Project Description

1. Project Title

Central Coast Blue

2. Lead Agency Name and Address

City of Pismo Beach
Community Development Department, Planning Division
760 Mattie Road
Pismo Beach, California 93449

3. Contact Person and Phone Number

Matthew Downing, AICP, Planning Manager
(805) 773-7044

4. Background and Project Overview

The cities of Pismo Beach, Grover Beach, and Arroyo Grande and the Oceano Community Services District (OCSD) obtain water from a combination of three sources: the California State Water Project, Lopez Reservoir, and local groundwater. Each of these sources is highly variable, with supply fluctuations on the order of thousands of acre-feet per year over the past decade (City of Pismo Beach 2016). The primary source of groundwater for these agencies is from the Northern Cities Management Area (NCMA) of the Santa Maria Groundwater Basin (SMGB). The cities of Pismo Beach, Grover Beach, and Arroyo Grande and OCSD (NCMA agencies) manage groundwater extraction in their portion of the basin to protect long-term sustainable use and to prevent seawater intrusion.

Historically, elevated fresh water levels along the coastline and natural outflow to the ocean have prevented seawater from intruding into the groundwater basin. However, groundwater elevations along the coastline have dropped due to changing climatic conditions, including more frequent periods of extended drought resulting in reduced inflow into the groundwater basin and increased demands on groundwater supplies resulting in a higher rate of groundwater extraction. These lower levels reduce the flow of freshwater out toward the ocean, which reduces the effectiveness of groundwater as a barrier to seawater. If conditions worsen, seawater will draw toward the freshwater zone of the aquifer, contaminating it with elevated salt concentrations.

Central Coast Blue (herein referred to as the "proposed project" or "project") is a regional advanced purified water project intended to enhance supply reliability by reducing the SMGB's vulnerability to drought and seawater intrusion. The project is a multi-agency collaboration between the City of Pismo Beach, the South San Luis Obispo County Sanitation District (SSLOCSD), and the other NCMA agencies. The project would involve injection of advanced purified water into the SMGB via a series

of injection wells, installed at various locations in the SMGB, to develop a seawater intrusion barrier. Water for the project would be sourced from two of the region's wastewater treatment facilities - the Pismo Beach Wastewater Treatment Plant (WWTP) and the SSLOCSD WWTP. Prior to injection to the SMGB, water would be treated to an advanced level of purification at a proposed Advanced Treatment Facility (ATF) constructed at a yet to be determined location in the NCMA. The proposed ATF would treat a combination of flows from the Pismo Beach WWTP and flows from the SSLOCSD WWTP for injection in the SMGB and/or for agricultural irrigation. The blend of source water treated at the ATF would depend on the amount of water available from each WWTP, the water quality characteristics of each of the water flows, the production capacity of the ATF, and the demand for advanced purified and/or irrigation water. The amount of water from each WWTP treated at the ATF would be adjusted periodically based on operational needs.

Because the location, engineering, and construction details are not known for several of the project components at this time, this analysis evaluates the environmental impacts of those improvements at a programmatic level. Once these details are known, project activities will be examined in light of this EIR to determine what, if any, additional CEQA documentation needs to be prepared. However, this analysis evaluates some of the proposed project components, including the injection wells, at a more detailed, project-specific level because they would be constructed in the near-term and the construction details, locations, and component specifications are generally well-known at this time. Project components are described in detail below under *Project Features*.

Project Objectives

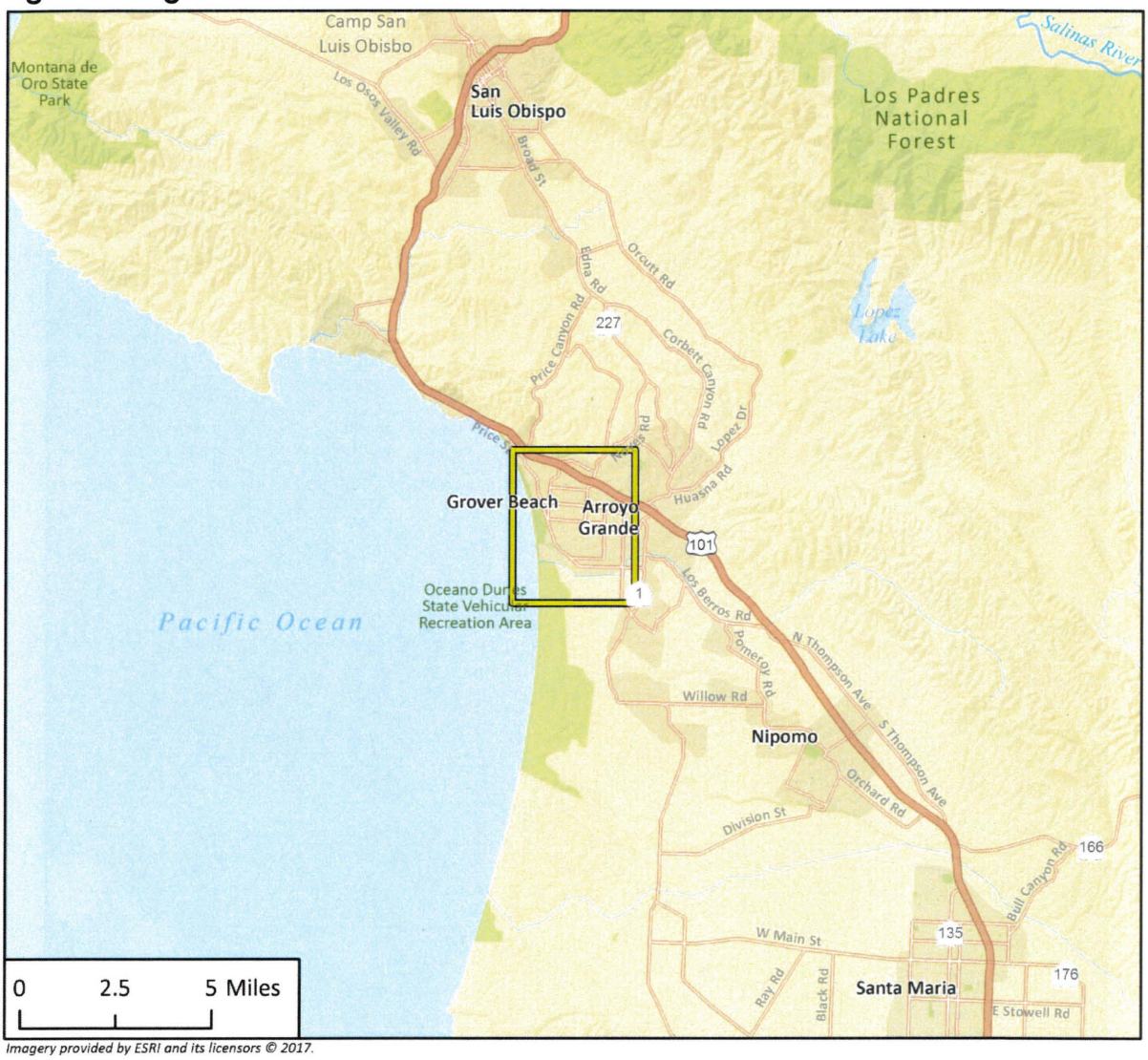
The objectives for the proposed Central Coast Blue project are as follows:

A. Produce advanced purified water of a quality that can safely be used to augment groundwater supply while maintaining or improving existing groundwater quality
B. Create a sustainable, drought-resistant, local water supply and improve water supply reliability for southern San Luis Obispo County
C. Provide a new source of recharge to the SMGB to protect the basin from degradation via seawater intrusion
D. Reduce wastewater discharges to the ocean and maximize utilization of local water supplies
E. Facilitate continued water resources collaboration in the NCMA

5. Project Location

The project area is in the cities of Grover Beach and Pismo Beach, and portions of unincorporated San Luis Obispo County, including the community of Oceano, which is a census-designated place. Figure 1 shows the regional location of the project site, which is approximately seven miles south of the city of San Luis Obispo. The project site is regionally accessible from U.S. Highway 101 (U.S. 101) and locally accessible from California State Route (SR) 1. Figure 2 shows the boundaries of the NCMA agencies overlain on an aerial view of the project site and the surrounding area. The project site extends from Pismo Beach in the north, through Grover Beach, to unincorporated San Luis Obispo County and Oceano in the south. The total project area measures approximately nine miles north to south. With the exception of the existing production wells that would be used for the proposed project and one new production well likely in Grover Beach, all of the known project components would be located within one mile of the coast. Some project components (such as

Figure 1 Regional Location



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Project Location

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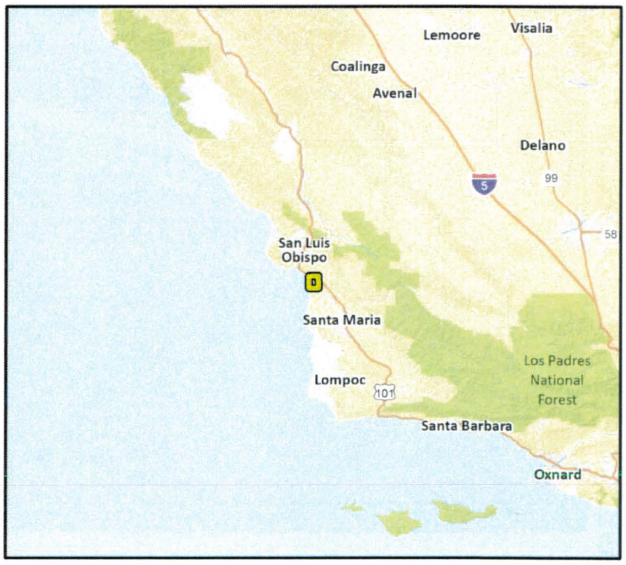
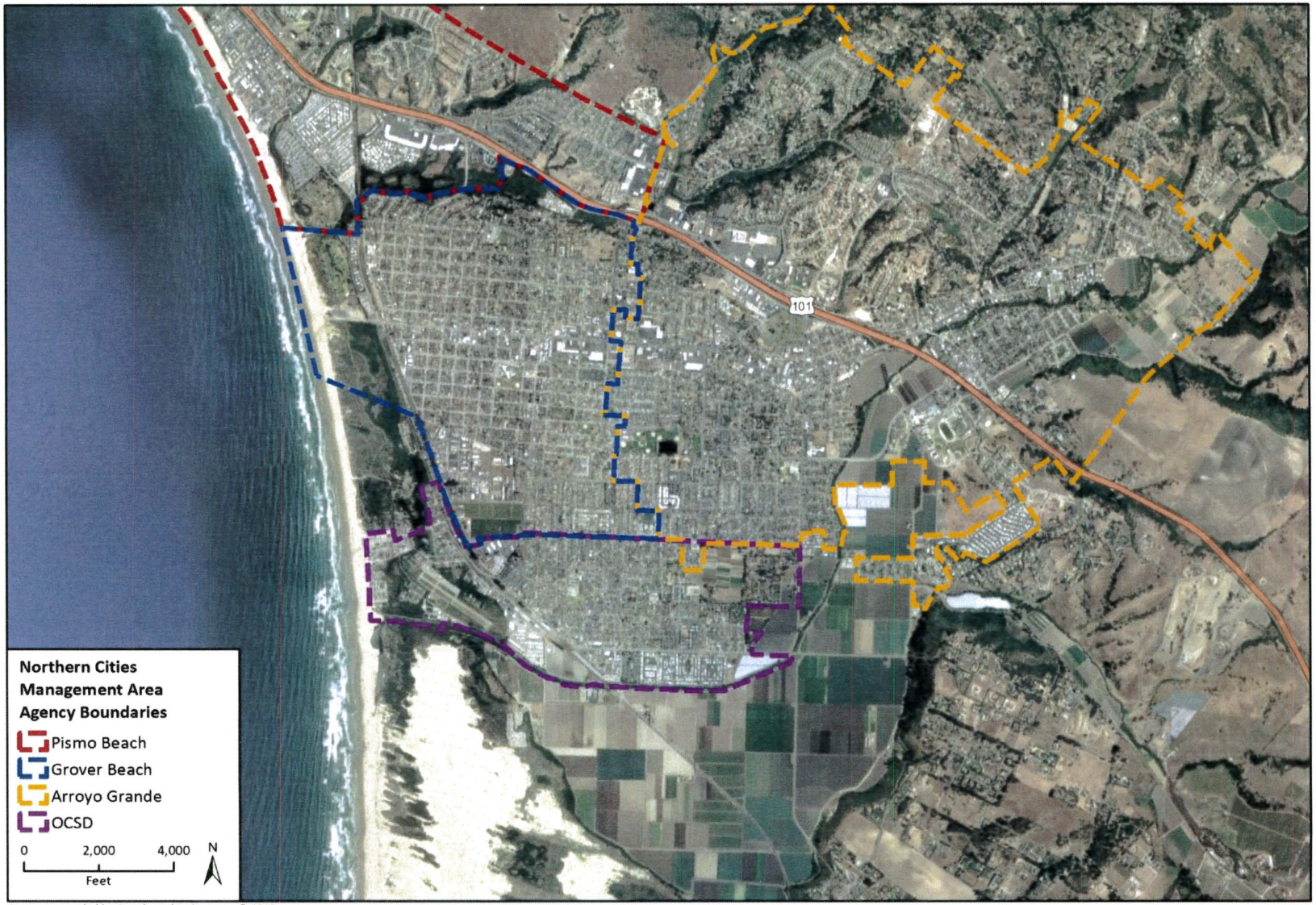


Figure 2 General Project Location



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Additional data provided by South San Luis Obispo County Sanitation District 2016

irrigated lands described in detail below) may be located further inland, but the precise location of those components is unknown at this time.

6. Project Sponsors' Name and Address

City of Pismo Beach
Public Works Department
760 Mattie Road
Pismo Beach, California 93449

South San Luis Obispo County Sanitation District
1600 Aloha Place
Oceano, California 93445

7. General Plan Designation

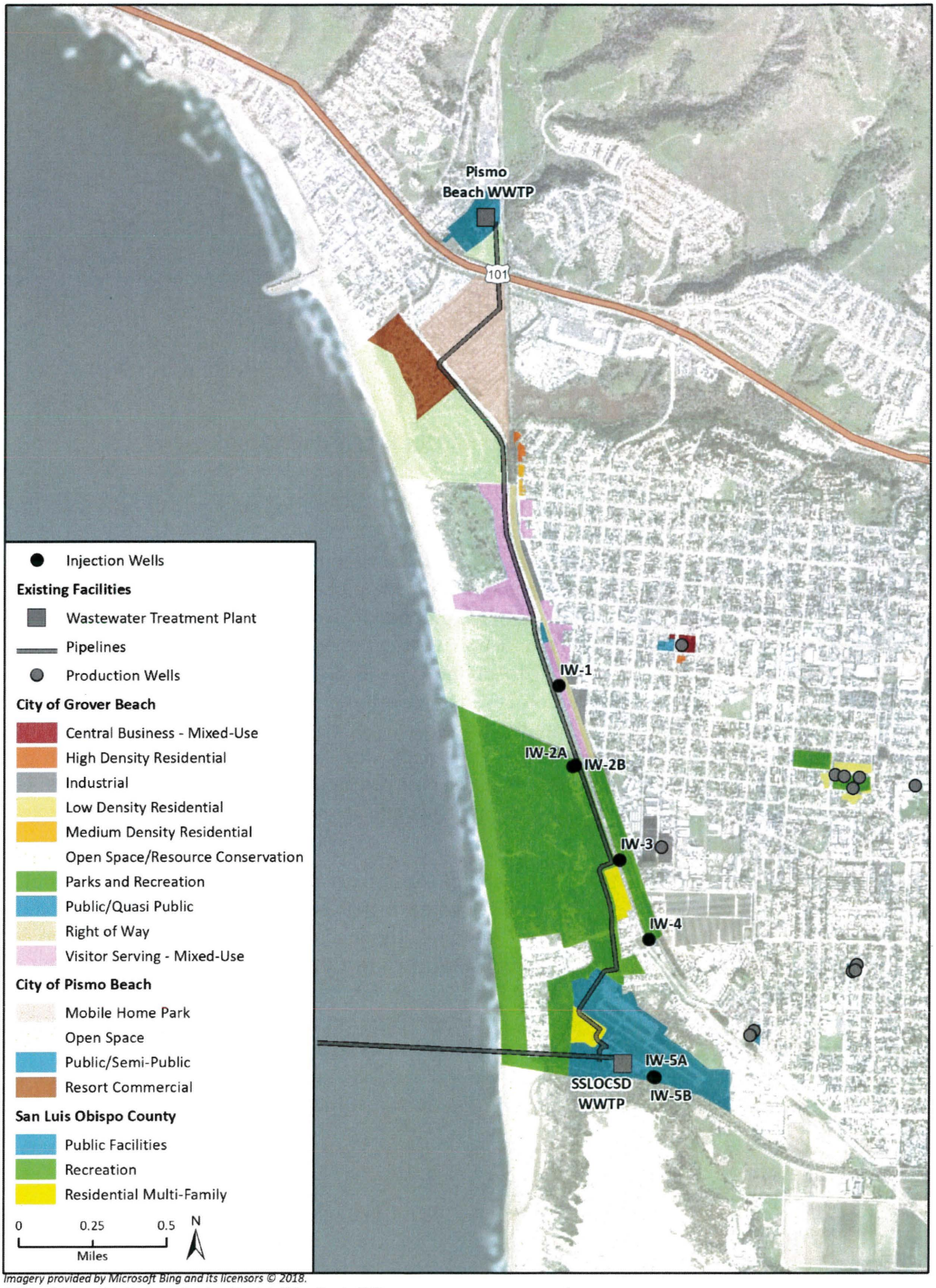
See Figure 3 for General Plan land use designations of the known project components.

8. Description of Project

The proposed project consists of an ATF at a yet to be determined location in the NCMA, an advanced purified water storage tank, an equalization tank, a pump station, distribution pipelines, injection wells, monitoring wells, and one new production well. The project would alter the pumping regime of existing, operational production wells in the project area and also would include construction of one new production well to optimize groundwater production in the area. The project area, which is located approximately seven miles south of the city of San Luis Obispo, spans approximately nine miles to allow for appropriate spacing of the proposed injection wells. From west to east, the project site is approximately one mile wide or less (extending inland from the coast) for known project components other than the new production well. Some conceptual project components may be located further inland, as described in more detail below under *Project Features*.

The total acreage and parcel numbers for many of the project components, including the water distribution pipelines, injection wells, monitoring wells, the ATF, and potential agricultural irrigation areas, are either preliminary or not known at this time. The preliminary locations of known project components and locations of the existing production wells are shown on Figure 4. The location of the ATF is unknown at this time, but it would occupy approximately two acres of available land in the NCMA. Additional project components will include distribution pipelines to transport treated wastewater to the ATF, advanced purified water distribution pipelines to transport water from the ATF to the injection wells, and potentially agricultural irrigation and pipelines to transport water to those irrigated lands; however, those locations are unknown at this time.

Figure 3 Project Site General Plan Land Use Designations



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Additional data provided by Grover Beach and San Luis Obispo County, 2008.

Figure 4 Preliminary Project Components

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Site Characteristics

The injection wells and associated monitoring wells would be located within several publicly-owned properties including the Coastal Dunes RV Park and Campground, Pismo State Beach, and the SSLOCSD WWTP property.

The locations of the ATF, equalization basin, storage tank, pump station, water distribution pipelines, and new production well are not known at this time. The new production well would be owned and operated by the City of Pismo Beach and likely would be located in Grover Beach on land leased or acquired by the City of Pismo Beach. The characteristics of the new production well would be similar to those of the City's existing production wells. It is likely that the ATF, equalization basin, storage tank, and pump station would be located east of SR 1 in Grover Beach. Water distribution pipelines would likely be located within the public rights-of-way along the majority of the pipeline alignments. In addition, because the ATF and associated facilities would likely be located in Grover Beach, several water distribution pipelines would be constructed under SR 1 and the Union Pacific Railroad tracks.

The General Plan land use designations for known preliminary component locations are shown in Figure 3. Most of the project components would be located in or adjacent to public rights-of-way, generally parallel to SR 1.

Project Features

The proposed project consists of an ATF at a yet to be determined location in the NCMA, an advanced purified water storage tank, a pump station and distribution pipelines, injection wells, monitoring wells, and increased pumping from existing production wells. Each of these components of the proposed project is described below. While the project would lead to increased groundwater pumping over recent rates, groundwater pumping will still be below historical (i.e., 2009) levels.

Advanced Treatment Facility

The ATF would treat flows from the Pismo Beach WWTP and the SSLOCSD WWTP. The proportion of the ATF source water that each of these flows comprises would be determined based on the operational needs of the project and the need for supplemental water for the participating agencies, among other factors.

The Pismo Beach WWTP currently treats an average of 0.9 million gallons per day (mgd) of wastewater to a secondary treatment level. The existing treatment process starts with a bar screen to remove debris. After the bar screen, the water flows through oxidation ditches. The oxidation ditches operate under anoxic and aerobic conditions to remove nitrogen/ammonia from the water. Next, the water flows to a clarifier, where solids are settled out. At this point, the water has been treated to a non-potable level and can be disinfected in the chlorine contact basins and conveyed to the SSLOCSD WWTP where it is discharged to the ocean through the existing ocean outfall, which is shared with SSLOCSD.

The existing treatment process at the SSLOCSD WWTP is slightly different than the process described above for the Pismo Beach WWTP. The SSLOCSD WWTP currently treats approximately 2.4 mgd of wastewater to a secondary level. Similar to the process at the Pismo Beach WWTP, the first step of treatment is a bar screen that physically separates solids and large debris from the flow. After the bar screen, the water is sent to the grit removal stage to remove sand, silt and grit. Then, the wastewater flows to the primary clarifier, which uses gravity to separate solid compounds out of the water. Next, the wastewater flowing out of the primary clarifier goes to the fixed film reactor.

The fixed film reactor is a large circular basin filled with a network of plastic media. Microorganisms grow on the plastic media. As the wastewater runs through the media, the microorganisms consume the dissolved organic matter in the water as their food supply. After the water leaves the fixed film reactor, it then goes to the secondary clarifier. The secondary clarifier performs the same process as the primary clarifier, using gravity to separate out any remaining solids or new solids that may have formed during the fixed film reactor stage of treatment. At this point, the water has been treated to a non-potable level and can be disinfected in the chlorine contact chambers before being discharged to the ocean through the existing ocean outfall.

Advanced treatment would add several additional treatment steps to further purify recycled water from the Pismo Beach WWTP and SSLOCSD WWTP. Additional treatment steps include microfiltration/ultrafiltration (MF/UF), reverse osmosis (RO), and ultraviolet (UV) disinfection with advanced oxidation. The first step in the advanced treatment process is MF/UF, which filters the wastewater that has already undergone secondary treatment through a physical membrane barrier with very small pores to remove turbidity, particles, and microorganisms. These pores range in size depending on the level of filtration; MF typically has a pore diameter of 0.1 micrometer (µm) and UF typically has a pore diameter of 0.01 µm. For comparison, 0.1 µm is 1/600th the diameter of a human hair. In comparison, the smallest size of bacteria is approximately 0.3 µm, which is 1/300th the diameter of a human hair. MF/UF removes very small particles and prepares the water for the next step of RO. The MF/UF membranes are permeable and retain suspended particulates, including bacteria, protozoa, and some organics and viruses, thereby removing these constituents from the water. The MF/UF membranes are designed to adapt to water quality conditions and flow with automatic adjustments to the filter system, which saves energy, chemical use, and manpower. Figure 5 provides an illustrated example of the MF process. The UF process is similar to that of the MF process; however, more organics and viruses are removed in the UF process due to the smaller pore size.

From the MF component, the water travels downstream to the RO component. RO removes dissolved solids, organic contaminants, sugars, salts, and sub-micron particles and pathogens, including viruses, bacteria, and protozoa, from the water. It also uses a physical membrane barrier with pore sizes that range from 0.02 µm to 0.0001 µm depending on the membranes used. Figure 6 provides an illustrated example of the RO process. Unlike MF/UF, RO produces a clean water stream (permeate) and a waste water stream (concentrate). This means that not all the water is recovered from this process as permeate water. A percentage of the water becomes concentrate (typically about 10 to 30 percent), which contains a higher concentration of the dissolved particles than were in the source water flow. This concentrate will ultimately be discharged to the ocean through the existing ocean outfall that currently receives all the flow from the Pismo Beach and SSLOCSD WWTPs. While the concentrate stream is more concentrated than typical drinking water, it is still much less salty than ocean water or concentrate from ocean desalination facilities. As discussed in the *RO Concentrate Sampling Plan Results* prepared by Carrollo Engineers (2018), the large majority of constituents present in RO concentrate produced using treated wastewater from the City's WWTP will not cause exceedances of the City of Pismo Beach's National Pollutant Discharge Elimination System permit effluent concentration limits. Although testing determined that Total Residual Chlorine concentrations would exceed the effluent concentration limits, the ATF would include a process to neutralize the chlorine, which would resolve the exceedance of Total Residual Chlorine concentrations. Testing of RO concentrate produced using the treated wastewater from the SSLOCSD WWTP has not been performed because the advanced treatment pilot plant was located at the Pismo Beach WWTP and the SSLOCSD WWTP effluent water quality is expected to change with implementation of the planned SSLOCSD WWTP Redundancy Project.

After the dissolved solids have been removed, the water that passed through the RO membranes is of very high quality and is ready for the UV disinfection/advanced oxidation treatment process. The UV disinfection component provides additional treatment by oxidizing trace chemical pollutants that may have passed through the MF and RO stages. Advanced oxidation uses UV light and oxidation chemicals to initiate a series of chemical reactions that break down compounds in the water that cannot be broken down by biological treatment or removed using the membranes. Figure 7 provides an illustrated example of the UV/advanced oxidation treatment process.

In addition to the advanced treatment components described above, the ATF would include staff support facilities that may include office space, a locker room, restrooms, file storage, a break room and kitchen, chemical storage and feed facilities, and an emergency power generator. The ATF would occupy approximately 0.85 acres, and the support facilities would occupy approximately 0.14 acres.

Equalization Basin, Storage Tank, and Pump Station

The project would involve construction of an equalization storage basin at a yet to be determined location in the NCMA, providing greater capacity and operational flexibility to the ATF. The 1.5 million gallons of storage is required for the secondary treated effluent from the Pismo Beach and SSLOCSD WWTPs prior to advanced purification in the ATF, allowing operations staff to address fluctuations in flow from the WWTPs without impacting the flow rate to the ATF. The storage would occupy approximately 7,500 square feet of area on land adjacent to the ATF in the NCMA.

Following advanced purification in the ATF, water would travel to the proposed advanced purified water storage tank and then to the pump station, where advanced purified water would be pumped to the injection wells. The advanced purified water storage tank would provide operational flexibility and help to maintain a consistent flow in the advanced purified water pump station. The storage tank is anticipated to be located below ground on land adjacent to the ATF in the NCMA. The pump station would occupy approximately 0.03 acre and would be located adjacent to the ATF. A conceptual drawing of the overall treatment process that would be used is shown in Figure 8.

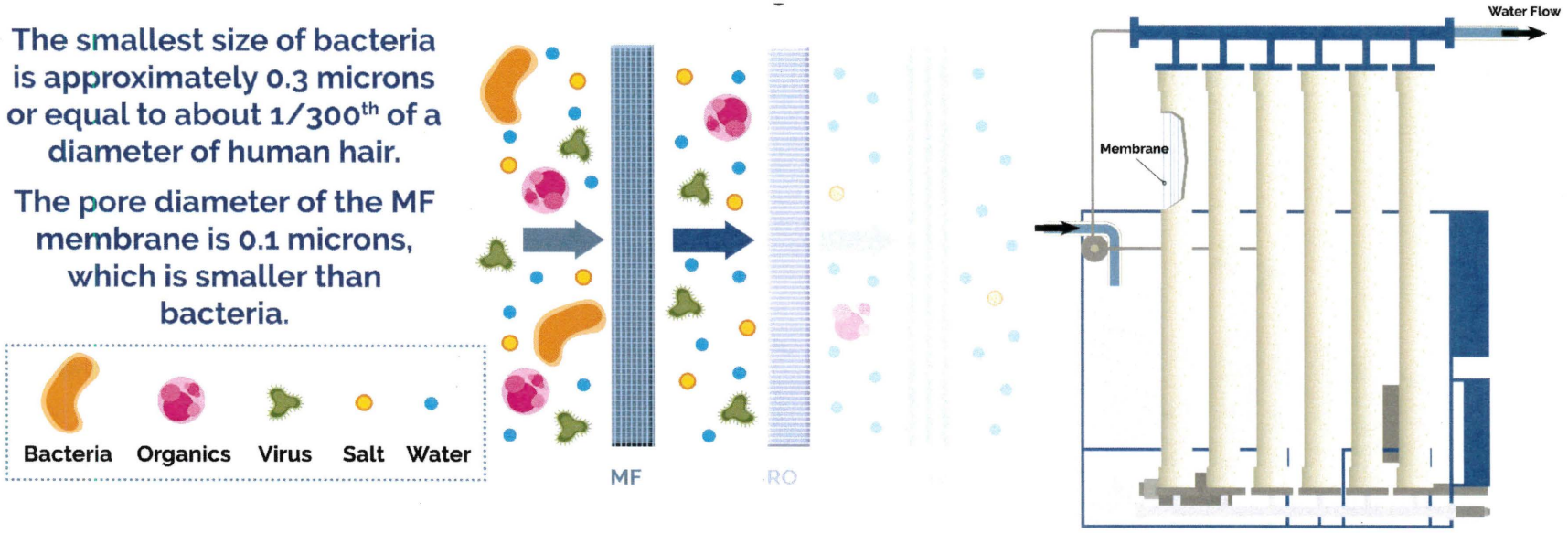
Water Distribution Pipelines

Two sets of water distribution pipelines would be installed. One set would transport treated water from the Pismo Beach and SSLOCSD WWTPs to the proposed ATF, and the other set would transport advanced purified water from the proposed ATF to several groundwater injection wells located throughout the NCMA. While the alignments of those pipelines are unknown at this time, they are expected to generally be located in existing rights-of-way, such as beneath public streets, and in previously disturbed areas in the NCMA. Construction methods for the proposed pipelines would predominantly involve open trenching, with jack and bore or horizontal directional drilling methods used as needed.

Groundwater Injection and Monitoring Wells

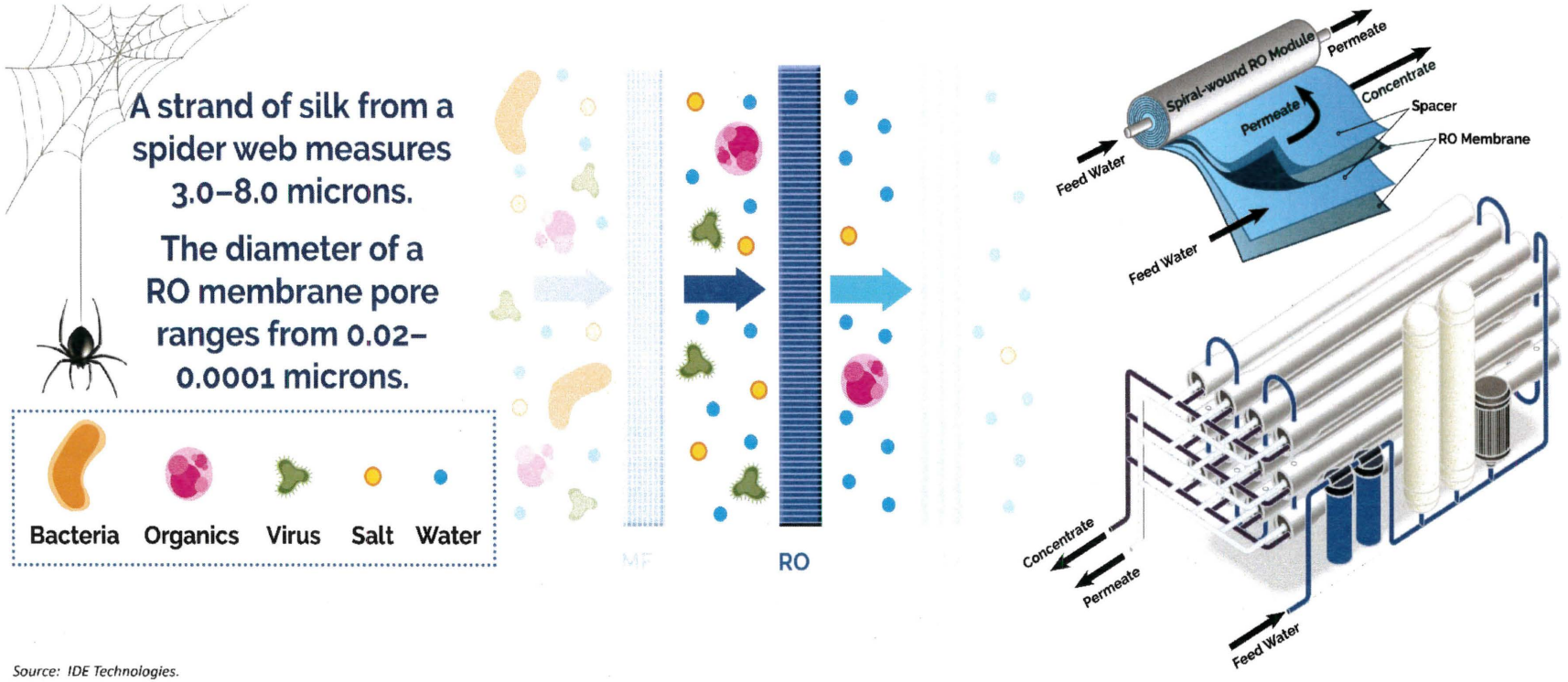
Seven injection wells would be installed at five locations throughout the NCMA, which are shown in Figure 4. The injection wells would be located generally within one-half mile of the coast. Each injection well would be capable of injecting approximately 200 to 300 acre-feet per year (AFY). The advanced purified water would be injected at a depth of approximately 200 to 600 feet below ground surface. Each injection well would be accompanied by up to two monitoring wells equipped to measure and monitor water level and water quality. Injection wells would include aboveground

Figure 5 Conceptual Microfiltration Process Detail



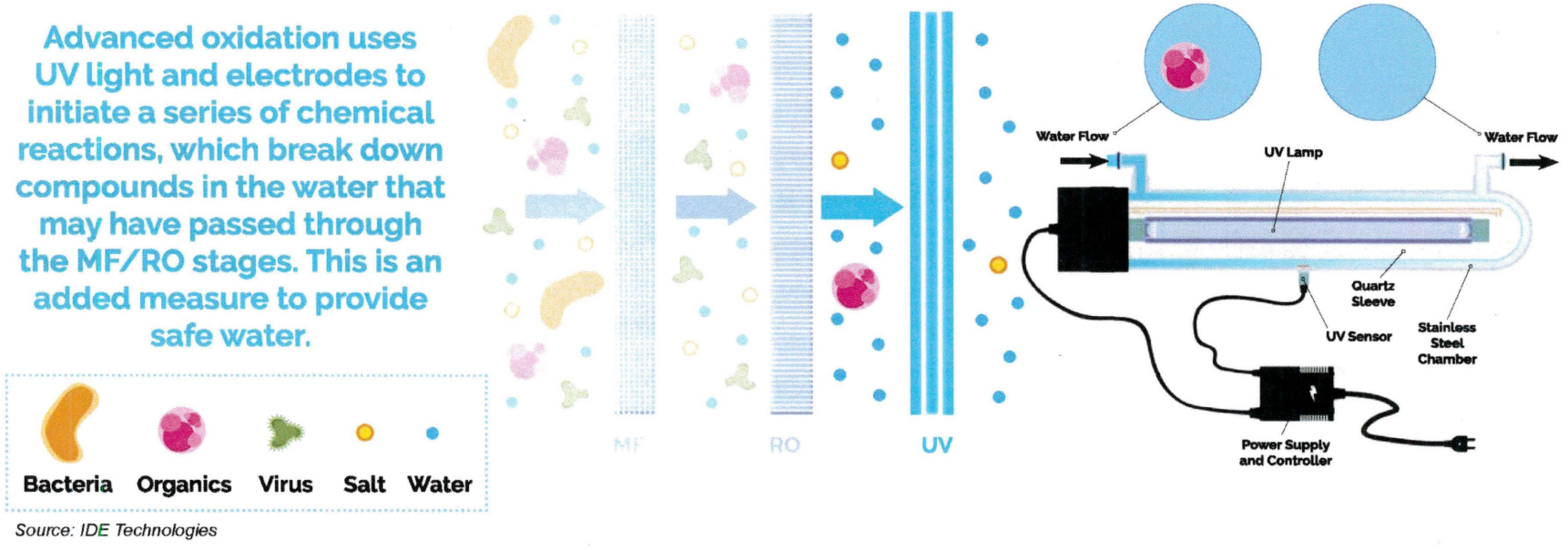
Source: IDE Technologies.

Figure 6 Conceptual Reverse Osmosis Process Detail



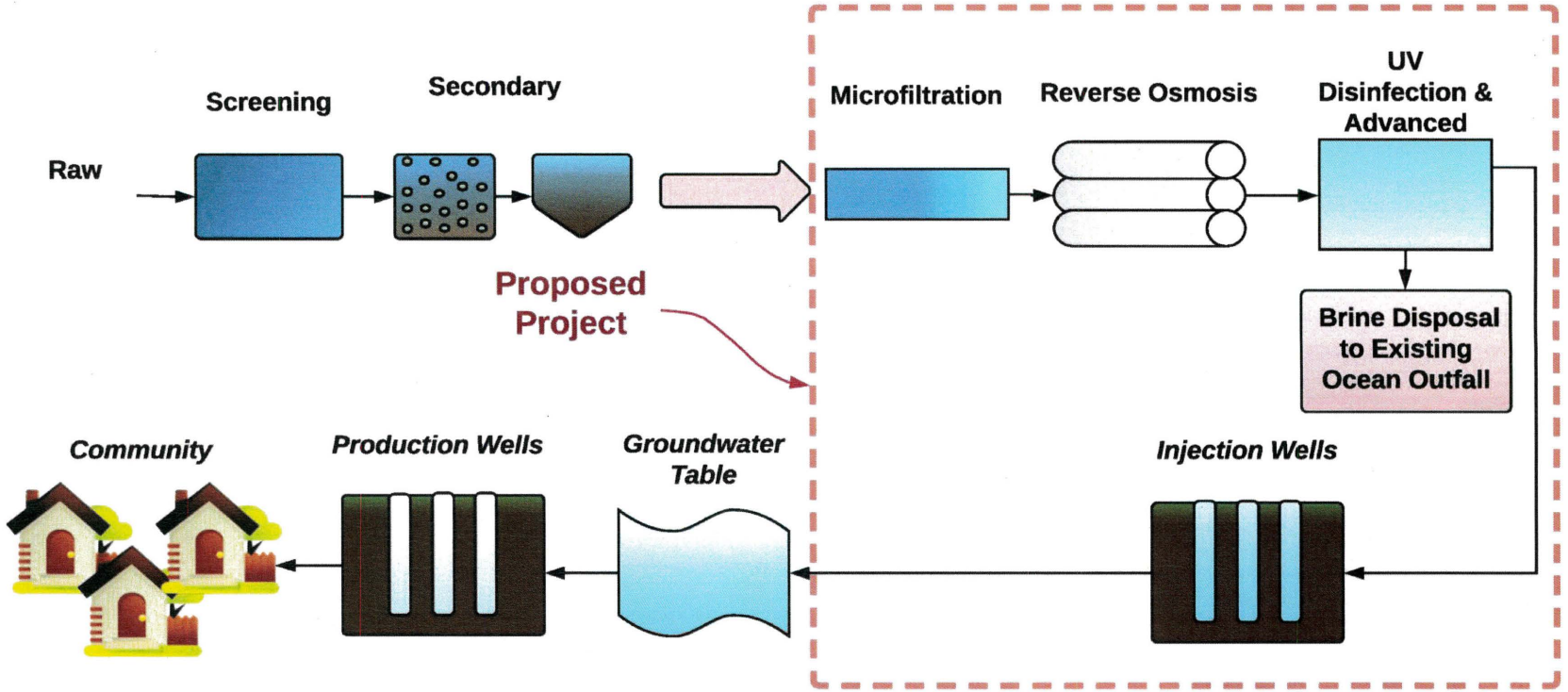
Source: IDE Technologies.

Figure 7 Conceptual Ultraviolet/Advanced Oxidation Process Detail



Source: IDE Technologies

Figure 8 Conceptual Advanced Treatment Process



piping and infrastructure such as electrical panels, control panels, and storage facilities. Maintenance of the injection wells would involve monitoring of pressures, frequent inspections, cleaning out the well casings, and removing microbial build-up once every two years.

Production Wells

Several existing production wells would be available for extraction of the injected advanced purified water. The project would involve increased pumping at these wells but would not involve modification of these existing production wells or any associated ground disturbance. Figure 4 shows the existing production wells that are anticipated to be used. One new production well will need to be constructed to optimize the system, but the precise location of that new well has not been determined at this time. The new production well likely would be located in the Grover Beach, likely on land leased or acquired by the City of Pismo Beach. The characteristics of the new production well would be similar to those of the City's existing production wells.

Agricultural Irrigation

A portion of the advanced purified water may be used for agricultural irrigation. Potential agricultural irrigation areas include agricultural lands located generally south of Oceano. If agricultural irrigation is included in the proposed project, additional distribution pipelines would be constructed to carry advanced purified water from the ATF to the irrigated lands.

Grading and Construction

Construction of the known project components identified above under *Project Features* is anticipated to last approximately 24 months. During the construction period, portions of the project area would be closed to public access.

The location of the ATF would likely need to be graded to provide a level base for the ATF and appurtenant structures, to provide site access, and to provide appropriate stormwater drainage. If the location is within a designated 100-year Special Flood Hazard Area, site preparation and grading for the ATF and appurtenant structures would also include necessary improvements to provide adequate flood protection, which may include raising structural foundations above the base flood elevation.

It is assumed that a moderate amount of existing soil would be excavated and exported, and a moderate amount of clean engineered fill or another suitable substrate would be imported to provide geotechnical stability for the ATF and appurtenant structures. No substantial soil import or export beyond that required for geotechnical improvements is anticipated. Excavation depth is not anticipated to exceed 20 feet for any of the project components other than the injection wells, which would be excavated to a depth of up to 600 feet.

Construction of the project components is not expected to result in removal of large numbers of mature trees. Also, the project would include planting trees for accenting, screening, or other purposes as space allows, with a preference for native trees.

Injection and Monitoring Wells

Construction activities would occur from 7:00 a.m. to 7:00 p.m., Monday through Friday with the exception of a two to three-week period during which well drilling activities would occur for 24 hours per day, Monday through Sunday. Temporary lighting would be required during 24-hour

drilling activities and would consist of several lights adhered to the mast of the drill rigs that would be pointed downward and portable lights that would be placed around the working areas.

Construction equipment would include a drilling rig, a gradall forklift, four diesel-powered generators, a compressor, and a backhoe. Additional construction components would include a pipe trailer, water storage tanks, a tool trailer for supply storage, a mud tank, and a roll-off bin. Construction equipment would be up to 50 feet in height. Approximately seven construction workers would be on the project site at any given time. Approximately 392 cubic yards of soil would be excavated and exported during well drilling activities.

Project construction would require groundwater pumping activities during well development at a rate of approximately 100 to 300 gallons per minute (gpm) for the monitoring wells and 100 to 1,500 gpm for the injection wells. Well development would produce approximately 300,000 gallons (0.9 acre-feet) of water per monitoring well and approximately 3,500,000 gallons (10.8 acre-feet) of water per groundwater well. Groundwater produced during well development would be disposed of via connections to the existing Pismo WWTP ocean outfall pipeline that runs below SR 1.

Site Access

Site access at the ATF would be provided via an entrance gate through the ATF fencing. Construction of the project components, including the water distribution pipelines and the injection and monitoring wells, would result in temporary access restrictions along public roadways throughout the project area. Operation of the project components would result in a minor increase in daily trips to and from the project site.

9. Surrounding Land Uses and Setting

Land use west of the known project components is mainly open space associated with Pismo State Beach. A golf course, a campground, and residential development are located west of the northern portion of the project site. The southern portion of the project site is occupied primarily by the Oceano County Airport and single-family residences in Oceano. Industrial and agricultural development extends eastward from the southern portion of the project site. Residential development occupies most of the land east of the middle and northern portions of the project site, with some commercial and industrial development located along the SR 1 corridor.

10. Other Public Agencies Whose Approval is Required

Other agencies whose approval is potentially required include the United States Bureau of Reclamation, the United States Army Corps of Engineers (USACE), the Federal Aviation Administration, the Federal Railroad Administration, the California Department of Fish and Wildlife (CDFW), the California Coastal Commission, the California Department of Parks and Recreation, the State Water Resources Control Board (SWRCB) Division of Funding Assistance and the Division of Drinking Water, the California Department of Water Resources, the Central Coast Regional Water Quality Control Board, SSLOCSD, the County of San Luis Obispo, the California Department of Transportation (Caltrans), the City of Arroyo Grande, and the City of Grover Beach.

Several partner agencies, potentially including the City of Pismo Beach, SSLOCSD, the County of San Luis Obispo, the City of Arroyo Grande, and the City of Grover Beach, may form a Joint Powers Authority (JPA) at a future time. Should a JPA be formed for the purposes of project funding,

management, and operation, that JPA likely would serve as a CEQA Responsible Agency for the proposed project.

References

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