn Prickett, AICP
Principal/Senior Water Resources Planner
Woodard & Curran
10509 Vista Sorrento Parkway, Suite 205
San Diego, California 92121
Via email: rprickett@woodardcurran.com

Subject: **Paleontological Resources Assessment for the Carpinteria Advanced Purification Project, Santa Barbara County, California**

Dear Ms. Prickett:

Woodard & Curran retained Rincon Consultants, Inc. (Rincon) on behalf of the Carpinteria Valley Water District (CVWD) to conduct a paleontological resource assessment for the Carpinteria Advanced Purification Project (CAPP or project) in Santa Barbara County, California. The assessment goals are to identify the geologic units potentially impacted by development of the project, determine the paleontological sensitivity of geologic units in the project area, assess potential for impacts to paleontological resources from development of the project, and recommend mitigation measures to reduce impacts to scientifically significant paleontological resources, as necessary. Attachment A contains the figures referenced in this report.

Project Location and Description

The project area is in the city of Carpinteria and unincorporated Santa Barbara County, California (Attachment A, Figure 1). Carpinteria is approximately 12 miles south of Santa Barbara and approximately 80 miles north of Los Angeles. Specifically, the project encompasses portions of Township 4 North, Range 25 West, Sections 20, 21, 28, and 29 on the Carpinteria, California, United States Geological Survey 7.5-minute topographic quadrangle.

The project will develop a sustainable, locally controlled water supply for CVWD. The recent critical drought and projected changes to the area's existing water supplies stress the importance and need for a local, sustainable water supply. The project would consist of a new Advanced Water Purification Facility Plant (AWPF) at the Carpinteria Sanitary District wastewater treatment facility, a purified water pump station, injection wells, monitoring wells, an approximately 6,100-linear-foot pipeline to convey purified water to the injection wells, and modification to the existing Carpinteria Sanitary District ocean outfall to accommodate the reduced brine flows from current conditions. All facilities in the project footprint would be located in the city of Carpinteria, aside from one potential well site (Injection Well #6) situated in an unincorporated area of Santa Barbara County (Attachment A, Figure 2). The AWPF would be located at the existing Carpinteria Sanitary District Wastewater Treatment Plant site at 5351 6th Street, approximately 0.1 mile from the Pacific Ocean, and adjacent to Carpinteria Creek. The injection well sites would be located approximately one mile north of the AWPF. Six potential injection well sites are identified, though only three would be selected as design continues and property rights are acquired. Conveyance pipelines between the AWPF and the injection wells would run mostly in the public roadway rights-of-way. The pipeline would cross U.S. Highway 101 at the Linden Street overpass.

Regulatory Setting

Fossils are remains of ancient, commonly extinct organisms, and as such are nonrenewable resources. The fossil record is a document of the evolutionary history of life on earth, and fossils can be used to understand evolutionary pattern and process, rates of evolutionary change, past environmental conditions, and the relationships among modern species (i.e., systematics). The fossil record is a valuable scientific and educational resource, and individual fossils are afforded protection under federal, state, and local environmental laws, where applicable.

This study has been completed in accordance with the requirements of the California Environmental Quality Act (CEQA) as well as federal regulations in the case a federal nexus is established during the course of project execution. A federal nexus may be established if federal funding is acquired and/or federal permitting is necessary. Compliance with both federal and state regulations allows the lead agency to apply the results of this technical study should a federal nexus be established at a later time. State and local regulations applicable to potential paleontological resources in the project area are summarized below.

Federal Regulations

A variety of federal statutes address paleontological resources specifically. They are applicable to all projects occurring on federal lands, and may be applicable to specific projects if the project involves a federal agency license, permit, approval, or funding.

The National Environmental Policy Act (United States Code, Section 4321 et seq.; 40 Code of Federal Regulations, Section 1502.25), as amended, directs federal agencies to “preserve important historic, cultural, and natural aspects of our national heritage (Section 101(b) (4)).” The current interpretation of this language includes scientifically important paleontological resources among those resources potentially requiring preservation.

The Paleontological Resources Preservation Act (PRPA) is part of the Omnibus Public Land Management Act of 2009 (Public Law 111-011 Subtitle D). The PRPA directs the Secretary of the Interior or the Secretary of Agriculture to manage and protect paleontological resources on federal land, and develop plans for inventorying, monitoring, and deriving the scientific and educational use of such resources. The PRPA prohibits the removal of paleontological resources from federal land without a permit, establishes penalties for violations, and establishes a program to increase public awareness about such resources. While specific to activity occurring on federal lands, some federal agencies may require adherence to the directives outlined in the PRPA for projects on non-federal lands if federal funding is involved, or the project includes federal oversight.

State Regulations

California Environmental Quality Act

Paleontological resources are protected under CEQA, which states in part a project will "normally" have a significant effect on the environment if it, among other things, will disrupt or adversely affect a paleontological site except as part of a scientific study. Specifically, in Section V(c) of Appendix G of the State CEQA Guidelines, the Environmental Checklist Form, the question is posed thus: "Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature." To determine the uniqueness of a given paleontological resource, it must first be identified or recovered (i.e., salvaged). Therefore, CEQA mandates mitigation of adverse impacts, to the extent practicable, to paleontological resources.

CEQA does not define "a unique paleontological resource or site." However, the Society of Vertebrate Paleontology (SVP) has defined a "significant paleontological resource" in the context of environmental review as follows:

> Fossils and fossiliferous deposits, here defined as consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are typically to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years) (SVP 2010).

The loss of paleontological resources meeting the criteria outlined above (i.e., a significant paleontological resource) would be a significant impact under CEQA, and the CEQA lead agency is responsible for ensuring that impacts to paleontological resources are mitigated, where practicable, in compliance with CEQA and other applicable statutes.

California Public Resources Code

Section 5097.5 of the Public Resources Code states:

> No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

Here "public lands" means those owned by, or under the jurisdiction of, the state or any city, county, district, authority, or public corporation, or any agency thereof. Consequently, public agencies are required to comply with Public Resources Code Section 5097.5 for their own activities, including construction and maintenance, and for permit actions (e.g., encroachment permits) undertaken by others.

Methods

Rincon evaluated the paleontological sensitivity of the geologic units which underlie the project area using the results of the paleontological locality search and review of existing information in the scientific literature concerning known fossils in those geologic units. Rincon submitted a request to the Los

Angeles County Museum (LACM) for a list of known fossil localities from the project area and immediate vicinity (i.e., localities recorded on the United States Geological Survey Carpinteria, California 7.5-minute topographic quadrangle), and reviewed geologic maps and scientific literature.

Rincon assigned a paleontological sensitivity to the geologic units in the project area. The potential for impacts to significant paleontological resources is based on the potential for ground disturbance to directly impact paleontologically sensitive geologic units. The SVP (2010) has defined paleontological sensitivity and developed a system for assessing paleontological sensitivity, as discussed below.

Paleontological Resource Potential

Significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, diagnostically important, or are common but have the potential to provide valuable scientific information for evaluating evolutionary patterns and processes, or which could improve our understanding of paleochronology, paleoecology, paleophylogeography, or depositional histories. New or unique specimens can provide new insights into evolutionary history; however, additional specimens of even well represented lineages can be equally important for studying evolutionary pattern and process, evolutionary rates, and paleophylogeography. Even unidentifiable material can provide useful data for dating geologic units if radiocarbon dating is possible. As such, common fossils (especially vertebrates) may be scientifically important, and therefore considered highly significant.

The SVP (2010) describes sedimentary rock units as having high, low, undetermined, or no potential for containing significant nonrenewable paleontological resources. This criterion is based on rock units in which significant fossils have been determined by previous studies to be present or likely to be present. While these standards were written specifically to protect vertebrate paleontological resources, all fields of paleontology have adopted these guidelines, which are given here verbatim:

I. **High Potential (Sensitivity).** Rock units from which significant vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered have a high potential for containing significant non-renewable fossiliferous resources. These units include but are not limited to, sedimentary formations and some volcanic formations which contain significant nonrenewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. Sensitivity comprises both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, or botanical and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, ecologic, or stratigraphic data. Areas which contain potentially datable organic remains older than Recent, including deposits associated with nests or middens, and areas which may contain new vertebrate deposits, traces, or trackways are also classified as significant.

II. **Low Potential (Sensitivity).** Sedimentary rock units that are potentially fossiliferous, but have not yielded fossils in the past or contain common and/or widespread invertebrate fossils of well documented and understood taphonomic, phylogenetic species and habitat ecology. Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potentials for yielding significant fossils prior to the start of construction. Generally, these units will be poorly represented by specimens in institutional collections and will not require protection or salvage operations. However, as excavation for construction gets underway it is possible that significant and unanticipated paleontological resources might be encountered and require a change of classification from Low to High Potential and, thus, require monitoring and mitigation if the resources are found to be significant.

III. **Undetermined Potential (Sensitivity).** Specific areas underlain by sedimentary rock units for which little information is available have undetermined fossiliferous potentials. Field surveys by a qualified vertebrate paleontologist to specifically determine the potentials of the rock units are required before programs of impact mitigation for such areas may be developed.

IV. **No Potential.** Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources.

Existing Conditions

Regional Geologic Setting

The project area is located in the Carpinteria Valley in a seismically active region of Santa Barbara County in the Transverse Ranges geomorphic province of California (California Geological Survey 2002). The Transverse Ranges extend from southwestern San Bernardino County, westward through northern Los Angeles County and Ventura County, and terminate at the Pacific Ocean near Point Arguello in western Santa Barbara County. The Transverse Ranges near the project area include the Santa Ynez Mountains and are characterized by east-west trending faults, and folds, including the active San Andreas fault (Norris and Webb 1990; Upson and Thomasson 1951).

The Carpinteria Valley is situated in an area referred to as the Santa Barbara Fold Belt, a seismically-active region located along the coastal piedmont (the area between the mountains and the ocean) from east of Carpinteria to west of Goleta (Gurrola et al. 1998). The Santa Barbara Fold Belt consists of west to northwest trending folds and blind reverse faults deforming late Pleistocene to Holocene marine terraces, terrace deposits, and alluvial fans (Gurrola et al. 1998). This deformation is thought to have yielded localized topographic highs in the Carpinteria Valley, such as the Shepard Mesa and Summerland Hills. Surficial deposits in the Carpinteria Valley are comprised of Holocene-aged stream channel, floodplain, and alluvial fan deposits of gravels, sands, and silt.

The project includes two geologic units mapped at the surface (Attachment A, Figure 3): Quaternary alluvium (Qa) and Quaternary beach sand deposits (Qs) (Dibblee and Ehrenspeck 1986; Minor et al. 2009). Quaternary young alluvium was deposited during the Holocene to latest Pleistocene and is composed of unconsolidated and poorly sorted alluvial sand, gravel, and silt of modern drainages and piedmont alluvial fans (Dibblee and Ehrenspeck 1993). Surficial Holocene alluvium, particularly deposits younger than 5,000 years old, are too young to preserve fossils. However, Holocene sediments may grade into older Quaternary (Pleistocene) alluvial deposits which may preserve fossil remains.

Older Quaternary terrestrial alluvium and marine terrace deposits (Qoa) are not mapped at the surface of the project area; however, Dibblee and Ehrenspeck (1986) and Minor et al. (2009) mapped these Pleistocene deposits nearby at the ground surface. The Pleistocene deposits are likely present at moderate depth beneath the younger Holocene alluvium in the project area, and are composed of weakly to moderately consolidated, moderately bedded, pebble-cobble gravel and conglomerate, pebbly to conglomeratic sand and sandstone, and silt and siltstone. They include a fossiliferous basal conglomerate deposited on wave-cut platforms and overlain by beach, aeolian, and alluvial sediments (Minor et al. 2009). Pleistocene deposits have a well-documented record of abundant and diverse vertebrate fauna throughout California, including Santa Barbara County (Dibblee 1966). Fossil specimens of sabre-toothed cat, bison, crow, dire wolf, skunk, lion, weasel, pocket mouse, pocket gopher, mollusk, foraminifera, and coral have been reported in the vicinity of the project area (McLeod 2019; University of California Museum of Paleontology [UCMP] 2019; Shaw and Quinn 2015).

Despite not being mapped in the project footprint, it is important to note the adjacent bluff exposures of the Miocene Monterey Formation. These deposits are unconformably overlain by the Pleistocene alluvium and marine terrace deposits immediately adjacent to the southeast portion of the study area (Minor et al. 2009). These deposits are composed of calcareous, siliceous, and phosphatic mudstone and shale, which have yielded an abundance of fossil specimens including birds, fish, sea lions, sea cows, porpoises, whales, and sharks (UCMP 2019; McLeod 2019) (Attachment A, Figure 3).

Museum Fossil Locality Records

A search of the paleontological locality records at the LACM resulted in no previously recorded fossil localities in the project area; however, several vertebrate localities have been recorded nearby in Pleistocene alluvial deposits (which may underlie the project area at moderate depth below the younger Holocene surficial deposits). The closest vertebrate fossil locality, LACM (CIT) 139, is located just southeast of the project area along the coast of Carpinteria. This late Pleistocene locality has yielded several fossil specimens of crow (*Corvus caurinus*), extinct lion (*Felis atrox*), skunk (*Mephitis mephitis, M. occidentalis, Spilogale phenax*), weasel (*Mustela*), fox (*Urocyon cinereoargenteus*), dire wolf (*Canis dirus*), sabre-tooth tiger (*Smilodon sp.*), pocket mouse (*Perognathus*), pocket gopher (*Thomomys bottae*), and Bison (*Bison sp.*) with depth of recovery unreported.

Results

Paleontological Resource Potential of the Project Area

In accordance with SVP (2010) guidelines, Rincon determined the paleontological sensitivity of the project area based on a literature review and museum locality search. Quaternary alluvium (Qa) and Quaternary beach sand deposits (Qs) mapped at the surface of the project area have been assigned a low paleontological sensitivity because Holocene sedimentary deposits, particularly those younger than 5,000 years old, are generally too young to contain fossilized material. The Holocene sediments may be underlain by older Quaternary (Pleistocene) alluvial and marine terrace deposits (Qoa), assigned a high resource potential, at moderate depth of approximately 15 feet below ground surface (bgs), based on a geotechnical study conducted in the vicinity of the project area (Rincon Consultants, Inc. 2006). Although not exposed at the surface in the project area, it is necessary to account for the buried Pleistocene alluvial deposits due to their high paleontological resource potential. Refer to Table 1 for paleontological sensitivity in the project area.

Table 1 Paleontological Sensitivity of the Geologic Units in the Project Area

Geologic Unit[1]	Unit Symbol	Typical Fossils	Paleontological Sensitivity[2]
Quaternary Alluvium	Qa	None	Low at surface
Quaternary Beach Sand Deposits	Qs	None	Low
Older Quaternary Alluvium (not mapped at the surface of the project area, but may present in the subsurface)	Qoa	Nonmarine and marine mammal	High

Impact Analysis

The Holocene age deposits mapped at the surface of the project area have a low paleontological sensitivity. Based on the findings of previous geotechnical work (Rincon Consultants, Inc. 2006), Holocene alluvium overlies the paleontologically-sensitive Pleistocene alluvium and marine terrace deposits to a depth of approximately 15 feet bgs; therefore, impacts to paleontological resources are not expected above 15 feet bgs. As currently proposed, project ground disturbance will reach a maximum depth of 20 feet bgs during excavation for the AWPF. However, previous excavation activities across the project site have disturbed the sediments to an estimated depth of 20 feet bgs. As a result, impacts to paleontological resources are not anticipated. Further paleontological resource management is not recommended unless paleontologically-sensitive strata are unexpectedly encountered during ground disturbance resulting in the discovery of unanticipated resources during the course of the project.

Recommendations

Rincon does not recommend any further paleontological resources work at this time; however, the following measures are recommended in the case of unanticipated fossil discoveries. This measure would apply to all phases of project construction and would ensure that any unanticipated fossils present on site are preserved.

- In the event an unanticipated fossil discovery is made during the course of the project development, then in accordance with SVP (2010) guidelines, a qualified professional paleontologist should be retained in order to examine the find and to determine if further paleontological resources mitigation is warranted.

If you have any questions regarding this Paleontological Resources Assessment, please contact us.

Sincerely,
Rincon Consultants, Inc.

Jorge Mendieta, BA
Associate Paleontologist

Jessica DeBusk, BS, MBA
Principal Investigator/Program Manager

Jennifer Haddow, PhD
Principal Environmental Scientist

Attachments

Attachment A Figures

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WOODARD &CURRAN

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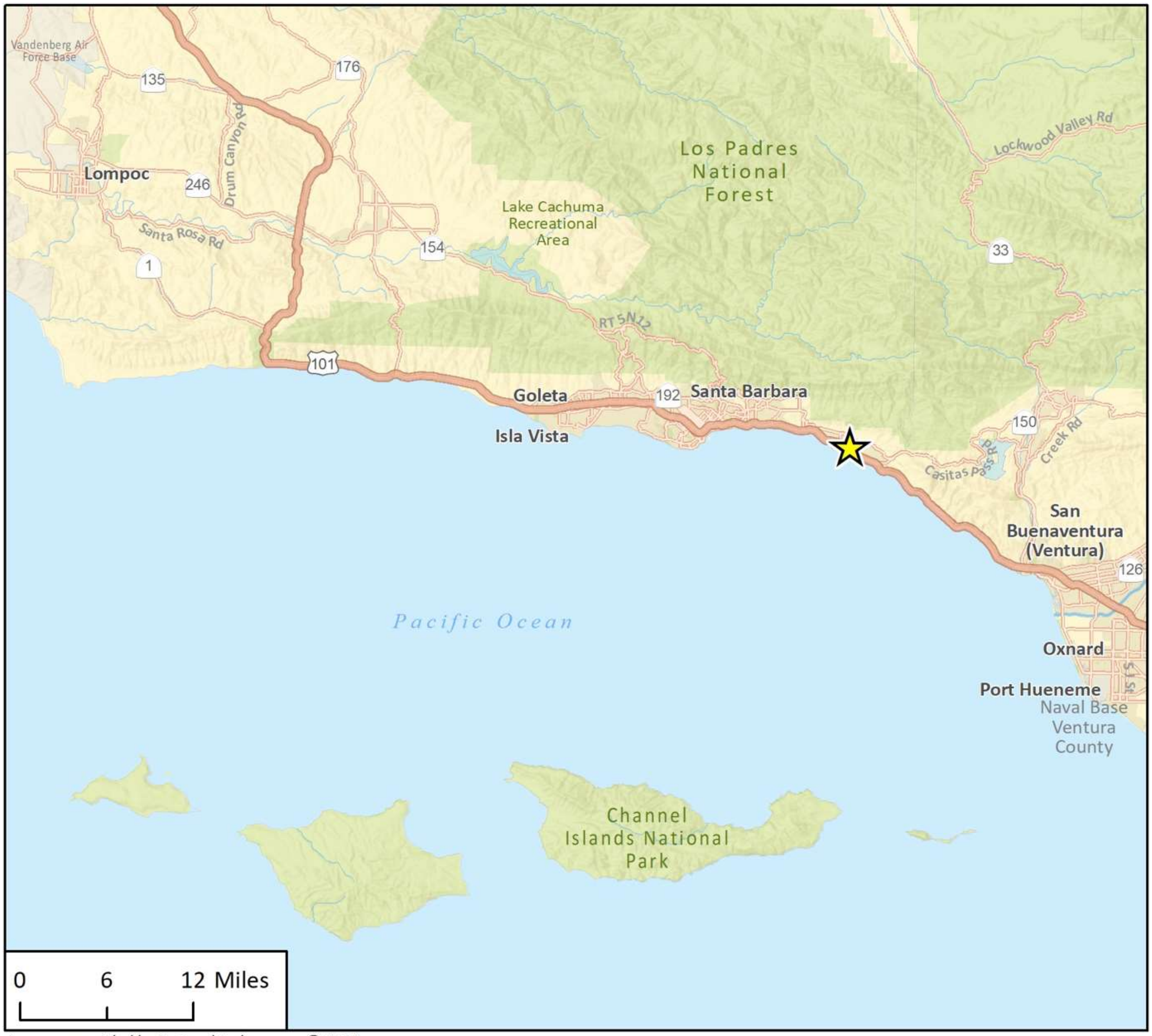
Attachment A

Figures

Figure 1 Project Vicinity Map



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Project Location

N

Fig 1 Regional Location

Figure 2 Map of the Project Area and Disturbance Footprint

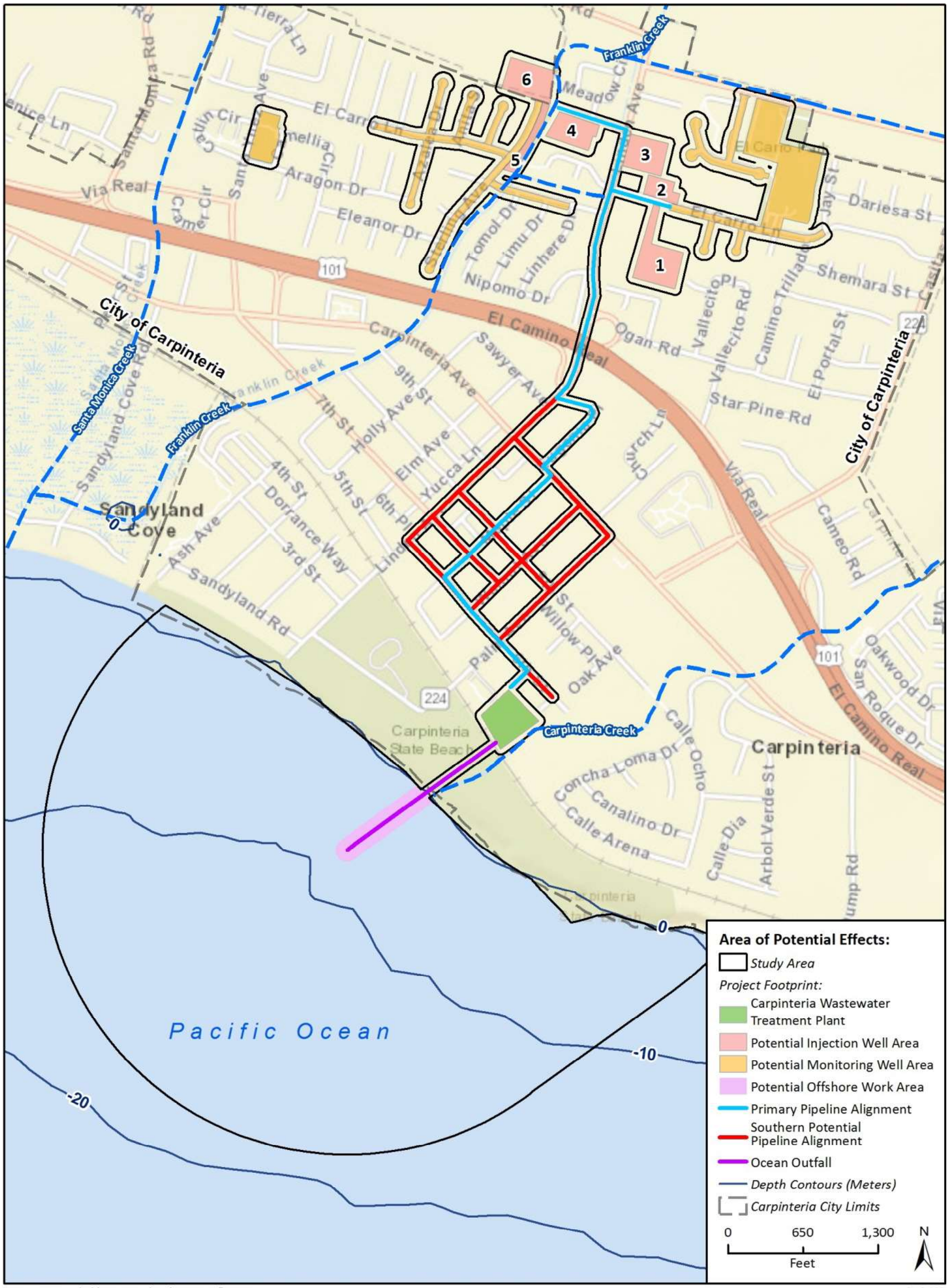

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Fig 2 APE

Figure 3 Geologic Units in the Project Area

Geological basemap provided by Dibblee, T.W., and Ehrenspeck, H.E., ed., 1986,
Geologic map of the Carpinteria quadrangle, Santa Barbara County, California: Dibblee Geological Foundation, Dibblee Foundation Map DF-04, scale 1:24,000

Fig 2 Geologic Units and Paleontological Sensitivity of the Project Area

Appendix G

EnviroStor and GeoTracker Maps

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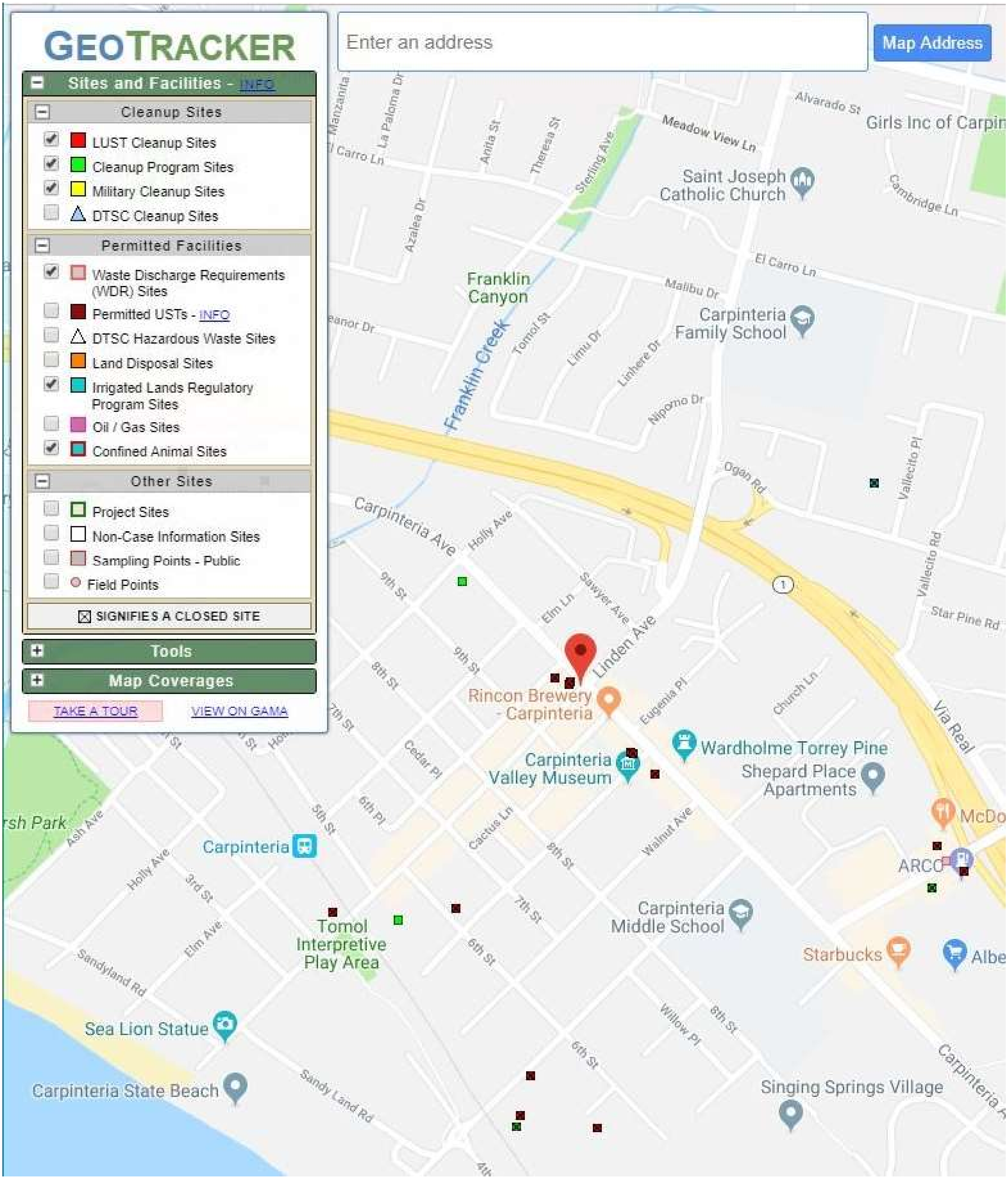
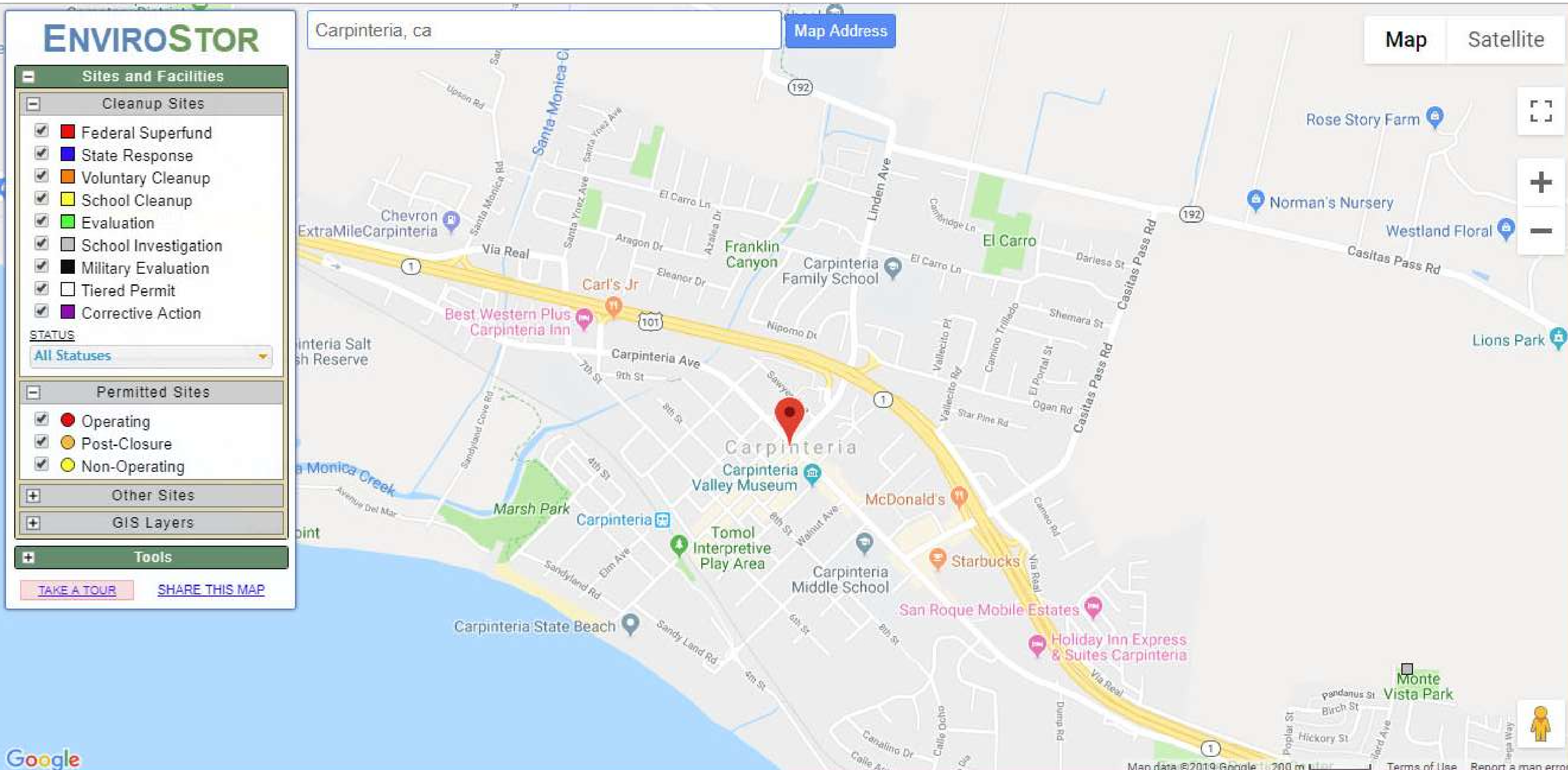


GEOTRACKER
Enter an address
Map Address
Sites and Facilities - INFO
Cleanup Sites
LUST Cleanup Sites
Cleanup Program Sites
Military Cleanup Sites
DTSC Cleanup Sites
Permitted Facilities
Waste Discharge Requirements (WDR) Sites
Permitted USTs - INFO
DTSC Hazardous Waste Sites
Land Disposal Sites
Irrigated Lands Regulatory Program Sites
Oil / Gas Sites
Confined Animal Sites
Other Sites
Project Sites
Non-Case Information Sites
Sampling Points - Public
Field Points
SIGNIFIES A CLOSED SITE
Tools
Map Coverages
TAKE A TOUR
VIEW ON GAMA
Saint Joseph Catholic Church
Franklin Canyon
Franklin Creek
Carpinteria Family School
Carpinteria Ave
Linden Ave
Rincon Brewery - Carpinteria
Carpinteria Valley Museum
Wardholme Torrey Pine
Shepard Place Apartments
Carpinteria
Tomol Interpretive Play Area
Carpinteria Middle School
Starbucks
ARCO
Sea Lion Statue
Carpinteria State Beach
Singing Springs Village
Via Real
Meadow View Ln
El Carro Ln
Malibu Dr
Ogan Rd
Star Pine Rd
Sandyland Rd
Sandy Land Rd



SITES CURRENTLY VISIBLE ON MAP — 1 SITES LISTED — EXPORT THIS LIST TO EXCEL

PROJECT NAME	STATUS	PROJECT TYPE	ADDRESS	CITY
KESTER PROPERTY SCHOOL SITE	NO ACTION REQUIRED	SCHOOL INVESTIGATION	1101/1103 BAILARD AVENUE	CARPINTERIA

Appendix H

Sea Level Rise
Summary Technical Memorandum

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COMMITMENT & INTEGRITY
DRIVE RESULTS

10509 Vista Sorrento Parkway #205
San Diego, CA 92121
www.woodardcurran.com

T 800.426.4262

MEMORANDUM

TO: Rosalyn Prickett, Rob Morrow

CC: Sally Johnson

FROM: Enrique Lopezcalva

DATE: March 25, 2019

RE: Carpinteria Advanced Purification Project – Sea Level Rise Vulnerability

---

This memorandum presents a summary of information related to Carpinteria Sanitary District's Wastewater Treatment Plant (WWTP) site vulnerability to sea level rise (SLR) and fluvial flooding, as presented in relevant documents. The main purpose of this memorandum is to deconstruct the complexity of the analysis typically associated with SLR vulnerability studies and simplify results specifically related to the WWTP site. The main sources of information on which the vulnerability summary is based are the *Final City of Carpinteria Coastal Vulnerability and Adaptation Project* (CCVAP) (City of Carpinteria, 2019) and the report *Rising Seas in California, an Update on Sea Level Rise Science* (Griggs, G, et. al. 2017) with guidance from the California Ocean Science Trust.

Background for Results Interpretation

Factors associated with vulnerability assessment of coastal infrastructure generally can include both long term trends and event-based impacts. Long term trends include SLR and coastal erosion, while events that trigger vulnerability include extreme tides, waves, El Niño thermal expansion, vertical land movement under seismic episodes, and storm-related elements such as storm surge and fluvial flooding. Climate change science predicts that two key factors of vulnerability, meaning sea level and extreme precipitation, will be impacted, with sea levels forecasted to rise and precipitation changing in intensity and pattern. Vulnerability assessments typically combine factors that are likely to be combined in natural conditions such as higher sea levels in the future coupled with the associated coastal erosion, the wave action and storm surge associated with a storm, and the precipitation in land potentially compounding flooding conditions.

The CCVAP was selected as the main source of information to analyze the WWTP site vulnerability due to three main considerations:

1) The study considers local conditions and setting and looks at a comprehensive list of coastal hazards specifically on the City of Carpinteria coast line based on the *Santa Barbara County Coastal Hazard Modeling and Vulnerability Assessment* (Revell Coastal and ESA, 2016)

2) The study explores the WWTP site vulnerability specifically, as part of its analysis

3) The study comprehensively analyzes and addresses the hazard factors described above, relevant to coastal vulnerability

Coastal vulnerability studies and fluvial flooding assessments have been conducted historically, including the Federal Emergency Management Agency (FEMA) analysis that delineates the floodplain under the 100-yr storm event and FEMA coastal storm flooding analyses. SLR, however, is a new dimension of vulnerability that has the potential to significantly change the exposure to hazards. SLR forecast vary primarily based on three factors:

1) Assumptions about the concentration of greenhouse gases (GHGs) in the atmosphere in the future, as defined by Reasonable Concentration Pathways (RCPs).

2) The forecast of steric (density) changes in the ocean (primarily due to thermal expansion). This thermal expansion is, in turn, forecasted to be different under the different assumptions on RCPs.

3) The model uncertainty associated with the land-ice dynamics and the contribution to sea level by land ice sheets melting into the ocean. This is expected to be the largest influence in SLR and, just as the thermal expansion in the ocean, is forecasted differently under different RCPs.

Given the uncertainty associated with the three factors above, international, national, sub-national and state agencies and organizations have worked with scientists to define guidelines to select SLR scenarios and levels for local planning and vulnerability assessments. The CCVAP follows the guidelines of the California Ocean Protection Council Science Advisory Team Working Group, the California Ocean Science Trust, and the California Coastal Commission, and uses sound science and engineering methods and practices. The CCVAP bases many of the conclusions on coastal hazards on the 2016 *County of Santa Barbara Coastal Resilience Project* (Revell Coastal and ESA, 2016). The report is also consistent with science and findings under the *California Fourth Climate Assessment* (Pierce, et, al., 2018) and compares its results with forecasts developed by USGS's Coastal Storm Modeling System version 3.0 (CoSMoS 3.0).

A key feature of the guidelines currently in use in California is the recognition of the uncertainty associated with forecasts and the use of ranges and probabilities in the description of potential future conditions of sea level. This memorandum preserves the probabilistic approach in the summary of the WWTP site vulnerability in the next section.

Identified Vulnerabilities

The CCVAP includes a comprehensive scope of sectors analyzed for vulnerability including transportation, land use parcels and structures, hazard material sites, stormwater infrastructure environmentally sensitive areas, and others. Included in the sectors is the wastewater infrastructure (sewer lines and lift stations and the WWTP) using information from the County Public Works and Carpinteria Sanitary District. The report overlays the geospatial relevant elements of the wastewater sector to the hazards evaluated, which include:

- Tidal inundation
- Coastal storm wave flooding
- Barrier beach flooding
- Wave run up
- Coastal erosion (short- and long-term)
- And combined coastal hazards
- 100-yr storm fluvial flooding (not combined with the hazards above)

All these hazards were evaluated in multiple future years including scenarios of SLR in each future year. Detailed description of hazard modeling is included in the 2016 *County of Santa Barbara Coastal Resilience Project* (Revell Coastal and ESA, 2016). It is notable that thermal expansion associated with El Niño events is not included in the analysis and could represent a considerable additional influence in sea level. Vertical land movement (under earthquake and other conditions) is also not part of the conditions evaluated.

The fluvial flooding hazard in the CCVAP is based on FEMA modeling and thus, does not account for forecasted precipitation intensity changes due to climate change. The 2016 *County of Santa Barbara Coastal Resilience Project* includes considerations of scenarios with increased intensities and shows larger areas impacted under the 100-yr storm event in 2100 as compared to today and mid-century forecasts (See Figure 9 in the *Santa Barbara County Coastal Hazard Modeling and Vulnerability Assessment*, ESA, 2015)

Key results for the WWTP site, after consideration of the multiple scenarios and hazards evaluated, are summarized here. The WWTP site is forecasted to be impacted by flooding under the following conditions:

- Fluvial flooding under 100-yr storm
- Fluvial flooding under 500-yr storm
- Combined hazard scenarios (including a 1% annual chance storm event under SLR conditions) once SLR reaches levels of approximately 5 ft over current mean sea levels

Coastal sewer lines and lift stations are forecasted to be impacted by flooding earlier in the SLR curve, with persistent seawater infiltration once SLR reaches 1 ft over current mean sea level (Section 6 in the CCVAP).

There are several flood-prone areas within the City of Carpinteria, generally located in low-lying areas near creeks and the coast. The FEMA Flood Insurance Rate Map (FIRM) dated 2018 shows the WWTP site is located in a Special Flood Hazard Zone (land area covered by the floodwaters of the base flood) and the WWTP itself is located within Zone X, indicating a 500-yr storm probability or 0.2% annual chance flood (FEMA, 2018a). In April 2018, FEMA issued a Letter of Map Revision (LOMR) which mapped a majority of the WWTP site in the Regulatory Floodway of Carpinteria Creek. In May 2018, the City issued a *Carpinteria Creek No-Rise Determination and Certification* (River Focus, 2018) that demonstrated proposed development on the WWTP site would have no impact on the revised FEMA Regulatory Floodway or base flood elevation (BFE). Subsequently, CSD prepared a comprehensive appeal to the April 2018 proposed LOMR. This appeal is currently being reviewed by FEMA and if upheld would reflect a regulatory floodway that remains within the primary channel of Carpinteria Creek and does not include the WWTP site. Note that the *Santa Barbara County Coastal Hazard Modeling and Vulnerability Assessment* (ESA 2015) fluvial flooding assessment also shows the WWTP site as vulnerable under 100-yr storm conditions, although it is not clear if those simulations and/or results are based on FEMA information and/or assumptions.

Results Interpretation

Given the complexity of the analysis and the level of uncertainty associated with forecasts, the results need to be interpreted in either a temporal dimension (when is the site vulnerable) or a probabilistic dimension (what is the likelihood that the conditions of vulnerability will be present), or both. The table below presents a summary of the results under this perspective.

Table 1: Projected Sea Level Rise at WWTP Site

	Year				
Condition/Event	**2020**	**2060**	**2080**	**2100**	**2150**
100-yr Storm[1]	1%	1%	1%	1%	1%
500-yr Storm[1]	0.2%	0.2%	0.2%	0.2%	0.2%
5-ft SLR[2,3]	0%	~1%	~1%	~2%	>30%

[1] Annual Probability

[2] Probability that SLR is 5 ft over current mean sea level in that year.

[3] An additional forecast of SLR is available, more extreme, referred to as the H++ scenario. It has been generated under different assumptions and methods that don't allow to establish a probability. Under H++ scenario, the 5ft SLR condition could be reached in Carpinteria as early as 2070.

In Table 1 above, the fluvial flooding events' (first two rows) probability represent the probability of those events happening in any given year (1% and 0.2% annual probability). They are mutually exclusive in terms of when the event happens (at any given time, we can only have the 100-yr storm or the 500-yr storm).

The probability listed on Table 1 for SLR condition should not be interpreted as an annual probability (there is not a return period for SLR). Instead, the SLR probability needs to be interpreted as the likelihood of the condition to be reached by that year. But once the 5-ft SLR condition is reached, it becomes permanent with forecasts indicating that levels will only increase over time. Thus, the combined probability of the SLR condition and the storm condition should not be treated as joint probabilities (with a likelihood equal to the product of the two individual events). As mentioned, once the SLR condition is reached, it becomes permanent (sea level is at that level or worse) and the annual probability of the fluvial flooding continues to be 1% and 0.2% annually for the two events.

An important consideration in the vulnerability assessment in the CCVAP is that fluvial flooding and SLR-driven hazards were not combined in the analysis. Vulnerability did include a SLR condition combined with a storm (a storm with an annual probability of 1%), but that storm was imposed on the ocean/coast only and not on the precipitation inland.

From the temporal perspective, results indicate that the WWTP site is vulnerable to some hazards (specifically the 100-yr storm fluvial flooding and 500-yr storm fluvial flooding) now and into the future. Results also indicate that vulnerability driven by SLR combined with coastal hazards is not a concern before late in the century (2070 under H++ and later under other hazards).

For the lifecycle of the current Proposed Project, and well beyond that through 2100, sea level rise does not represent a significant hazard. The CSD WWTP is relatively well protected by its existing design and exterior berm. However, the CSD's wastewater collection system and pump facilities will need to address seawater intrusion earlier in this century (likely 2080 timeframe), as those facilities have relatively lower profiles.

References

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Appendix I

Groundwater Model Information

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TECHNICAL MEMORANDUM
Pueblo Water Resources, Inc.
4478 Market St., Suite 705
Ventura, CA 93003
Tel: 805.644.0470
Fax: 805.644.0480

To:	Carpinteria Valley Water District	Date:	March 15, 2019
Attention:	Robert McDonald, P.E. General Manager	Project No:	15-0099
Copy to:	Rob Morrow, P.E. Project Manager (Woodard & Curran)		
From:	Robert Marks, P.G., C.Hg.		
Subject:	Carpinteria Advanced Purification Project – Groundwater Model Simulation Results **DRAFT**		

INTRODUCTION

GENERAL STATEMENT

Presented in this Technical Memorandum (TM) is a summary of groundwater modeling simulation results performed for the Carpinteria Advanced Purification Project (CAPP). The subject analysis was performed to evaluate various operational scenarios for the proposed CAPP project to evaluate whether acceptable groundwater level mounding and minimum aquifer retention times can be achieved by the project. This TM discusses the hydrogeologic setting, the groundwater model used, and the results of three simulated project operational scenarios.

BACKGROUND

The Carpinteria Valley Water District (CVWD) recently completed a Recycled Water Facilities Plan, which identified Groundwater Replenishment (GWR) in the Carpinteria Groundwater Basin (CGB) via Indirect Potable Reuse (IPR) injection wells as the preferred end use of potential future advanced treated wastewater (ATW) sourced from the Carpinteria Wastewater Treatment Plant (CWWTP). Work performed previously by PWR in support of the IPR project has included a well siting study for project IPR wells and groundwater modeling of initial IPR project operational scenarios. The results of this previous work identified several potential IPR wells sites in the basin that were physically suitable to support IPR well construction and permanent facilities.

Five properties were identified in the basin by the well siting study that could potentially accommodate IPR well sites and are shown on **Figures 1 and 2**. As shown, the potential IPR wells sites are concentrated in a relatively small area of the basin and are located between two of CVWD's most productive municipal supply wells, the Headquarters Well (29D7) and the El Carro #2 Well (28D2). The final IPR well site selection process is currently ongoing; however, for purposes of this groundwater modeling evaluation, all of the potential IPR well sites under consideration overlie the Confined Area of the CGB, and subsurface stratigraphy (depths and thicknesses of the various aquifers) and aquifer hydraulic parameters are not likely to vary significantly from site to site in this area of the basin; therefore, it is assumed that the anticipated well completions, well performance characteristics (injection rates) and injected water travel/residence times will not vary significantly between the potential IPR well sites.

The primary purpose of the groundwater modeling was to evaluate aquifer water level responses to various operational scenarios and to predict aquifer travel paths and residence times of the injected water sourced from the CWWTP. The predicted water levels at the IPR injection wells must be maintained below ground surface in order to sustain injection capacities and avoid adverse impacts (e.g., groundwater “daylighting” at the ground surface). In addition, current state regulations require the recycled wastewater to be retained within the aquifer system for specified periods of time before being captured and pumped by a water supply well used for drinking water purposes. The amount of aquifer residence time required is dependent on the level of treatment achieved by the AWT system; for the CAPP project it is our understanding that the residence time requirements may vary between 2 to 4.5 months, depending on the final design selected for the AWT.

FINDINGS

HYDROGEOLOGIC SETTING

Regional Setting

The CGB has been studied extensively over the last 60 years in previous investigations, most notably by the United States Geological Survey (USGS), *Geology and Ground Water Reservoirs of the South-Coast Basin of Santa Barbara County, California,* USGS Water Supply Paper 1108, J.E. Upson, 1951, Geotechnical Consultants, Inc. (GTC), *Hydrogeologic Investigation of Carpinteria Ground Water Basin*, dated June 1976, and most recently by Pueblo Water Resources, Inc. (PWR), *Hydrogeologic Update and Groundwater Model Project*, dated June 2012. These documents have extensively documented the stratigraphy, structure, and hydraulic characteristics of the aquifer systems of the CGB.

As described in these documents, the CGB is located on the south flank of the Santa Ynez Mountains, one of the east-west trending ridges of the Transverse Range Geomorphic Province. The basin represents the north limb of a structural syncline that has been filled with water bearing sediments. The principal aquifers occur primarily within marine sediments of the Pleistocene- and upper Pliocene-aged Carpinteria and Casitas Formations. These principal zones include Aquifers A, B, C, and D, with Aquifer A representing the shallowest major aquifer and Aquifer D being the deepest. Geologically, Aquifer A likely represents the basal conglomerate of the Carpinteria Formation, whereas Aquifers B, C, and D are contained within the Casitas Formation. The base of Aquifer D is considered to represent the effective base of freshwater in the basin (GTC) and is generally 1,200 to 1,700 feet below sea level in the basin.

Lithologically, primary water bearing deposits in the basin consist of interbedded unconsolidated and semi-consolidated sand, gravel, silt and clay (and combinations thereof) deposits. The coarser grained sandy/gravelly strata in these deposits comprise the individual primary aquifer zones (i.e., Aquifers A through D). These primary aquifer zones are generally on the order of 50 to 100 feet thick each. Finer grained strata of silt and clay are generally thicker and form a series of aquitards between the primary aquifer zones. These aquitards are laterally extensive in the basin and confine water held in the primary aquifers under artesian pressure. The CVWD's two primary production wells in the basin (Headquarters and El Carro Wells) and are completed in Aquifers A through C, and these are also the target aquifers for the project IPR injection wells.

Hydrostratigraphy

The hydrostratigraphy of the potential IPR well sites can be established from the aquifer structural contours developed as part of PWR's 2012 hydrogeologic update for the basin, which indicate the following approximate (+/- 50 ft depending on site) stratigraphic delineation at the sites:

Table 1. IPR Well Site Stratigraphy

Aquifer Zone	Depths (ft bgs)	Thickness (ft)
A	280 – 340	60
B	930 – 990	60
C	1100 – 1200	100

Well Performance and Capacities

Wells completed in the target Aquifers A - C generally produce water at rates ranging from approximately 500 gpm to 1,500 gpm, with specific capacities[1] in the range of 3 to 16 gpm/ft. Specifically, for this project, pumping test data for the Headquarters (HQ) and El Carro #2 (EC #2) wells following their construction both indicated sustainable production rates of approximately 1,500 gpm, with 24-hour specific capacities of approximately 7 and 9 gpm/ft, respectively.

Both the HQ and EC #2 wells have also been analyzed for injection capacity and performance as part of previous investigation of Aquifer Storage and Recovery (ASR) technology in the CGB by CVWD[2,3]. These investigations included the performance of pilot/demonstration injection testing using potable water at each well. Analysis of the various

[1] Specific capacity is the ratio of well discharge rate to drawdown. Units are typically expressed as gallons per minute per foot of drawdown (gpm/ft). The value is useful for normalizing and comparing performance between different wells and for predicting the performance of a given well at differing discharge rates.
[2] Padre Associates, Inc. (2003), *Aquifer Storage and Recovery Demonstration Project*, report prepared for Carpinteria Valley Water District.
[3] Pueblo Water Resources, Inc. (2013), *EC #2 ASR Demonstration Project; Summary of Operations*, draft Technical Memorandum prepared for Carpinteria Valley Water District.

factors affecting injection capacities (e.g., water level mounding, backflushing capacity, hydrofracturing potential, etc.) and the pilot injection testing data resulted in estimated long-term sustainable injection capacities for the HQ and EC#2 wells of approximately 300 and 400 gpm, respectively. Accordingly, an average per-well injection rate of 350 gpm (0.5 million gallons per day [mgd]) has been adopted for the project IPR injection wells.

GROUNDWATER MODEL DESCRIPTION

The three-dimensional calibrated groundwater flow model used is the Carpinteria Groundwater Basin Model, which was developed by the CVWD in 2012 and is documented in a report prepared by PWR[4] (with assistance from HydroMetrics Water Resources, Inc.), the details of which will not be repeated here. In summary, the USGS model code MODFLOW-NWT (Niswonger et al., 2011) is used and the model domain encompasses the basin boundaries covering an area of approximately 36 square miles. The model grid consists of 72 rows and 156 columns with a uniform grid spacing of 300 feet. The model consists of seven active layers in the project area and include:

- Layer 1: Shallow aquifer
- Layer 2: Aquifer A
- Layer 3: Aquitard
- Layer 4: Aquifer B
- Layer 5: Aquitard
- Layer 6: Aquifer C
- Layer 7: Undifferentiated deposits

The model was calibrated to a base period consisting of Water Years (WY) 1985 – 2008 with annual stress periods. The mean error (ME) of the calibrated model is -1.7 feet, which is approximately 0.5 percent of the total head range, indicting that the model errors are significantly less than the industry standard of 5 percent.

Model Refinements

For this project, the model grid was refined to uniform grid spacing of 37.5 feet in the vicinity of the project IPR injection wells to facilitate particle tracking. The area of model grid refinement is shown on **Figure 1**. The model water balance and water level hydrographs for key wells in the vicinity model were verified to have no significant changes relative to calibrated baseline scenario as a result of the grid refinement.

Particle tracking using the USGS MODPATH program was added to the model to determine injected water travel paths and distances and retention times of the recycled water. It is noted that MODPATH does not take into account mixing or dispersion; therefore, the MODPATH results provide only an indication of the direction and rate of groundwater flow. Using MODPATH, particles are released from the simulated IPR injection wells at the beginning of any given scenario. MODPATH then uses the groundwater levels and flows simulated by MODFLOW to show where particles representing the injected recycled water travels to by specified times.

GROUNDWATER MODELING SCENARIOS

A total of three project operational scenarios were simulated, as summarized below:

1. IPR Injection Only: Added the two IPR wells injecting at 0.5 mgd each continuously throughout the 24-yr model base period (WY 1985 – 2008) to evaluate water-level responses at the IPR wells.

2. IPR "Put-and-Take": Same as Scenario 1 but increased the pumping rates of both the HQ and EC#2 wells by 0.5 mgd ea to match the injection rate. This represents a potential long-term basin operational management strategy.

3. IPR with HQ and EC#2 1-Yr Max Pumping: Increased the pumping rate of both HQ and EC#2 to their design rates of 1,500 gpm (2.16 mgd) continuously for an entire year. This is intended to represent a "worst-case" short-term (1-yr) scenario where CVWD may need to pump those wells at their maximum capacities to meet demands (e.g., during a short-term drought when other sources of supply are limited). The intent was to examine a potential maximum for recycled water travel distances.

The resulting predicted water levels and particle tracking paths and aquifer residence times are discussed below:

Simulation Results – Predicted Water Levels

A well location map showing the known existing wells in the vicinity of the proposed IPR injection wells is presented as **Figure 2**. **Figures 3 through 6** show simulated water levels at the two proposed IPR wells, as well as the nearest 6 offsite wells surrounding the IPR wells (both CVWD and private wells). The hydrographs show the predicted water levels under calibrate baseline (No Project) and the above-described Scenario 1 (Injection Only) and Scenario 2 (Put-and-Take) conditions superimposed. Relevant observations regarding the simulation results include the following:

Scenario 1 (Injection Only): Water levels at the IPR injection wells significantly exceed ground surface in all but the driest years (e.g., WY 89 – 90), with water levels reaching as much as 80 feet above ground surface during wet periods (e.g., WY 98). Water level increases at the

[4] Pueblo Water Resources, Inc. and HydroMetrics Water Resources, Inc., (2012), *Carpinteria Groundwater Basin Hydrogeologic Update and Groundwater Model Project, Final Report*, prepared for Carpinteria Valley Water District.

proximate offsite wells are somewhat less than at the IPR wells (as would be expected) but are also still excessive in many years.

Scenario 2 (Put-and-Take): Water levels at the IPR injection wells are only approximately 10 feet higher than calibrated baseline (No Project) and the levels are essentially maintained at or below ground surface throughout the simulation. The water levels at the offsite wells are essentially the same as calibrated baseline (No Project) conditions.

Based these results, it appears that IPR injection only is likely infeasible under most conditions and CVWD will need to increase their municipal pumping rates most years commensurately with the injection rates of recycled water in order to maintain water levels below ground surface (i.e., to avoid artesian conditions and the potential “daylighting” of injected water at the ground surface).

Simulation Results – Particle Tracking

Particle tracking was not performed for Scenario 1 (Injection Only) because that project operational scenario is considered infeasible due to excessive water level conditions. The results for Scenarios 2 and 3 are presented on **Figures 7 through 9** and **Figures 10 through 12**, respectively. Each figure shows the resulting particle traces (20 particles per IPR well) for 3-, 6- and 12-month travel times and are discussed further below:

Scenario 2 (Put-and-Take): The particle tracking results for Aquifers A, B and C are shown on Figures 7 through 9, respectively. This scenario represents the likely typical operation of the basin with the proposed CAPP IPR wells. The results show that the maximum travel distances occur in Aquifer B and at IPR-1 under this scenario, with a maximum 3-month travel distance of approximately 435 ft. No existing wells are predicted to be impacted within 12 months.

Scenario 3 (Short-Term Maximum CVWD Pumping): Figures 10 through 12 show the particle traces for Scenario 3 (Max CVWD Pumping), Aquifers A, B and C, respectively. This scenario is intended to represent a potential “worst-case” scenario in terms of CVWD pumping that could result in maximum travel distances and shortest aquifer residence times. As shown, under this scenario all of the injected water goes into Aquifers B and C (Figures 11 and 12), respectively) and virtually no particles are moving goes into Aquifer A (i.e., note the absence of particle traces on Figure 10). Similar to Scenario 2, the maximum travel distances occur in Aquifer B and at IPR-1 in this scenario as well, with a maximum 3-month travel distance of approximately 425 ft.

It is notable, however, that the vast majority of IPR-2 particles in Aquifer C would be captured by EC #2 (located a distance of approximately 1,120 feet) after approximately 12 months of travel time. Further inspection of the model results shows a disproportionate level of drawdown in Aquifer C at EC #2, with a pumping level of -69.7 feet mean sea level (msl) compared to -58.8 feet msl in Aquifer A (a head differential of 10.9 feet). It appears this creates a downward gradient that draws the injected water at IPR-2 preferentially into Aquifer C and towards EC #2 compared to Aquifers A and B.

CONCLUSIONS AND RECOMENDATIONS

Based on the findings presented herein and our experience with similar projects, we offer the following conclusions and recommendations:

- IPR “Injection Only” is likely infeasible, as it would result in excessive water level conditions under all but the lowest basin water level conditions (i.e., drought conditions).
- IPR “Put-and-Take” appears feasible, and only requires that CVWD pump/recover commensurate volumes of water that are being injected on an average annual basis in order to maintain acceptable water level conditions. The existing CVWD wells have sufficient excess capacity for this and it does not appear that the project will require additional production recovery wells.
- Maximum particle travel distances occur in Aquifer B from IPR-1 at around 400 – 450 feet after 3 months, depending on the scenario.
- Minimum aquifer residence time occurs in Aquifer C, with injectate from IPR-2 having a predicted arrival time of approximately 12 months at EC #2 under the “worst case” case Scenario 3, which simulates the CVWD wells pumping at their maximum capacity continuously for one year; however, it is noted that this is not a typical operation for CVWD’s wells an represents an extreme case.
- The findings indicate that the required minimum aquifer residence time of 2 to 4.5 months can be achieved; however, it is recommended that a field tracer test be conducted to confirm the simulated results.

CLOSURE

This technical memorandum has been prepared exclusively for the Carpinteria Valley Water District for the specific application to the Carpinteria Advanced Purification Project (CAPP). The findings and conclusions presented herein were prepared in accordance with generally accepted hydrogeologic practices. No other warranty, express or implied, is made.

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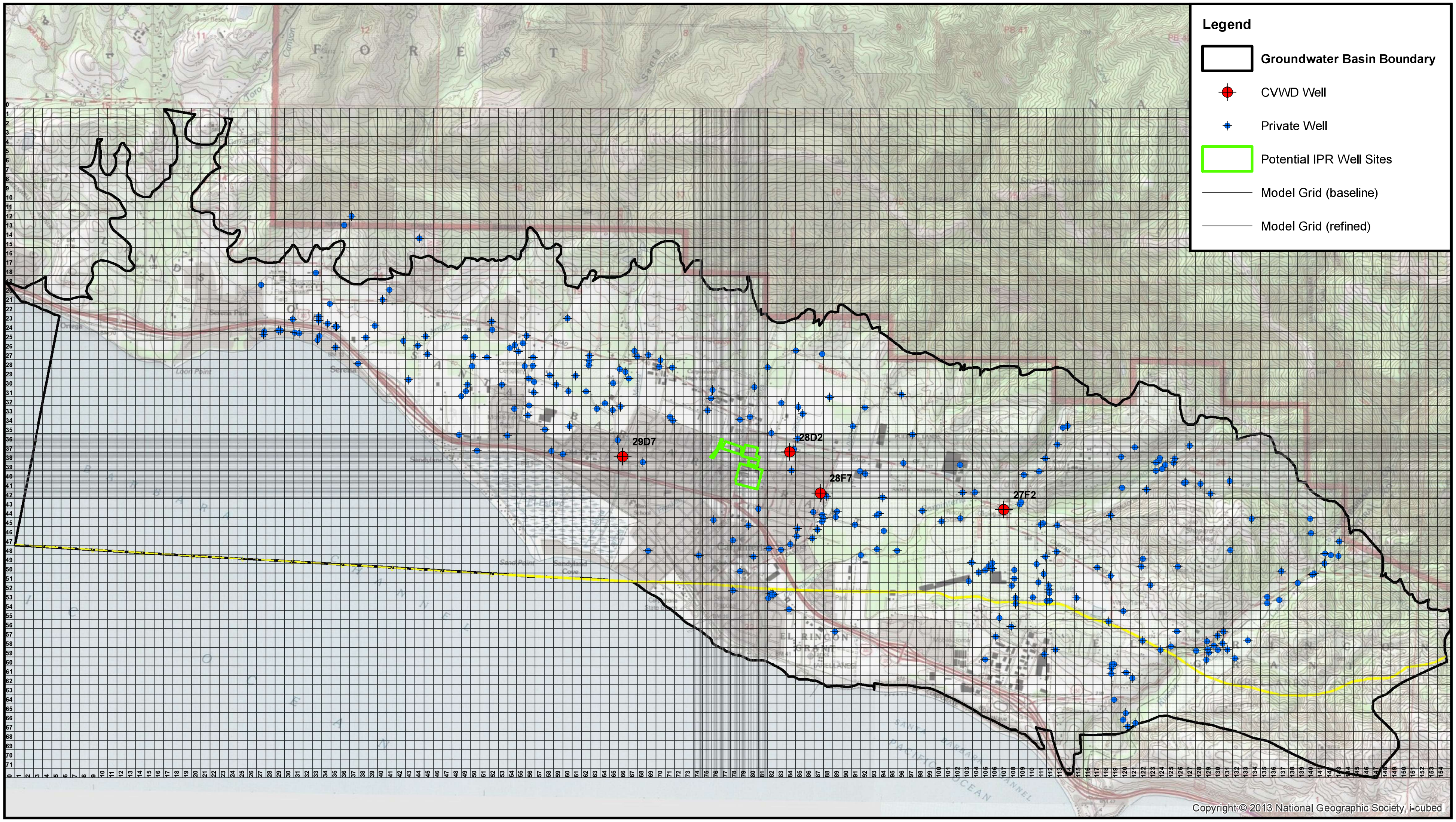
March 2019
Project No. 15-0099



PUEBLO water resources

N E S W

1 inch = 3,000 feet

0 3,000 6,000 Feet

FIGURE 1. BASIN MAP AND REFINED MODEL GRID
CAPP IPR Groundwater Modeling Assessment
Carpinteria Valley Water District

March 2019
Project No. 15-0099

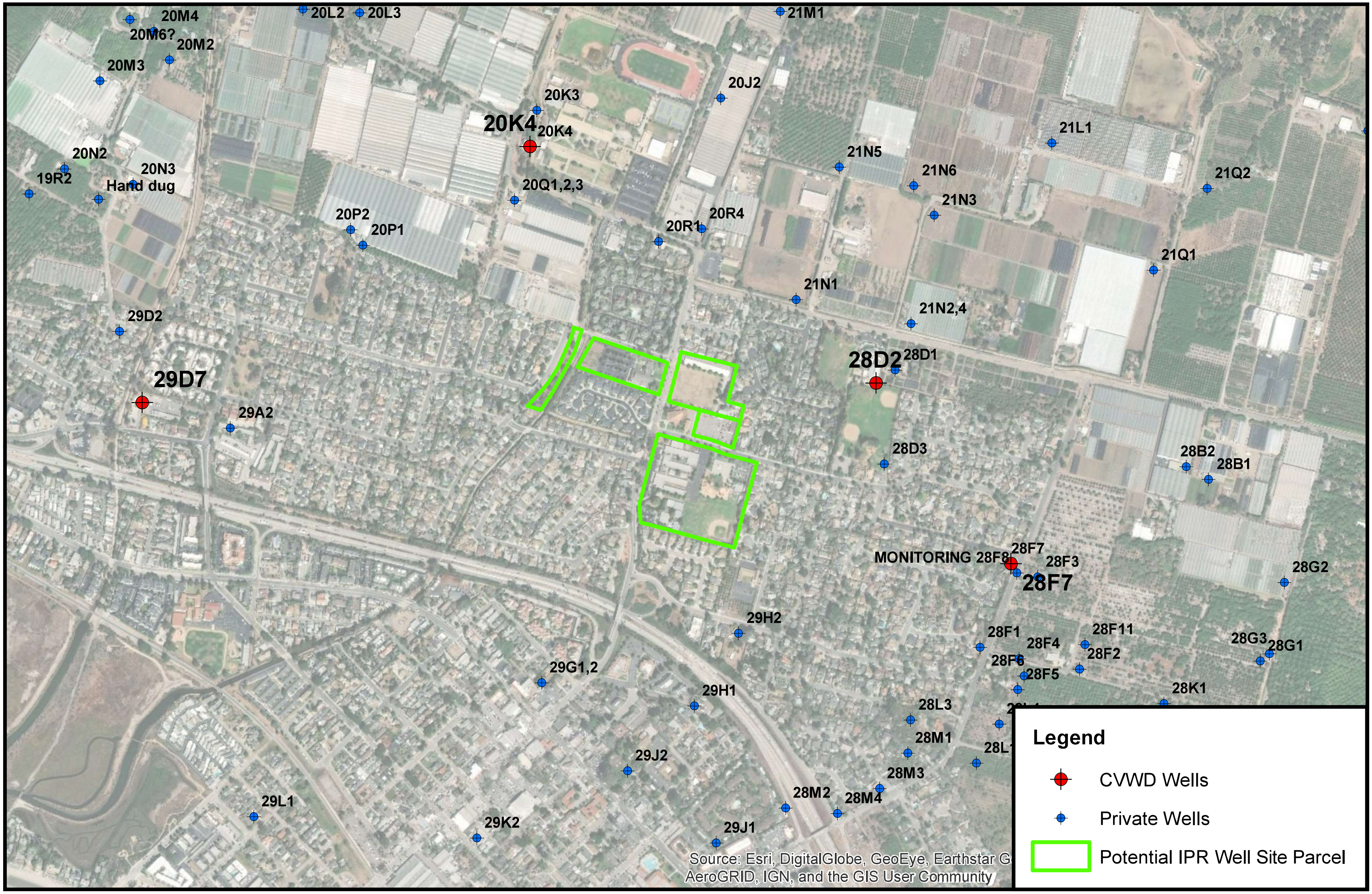
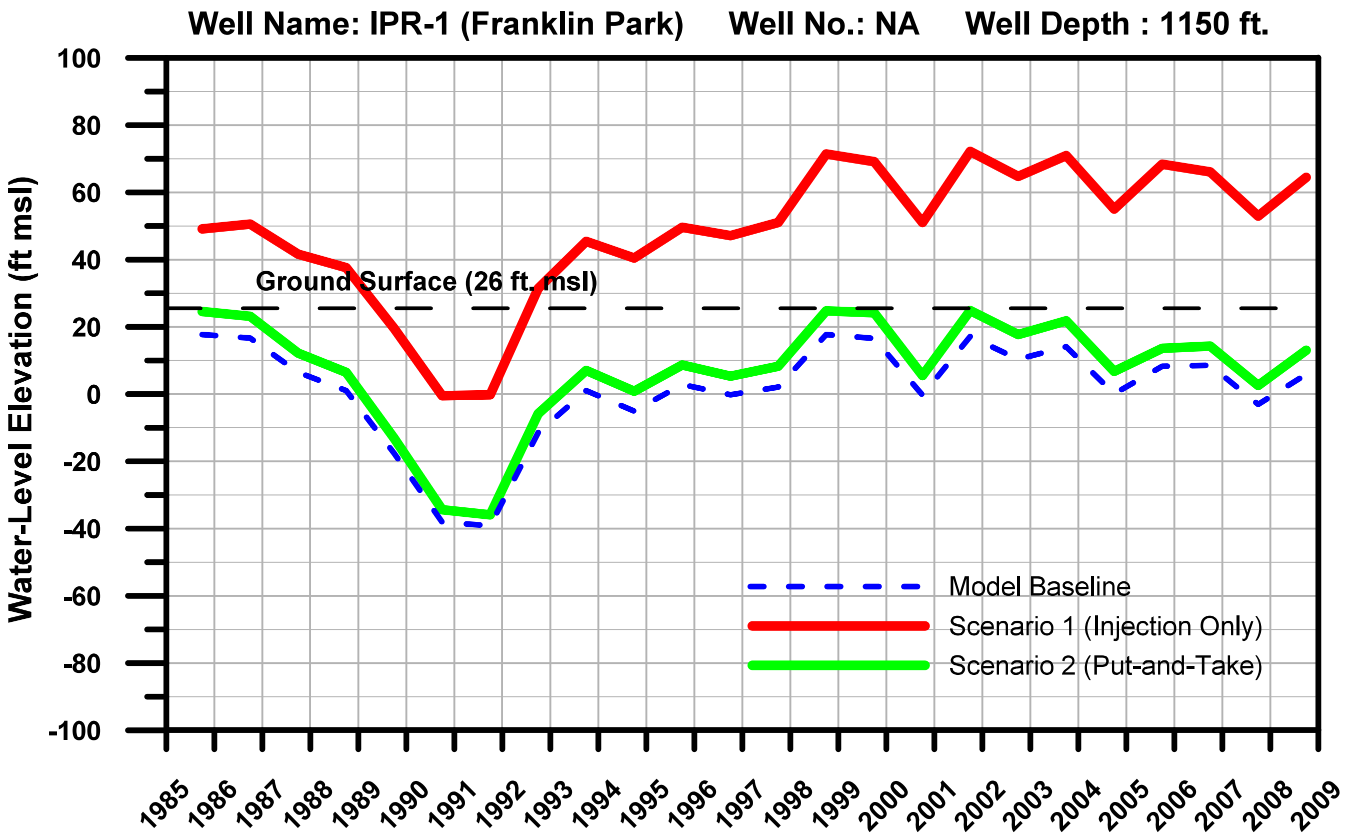
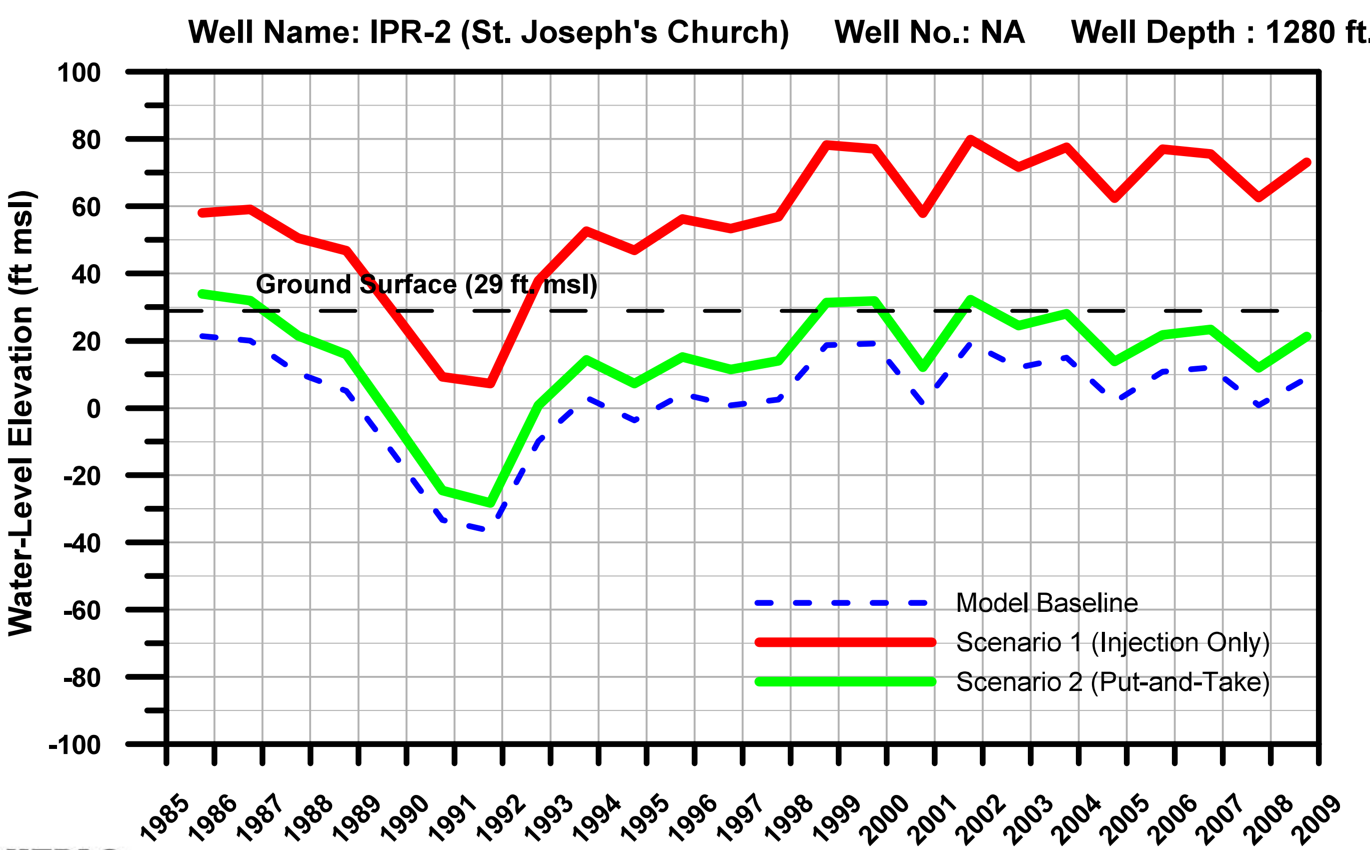


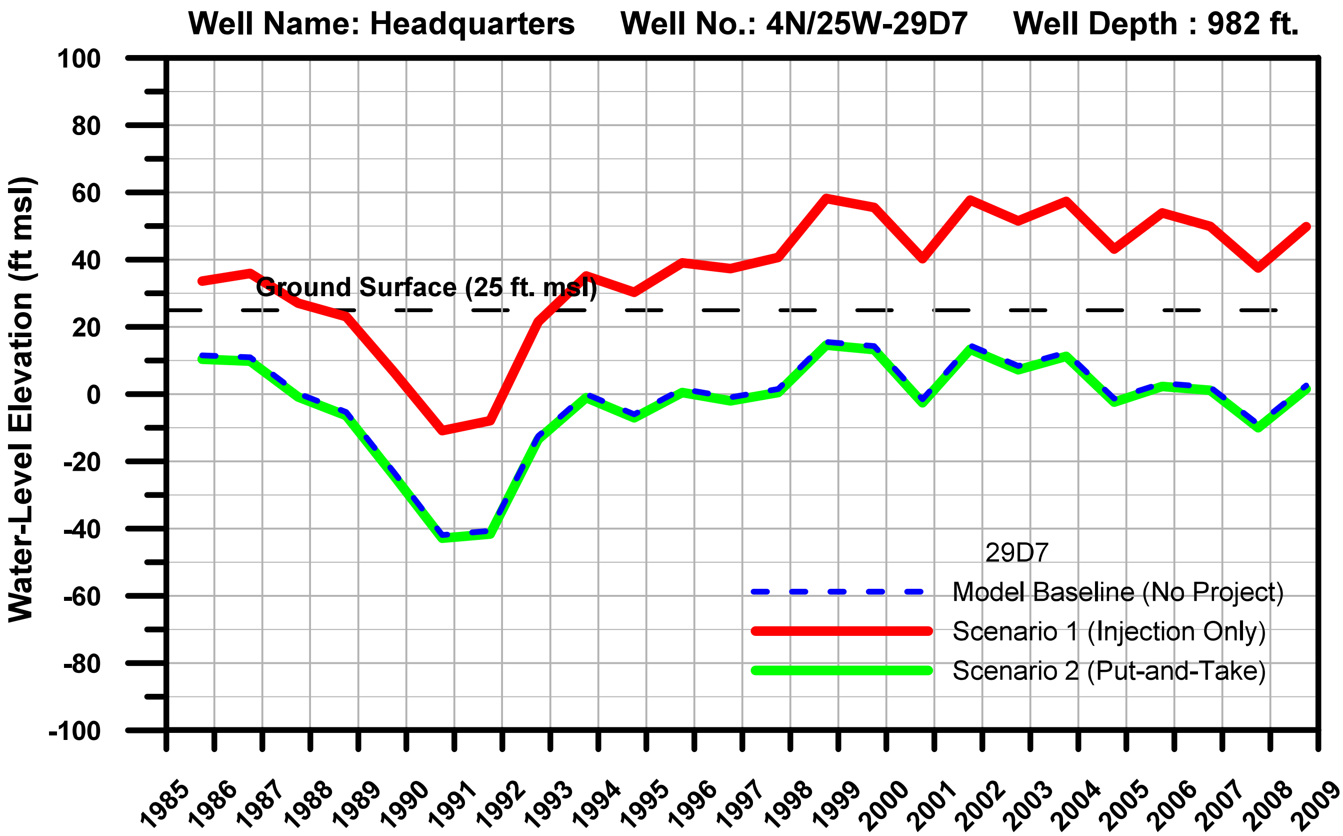
FIGURE 2. WELL LOCATION MAP
CAPP IPR Groundwater Modeling Assessment
Carpinteria Valley Water District

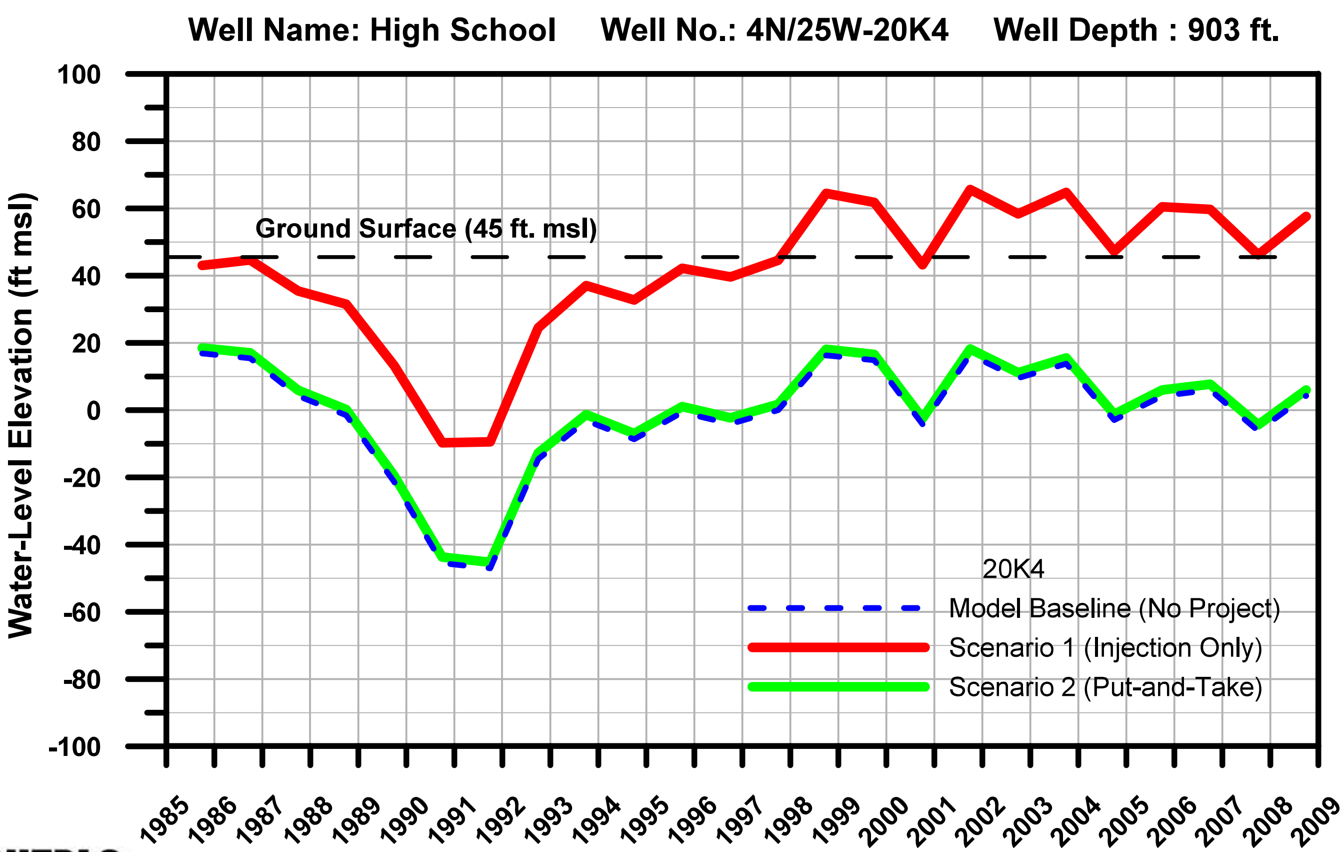




PUEBLO
water resources

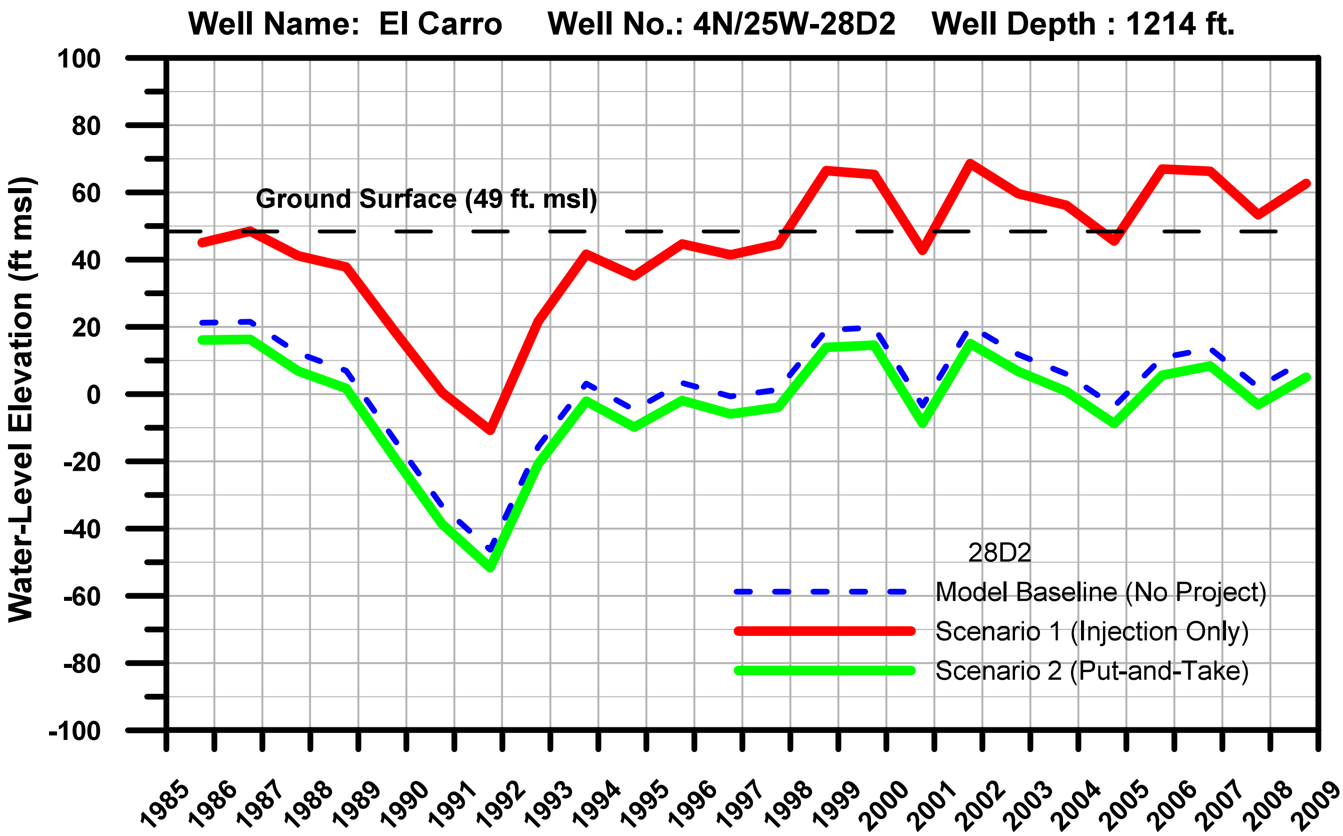
FIGURE 3. WATER LEVEL HYDROGRAPHS (Simulated IPR Wells)
CAPP IPR Well Groundwater Modeling Assessment
Carpinteria Valley Water District

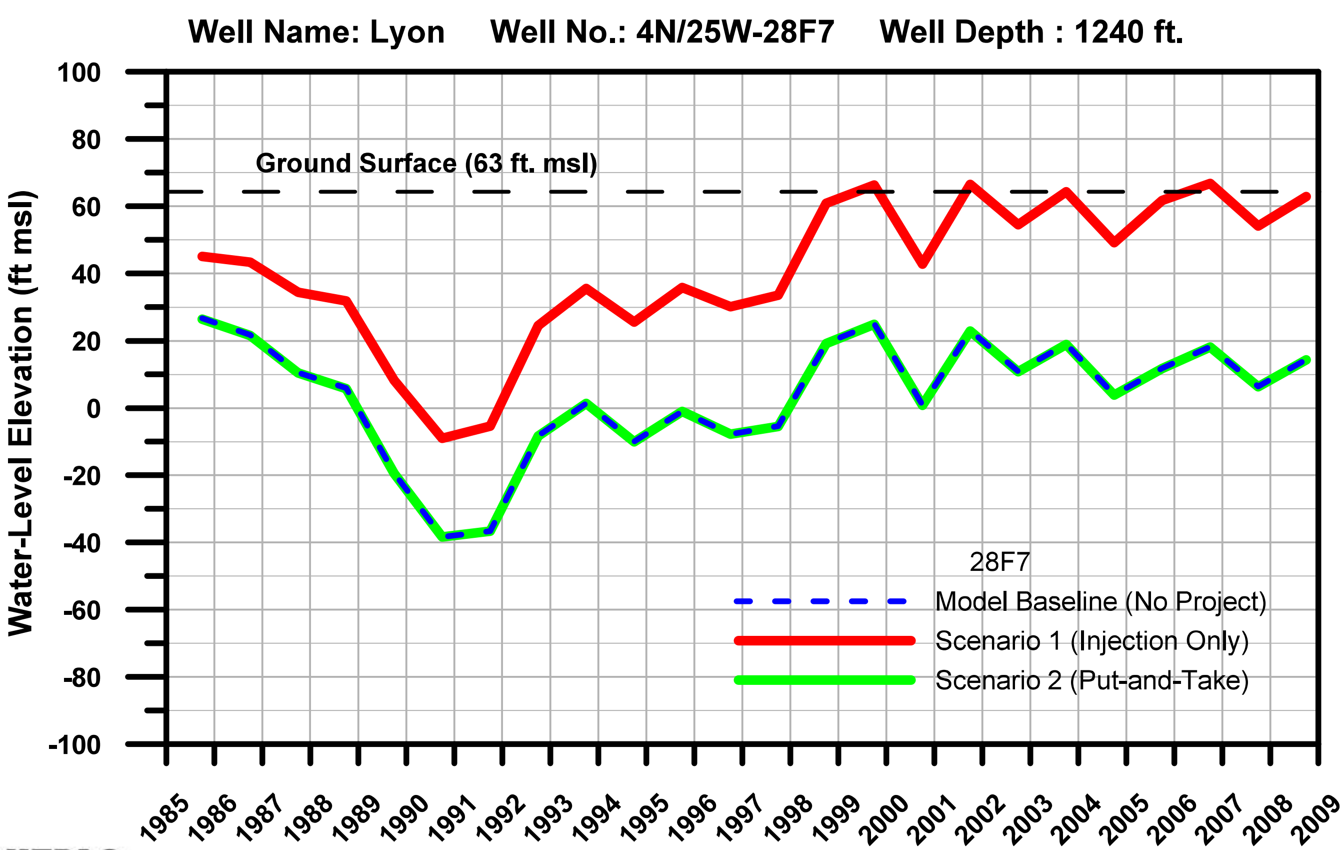




PUEBLO water resources

FIGURE 4. WATER LEVEL HYDROGRAPH (29D7 - 20K4)
CAPP IPR Well Groundwater Modeling Assessment
Carpinteria Valley Water District



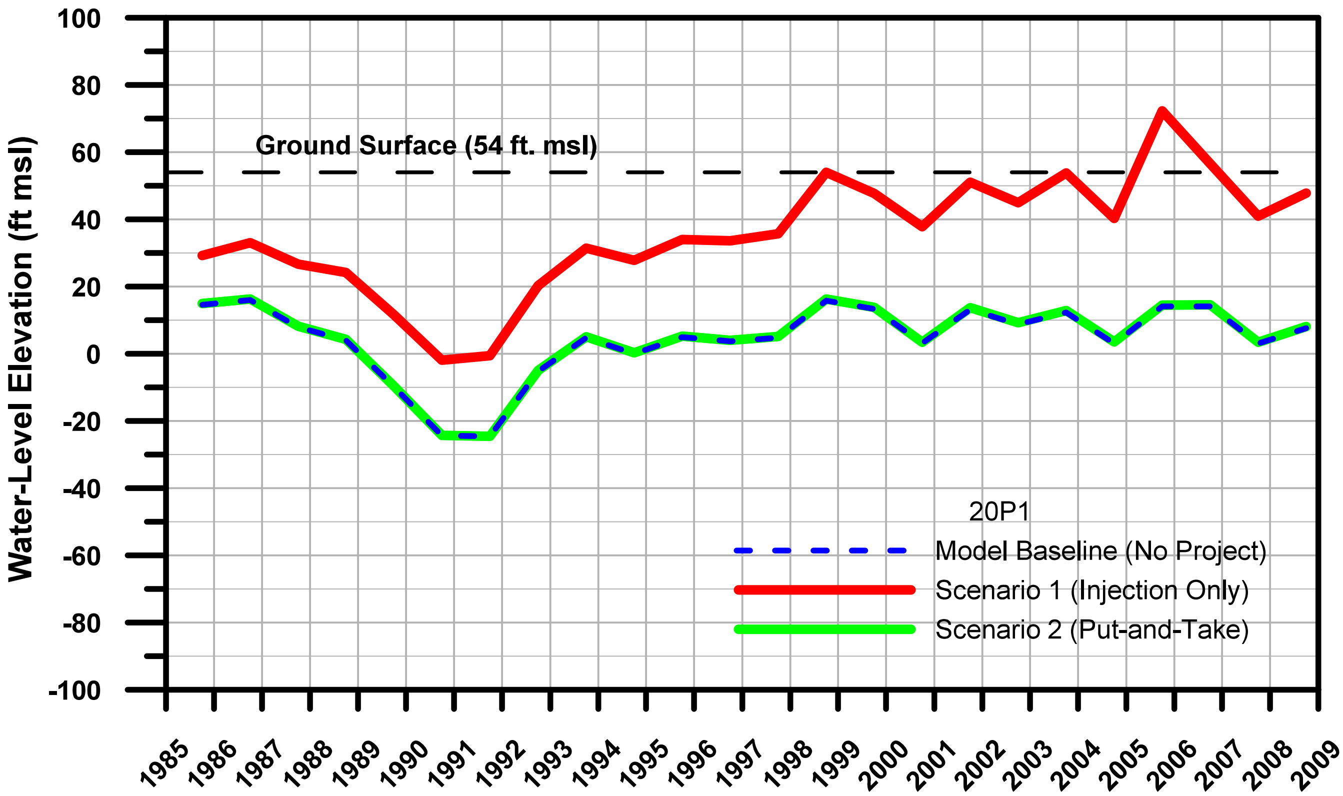


PUEBLO water resources

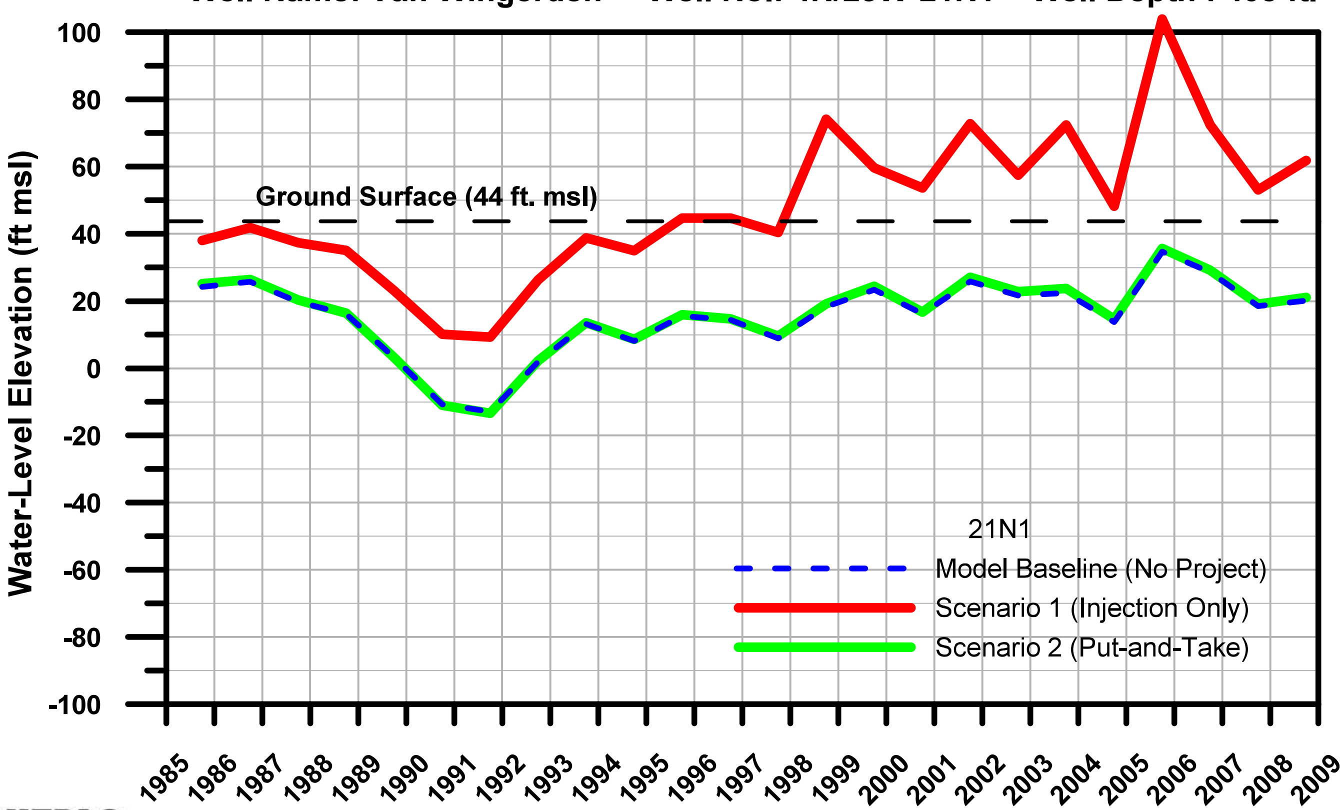
FIGURE 5. WATER LEVEL HYDROGRAPH (28D2 - 28F7)
CAPP IPR Well Groundwater Modeling Assessment
Carpinteria Valley Water District

March 2019
Project No. 15-0099

Well Name: Everbloom   Well No.: 4N/25W-20P1   Well Depth : 228 ft.



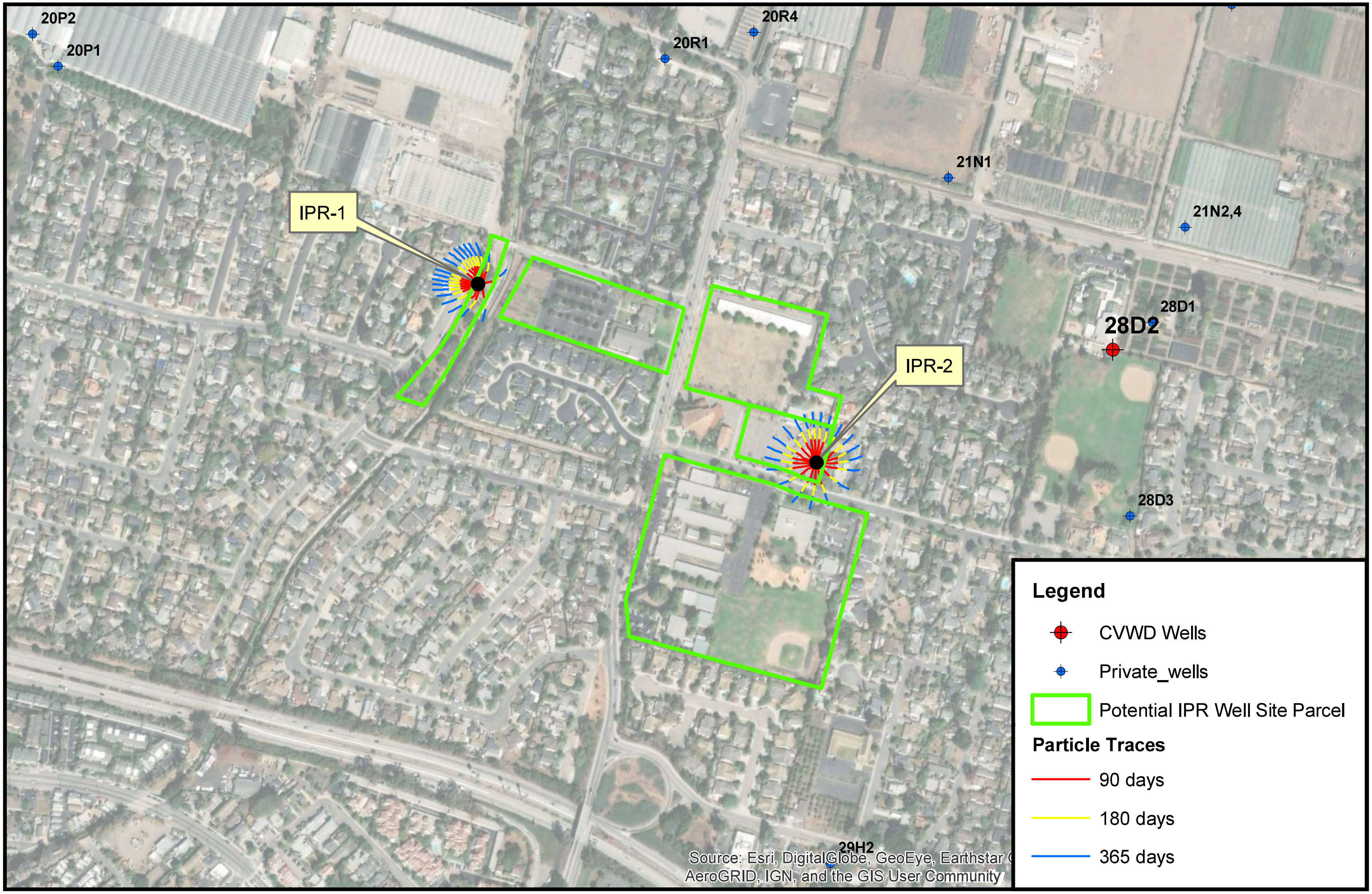
Well Name: Van Wingerden   Well No.: 4N/25W-21N1   Well Depth : 405 ft.



PUEBLO water resources

FIGURE 6. WATER LEVEL HYDROGRAPHS (20P1 - 21N1)
CAPP IPR Well Groundwater Modeling Assessment
Carpinteria Valley Water District

March 2019
Project No. 15-0099



PUEBLO water resources

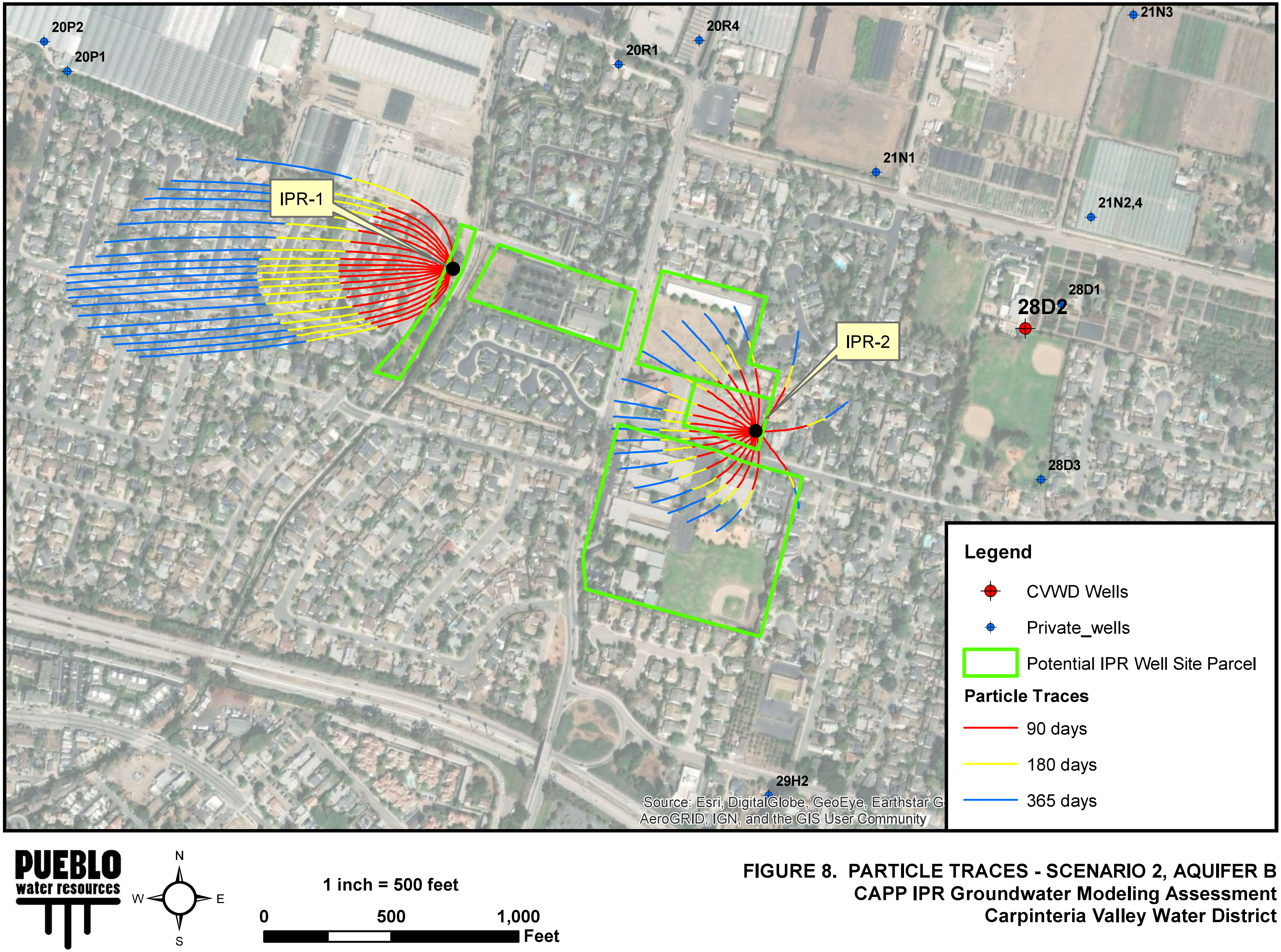
N W E S

1 inch = 500 feet

0 500 1,000 Feet

FIGURE 7. PARTICLE TRACES - SCENARIO 2, AQUIFER A
CAPPP IPR Groundwater Modeling Assessment
Carpinteria Valley Water District

March 2019
Project No. 15-0099



PUEBLO water resources

FIGURE 8. PARTICLE TRACES - SCENARIO 2, AQUIFER B
CAPP IPR Groundwater Modeling Assessment
Carpinteria Valley Water District

March 2019
Project No. 15-0099

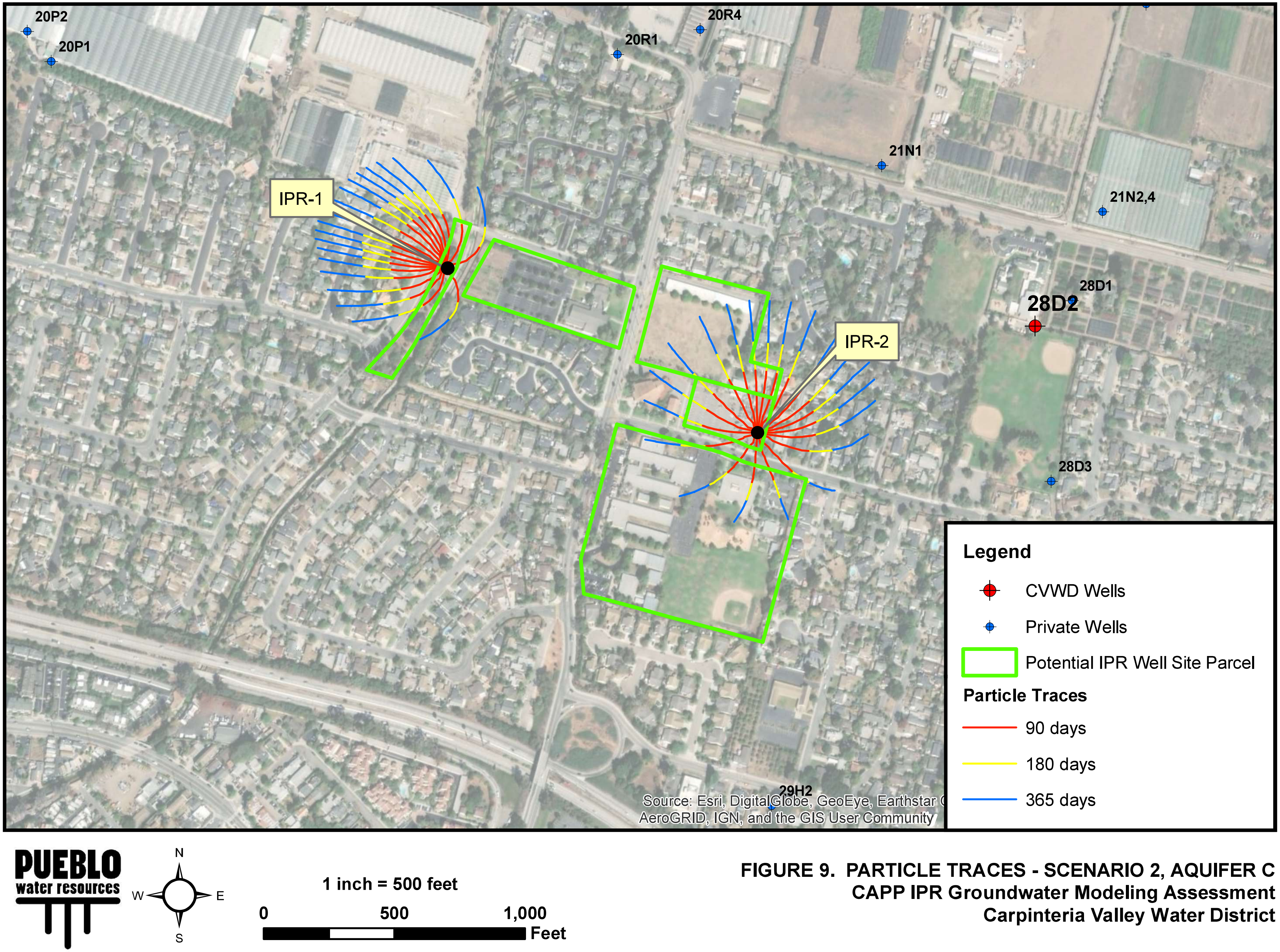


FIGURE 9. PARTICLE TRACES - SCENARIO 2, AQUIFER C
CAPP IPR Groundwater Modeling Assessment
Carpinteria Valley Water District

March 2019
Project No. 15-0099

PUEBLO water resources

FIGURE 10. PARTICLE TRACES - SCENARIO 3, AQUIFER A
CAPP IPR Groundwater Modeling Assessment
Carpinteria Valley Water District

March 2019
Project No. 15-0099

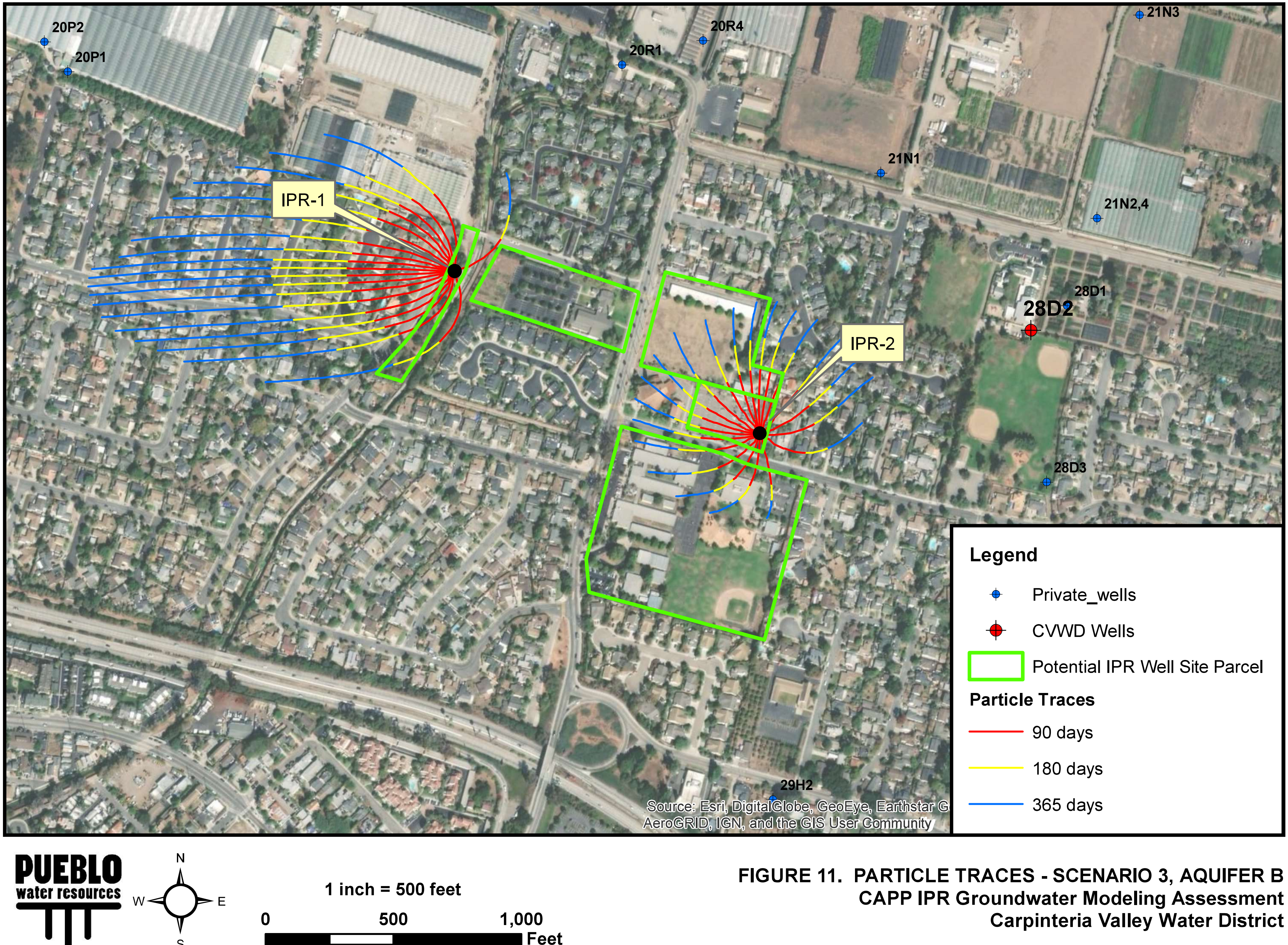


FIGURE 11. PARTICLE TRACES - SCENARIO 3, AQUIFER B
CAPP IPR Groundwater Modeling Assessment
Carpinteria Valley Water District

March 2019
Project No. 15-0099

PUEBLO water resources

N W E S

1 inch = 500 feet

0 500 1,000 Feet

FIGURE 12. PARTICLE TRACES - SCENARIO 3, AQUIFER C
CAPP IPR Groundwater Modeling Assessment
Carpinteria Valley Water District

Appendix J

Dilution Study

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Flow Science Incorporated
202 S. Lake Ave., Ste. 294, Pasadena, CA 91101
(626) 304-1134 • FAX (626) 304-9427

DRAFT TECHNICAL MEMORANDUM

DATE: March 28, 2019

TO: Rosalyn Prickett
Woodard & Curran

FROM: Gang Zhao, Ph.D., P.E.
Kristen Bowman Kavanagh, P.E.
E. John List, Ph.D., P.E.

SUBJECT: Near-field dilution analysis of the Carpinteria Valley Water District IPR Project
FSI 174080

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1. INTRODUCTION

As part of the Carpinteria Valley Water District's Indirect Potable Reuse (IPR) project, Flow Science Incorporated (Flow Science) was retained by Woodard & Curran to analyze the near-field dilution of the IPR project brine effluent that is proposed to be discharged to the Pacific Ocean. The IPR project includes plans to build an advanced water purification facility (AWPF), which will provide advanced treatment for the effluent from the Carpinteria Sanitary District (CSD) wastewater treatment plant (WWTP). The highly treated effluent would then be injected into the Carpinteria Valley Groundwater Basin for reuse. The AWPF will produce a maximum of approximately 0.3 mgd of brine effluent, which will be discharged through the CSD ocean outfall. In addition, preliminary design work has been started to modify the diffuser of the CSD ocean outfall. Dilution of the effluent discharged from both the current and the proposed new outfall diffuser needs to be analyzed to evaluate the performance of the proposed diffuser modification.

This technical memorandum summarizes the analyses Flow Science completed for the near-field dilution of the selected discharge scenarios of the IPR project and describes the input data and methods Flow Science used to analyze the selected scenarios.

2. ANALYSIS INPUT DATA

2.1 DIFFUSER CONFIGURATION

The existing CSD ocean outfall has a diffuser located approximately 800 ft offshore in the Santa Barbara Channel (see Figure 1). The diffuser has 17 discharge ports. Eight 4-inch ports discharge effluent from one side of the diffuser and eight 4-inch ports discharge from the opposite side of the diffuser in an alternating pattern. In addition, there is one 8-inch port in the end flange of the diffuser. The ports are spaced 6 ft apart and are located approximately 22 feet below mean sea level. Figure 2 shows a typical section of the current diffuser.

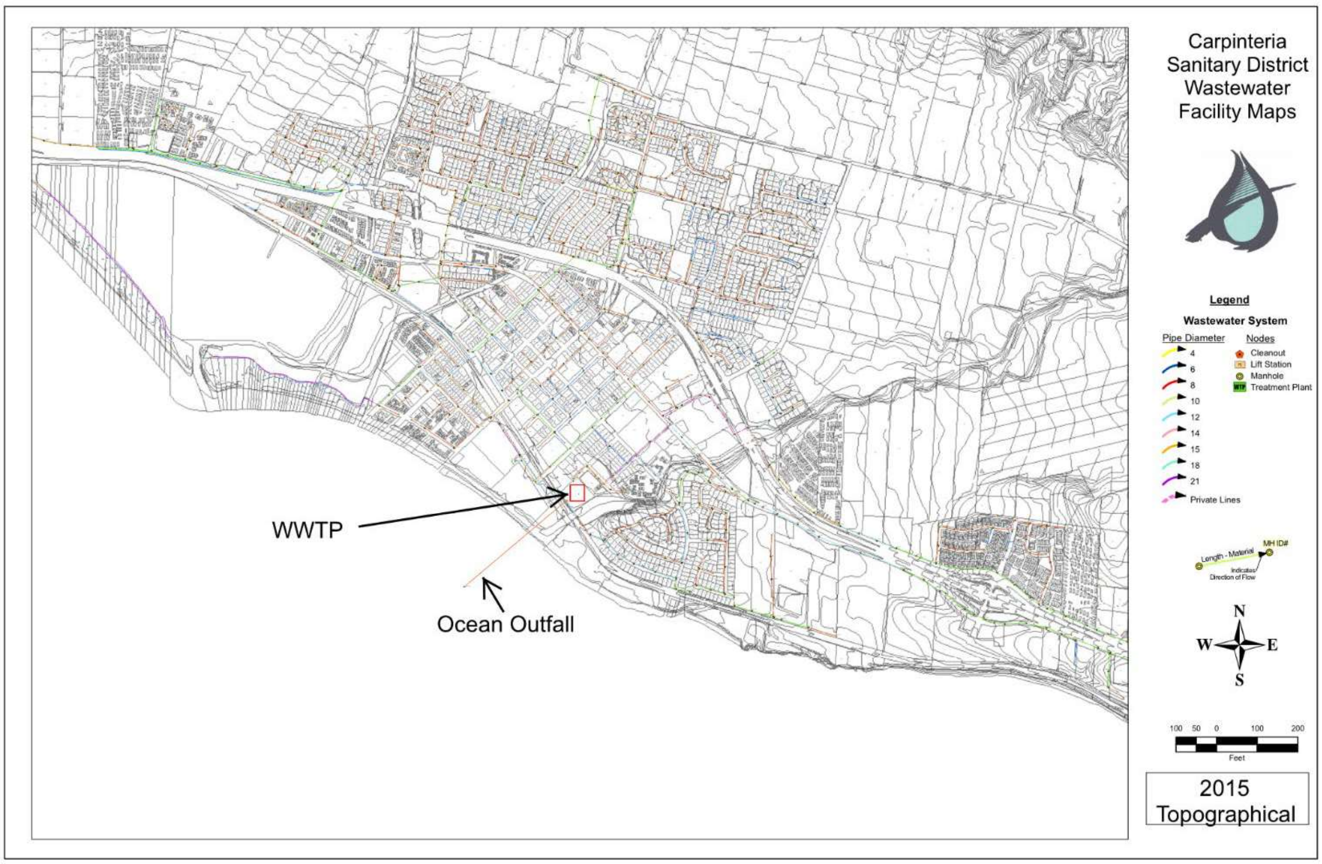

Figure 1. Location of CSD ocean outfall

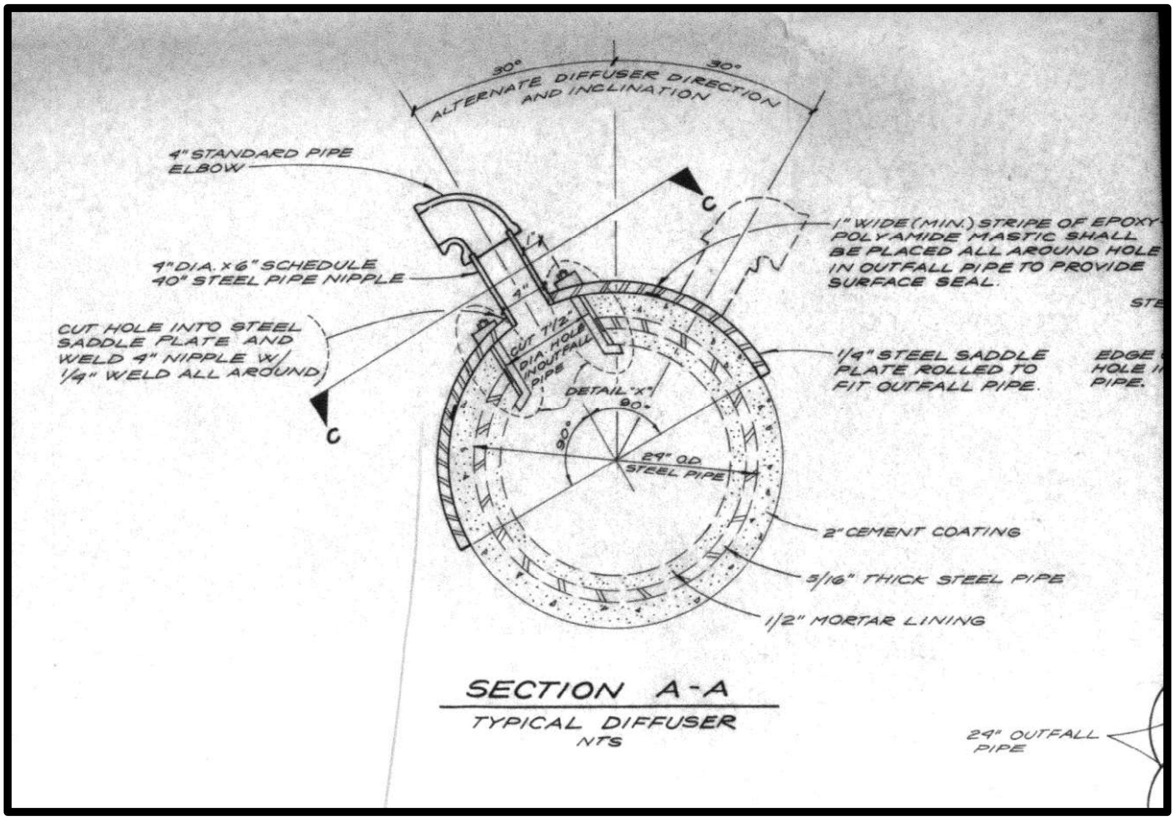

Figure 2. Typical diffuser section (currently in place)

Preliminary design work is underway to modify the current diffuser. The modified diffuser will have 17 ports fitted with Tideflex "duckbill" check valves, and effluent will be discharged horizontally (*i.e.*, with a 0º port vertical angle). The preliminary design calls for 16 ports to be fitted with 4-inch duckbill check valves, while the end port will be fitted with a single 8-inch duckbill check valve. The opening area of the "duckbill" check valves depends on the discharge flow rate. For the discharge flow rates modeled in this analysis, the opening area of the valve was determined by Woodard & Curran from data provided by the valve manufacturer, and an effective port diameter was derived to provide the same opening area. Key parameters of the current diffuser and the proposed new diffuser are summarized in Table 1. Due to model limitations, the end port of the new diffuser was represented as a 4-inch diffuser check valve, rather than an 8-inch diffuser check valve. The end port of the existing diffuser was not included in the model, consistent with previous modeling efforts.

Table 1. Current versus modified diffuser configuration for the model input

Parameter	Current Diffuser	New Diffuser
Depth of diffuser ports	22 feet below MSL	22 feet below MSL
Number of open ports	16	17
Port spacing	6 feet	6 feet
Port diameter	4 inches	Depends on flow rate
Port vertical angle	-30º	0

2.2 DISCHARGE CHARACTERISTICS

A range of discharge scenarios with various discharge flow rates, effluent salinity, and discharge seasons were selected for this analysis. The selected discharge scenarios are summarized in Table 2. Effluent temperature was determined based on data of effluent temperature for 2013-2018. For the cool season, the effluent temperature is the average of the first quarter effluent temperature; for the warm season, the average temperature for the months July to October, the four months with the highest average effluent temperature, is selected as the effluent temperature. The first two scenarios in Table 2 are for the current diffuser configuration, and the remainders are for the modified diffuser. All scenarios in Table 2 were analyzed for a stagnant (no current) receiving water condition, consistent with the California Ocean Plan (2015). Temperature and salinity data were used to calculate densities of the effluent and ambient water, which are important parameters in dilution analyses.

Three flow rates were modeled, as follows:

- **2.5 MGD** represents the average dry weather flow capacity of the WWTP as listed in CSD's NPDES Permit (Central Coast Regional Water Quality Control Board, NPDES NO. CA0047364). It is also larger than the maximum month wet weather flow rate of 1.8 MGD discharged to the Pacific Ocean, based on effluent flow data for 2009–2018.

- **1.5 MGD** represents the preliminary design dry weather flow capacity of the advanced treatment facility. Under normal operating conditions, advanced-treated water will be injected into the groundwater basin. However, there may be periods when the injection wells are off-line and all effluent is discharged to the Pacific Ocean. This represents such a scenario.

- **0.3 MGD** represents the design dry weather flow capacity of the advanced treatment facility. In this scenario, all WWTP effluent is receiving advanced treatment, and the outfall receives 100% RO concentrate. This scenario represents the worst-case condition for effluent water quality.

Table 2. Discharge scenarios analyzed

Scenario	Description of Discharge	Season	Effluent Flow (mgd)	Effluent Salinity (ppt)	Effluent Temp. (°F)	Port Diameter (in)	Port Angle
Current Diffuser Configuration							
1	ADWF Capacity	Warm	2.5	1.5	78	4	-30°
2	ADWF Capacity	Cool	2.5	1.5	69	4	-30°
Modified Diffuser Configuration							
3	ADWF Capacity	Warm	2.5	1.5	78	2.9	0°
4	ADWF Capacity	Cool	2.5	1.5	69	2.9	0°
5	Project Design Dry Weather Flow	Warm	1.5	1.5	78	2.6	0°
6	Project Design Dry Weather Flow	Cool	1.5	1.5	69	2.6	0°
7	RO Concentrate Dry Weather Flow	Warm	0.3	9	78	1.7	0°
8	RO Concentrate Dry Weather Flow	Cool	0.3	9	69	1.7	0°

2.3 RECEIVING WATER PROFILES

Salinity and temperature data over the entire depth of the receiving water column for all typical seasonal conditions are needed in computing the effluent dilution. Receiving water profile data are not available at the CSD outfall diffuser. However, ocean profile data have been collected quarterly at the Goleta Sanitary District (GSD) ocean outfall, which is approximately 16 miles to the west of the CSD outfall. These ocean profile data are summarized in quarterly receiving water monitoring reports (Goleta Sanitary District, 2013-2017). The GSD's nearshore stations, K1 and K5, are located in relatively shallow water, and these two stations are farther away from the GSD outfall than other nearshore stations. Data from stations K1 and K5 are less affected by the GSD outfall effluent than data collected at other nearshore stations. Thus data collected at stations K1 and K5 were used to represent the receiving water conditions at the CSD outfall.

The GSD ocean profile data from the first quarter of 2013 through the second quarter of 2017 were examined to determine typical ocean conditions. Data for the first quarter of 2016 and after the second quarter of 2017 are not available. The ocean temperature data were grouped by quarter and are presented in Figures 3 through 6, and the quarterly ocean salinity data are presented in Figures 7 through 10. Note that the water depth at the CSD outfall is about 25 ft (8 meters). Therefore only the top 25 ft of ocean profile data were used in the dilution analysis.

The ocean temperature profiles in Figures 3 through 6 show that water temperature is nearly uniform over the top 25 ft (8 m) for the first quarter (cool season), while thermal stratification exists in various degrees for the other quarters. Note that most of the data for the fourth quarter were collected in the month of October, and the ocean water had not cooled down. Therefore the fourth quarter data do not represent cool seasonal conditions. For the first and second quarters, the observed ocean temperature was in the range of 12 ºC to 16.5 ºC; for the third and fourth quarters, the ocean temperature was in the range of 16 ºC to 22.5 ºC. The ocean salinity profiles presented in Figures 7 through 10 show that salinity is generally uniform over the top 25 ft (8 m) of water. The observed ocean salinity was in the range of 33 ppt to 33.7 ppt, and most salinity profiles centered around 33.5 ppt. Variations in salinity are small and without discernible seasonal patterns.

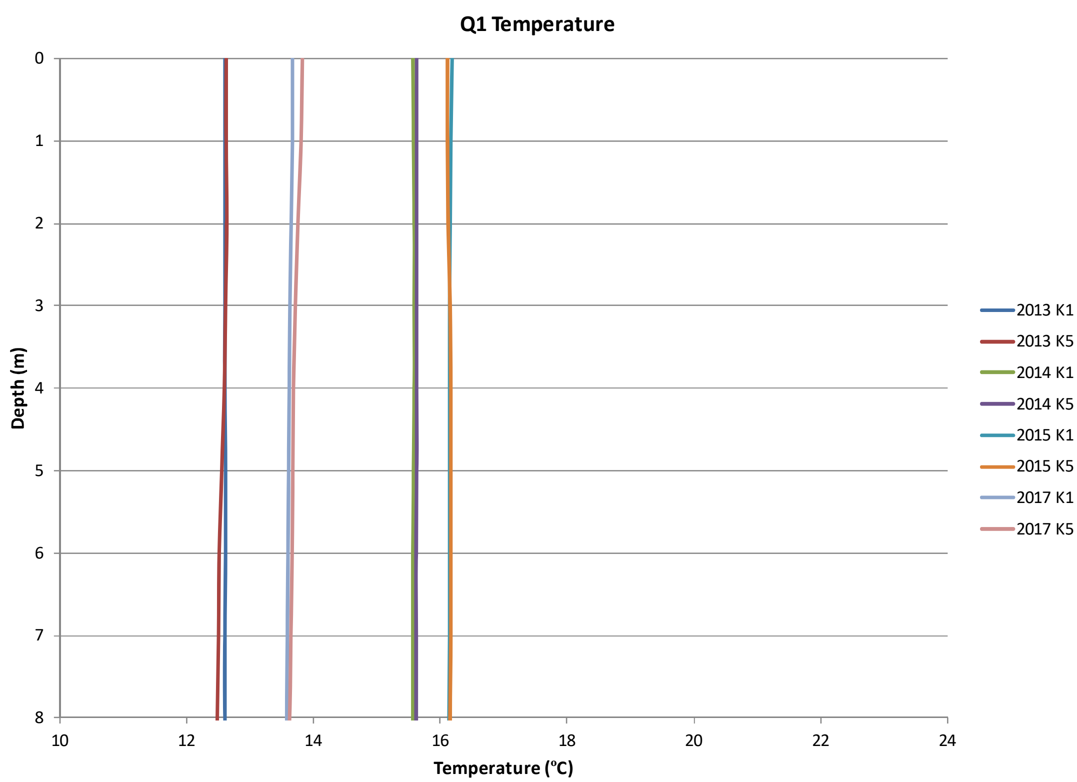

Figure 3. Ocean temperature data for the first quarter

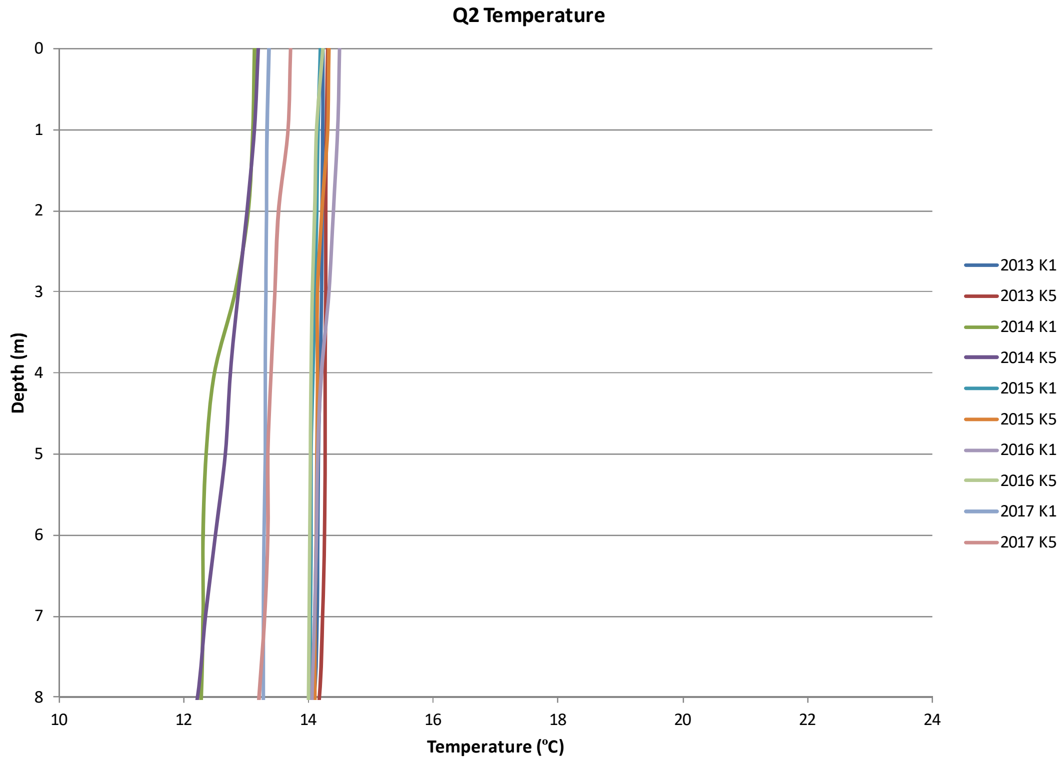

Figure 4. Ocean temperature data for the second quarter

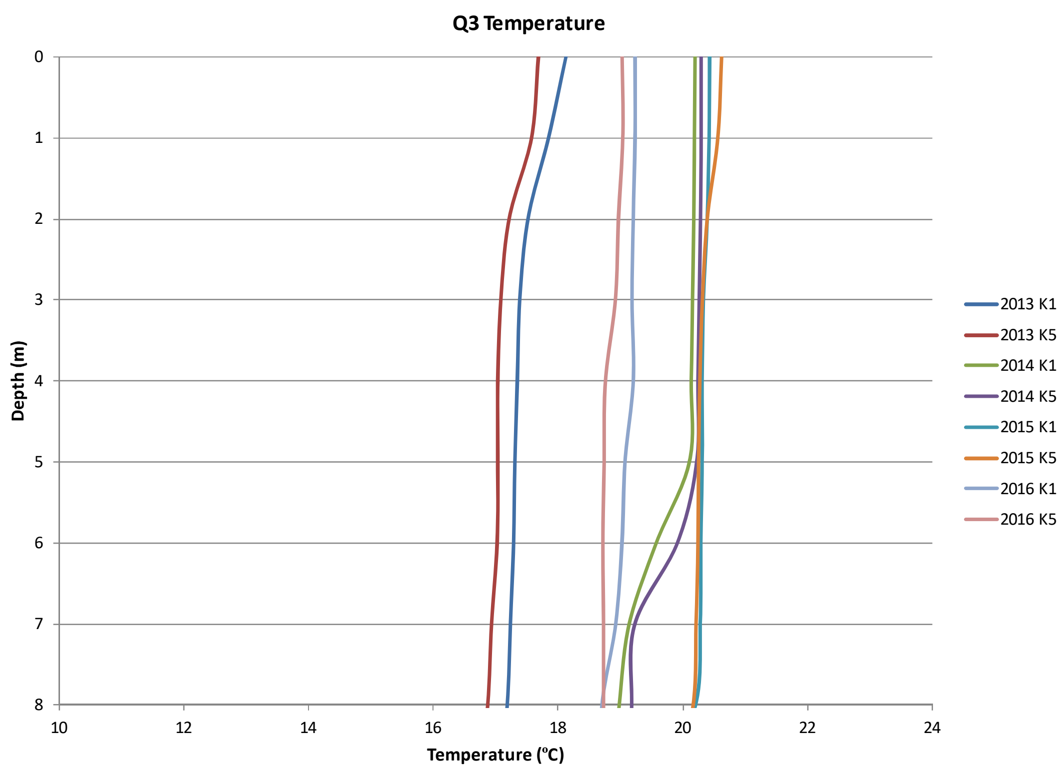

Figure 5. Ocean temperature data for the third quarter

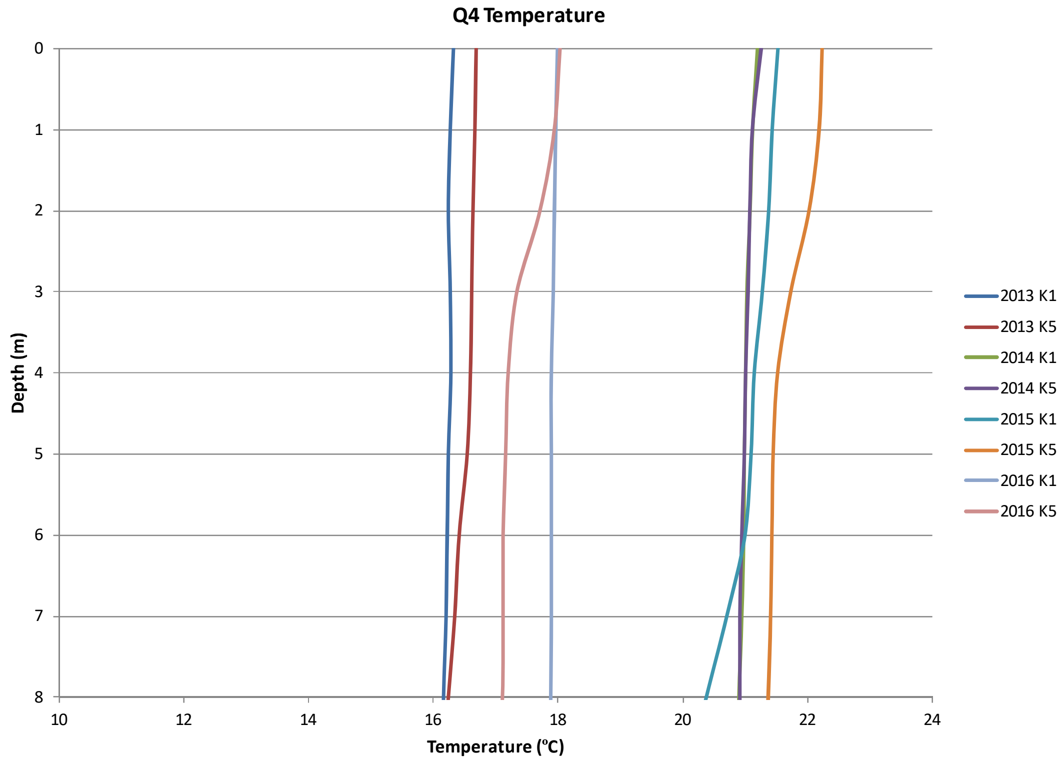

Figure 6. Ocean temperature data for the fourth quarter

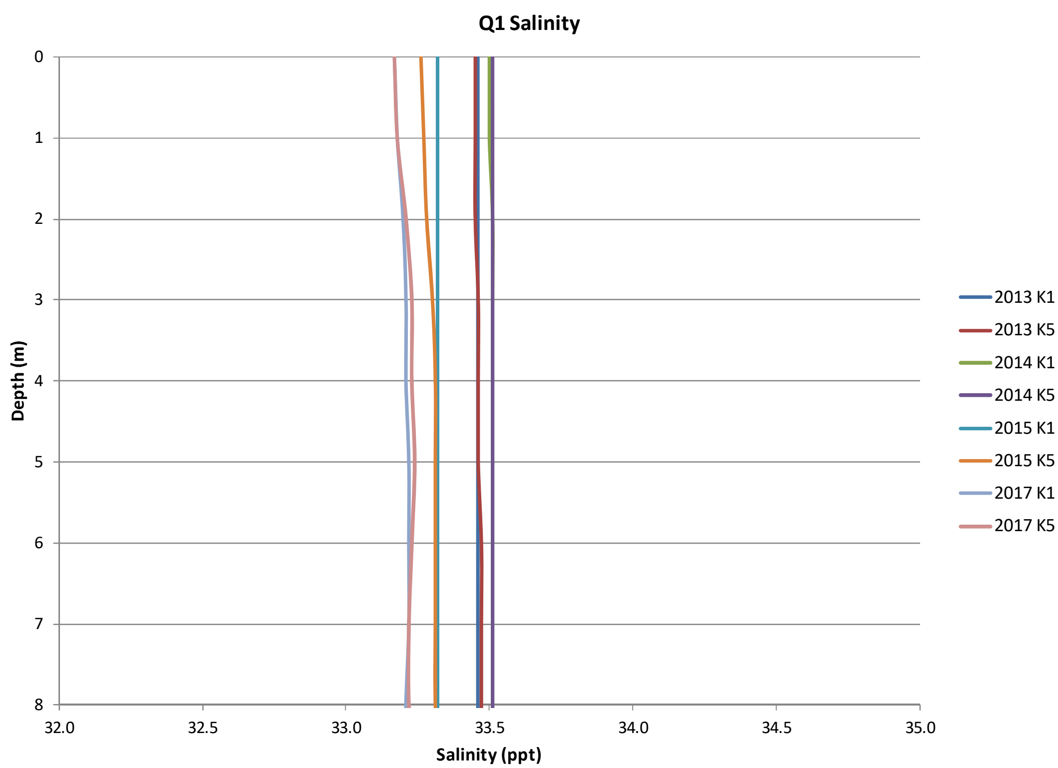

Figure 7. Ocean salinity data for the first quarter

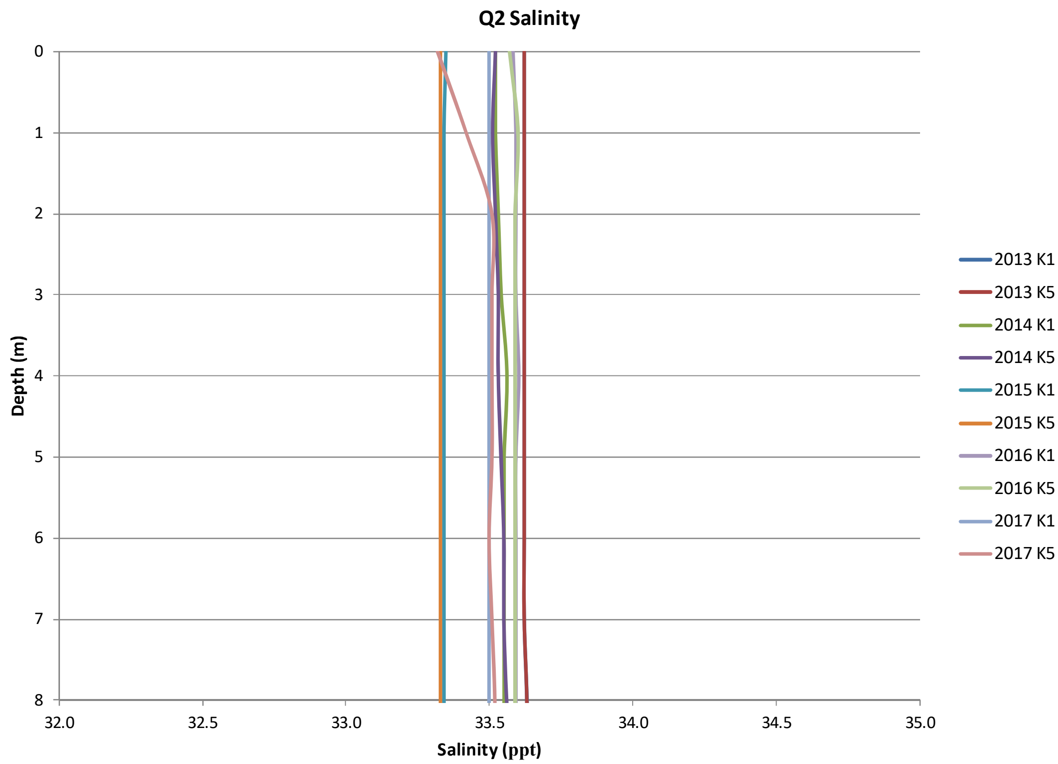

Figure 8. Ocean salinity data for the second quarter

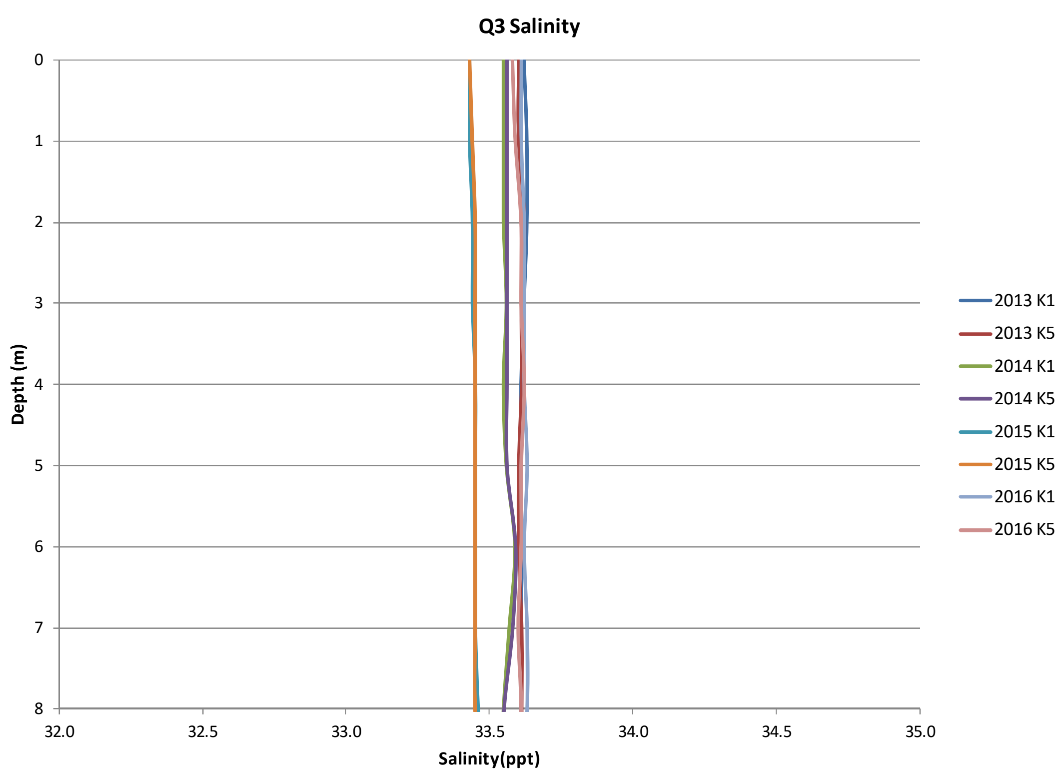

Figure 9. Ocean salinity data for the third quarter

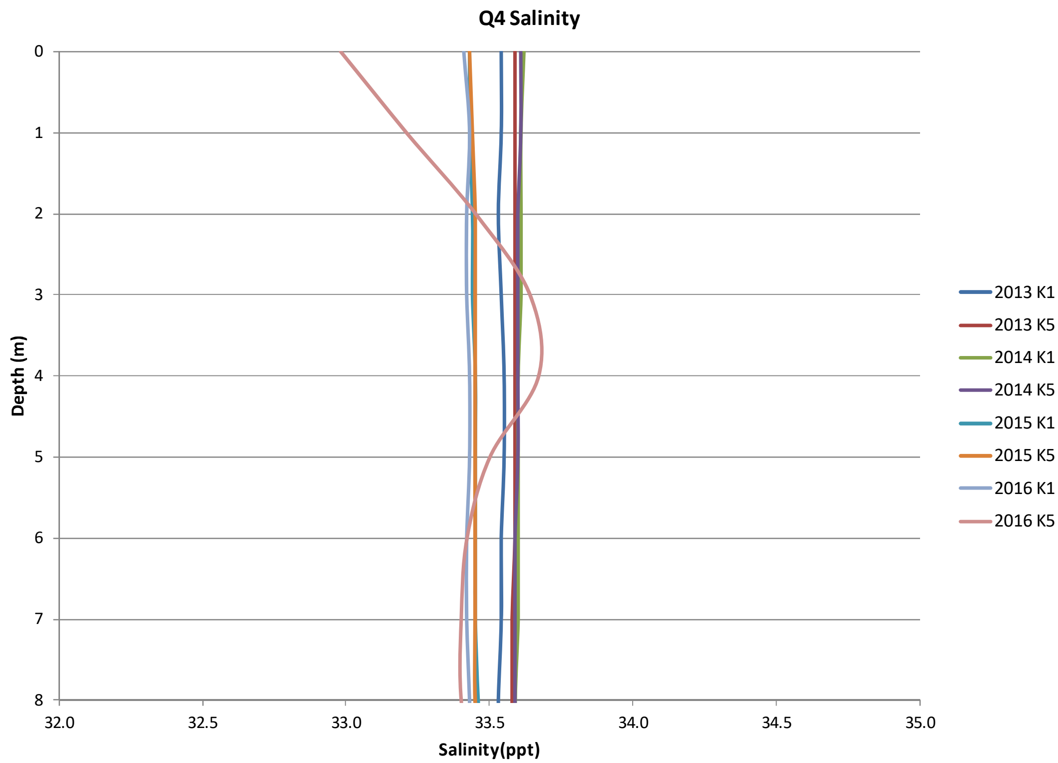

Figure 10. Ocean salinity data for the fourth quarter

For the cool season (first quarter), the data indicate that density stratification is negligible, and the difference in density is small among data collected from different years. Test model runs show that the profile at Station K5 collected in the first quarter of 2013 led to the lowest cool season effluent dilution. For the warm season, the profile at Station K5 collected in the fourth quarter of 2015 shows strong density stratification, which leads to the lowest warm season effluent dilution. These two profiles were selected to represent the cool and warm seasons in this analysis. The top 25 ft (8 meters) of the selected profiles are displayed in Table 3 and shown in Figure 11.

Table 3. Ocean temperature and salinity profiles used for dilution analysis

Depth (m)	Cool Season Station K5, Q1 2013		Warm Season Station K5, Q4 2015	
	Temp. (°C)	Salinity (ppt)	Temp. (°C)	Salinity (ppt)
0	12.63	33.45	22.23	33.43
1	12.63	33.45	22.18	33.44
2	12.64	33.45	22.02	33.45

Depth (m)	Cool Season Station K5, Q1 2013		Warm Season Station K5, Q4 2015	
	Temp. (°C)	Salinity (ppt)	Temp. (°C)	Salinity (ppt)
3	12.62	33.46	21.73	33.45
4	12.6	33.46	21.52	33.45
5	12.56	33.46	21.45	33.45
6	12.52	33.47	21.43	33.45
7	12.51	33.47	21.41	33.45
8	12.49	33.47	21.37	33.45

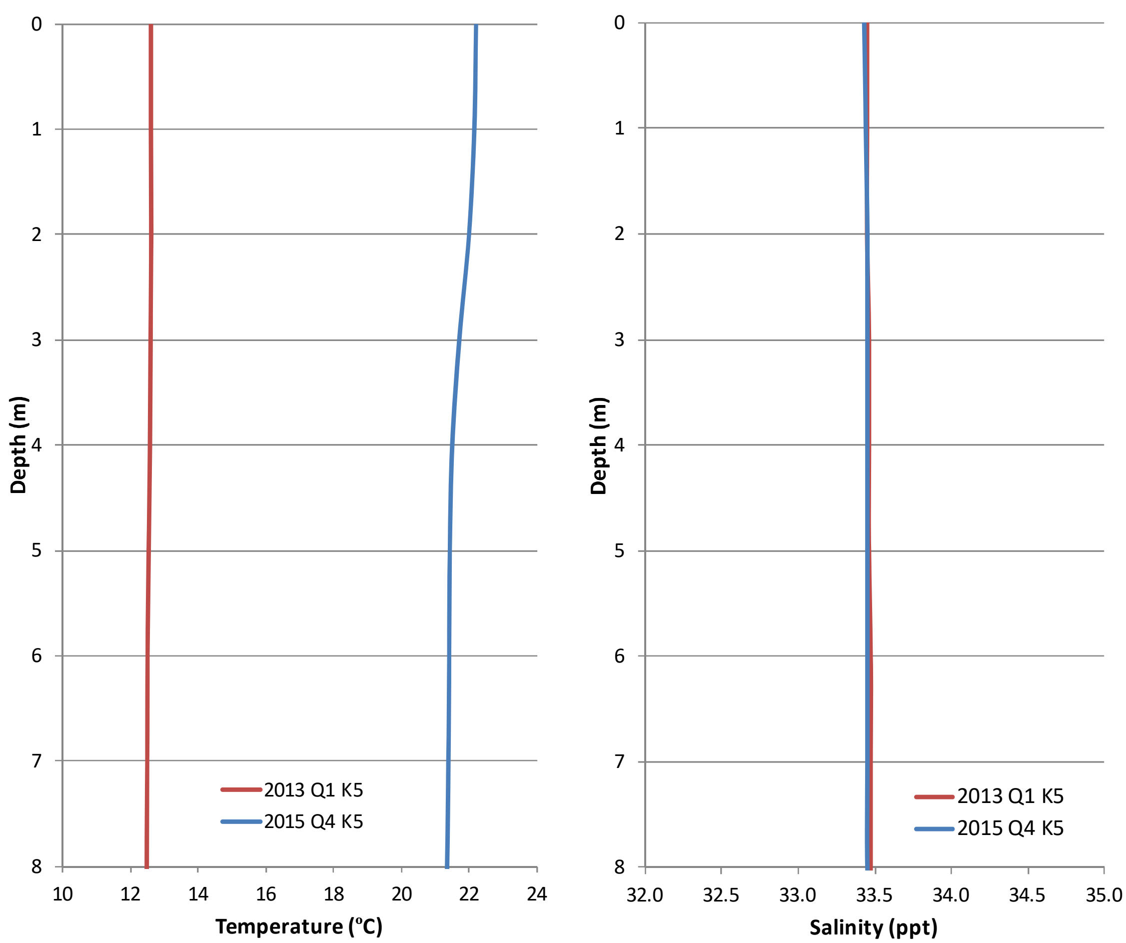

Figure 11. Selected ocean temperature and salinity profiles

Dilution analyses for ocean outfalls are typically used to characterize "worst case," stagnant (no current) receiving water conditions, and stagnant conditions are typically used as the basis for developing NPDES permit conditions. For these reasons, Flow Science has conducted the dilution analyses presented in this report for a zero-current, stagnant receiving water condition and regards this as a "worst case" condition.

3. DILUTION ANALYSIS METHOD

The analysis performed by Flow Science is a near-field dilution analysis, in which the dilution of the discharged effluent is computed within the "Zone of Initial Dilution" or ZID. The ZID is defined as the zone immediately adjacent to a discharge where momentum and buoyancy-driven mixing produces rapid dilution of the discharge. In this analysis, the ZID ends at the point where the effluent plume reaches the water surface.

Visual Plumes is a mixing zone computer model to simulate effluent discharged into a receiving water body that was developed from a joint effort led by the United States Environmental Protection Agency (U.S. EPA). Visual Plumes can simulate both single and merging submerged plumes, and stratified ambient flow can be specified by the user. The UM3 model — part of the EPA Visual Plumes diffuser modeling package — was used to simulate the effluent plume in this analysis. Note that the Visual Plumes model is not capable of simulating diffuser ports discharging effluent in alternating directions, which is how the CSD diffuser discharges effluent. In this analysis, it is assumed that all ports of the CSD diffuser discharge effluent in the same direction. This is a conservative assumption because it reduces the spacing between ports, leading to early merging of the plumes from individual ports and a lower computed dilution of the effluent.

4. DILUTION ANALYSIS RESULTS

The dilution analysis results presented in this report represent the point where the plumes just reached the sea surface. Horizontal spreading of the plumes at the sea surface was not included in this analysis. Results for the selected scenarios are presented in Table 4. The values of dilution in Table 4 are the ratio of the total volume of water within the plume to the volume of the effluent discharged through the diffuser. For example, a dilution value of 10 means the plume contains 9 parts of ocean water and 1 part of the effluent. When the effluent is discharged from the diffuser ports, it has an initial momentum which has a component in the horizontal direction. This initial momentum moves the plume away from the diffuser ports in the horizontal direction as the plume rises in the water column. When the plume reaches the sea surface, the centerline of the plume will be at some horizontal distance away from the diffuser ports. This horizontal distance of the plume centerline from the diffuser ports is also presented in Table 4.

The results in Table 4 indicate that dilution during the warm season is slightly lower than for the cool season. Comparison of the results at a 2.5 mgd effluent discharge flow rate for the current diffuser configuration (Scenarios 1 and 2) versus the new modified diffuser (Scenarios 3 and 4) indicate that the modified diffuser configuration could increase dilution by approximately 10%. For the modified diffuser, when the effluent discharge rate was reduced from 2.5 mgd to 1.5 mgd, the average dilution increased from 74 and 75 to 93 and 97 for the warm and cool seasons, respectively. When the effluent was changed to 0.3 mgd of the RO brine, the average dilution increased to 200 and 220 for the warm and cool seasons, respectively.

Both the average dilution of the effluent and the dilution at the plume centerline are presented in Table 4. For a discharge with an approved ZID, the effluent plume is required to meet water quality standards at the boundary of the ZID, and water quality standards can be exceeded within the ZID. The centerline of a plume is usually within the ZID. Therefore, the average dilution of the effluent is more appropriate for representing the effluent dilution of a discharge with a ZID.

Table 4. Dilution analysis results for selected scenarios

Scenario	Effluent discharge flow rate (mgd)	Season	Effluent salinity (ppt)	Effluent temp. (°F)	Average Dilution	Centerline Dilution	Horizontal distance from port (ft)
Current Diffuser Configuration							
1	2.5	Warm	1.5	78	67	36	8
2	2.5	Cool	1.5	69	68	36	8
Modified Diffuser Configuration							
3	2.5	Warm	1.5	78	74	41	12
4	2.5	Cool	1.5	69	75	41	11
5	1.5	Warm	1.5	78	93	50	9
6	1.5	Cool	1.5	69	97	51	9
7	0.3	Warm	9	78	200	111	4
8	0.3	Cool	9	69	220	114	4

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