

**San Vicente Pumped Storage Project**  
**FERC Project Number 14642-000**  
**Pre-Application Document**

*Submitted by:*



**San Diego County Water Authority**



**THE CITY OF SAN DIEGO**

*Date:* July 28, 2015

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## 1.0 Introduction

The San Diego County Water Authority (Water Authority) and City of San Diego (City) are filing with the Federal Energy Regulatory Commission (FERC or Commission) this Pre-Application Document (PAD) and Notice of Intent (NOI) to file an Application for license for the proposed San Vicente Pumped Storage Project (FERC Project Number 14642-000) (San Vicente Project or “Project”).

The San Vicente Project is a proposed 500-megawatt (MW) pumped storage hydroelectric project located near the community of Lakeside within San Diego County, California. The Project will be configured using the existing San Vicente Reservoir as the lower reservoir. The proposed upper reservoir site (Foster Canyon) site is located approximately 0.5 miles northwest of the San Vicente Reservoir.

In addition to the two reservoirs, the San Vicente Project would consist of new inlet/outlet structures, a powerhouse cavern, pipeline/tunnel connecting the upper and lower reservoirs to the powerhouse, access and cable tunnels, new power transmission lines, access roads, and other related facilities. Refer to Section 2.2 Maps (Figures 2.2-1 Vicinity Map, 2.2-2 Regional Map, 2.2-3 A/B FERC Boundary Map – San Vicente Project, 2.2-4 A/B Land Ownership Map) and Section 2.3 Existing and Proposed Facilities (Figure 2.3-1 San Vicente Project Operations).

On May 14, 2015, the FERC issued the preliminary permit to the Water Authority and City, for a period effective the first day of the month in which this permit is issued (May 1, 2015), and ending either 36 months from the effective date (April 30, 2018) or on the date that a development application submitted by the permittee has been accepted for filing, whichever occurs first. The preliminary permit secures and maintains priority of application for a license for the Project under the Federal Power Act, allowing the Water Authority and City time to collect the data and perform the acts required to determine the feasibility of the Project and to support an application for a license. Such studies have been ongoing and results are described in this document.

The Water Authority and City are proposing to move forward with a License Application for the Project using the Traditional Licensing Process (TLP). The formal request to FERC to use the TLP process rather than the default process, known as the Integrated Licensing Process (ILP), is also being filed at this time (18 C.F.R. §5.3; see Notification of Intent letter attached with request to utilize the TLP).

Due diligence has been exercised to determine and collect existing available information in order to describe the existing environment and identify potential impacts to Project area resources from Project construction and operation. This PAD summarizes the engineering, operational, economic, and environmental information about the Project and Project area resources that are reasonably available at this time.

The San Vicente Project PAD is organized into two volumes: Volume 1 – Public Information and Volume 2 – Critical Energy Infrastructure Information (CEII). CEII is information about proposed or existing critical infrastructure that (1) is exempt from disclosure under the Freedom of Information Act (FOIA), (2) relates to the production, generation, transportation, transmission, or distribution of energy, (3) could be useful to a person planning an attack on the infrastructure, and (4) does not simply give the location of the critical infrastructure. Privileged information is usually confidential business information or cultural resource reports submitted under 18 C.F.R. §388.112. More information about these document classes can be obtained on the FERC website at <http://www.ferc.gov/legal/ceii-foia/ceii/nip.asp>.

The Water Authority and City have filed Volumes 1 and 2 of the PAD with the Commission and will provide Volume 1 to any interested entity. Volume 2 must be obtained directly from the Commission via a written request.

## **1.1 Process Plan and Schedule and Communications Protocol**

The Water Authority and City developed the proposed Process Plan and Schedule, provided in Table 1.1-1, assuming FERC approval of the TLP and in accordance with the Commission's regulations at 18 CFR § 5.6. The Water Authority and City's proposed Process Plan and Schedule identifies key activities, the responsible parties (FERC, Water Authority, City, and stakeholders), and timelines during the PAD filing period. The proposed dates provided in the Process Plan and Schedule take into account FERC's timeline for the key TLP milestones, federal holidays, and where necessary, adjusted to eliminate weekend day deadlines in the schedule.

The TLP includes a First, Second and Third Stage consultation process as required per 18 CFR § 4.38 for an original License. The License Application pre-filing period will include the First and Second Stage consultation activities. Under the First Stage, the Water Authority and City will consult with resource agencies and stakeholders to identify potential issues and information needs relevant to the proposed Project development. This stage will include the development of study plans for implementation during the Second Stage consultation period. The Second Stage will include implementation of the studies, development of study reports, development of the Draft License Application, and will conclude with the filing of the Final License Application with FERC. The Third Stage will begin with the Water Authority and City filing of the Final License Application with FERC. FERC will then conduct post-filing processing of the License Application.

The Water Authority and City will hold a Joint Meeting, including an opportunity for a site visit, within 30-60 days of FERC approval to use the TLP at a location to be announced. The Water Authority and City will consult with all pertinent agencies, tribes, and members of the public on the scheduling and agenda of the Joint Meeting and provide written notice and an agenda to the Commission no later than 15 days in advance of the meeting date. The Joint Meeting will

provide an opportunity for the Water Authority and City to present information regarding the proposed San Vicente Pumped Storage Project, review the PAD application materials with the stakeholders, discuss any additional data and study needs, and review the process and consultation schedule. The Joint Meeting will be recorded or transcribed as required by 18 CFR § 4.38.

### **Communications Protocol**

Consistent with federal and state paper-reduction policies, and in accordance with the objectives of FERC Order No. 604, the Water Authority and the City will transmit and receive licensing related communications and other written materials in electronic format when possible. Preferred formats are: Microsoft Word, Adobe, and Microsoft Excel.

Certain documents may also be restricted from publication on the licensing website in accordance with FERC's regulations protecting Critical Energy Infrastructure Information (CEII) (18 CFR§ 388.113) or in cases where the document contains privileged information (e.g., sensitive species locations, cultural resource sites, etc.). The Water Authority and the City will address requests for access to this information on a case-by-case basis, in accordance with state and federal law as needed during the licensing consultation process.

### **Licensing Website**

The Water Authority and the City will maintain a website (<http://www.sdcwa.org/san-vicente-pumped-storage-project>) as the primary mode of document distribution and access to key documents developed during the course of the licensing consultation, such as this PAD and NOI, meeting notices, meeting summaries, study plans and study reports, preliminary licensing proposal/draft license application and final license application.

The Water Authority and the City will maintain a current calendar of upcoming and past meetings, and will post meeting materials (including agendas, handouts, and summaries) on the website to increase the availability of these materials to all Participants.

The following table summarizes the general guidelines that the Water Authority and the City will follow in determining the appropriate mode of distribution for licensing documents.

**Table 1.1-1 Documents Distribution Guidelines**

Document Type	Distribution Mode(s)
Informal communications	Email or regular mail
Formal meeting notices and agendas	Website and regular mail notice
Meeting summaries	Website and/or regular mail notice
Large licensing related documents (e.g., PAD, study reports, progress reports, Draft License Application, responses to Additional Information Requests, and Final License Application	Website and regular mail notice; CD-ROM and/or paper format available upon request
PAD reference documents	Website (via direct links and/or within scanned PDF files)

**Table 1.1-2 Proposed Process Plan and Schedule for the San Vicente Project**

<b>RESPONSIBLE PARTY</b>	<b>ACTION</b>	<b>TIMING</b>	<b>PROPOSED TARGET DATE</b>
<b>Water Authority / City</b>	File NOI and PAD, Request to use TLP	July 2015 per FERC direction in approval of Preliminary Permit	7/28/2015
<b>Stakeholders</b>	Comments on NOI, PAD, and TLP Request	30 days from filing NOI/PAD	8/28/2015
<b>FERC</b>	Notice of NOI/PAD; Decision on TLP Request	60 days from filing TLP Request	9/28/2015
<b>Water Authority / City; Stakeholders</b>	Joint Agency Meeting/Site Visit	30-60 days after FERC TLP Approval	Mid-Nov 2015- TBD
<b>Stakeholders</b>	Comments on PAD; Study Requests	60 days from Joint Agency Meeting	1/11/2016
<b>Water Authority / City</b>	Conduct Studies (assume 2 years of studies)	Dependent upon study needs	3/2016 - 3/2018
<b>Water Authority / City</b>	Draft License Application/Study Results to Stakeholders	Dependent upon study needs	April 2018
<b>Stakeholders</b>	Comments on Draft License Application	Within 90 days from filing of DLA	July 2018
<b>Water Authority / City; Stakeholders</b>	Joint Agency Meeting if Needed	Within 60 days from comment deadline	September 2018
<b>Water Authority / City</b>	File Final License Application	Dependent upon study needs	December 2018



## **2.0 Project Location, Facilities, and Operations**

This section provides contact information of each person authorized to act as agent for the potential co-applicants; maps of land use within Project boundaries, including, and as applicable, federal and Tribal lands; and the location of proposed facilities. The Project description, including existing and proposed facilities and operational functions are also described below.

### **2.1 Contact Information**

San Diego County Water Authority  
4677 Overland Avenue  
San Diego, California 92123  
Contact Name: Frank Belock, Deputy General Manager  
Contact phone: (858) 522-6600

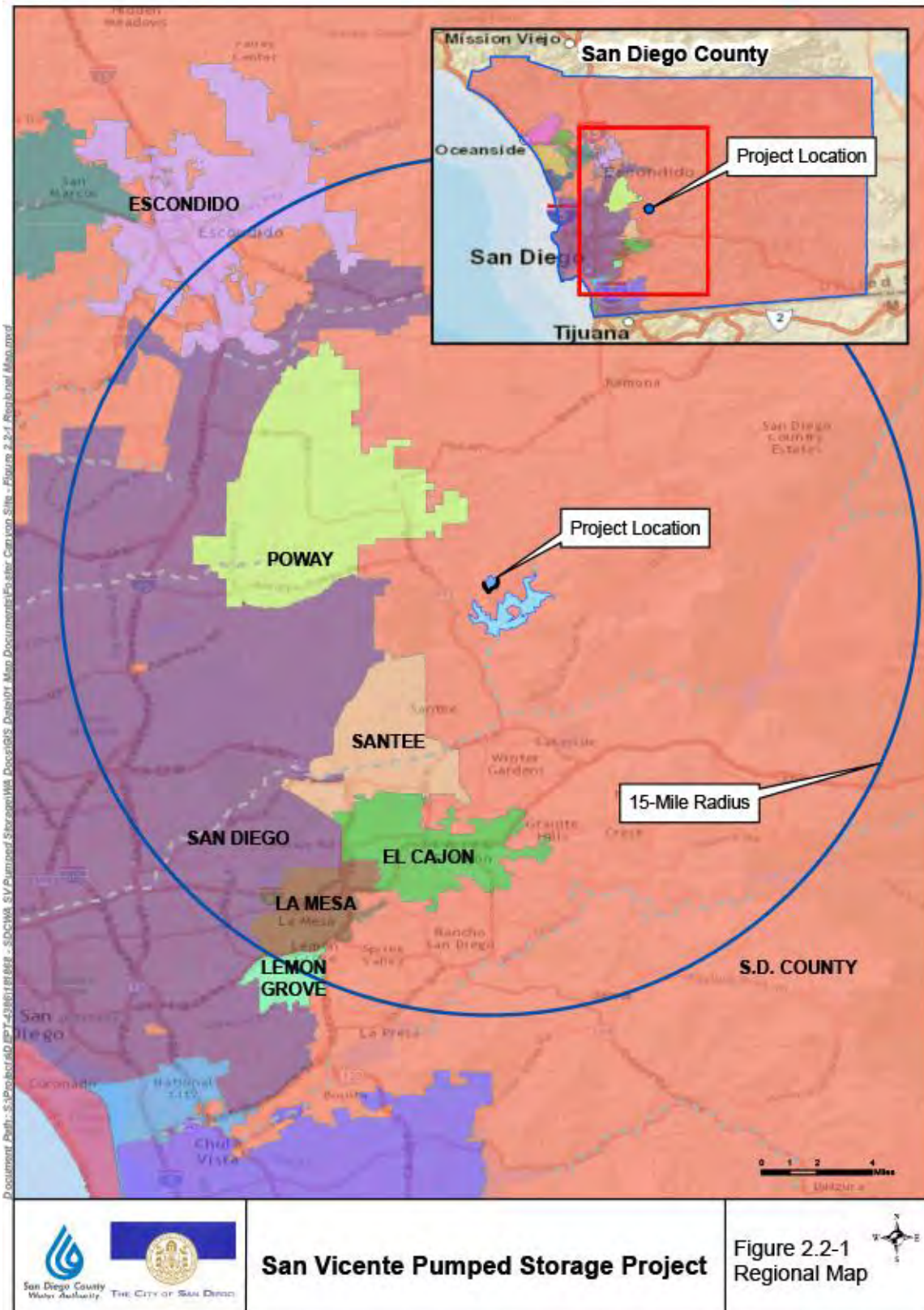
City of San Diego  
9192 Topaz Way, MS901A  
San Diego, California 92123  
Contact Name: Robert Mulvey, Assistant Public Utilities Director  
Contact phone: (858) 292-6418

### **2.2 Maps**

The San Vicente Project is located in San Diego County, California, approximately 30 miles northeast of downtown San Diego. Municipalities and unincorporated communities within 15 miles of the Project site include Poway, Lakeside, Ramona, Escondido, Santee, El Cajon, Lemon Grove, and La Mesa. The proposed upper reservoir site is located in the following township, range, and section designations: T14S/R1W/S24 and T14S/R1E/S19.

See Figures 2.2-1 Vicinity Map, 2.2-2 Regional Map, 2.2-3 A and 2.2-3 B FERC Boundary Map – San Vicente Project, and 2.2-4 A and 2.2-4 B Land Ownership Map.

**Figure 2.2-1 Vicinity Map**



**Figure 2.2-2 Regional Map**





**Figure 2.2-3 A FERC Boundary Map (Part 1)**

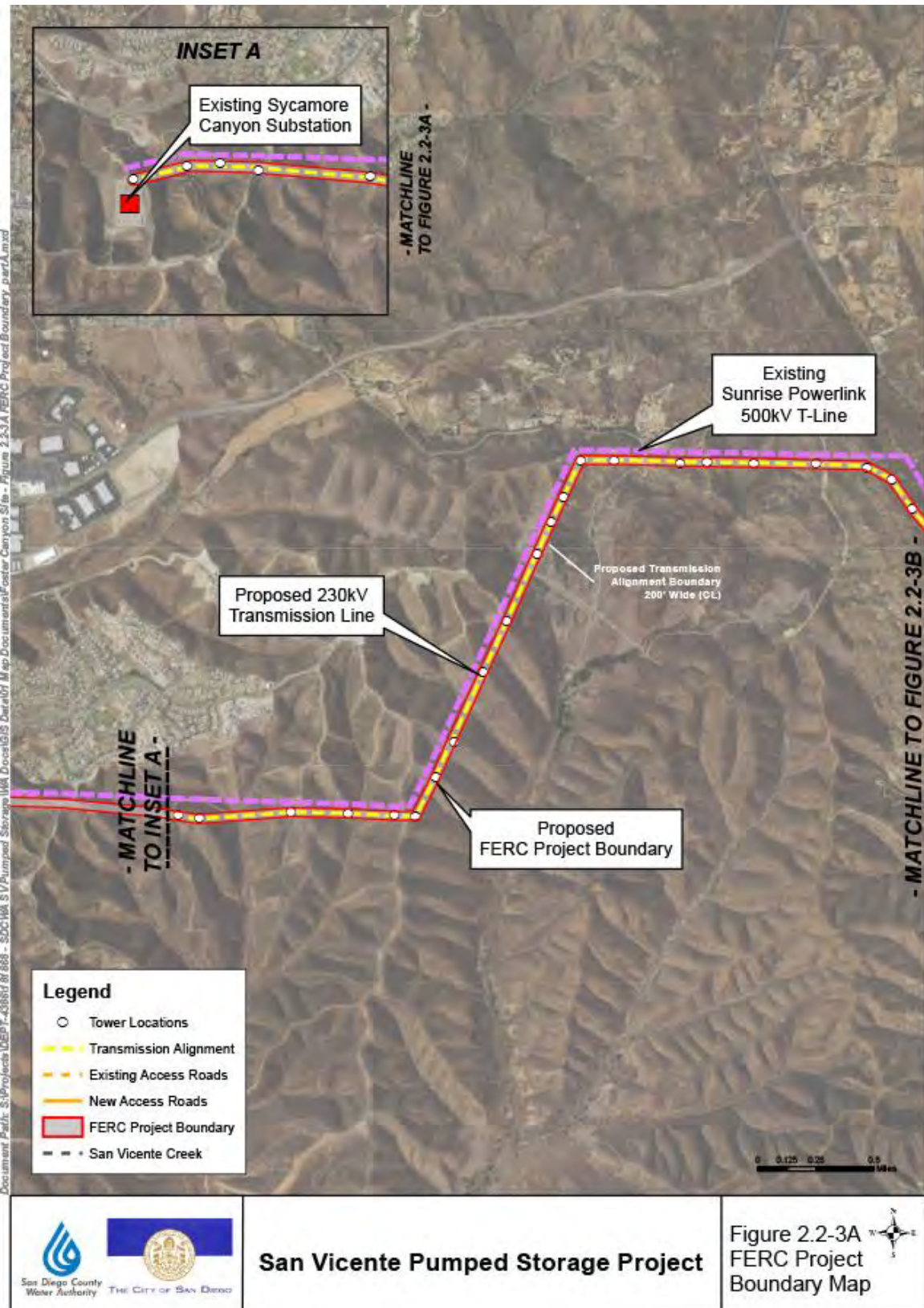


Figure 2.2-3 B FERC Boundary Map (Part 2)

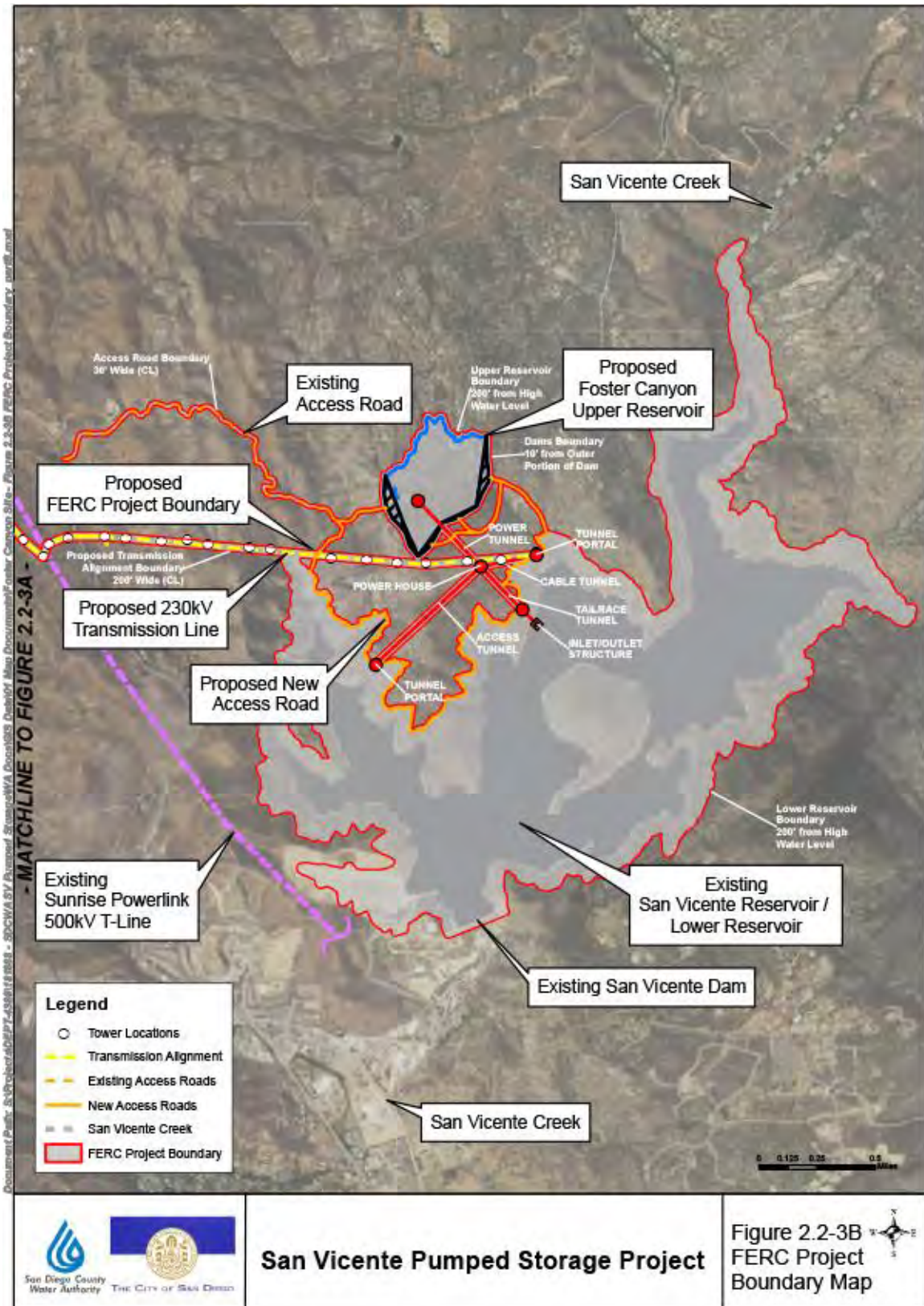




Figure 2.2-4 A Land Ownership Map (Part 1)

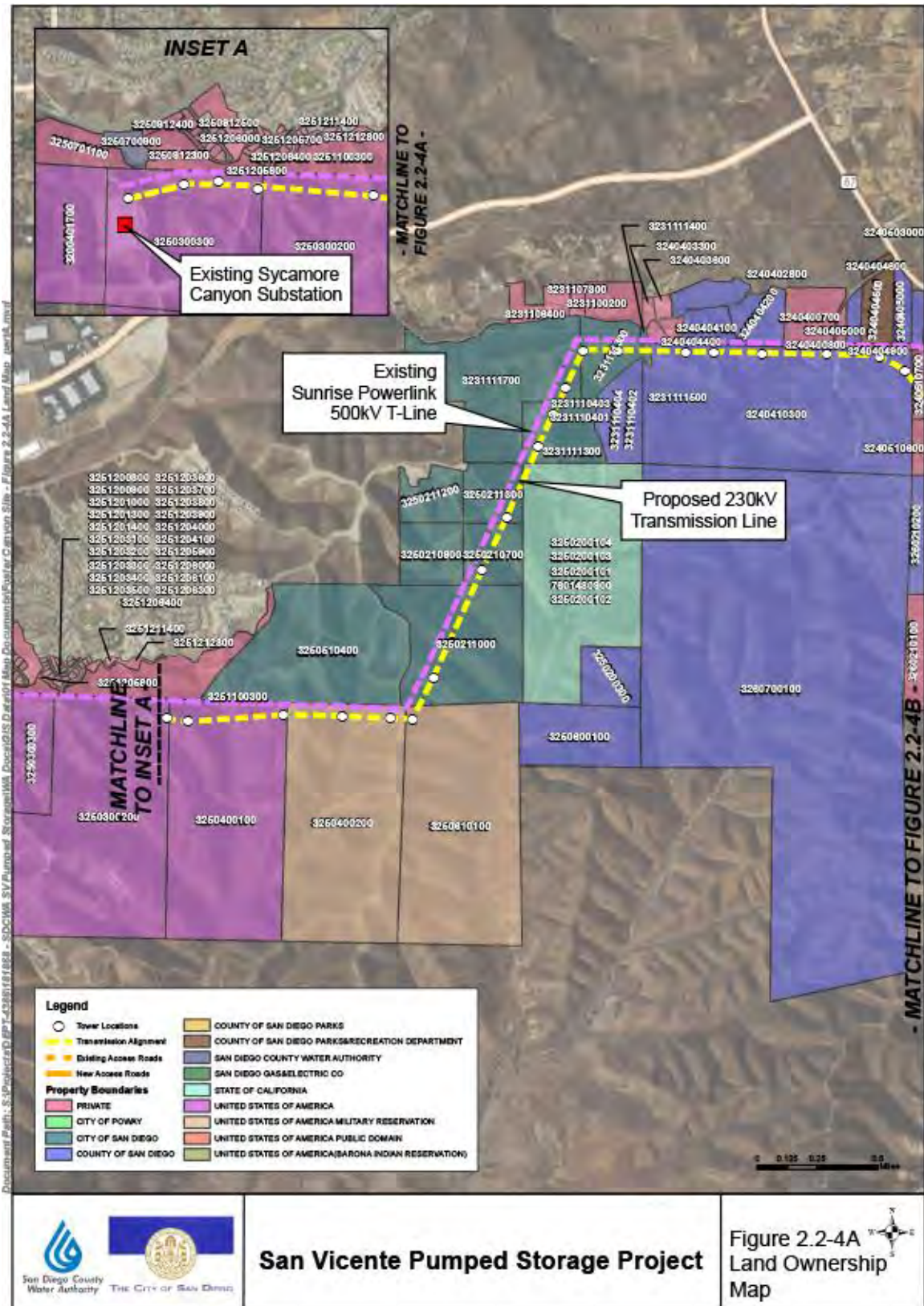
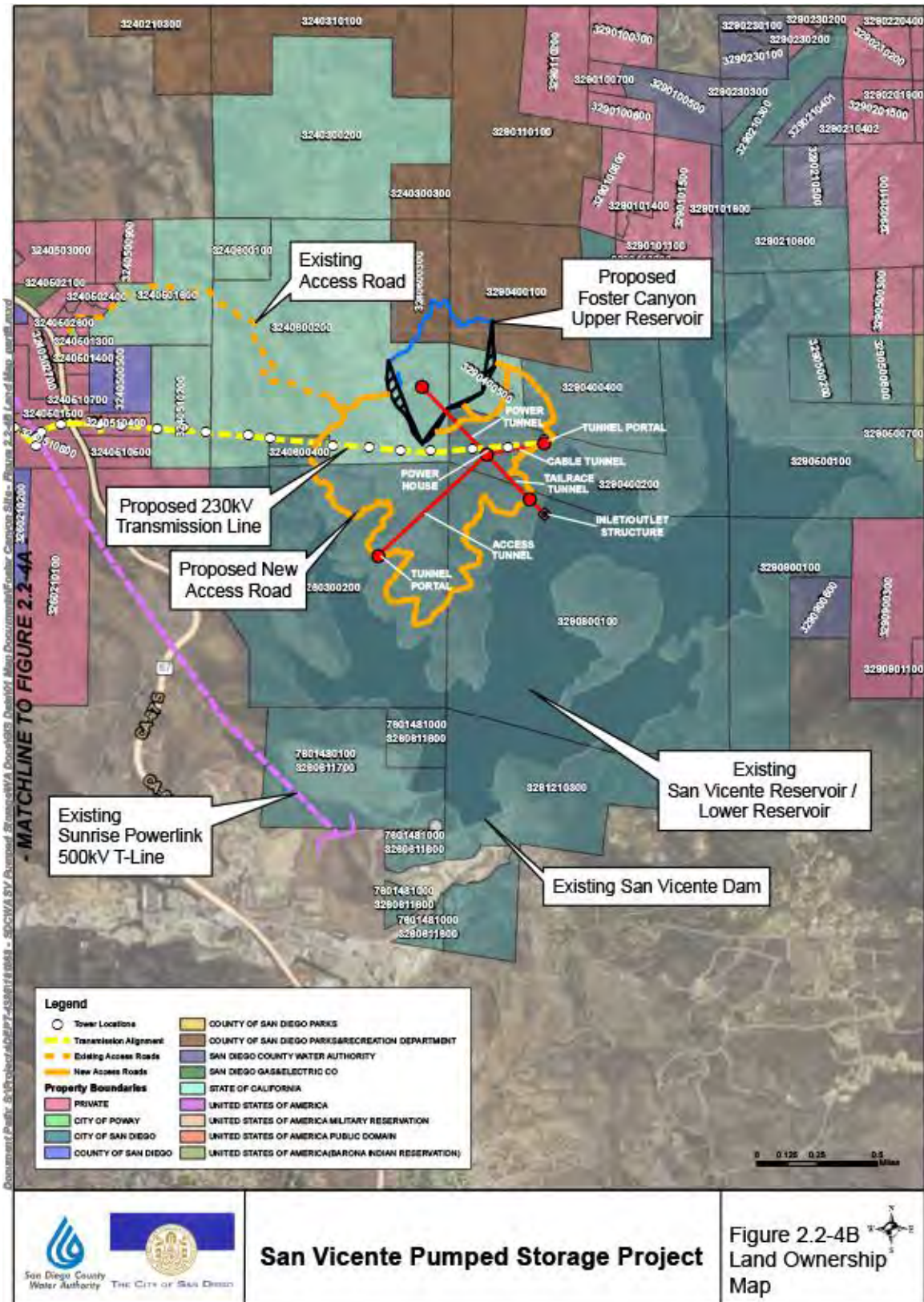




Figure 2.2-4 B Land Ownership Map (Part 2)



## 2.3 Existing and Proposed Facilities

The proposed Project would utilize the existing San Vicente Reservoir as the “lower reservoir” and develop a new “upper reservoir” to be constructed approximately one-half mile to the north at the Foster Canyon site. San Vicente Reservoir is an impounding reservoir on San Vicente Creek with a maximum water surface area of approximately 1,664 acres and an approximate total storage capacity of 246,000 acre-feet. The new Foster Canyon upper reservoir is anticipated to have a maximum surface area of approximately 100 acres and a storage capacity of 7,842 acre-feet.

The Project would pump water from the lower reservoir, using energy from the grid, to the upper reservoir during periods of low electricity demand. During high electricity demand periods the water would be released and flow by gravity from the upper reservoir to the lower reservoir through turbines to produce energy that would be sent to the grid.

### Upper Dam and Reservoir

The proposed upper reservoir at the Foster Canyon Site has a crest elevation of 1,520 feet and is developed through a series of five interconnected roller compacted concrete (RCC) dams constructed on three sides of the reservoir (Table 2.3-1). The maximum height of the RCC dams is 240 feet above existing ground, and the total crest length is 7,207 feet. The maximum water surface elevation in the upper reservoir will be approximately 1,510 feet, while the minimum water surface elevation will be approximately 1,417 feet. The total storage volume is 7,842 acre-feet, which includes 6,778 acre-feet of usable storage between the two operating levels and 1,064 acre-feet of dead storage below elevation 1,417 feet. The maximum depth of the upper reservoir at full pool is 113 feet.

**Table 2.3-1 Upper Reservoir Dam Parameters**

DAM ID	MAX HEIGHT (ft)	CREST LENGTH (ft)	CREST WIDTH (ft)	CROSS-SECTIONAL AREA (sf)	FOUNDATION PLAN AREA (sf)
<b>Dam 1</b>	235	1,425	20	7,467	76,267
<b>Dam 2</b>	80	838	20	2,667	23,287
<b>Dam 3</b>	80	838	20	2,667	23,287
<b>Dam 4</b>	240	1,006	20	14,400	74,300
<b>Dam 5</b>	30	3,100	20	750	47,400



## Lower Reservoir and Dam

The existing lower San Vicente Reservoir and Dam were initially constructed in 1943 as a gravity concrete dam with a storage pool of 90,000 acre-feet. A project to raise the dam height by 117 feet was completed in 2014. The raised dam, which is constructed of RCC, is 337 feet above the existing ground and provides a total storage volume of about 246,000 acre-feet. The crest length of the raised dam is 1,430 feet. Additionally, and as part of the dam raise project, a 42 foot tall, 675 foot long RCC saddle dam was constructed across a topographic low-point (saddle) on the reservoir rim approximately 2,000 feet west of the main dam. The maximum water surface elevation in the upper reservoir is 764 feet, while the minimum water surface elevation is 539 feet. The San Vicente Reservoir provides 236,772 acre-feet of usable storage between the two operating levels and 5,228 acre-feet of dead storage below elevation 539 feet. The maximum depth of the reservoir at normal full pool is 311 feet.

## Inlet/Outlet Structures

Due to its steep side slopes, the lower reservoir will include a vertical inlet/outlet structure located near the San Vicente Reservoir shoreline. The top of the inlet/outlet will be located below the minimum normal operating reservoir level at an elevation of 583 feet to avoid vortices and air entrainment. The upper reservoir will include a horizontal type inlet/outlet structure with an invert elevation of 1,372 feet. Water would flow in both directions through the structures. Each inlet/outlet structure would include a 160-foot wide mouth and baffles to limit intake and discharge velocities to less than 1 foot per second (fps); a gate shaft and gate room to allow for isolation of the tailrace tunnel and powerhouse for maintenance; and a trash rack to limit debris from entering the powerhouse during pumping and generating modes. Additional parameters for each inlet/outlet structure are summarized below.

**Table 2.3-2 Lower Reservoir Inlet/Outlet Structure Parameters**

PARAMETER	VALUE
Gate House Elev. (feet)	800
Structure Invert (feet)	583
Gate Shaft Height (feet)	242
Gate Shaft Diameter (feet)	40
Pumping Flow, Max (cfs)	7,280
Generating Flow, Max (cfs)	8,748
Approach Velocity (fps)	<1

**Table 2.3-3 Upper Reservoir Inlet/Outlet Structure Parameters**

PARAMETER	VALUE
Gate Room Elevation (feet)	1,530
Structure Invert (feet)	1,372
Pumping Flow, Max (cfs)	7,280
Generating Flow, Max (cfs)	8,748
Approach Velocity (fps)	±1

### **Underground Powerhouse**

The underground powerhouse will have a volume of approximately 131,000 cubic yards. Powerhouse dimensions are approximately 360 feet long by 83 feet wide. The height will be approximately 119 feet. The powerhouse will house four vertical, variable speed, single-stage, reversible pump/turbine-motor/generator units. The turbines will each be rated for approximately 125 MW. Each pump/turbine will be directly coupled to a vertical shaft, three-phase, 60 hertz, alternating current synchronous motor/generator. In addition to the turbine units, a standby generator and step-up transformer will be provided. Additional equipment to be housed in the powerhouse cavern includes: upstream and downstream butterfly valves for unit isolation, maintenance bays with access to the pump/turbine pit, drainage pumps, cooling water strainers and pumps, compressor room and compressed air storage tanks, an oil treatment plant, a drainage gallery and sumps, access to the motor/generators, and auxiliary transformers. Access to the underground powerhouse is described below.

### **Water and Power Tunnels**

The water and power transmission infrastructure connecting the lower and upper reservoirs consists of the power tunnel and tailrace tunnel and their associated bifurcations, (Table 2.3-4). The power tunnel, consisting of both shaft and tunnel segments, will extend between the upper inlet/outlet structure and the pump/turbine inlet valves. The power tunnel and its bifurcations will be steel lined. The tailrace tunnel will extend between the lower inlet/outlet structure and the pump/turbine draft tubes. The tailrace tunnel will be concrete-lined.

**Table 2.3-4 Power and Tailrace Tunnel Parameters**

PARAMETER	POWER TUNNEL	TAILRACE TUNNEL
Flow (cfs)	8,748	7,280
Diameter (ft)	21	25
Length (ft)	2,050	1,913
Excavation Volume (cy)	44,966	49,600

## Access Tunnels

Equipment access to the underground powerhouse will be provided by an access tunnel. A separate emergency egress tunnel will exit the powerhouse to the surface in a general direction toward the west. The access tunnel will connect the Project access road to the underground powerhouse. This tunnel will generally slope at an 8 percent grade and will be a 23 feet wide by 20 feet tall horseshoe tunnel. The invert (road) will be concrete paved. The wall and roof will be exposed rock shotcrete and rock bolted as required for stability. Lighting and floor drainage will be provided. The exit tunnel will also carry the main power feed from the powerhouse to the surface substation. The tunnel will also serve as an emergency exit in the event the access tunnel is unusable. The tunnel will slope up as required not to exceed 20 percent. The tunnel will be approximately 15 feet wide by 15 feet high. Additional tunnel parameters are summarized below.

**Table 2.3-5 Access and Cable Tunnel Parameters**

PARAMETER	ACCESS TUNNEL	CABLE TUNNEL
Portal Elevation (ft)	800	800
Grade (%)	8	--
Length (ft)	3,430	1,372
Height (ft)	20	15
Floor Width (ft)	23	15
Cross Sectional Area (sf)	438	201
Tunnel Volume (cy)	55,602	10,205

## Access Roads

Access to the Project will be provided through new paved roadways and the improvement of existing unpaved roadways. The new and improved roadways will provide access to the upper reservoir, the access and cable tunnel points of entry, and the inlet/outlet structures. Access roads will be 20 feet wide. The length of new roadways is approximately 8,900 feet, and the length of existing roadways to be improved is approximately 25,200 feet. Access will be secured to allow use only for authorized personnel to conduct operations and maintenance activities.

## Transmission Lines and Substation

A new dual-circuit 230 kV transmission line will extend approximately five miles from the powerhouse generators to the existing Sycamore Canyon Substation owned by the San Diego Gas & Electric (SDG&E) company for interconnection to the regional transmission grid system. This new transmission line will generally run parallel to SDG&E's recently completed Sunrise Powerlink transmission line. SDG&E has determined that the Sycamore Canyon Substation, which was constructed as a part of the Sunrise Powerlink Project, has sufficient capacity to accommodate the Project.

## **Capacity and Energy Production**

Annual generation for the four 125 MW units will average 1,022 Giga-Watt hours (GWh), assuming the daily energy storage of 4,000 Mega-Watt hours (MWh) and operating at 70 percent of its total capacity.

## **2.4 Operations**

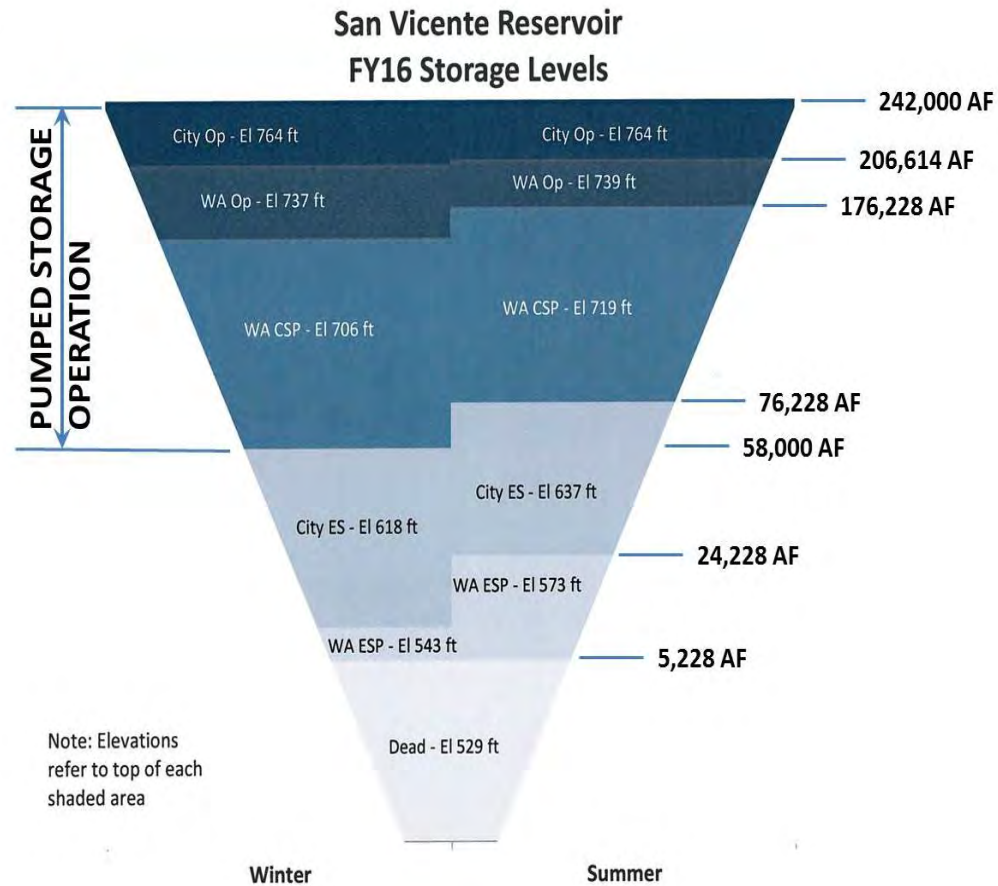
Hydroelectric pumped storage is a reliable and cost-effective technology that enables utilities to store electrical energy in the form of the gravitational potential energy of water produced during surplus generation and at periods of low demand and utilize that stored energy during periods of high demand and for transmission grid operations. Water will be pumped from the lower reservoir to the upper reservoir during periods of surplus power generation and/or low electrical demand. The water placed in the upper reservoir represents stored energy that can be used to meet capacity needs during periods of high demand as the water is passed through a hydraulic turbine from the upper to lower reservoir. The cycle is then repeated to balance demands on the regional or local power grid. The Project is also expected to participate in the ancillary services market and provide flexible generating capacity to maintain grid stability resulting from the increase in intermittent renewable energy generation.

The pumping and generating will be accomplished with the same equipment, with the turbine being used as a pump by reversing its direction of rotation, and the generator being used as a motor by reversing the flow of electrical current. The four units will be vertical, variable speed, single-stage, reversible pump/turbine-motor/generator units to be used for both pumping and generation. The proposed Project is configured for a nominal 500 MW through the use of the four 125 MW pump-turbine units. The Project is anticipated to be operated on a daily basis and to provide energy storage of eight hours, or 4,000 MWh.

Storage volumes in the San Vicente Reservoir will dictate seasonal and annual operating parameters for the Project. The San Vicente Reservoir serves multiple purposes and its total storage capacity is allocated to several operating pools, including emergency pools, carryover or drought storage pools, and daily operating pools (see Figure 2.4-1 – San Vicente Reservoir Storage Levels by Agency). This figure represents the available storage pools. Actual water levels will vary based on supply and demand conditions.

The Project can be operated when the water level in San Vicente Reservoir varies between elevation 764 feet (full pool elevation) and 618 feet (emergency pool elevation). The Project will not generate when the water level is above full pool (spillway elevation) or when the water level is below the emergency pool elevation.

**Figure 2.4-1 San Vicente Reservoir Storage Levels by Agency**



### **Key to Acronyms**

**AF:** Acre-feet

**City:** City of San Diego

**CSP:** Carryover Storage Project<sup>1</sup>

**ES:** Emergency Storage

**ESP:** Emergency Storage Project

**Op:** Operations Water

**WA:** Water Authority

<sup>1</sup> Through the use of carryover storage, water can be accumulated and stored during wetter years/seasons, when supplies are greater, and used (i.e. “carried over”) in drier years/seasons or during droughts when supplies are in higher demand.

### **3.0 Existing Environment and Resource Impacts**

This section of the PAD presents a discussion on the existing environment and resources within the Project area that may be affected by the proposed Project. This section includes:

- Description of existing environment;
- Summaries of existing data or studies regarding the resource;
- Description of any existing or proposed Project facilities or operations, and management activities proposed to be undertaken for the purpose of protecting, mitigating impacts to, or enhancing resources potentially affected by the project.

### **3.1 Geology and Soils**

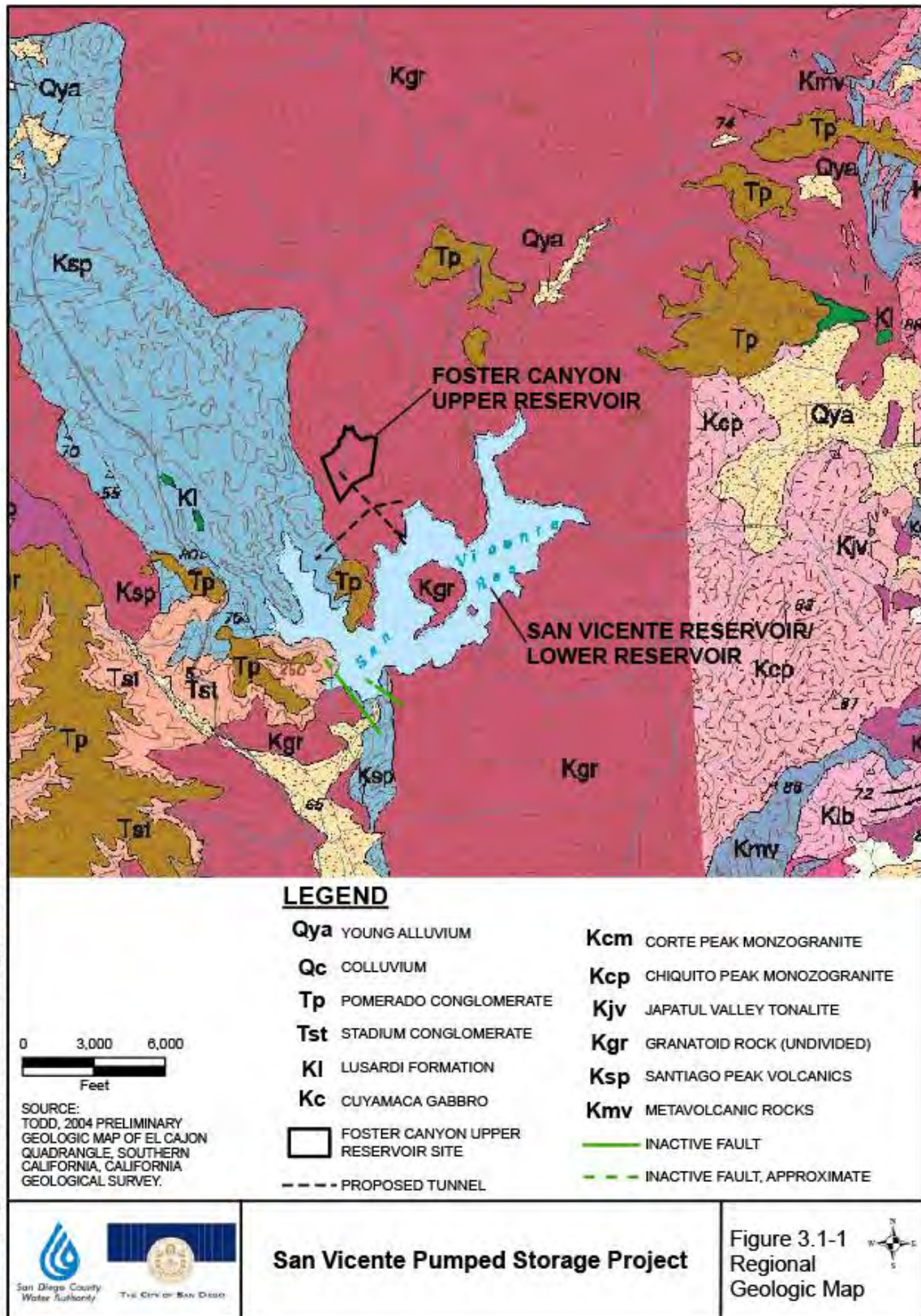
#### **Regional Geology**

San Diego County is located within the Peninsular Ranges Geomorphic Province of California. Within San Diego County, this geomorphic province can be divided into three subzones which include the coastal plain zone on the west, the central mountainous zone which dominates the majority of the land area of the County, and the desert zone along the eastern edge of the county.

The Project area is located along the western side of the central mountainous zone. This zone is characterized by a series of mostly northwesterly trending mountain ridges comprised of Cretaceous-age granitic rocks and Cretaceous- to Triassic-age metamorphic rocks. Review of regional geologic maps show that the proposed upper reservoir site and associated tunnels and support structures are entirely contained within the Cretaceous granitic bedrock material. Other material units consist mostly of shallow deposits of alluvial soils throughout the region which accumulate along drainage pathways and along the base of steep hillsides from sheet flow runoff. Refer to Figures 3.1-1, 3.1-2, and 3.1-3 for maps showing key geologic features in the region and project vicinity, including regional geology, geomorphic subzones, and major tectonic plates and faults.



**Figure 3.1-1 Regional Geologic Map**







**Figure 3.1-3 Tectonic Plates and Faults in Southern California**



## **Soil Characteristics**

The upper reservoir site is designated with three soil types. These consist of Acid igneous rock land (AcG) and covering approximately 25 percent of the site, Vista rocky coarse sandy loam (VvD) covers approximately 50 percent of the site and Cienega very rocky coarse sandy loam (CmrG) covers the remaining 25 percent. Acid igneous rock land covers the largest portion of the county with 6.6 percent (142,126 acres). The soil is very thin over decomposed granite and rock and has a high runoff potential and low erodibility. The Vista soil has typical depths of 20 to 36 inches over weathered rock. It covers approximately 0.3 percent of the county surface area and has a slight to moderate erosion capability. Runoff is medium to rapid. The Cienega series soil covers approximately 5.2 percent (112,088 acres) of county lands and is typically 5 to 15 inches deep. Runoff is rapid to very rapid and erodibility is high to very high.

## **Reservoir Shorelines and Stream Banks**

A significant outcropping is at the upper reservoir's left abutment of the eastern dam, extending northward along the entire eastern shoreline. This area is comprised of large areas of exposed rock with little vegetation cover. The following sections describe additional features specific to the reservoir shorelines and stream banks.

### Bedrock Material and Structure

The upper reservoir site is underlain by bedrock material composed of Cretaceous-age granitic rock. This igneous rock material originally cooled at depth into a fine to medium grained interlocking crystalline texture. Typical granitic rock types in the region consist of gabbro, tonalite and monzogranite.

A feature common in nearly all granitic rocks are fractures associated with faulting and/or shrinkage stresses developed during the cooling phase of the granitic magma body. Review of aerial photographs show joint sets (typically associated with cooling fractures) near the reservoir site.

Another structure common to granitic terrain are lineament features, which usually are related to high angle structural features within the bedrock due to faulting or joint fractures. There are numerous lineament features throughout the area of the upper reservoir site. Most consist of linear surface depressions or aligned drainages similar in alignment with the regional joint pattern. The upper reservoir site has several lineament features which cross the reservoir footprint and one contact feature.

### Unconsolidated Deposits

Unconsolidated deposits expected within the reservoir site would consist of alluvial deposits associated with stream deposition or sheet flow runoff down the face of slopes. The stream deposits typically accumulate along the banks of drainages as narrow band along the stream pathway. The material deposited by sheet flow typically accumulates as fan shape mass along the

base of slopes. Both types of deposits are anticipated at the site. Review of aerial photography indicates only small amounts of accumulation of stream alluvium within the upper reservoir site.

### Mineral Resources

The upper reservoir site is not located within or nearby any known past mining operations or deposits of economic value.

### **Constructability Issues**

The following primary constructability issues may be encountered on the Project with regards to geology/geotechnical factor: difficult soil/rock conditions; variability in rock conditions along the proposed tunneling alignments; steep sloping terrain which will impact the access and movement around the upper reservoir site; and slope stability.

### Difficult Soils/Rock

Except for installation of the I/O works and connecting tunnel, the existing lower reservoir site will not be altered for development of the Project. The proposed upper reservoir site was reviewed through analysis of both recent and historical aerial photographs, which allows for observations of surface rock outcrops which can show both fracture/joint patterns and the amount of vegetative ground cover. In general, areas of significant ground cover indicate more significant soil development and likely greater surface rock weathering. The upper reservoir site is estimated to have approximately 50 percent of surface rock outcrop exposure. Alluvial stream terraces appear to be relatively thin and underlain by bedrock material at shallow depth.

### Tunneling

Four tunnels are proposed for the Project; the access tunnel, cable tunnel, power tunnel, and tailrace tunnel. Each of the proposed tunnels will be within bedrock material comprised of granitic rock materials. Key soil and bedrock issues that will impact tunnel excavation and support methods include mineral and lithological composition, weathering, and rock strength, as well as degree, condition and orientation of rock mass discontinuities (fractures, joints, shear zones, etc.). There will likely be variations in the composition of the granitic rock encountered along the tunnel alignments which also may impact the tunneling effort.

The most likely adverse effects on tunneling conditions will be due to variability in the extent of weathering/quality of the rock and the degree of fracturing. The degree of weathering and fracturing will be greatest near the ground surface and generally decrease with depth. Due to lack of site specific subsurface information along any of the tunnel alignments, it is not possible to further evaluate the tunneling conditions at this time, and additional geologic studies will be undertaken during preparation of the Draft License Application to address these conditions.

### Areas with Steep Slopes

Areas with steep sloping ground affect constructability by deterring access and limiting the ease of movement around the Project site. This often necessitates the use of specialized equipment

and construction methods. Nine measurements were taken around the perimeter of the proposed upper reservoir and one along the main drainage alignment. The slopes around the perimeter ranged from a low of 4 degrees (15:1) to a high of 26 degrees (2:1). The steepest slope of 26 degrees occurs at the right southwest abutment of upper reservoir dam site. The left abutment of this dam slopes 12 degrees (5:1). The abutment slopes at the east upper reservoir dam site are 14 degrees (4:1) at the right abutment and 10 degrees (6:1) on the left. The remainder of slopes around the perimeter of the site range between 4 degrees (15:1) and 9 degrees (7:1). The main drainage channel below the southeast dam has a gradient of 2 degrees (27:1).

#### Topography and Slope Stability

Potential impacts to the existing topography at the upper reservoir site are affected due to changes in erosional patterns and intensity, and mass movement on slopes facilitated by water saturation. Review of aerial photographs did not show existing features associated with deep seated landslide failures on any of the slopes at the upper reservoir site. Shallow surface slumping is difficult to decipher at the scale of the photographs reviewed, but these have likely occurred, as they are a typical process of slope degradation. Generally, slopes composed of granitic rock are stable within the range of steepness at the reservoir site and not prone to deep seated landslide failure.

Filling of the upper reservoir would saturate the loose surficial soil cover on slopes and the unconsolidated alluvial materials below reservoir level and along the reservoir shoreline. This has the potential to result in shallow surficial slumping in isolated areas where these materials are concentrated, particularly within drainages and along the bottom of slopes. The rotational filling and draining of the upper reservoir would exacerbate this process, particularly during reservoir drawdown. Deep seated failure within bedrock material both below reservoir level and along the shoreline is not anticipated.

Erosion would be affected because reservoirs generally act as a sediment trap, arresting transport of the sediment beyond the confines of the reservoir. Sediment typically accumulates as fan shape delta features in areas where drainages enter the reservoir. This also eventually slows the process of erosion upslope from the reservoir surface. This occurs at present within the lower reservoir which has a substantial upslope watershed area. The upper reservoir would be located within the far upper reaches of its sub-watershed area with extremely limited ephemeral watershed fetch area that could potentially contribute in-flow sediment.

### **3.2 Water Resources**

#### **Physical Description**

The San Vicente Reservoir is located on San Vicente Creek, with several smaller drainages also tributary to the reservoir. The San Vicente Creek watershed (upstream of the dam) covers an area of approximately 74 square miles. The watershed includes several ephemeral drainages,

including Padre Barona Creek in the east, San Vicente and West Branch creeks in the north, and Foster Creek in the northwest. Prior to the original San Vicente Dam being built, San Vicente Creek continued south downstream of the existing reservoir to the San Diego River, which empties into the Pacific Ocean at Mission Bay. The City of San Diego does not release any water from San Vicente Reservoir into San Vicente Creek.

Surface flows from the creek are impounded by the San Vicente Reservoir and Dam, with the rights to these surface flows belonging to the City of San Diego. The City uses these flows to meet a portion of their domestic water demands. Purchased imported water would be used for the initial fill of the proposed upper reservoir and to provide make up water for operations.

Prior to the original San Vicente Dam construction in 1943, San Vicente Creek flowed intermittently to the San Diego River. That flow ceased upon construction of the original dam. However, the dam occasionally spilled prior to the current dam raise (completed in 2014), with the most recent spill occurring in 1995. That spill did not result in flows to the San Diego River, as there has been a quarry operation south of the dam in the creek bed channel since 1961. With the completion of the dam raise, the associated construction of new pipelines, a tunnel and pump station, the likelihood of any future spills is greatly diminished.

### **Flow Data**

The Project would operate as a closed-loop system as essentially no surface waters from San Vicente Creek are released downstream of the San Vicente Dam. As a closed-loop system, the Project would be operating with a constant volume of approximately 6,342 acre-feet of water moving between the upper and lower reservoirs. The volume of water in San Vicente Reservoir will also fluctuate to meet water operation requirements that are independent of the pumped storage operations. As a result of the closed-loop pumped storage system, the Project will have no effect on the quantity or use of water in the San Vicente Creek drainage area, or from the San Vicente Reservoir.

### **Existing and Proposed Water Use**

Source water for the initial fill of the upper reservoir, as well as make up water for project operations resulting from evaporation and minor seepage losses, will come from San Vicente Reservoir. As noted above, San Vicente Reservoir currently receives the vast majority of its stored water from imported supplies, with a much smaller volume entering the reservoir as local runoff from the upper San Vicente Creek watershed. Water quality within the San Vicente Reservoir and the proposed upper reservoir will therefore be dependent on the quality of imported supplies and reservoir operations.

### **Water Quality**

Water quality of imported supplies is monitored by the Metropolitan Water District of Southern California (MWDSC). Source waters used by MWDSC include the Colorado River and imported

supplies from Northern California through the Sacramento-San Joaquin Delta via the State Water Project. MWDSC publishes an Annual Drinking Water Quality Report that provides test results for almost 400 constituents and performs water quality tests on samples taken throughout its distribution system. Specific procedures are followed if any contaminant level exceeds Federal water quality standards. The City of San Diego measures and monitors water quality in the reservoir on a weekly basis. Reservoir operations also allow selective withdrawals at the best water quality levels within the reservoir to account for seasonal stratification. San Vicente Creek and the San Vicente Reservoir are both listed on the State Water Resources Control Board's list of impaired water bodies under section 303(d) of the Clean Water Act (CWA) due to natural constituents that affect essentially all surface water bodies in the region.

Additionally, the City of San Diego is proposing to develop a new local recycled water supply that would blend purified water (advanced treated municipal recycled water) with imported supplies in San Vicente Reservoir. The City's Pure Water San Diego Program would utilize the San Vicente Reservoir for water supply augmentation and develop an initial 15 MGD of purified water by approximately 2023, with an ultimate goal of producing and delivering 68 MGD to the reservoir by 2035. To determine the effect on water quality within the San Vicente Reservoir resulting from operation of both the proposed Pure Water San Diego Program and the Pumped Storage Project, the City of San Diego has undertaken extensive computer simulation modeling analysis of reservoir mixing and water quality. This analysis considered the proposed pumped storage project operating scenarios, including various purified water reservoir inflow rates and extended drought conditions.

The results and conclusions from the aforementioned modeling analysis and impacts of pumped storage operations on the San Vicente Reservoir indicate no adverse effects on water quality. These results are summarized below.

- ***Effects on Steady State Water Quality***

Pumped storage operations will provide a significant reduction in the vertical stratification of the reservoir, resulting in an oxygenated hypolimnion (the cooler, bottom layer of water in a thermally stratified lake). The increased oxygen levels at the sediment interface are predicted to result in lower nutrient recycling from sediments. Further benefits include delayed timing of algal productivity, possibly due to cooling effects at the water surface induced by mixing, and a decrease in the yearly average algal levels along with a corresponding increase in water clarity.

- ***Effects on Water Quality During Startup***

Initial startup operations of the Project may result in scouring of sediments in the vicinity of the inlet/outlet structure, producing an increase in turbidity levels. These higher turbidity episodes are expected to decline with time as sediments are transported

elsewhere. Startup operations will be performed to avoid periods when the reservoir is stratified and the hypolimnion is anoxic to avoid a rapid transfer of hydrogen sulfide and other substances from the hypolimnion that could otherwise result in adverse effects on fish and recreation.

- ***Effects on Water Operations and Recreation***

Due to destratification by the proposed Project, water quality across the water column will be somewhat homogeneous. Potential water quality excursions in the reservoir will be mixed over the entire reservoir at various depths. If pumped storage is continuously operated, using different vertically spaced outlet ports installed in the existing reservoir outlet tower will minimize differences in water quality, thus limiting effects of selective withdrawal from the multi-level outlet structure.

### **3.3 Fish and Aquatic Resources**

There are no existing fish populations at the upper reservoir site, as that site contains only minor ephemeral channels and does not have habitat for aquatic resources at this time. Therefore, this discussion of the existing fish community is focused on the lower reservoir.

San Vicente Reservoir is a popular recreational fishery which supports naturally reproducing populations of cool and warm water species (Table 3.3-1). It is also stocked by the California Department of Fish and Wildlife (CDFW) with one coldwater species, the rainbow trout (*Onchorhynchus mykiss*). Additional species reported to be present in San Vicente Reservoir include threadfin shad (*Dorosoma petense*) and prickly sculpin (*Cotus asper*); (Technology Associates, 2008).

No anadromous or migratory fish are present in the watershed. The catadromous fish prickly sculpin is present, but the San Vicente Dam prevents migration of this species. The reservoir does not provide essential fish habitat under the Magnuson-Stevens Fishery Conservation and Management Act, and there are no known state- or federally-listed threatened, endangered, or sensitive fish species present.

**Table 3.3-1 Record Fish Species Found in San Vicente Reservoir**

Species		Record Catch	Date
Largemouth Bass	<i>Micropterus salmoides</i>	18.75 lb	2/27/1981
Bluegill	<i>Lepomis macrochirus</i>	3.20 lbs	12/3/2000
Green Sunfish	<i>Lepomis cyanellus</i>	1.06 lb	8/5/1965
Redear Sunfish	<i>Lepomis microlophus</i>	3.70 lb	4/20/2002
Black Crappie	<i>Pomoxis nigromaculatus</i>	3.68 lb	3/5/1970
Channel Catfish	<i>Ictalurus punctatus</i>	41.65 lb	9/22/2004
Blue Catfish	<i>Ictalurus furcatus</i>	113.40 lb	7/24/2008
White Catfish	<i>Ameiurus catus</i>	7.18 lb	1/17/1974
Brown Bullhead	<i>Ameiurus nebulosus</i>	1.93 lb	4/15/1978
Black Bullhead	<i>Ameiurus melas</i>	2.31 lb	3/31/1979
Yellow Bullhead	<i>Ameiurus natalis</i>	2.75 lb	4/23/1992
Carp	<i>Cyprinus carpio</i>	42.00 lb	3/27/1982
Rainbow Trout	<i>Onchorhynchus mykiss</i>	15.35 lb	12/26/1999

Source: The City of San Diego (<http://www.sandiego.gov/water/recreation/fcrecords.shtml>)

San Vicente Reservoir was closed to fishing when construction began on the San Vicente Dam raise project in August 2008. It is scheduled to re-open for recreation by the end of 2015, but only after water levels rise to near-full pool. As part of the dam raise project, new recreational fishing and boating facilities are being constructed, including a 900-foot-long boat ramp and new marina.

No data on aquatic macroinvertebrates in the Project site have been located at this time.

The project will entail construction of a new upper reservoir with a maximum capacity of approximately 7,800 acre-feet. As water flows between the upper and lower reservoir, fish can be affected by entrainment at the diversion structures and intakes. The risk of entrainment is influenced by the depth of the intake, intake design, flow approach velocities, and other factors. The lower reservoir inlet/outlet structure will be approximately 60 feet by 215 feet and the upper reservoir's inlet/outlet will be 40 feet by 240 feet. The anticipated intake velocity at the lower reservoir inlet/outlet is less than 1.0 feet per second (fps) and at the upper reservoir will be about 1.0 fps. Both inlet/outlet structures will be equipped with trash racks to keep debris from entering the powerhouse.



Entrainment of large fish (> 6" total length) from San Vicente Reservoir is expected to be minimal due to the low intake velocity (0.75 fps). Smaller fish unable to avoid entrainment are expected to suffer mortality when they pass through the pumping system. Although the upper reservoir will experience substantial fluctuation on a daily basis, at maximum drawdown ("minimum pool") it will still provide over 1,000 acre-feet of water for fish and other aquatic resources.

### **3.4 Wildlife and Botanical Resources**

The San Vicente Reservoir is surrounded by lands that have been conserved for their natural resource value. The San Vicente Reservoir Cornerstone Lands (Cornerstone Lands; City of San Diego) immediately surround the existing reservoir, and the following conserved properties surround the Cornerstone Lands: San Vicente Highlands Open Space Preserve (CDFW), Boulder Oaks Open Space Preserve (County of San Diego (County)), Monte Vista Ranch (CDFW), Oak Oasis Open Space Preserve (County), Berkeley Hering Open Space Preserve (County), Lakeside Ranch (Endangered Habitats Conservancy), and Kimball Valley (County). In addition, the Barona Indian Reservation (Reservation) is located east of the Cornerstone Lands.

The following discussion describes the existing biological resources within the proposed upper reservoir site. Information about biological resources within the study area was obtained from a search of sensitive species databases, a review of pertinent literature, and focused field surveys.

High Sensitivity Areas were designated where Project components appeared to directly overlap with (1) undeveloped land known or suspected to support highly sensitive habitat and species, such as USFWS-designated critical habitat, and species listed under the federal Endangered Species Act ESA or California Endangered Species Act (CESA); (2) crossing of a blue-line stream (indicating a regular or seasonal presence of flowing water), drainage feature, riparian/wetland habitat, or other suspected surface water resource that could support sensitive species and resources subject to the regulatory jurisdiction of the US Army Corps of Engineers (USACE), RWQCB, and CDFW; and, (3) areas mapped as Multi-Habitat Planning Areas (MHPA), and Pre-Approved Mitigation Areas (PAMA). High Sensitivity Areas generally represent lands where development would likely require substantial coordination with the landowners and resource agencies throughout environmental review, and protective measures such as seasonal limitations on construction, habitat mitigation, or development of a detailed Resource Management Plan.

High Sensitivity Areas associated with the upper reservoir are listed below:

- Southeastern portion of the Foster Canyon reservoir site and sections of proposed access roads, access tunnel areas, and transmission tower locations that overlap uplands within the City MHPA Cornerstone Lands surrounding San Vicente Reservoir. The reservoir site supports sensitive chaparral that provides suitable habitat for the federally-endangered

Quino checkerspot butterfly (*Euphydryas editha quino*, Quino) and other non-listed sensitive species. The access roads, tunnel areas, and tower locations support sensitive coastal sage scrub and/or chaparral that are known to support several listed species, including the federally-endangered Quino, and federally-threatened coastal California Gnatcatcher (*Polioptila californiica californica*, Gnatcatcher). Several other non-listed sensitive species are also known to occur.

- Sections of proposed access roads and access tunnel areas that overlap wetlands within the City MHPA Cornerstone Lands surrounding San Vicente Reservoir, namely, the San Vicente Reservoir lakeshore fringe and Padre Barona Creek. The tunnel areas at the San Vicente Reservoir lakeshore fringe support sensitive wetlands subject to USACE, RWQCB, and Department jurisdiction. The access roads at Padre Barona Creek support sensitive riparian habitat known to support the federally and state endangered least Bell's vireo (*Vireo bellii pusillus*, Vireo), among other non-listed sensitive species.
- Northern portion of the Foster Canyon reservoir site and transmission tower locations that overlap PAMA and the Boulder Oaks Preserve. These areas support sensitive chaparral that provides suitable habitat for the federally-endangered Quino and other non-listed sensitive species, including rare and narrow endemic plants such as Lakeside ceanothus (*Ceanothus cyaneus*).
- Sections of proposed access roads and transmission tower locations that overlap PAMA and the Reams/Thomson Preserve and Goodan Ranch/Sycamore Canyon Preserve. These areas support sensitive coastal sage scrub and chaparral that provides suitable habitat for several listed species, including the federally-endangered Quino and federally-threatened Gnatcatcher. The gen-tie corridor passes through designated Critical Habitat for the San Diego Thornmint (federal threatened; California endangered). Several other non-listed sensitive species are also known to occur.

The upper reservoir site and related tunnel portals and transmission corridor will encroach upon and pass through designated MSCP lands. Potential effects include habitat loss and fragmentation of sensitive coastal sage scrub and/or chaparral areas that are known to support several state and federally listed species, as well as non-listed sensitive species, including rare and narrow endemic plants. Measures to avoid, minimize and compensate for impacts will be identified in studies to be completed as a part of preparation of the License Application, including evaluation of all potential impacts to biological resources, consistency with the City and County MSCP Sub-Area Plans, and development of a comprehensive Resource Management Plan to govern construction and operations. Impact studies, mitigation strategies and the Resource Management Plan will be completed in coordination with USFWS, CDFW and the County Department of Parks and Recreation.

### **3.5 Floodplains, Wetlands, Riparian, and Littoral Habitat**

Wetlands/vegetated waters and unvegetated stream channels are considered sensitive and declining resources by several regulatory agencies including the USACE, USFWS, the Department, and the Regional Water Quality Control Board (RWQCB). Sections 401 and 404 of the Clean Water Act (CWA) regulates activities that result in the discharge of dredged or fill material into jurisdictional wetlands and unvegetated waters of the United States.

The USACE-regulated wetlands/vegetated waters that could occur within the regional study area include the following five vegetation communities: coastal/valley freshwater marsh, southern coast live oak riparian forest, southern cottonwood willow riparian forest, mulefat scrub, and southern willow scrub. Potential indirect impacts to sensitive vegetation communities and habitats (including Department-defined wetlands and unvegetated waters of the state) may occur from construction activities associated with the Project. For example, erosion and sedimentation could affect water quality or natural hydrologic processes in, or adjacent to, riparian plant communities.

Studies conducted in 2005 and 2006 for the Water Authority's *Carryover Storage and San Vicente Dam Raise Project* concluded a total of 317 animal species have been documented in the San Vicente Dam raise study area, including 103 invertebrates (including 43 butterflies); 15 fish; eight amphibians; 23 reptiles; 138 birds; and 30 mammals.

The proposed Project does not involve the placement of any facilities within any designated floodplain. The proposed Project's lower reservoir is the existing San Vicente Reservoir, and the proposed upper reservoir is an upland environment that does contain some ephemeral stream channel segments. As shown in Figure 2.2-3B above, the only littoral / riparian habitat is the existing shoreline of the San Vicente Reservoir, which will be subject to disturbance during construction of the lower reservoir inlet/outlet works and lower tunnel system from the inlet/outlet to the powerhouse. Measures required for shoreline protection and restoration, and for erosion and sediment control in all construction zones, will be identified in studies to be completed as a part of preparation of the License Application, including a comprehensive jurisdictional delineation of all waters of the U.S. that exist within the proposed Project boundary.

### **3.6 Rare, Threatened, and Endangered Species**

The proposed Project is located within the plan area boundary of the San Diego County Multiple Species Conservation Program's South San Diego County Subarea Plan (SC-SAP); (MSCP and City Subarea Plan; City of San Diego 1998). The MSCP and Subarea Plan provide a framework for regional conservation planning throughout southwestern San Diego County.

The proposed Foster Canyon upper reservoir site is within the San Vicente Open Space Preserve and Boulder Oaks Open Space Preserve. These lands are considered by the USFWS and CDFW to be an integral part of the MSCP preserve network and were established for the conservation benefit of multiple species, including federally and state-listed species. A portion of the upper reservoir site is owned by the State of California, under management of the CDFW; (USFWS letter, June 19, 2015; and CDFW letter, June 23, 2015). The proposed Project has the potential to conflict with the biological goals developed in the MSCP for establishing a regional preserve system. The upper reservoir site is near the center of Core Area 11 and would remove native habitat.

The proposed Project has the potential to affect species listed under the California Endangered Species Act (CESA), federal Endangered Species Act (ESA) and/or Bald and Golden Eagle Protection Act (BGEPA). The California Natural Diversity Data Base (CNDDB) also lists the California Condor (*Gymnogyps californianus*), as potentially present in the San Vicente Reservoir region. The federally-threatened Gnatcatcher has been observed at several locations surrounding the San Vicente Reservoir. The federally-endangered Vireo has been observed along two drainages to the San Vicente Reservoir. The federally-endangered southwest arroyo toad (*Anaxyrus californicus*) is known to occur along the San Diego River northeast of the San Vicente Reservoir, and this area is designated critical habitat for the species. The federally-endangered Quino was observed on the San Vicente Open Space Preserve. The Hermes copper butterfly (*Lycaena hermes*) is a federal candidate species and was observed at the Sycamore Canyon Preserve to the west of the San Vicente Reservoir prior to the Cedar Fire in 2003. Critical habitat for the San Diego Thornmint is also designated in the Sycamore Canyon Preserve. The federally-endangered San Diego ambrosia (*Ambrosia pumila*) has been observed within the potential range of upper reservoir sites to the northeast and southwest of the San Vicente Reservoir. Golden eagles (*Aquila chrysaetos*) are known to utilize the area north of the San Vicente Reservoir for foraging, and nests have been documented northeast of the San Vicente Reservoir (USFWS, 2015).

The proposed upper reservoir would affect approximately 100 acres, which when constructed, has potential to support some wetland species. However, the USFWS considers its potential wildlife benefits to be minimal because the reservoir would be filled and drawn down frequently. For that reason, the USFWS also considers that potential impacts of upper reservoir construction and operation to native habitats to be permanent; (USFWS, June 19, 2015 letter to Water Authority and the City).

The San Vicente Reservoir is surrounded by lands that have been conserved as open space for natural resource values. Both USFWS and CDFW have expressed concerns regarding the location of portions of the proposed Project in relation to important large blocks of native habitat known to support several federally and/or state-listed species; (CDFW, June 18, 2015 letter to Water Authority).

The proposed Project also has the potential to impact the biological goals developed in the MSCP for establishing the regional preserve system. The upper reservoir site is near the center of Core Area 11 and would potentially remove native habitat within the core. As noted above, the proposed Project also has the potential to affect species listed under the ESA, CESA, and/or BGEPA.

Assessment of the upper reservoir site and potential alternatives will need to address potential impacts to the MSCP, and the potential for Project-related impacts to State and federally listed species and other biological resources from the proposed upper reservoir site and all ancillary facilities including tunnels, roads, and the transmission line. Studies to be undertaken in preparation of the License Application will fully detail potential conflicts with the established MSCP and proposed Project facilities, and in consultation with all relevant resource agencies, mitigation strategies will be examined that could offset Project effects on the designated core areas. In addition, analysis would detail the construction and operations management requirements required to minimize effects on adjacent lands, and restore and enhance biological functions to the extent feasible.

### **3.7 Recreation and Land Use**

#### **Existing Recreational Facilities and Opportunities - San Vicente Reservoir**

Existing recreational facilities and opportunities are provided at the San Vincente Reservoir. The San Vicente Dam and Reservoir and associated recreational facilities are owned and operated by the City. There is one access road that leads to the primary recreation area (marina and associated facilities) which is located along the southwest shoreline of the reservoir. Other than the City managed facilities described below, the remainder of the reservoir shoreline is undeveloped and there are no piers, boat docks, or other private or public recreational facilities. Small beach areas had been accessible by boat along the reservoir shoreline; however, with the current filling of the reservoir, the beaches are now submerged and the shoreline around the higher water elevation is rocky and vegetated. .

Since the fall of 2008, the existing recreational facilities and access has been closed to the public during the construction period associated with the San Vicente dam raise project. These recreational facilities included a marina at the southwest end of the reservoir with a three-lane launch ramp, a floating boat and courtesy dock with floating courtesy and rental boat dock, three-lane boat ramp, a floating fishing pier, a shoreline fishing path, parking area, picnic area with tables, shade structures and barbeques, and a comfort station and concession building, (Water Authority, 2008; 2015). Prior to the closure, the Water Authority conducted extensive public outreach regarding the recreation facility closures and provided information about other alternative recreational areas within the region. The reservoir is estimated to reopen by the end of 2015.

The dam raise project resulted in the reservoir increasing about 584 surface acres, from the pre-project surface area of about 1,083 surface acres at the maximum normal pool elevation at 650 feet above mean sea level (AMSL) to about 1,664 surface acres at 764 feet AMSL (Water Authority, 2008, EIR/EIS page 3-1-2). The Water Authority removed the existing marina and facilities that will be inundated due to the reservoir elevation increase, and constructed new recreational facilities as described below. The Water Authority increased the size and number of the recreational facilities to accommodate the existing high demand and potential increased future demand that may result from the additional reservoir surface area; (Estrada Land Planning, 2007).

New, as-built recreational facilities include a new marina area and access road, boat launch ramps, picnic area, shoreline beach areas, and parking area. Figure 3.7.1 shows the general location of these new recreational facilities located at the southwest end of San Vicente Reservoir. A new access road to the marina area replaces the previous steep access road, beginning at the entry station at San Vicente and following the general alignment of the previous access road. The new access road will remain the only public access road to the reservoir and was designed to have a maximum grade of 12 percent with the design of the curves at 500 feet or greater to enhance public safety and access to the recreation area.

The new marina includes: a 900-foot long concrete, six-lane boat launch ramp, a floating courtesy and rental boat dock, a comfort station, a concession building, an office building, an outdoor picnic area with shade structures, tables, and barbeques, and an expanded parking area that accommodates 292 trailers, 48 passenger cars, 8 ADA, and 5 City staff vehicles. These new facilities are ADA accessible.

### **Upper Reservoir**

The proposed upper reservoir would be located near Foster Canyon, about one-half mile northwest of the San Vicente Reservoir within the County of San Diego and within Lakeside Community. The water surface area of the proposed upper reservoir would encompass about 100 acres at full pond. There is no development, recreational facilities or public access within this area.

### **Recreational Use**

In terms of historical recreational use, the San Vicente Reservoir has provided boating, waterskiing, fishing and picnicking recreational opportunities. Swimming or any other direct body contact was not permitted and this restriction will continue once the reservoir is reopened to the public. Boating use at the reservoir includes sailboats, powerboats, rowboats, inflatable boats and rental powerboats, and will continue to be restricted to use during daylight hours only. The reservoir was previously open year-round, on Thursdays through Sundays, and holidays except for Thanksgiving, Christmas and New Year's Day (Fishing Network, 2015).

For public safety purposes, the City established and enforced use restrictions and schedules at the San Vicente Reservoir; it is anticipated that similar restrictions will be implemented at the time of the reopening of the reservoir.

Prior to the dam raise project, the City established priority times for waterskiing and fishing use. During May through October, waterskiing was permitted Thursdays through Sundays, and fishing is allowed on Thursdays and Fridays. During the remainder of the year (November – April) waterskiing was allowed on Thursdays and Fridays and fishing is permitted Thursdays through Sundays. Sailing was allowed year-round. For waterskiing, a surface area of 10 acres per boat was required for a maximum of 100 boats when the reservoir was at maximum surface elevation of 1,000 acres. Once the daily maximum capacity was reached, new boats were only allowed onto the reservoir as others exited the reservoir. For fishing, a surface area of 1 acre per boat was required. The schedule may change with the reopening. The tentative schedule published would allow fishing and boating every Thursday through Monday year-round, and non-incidental water contact activities (towing skiers, wakeboarders, inflatables, etc.) Thursday through Sunday during May through October, and Sundays only during November through April (The San Diego Union-Tribune, 2014).

Fishing is a primary and popular activity at the San Vicente Reservoir with Florida bass, catfish, crappie, and bluegill abundant species in the lake. Rainbow trout have also historically been stocked seasonally (during November to January). Fishing tournaments have been held at the reservoir, and trophy-sized catches of largemouth bass and other species have been recorded (Anglerweb, 2015; Fishing Network, 2015). The current state record blue catfish (113 pounds) was caught at San Vicente Reservoir in 2008 (CDFW, 2015).

The City estimated that in 2004, about 85,000 fishing permits, 40,500 boat launch permits, and about 10,000 boat rental permits were issued. The City estimated that during the peak recreation season (May through September), the number of people visiting the reservoir ranged between about 40 to 450 per day. In addition, during the summer months, the City estimated about 150 boats per day using the reservoir, and that the water ski only days were generally the busiest days for recreational use on the reservoir (Water Authority, 2008).



**Figure 3.7-1 San Vicente Reservoir: Location of New Recreation Facilities**





### **Existing Shoreline Buffer Zones within Project Boundary**

The proposed Project is a new development project and does not have a designated shoreline buffer zone or related policies associated with the proposed Project. The shoreline lands surrounding the San Vicente Reservoir are undeveloped and owned by the City of San Diego, and regulated by the San Diego County General Plan and associated land use policies (see additional discussion under section, *Land Use and Management Within and Adjacent to Project Boundary*) (San Diego County Water Authority, 2008).

### **Current and Future Recreation Needs Identified in Management Plans**

The existing California Statewide Comprehensive Outdoor Recreation Plan (SCORP) issued in 2009 covers the planning period from 2008 to 2014 (California State Parks, 2009). The SCORP is currently being updated with an anticipated release in 2015. The purpose of the SCORP is to serve as a statewide master plan for State and local parks and outdoor recreational open space areas; to offer policy guidance to all outdoor recreation providers, including federal, state, local, and special district agencies throughout California; and to also establish priorities for Land and Water Conservation Fund grant allocations to local governments (California State Parks, 2015). In addition, in response to the consultation request for preparation of this PAD, the San Diego Parks and Recreation Department advised that a hiking trail system is contemplated as a part of its Boulder Oaks Resource Management Plan (County of San Diego letter to FERC, December 29, 2014, resent to the Water Authority and the City June 24, 2015).

As part of the development of the SCORP, several supporting documents identify goals and trends for recreation demand and needs within California. California State Parks conducted a survey on public opinions and attitudes on outdoor recreation in California during 2012. The survey found several relevant factors related to outdoor recreational use, including that the most important facilities were wilderness type areas with no vehicles or development, play areas for children, areas for environmental and outdoor education, large group picnic sites, recreation facilities at lakes/rivers/reservoirs, and single-use trails. In addition, more than 60 percent of the adult respondents thought more emphasis should be placed on protecting natural resources, maintaining park and recreation areas, protecting historic resources, and cleaning up pollution of oceans, lakes, rivers, and streams in park and recreation areas (California State Parks, 2014).

For the southern California region (Orange, San Diego, Riverside, San Bernardino, and Imperial counties), the survey respondents reported the top recreational facilities used included: unpaved trails (56%), picnic areas (56%), open space to play (54%), paved trails (45%) and science and wildlife viewing (44%), (California State Parks, 2014). The California State Parks Study (California State Parks, 2014) also identified potential future recreation demand for key recreational use categories (see Table 3.7-1). These projections were based on future population growth rates in the southern California region counties, survey responses, and national outdoor

recreation projections through 2060 of growth within each activity based on national and regional (i.e., Pacific region) participation rates developed by Cordell et al. (2012).

**Table 3.7-1 Projected Top Activities through 2060 - Southern California**

Year	Walking	Playing	Hiking	Picnicking	Sports %
<b>2020</b>	52.3%	28.9%	28.7%	22.8%	<b>22.2%</b>
<b>2030</b>	53.6%	29.4%	29.4%	23.2%	<b>22.5%</b>
<b>2040</b>	54.8%	29.6%	30.0%	23.3%	<b>22.7%</b>
<b>2050</b>	56.4%	30.0%	30.9%	23.7%	<b>23.0%</b>
<b>2060</b>	<b>58.3%</b>	<b>30.6%</b>	<b>31.9%</b>	<b>24.1%</b>	<b>23.5%</b>

(Source: California State Parks, 2014)

### **Project Proximity to Protected Rivers and Regional Recreational Areas**

Although a segment of the proposed Project's electrical gen-tie line crosses federal property under the jurisdiction of the Miramar Marine Corps Air Station (MCAS), there are no federal recreational area lands located within or directly adjacent the proposed project boundary area. There is no land within or adjacent to the proposed project area that is designated as included in or has been designated for study for inclusion in the National Wild and Scenic Rivers System (National Wild and Scenic Rivers System, 2015; NPS, 2015a). In addition, there is no land within the study boundary that is under study for inclusion in the National Trails System or designated as wilderness area, recommended for designation as wilderness area or is designated as wilderness study area under the provisions of the Wilderness Act (NPS, 2015b; Wilderness.net, 2015). The Barona Indian Reservation is located to the east of the Project area, but is not within or directly adjacent to the Project area (Black & Veatch, 2015; SanGIS, 2015).

The City of San Diego manages and offers recreational opportunities at a number of reservoirs within the region under the City of San Diego Reservoirs and Recreation Program. All require daily permit fees and are open at various days and time of the year. The reservoirs are typically open from about sunrise to sunset on operating days, and over the weekends and holidays; along with several being available during weekday periods. Recreational facilities and activities provided at the reservoirs, along with reservoir elevations, shoreline miles, and surface acres at full elevation are summarized in Table 3.7-2. Recreational opportunities range from fishing, boating, picnicking, hiking, waterskiing, jet-skiing, canoe/kayaking, walking, jogging, and hunting (waterfowl and turkey). Figure 3.7-2 depicts the general locations of these reservoirs.

**Figure 3.7-1 Location of City of San Diego Reservoirs**



Source: City of San Diego, 2015d.

**Table 3.7-2 Summary of City Reservoir Recreational Opportunities**

Reservoir	Elevation	Shoreline Miles	Surface Acres	Facilities	Recreation Activities
<b>Barrett</b>	1,615	12	861	Boat rentals	Fishing boating, waterfowl hunting
<b>El Capitan</b>	750	20	1,574	Concessions, boat rentals, picnic areas	Canoeing/kayaking, waterskiing, wakeboarding, jet skiing, picnicking, boating, fishing, float tubing
<b>Hodges</b>	330	27	1,234	Concessions, boat rentals, picnic areas	Canoeing/kayaking, boating, fishing, hiking, float tubing
<b>Miramar</b>	714	4	162	Concessions, boat rentals, picnic areas	Canoeing/kayaking, boating, fishing, picnicking, walking, jogging, rollerblading, float tubing
<b>Murray</b>	541	4	198	Concessions, boat rentals, picnic areas	Canoeing/kayaking, boating, fishing, picnicking, walking, float tubing
<b>Lower Otay</b>	492	13	1,266	Concessions, boat rentals, picnic areas	Canoeing/kayaking, boating, fishing, picnicking, hiking, float tubing
<b>Upper Otay</b>	492	5	20	None	Fishing, float tubing
<b>San Vicente</b>	659	14	1,069	Currently closed	Currently closed
<b>Sutherland</b>	2,074	11	557	Picnic areas	Canoeing/kayaking, boating, fishing, picnicking, hiking, float tubing, turkey hunting,

(Source: City of San Diego, 2015c; 2015d)

### **Land Use and Management Within and Adjacent to Project Boundary**

Most of the land surrounding the San Vicente Reservoir is undeveloped and consists of steep canyon slopes with extensive rock outcroppings. To the south and southeast of the reservoir, the land use is primarily low-density residential development and agricultural land use. Lowell Island is located in San Vicente Reservoir and the topography and vegetation on the island consists of steep slopes, boulders, rock outcrops, and mixed chaparral with limited coastal sage scrub (San Diego County Water Authority, 2008).

Much of the San Vicente Creek watershed is undeveloped and sparsely populated. The watershed area is occupied by the communities of Lakeside, Ramona, and the Barona Indian Reservation. A small portion of the City of Poway makes up the northwestern most edge of the watershed, approximately 596 acres, or 1 percent of the total area. The City of Poway's contribution is strictly open space and undeveloped private land. The Barona Indian Reservation manages 6,823 acres, or 14 percent of the total area. Private land is the predominant ownership, covering 55 percent of the land. Vacant land and open space, at 31,020 acres or 65 percent of the total area, is the most predominant land use in terms of acreage, with family housing second at 7,530 acres. Most of the urbanization occurs in the northeastern edge of the basin where the San Diego Country Estates can be found southeast of the community of Ramona. Land ownership within the proposed Project area includes State of California, County of San Diego, City of San Diego, U.S. Government (MCAS), and private lands.

Table 3.7-3 below shows the existing land use acres across the San Vicente Creek watershed.

**Table 3.7-3 San Vicente Creek Watershed Land Uses**

Existing Land Use	Acres	Percent
Rural Family Housing	6,074	13%
Family Housing	1,456	3%
Industrial	6	<1%
Junkyard/Landfill	11	<1%
Transportation	674	1%
Retail	4	<1%
Public Services	10	<1%
Schools	22	<1%
Recreation	607	1%
Parks/Preserves	12,036	25%
Agriculture	2,035	4%
Undeveloped/Private Land	18,984	40%
Lakes/Lagoons	1,077	25
Indian Reservation	4,573	10%

Source: SANDAG 2002 Land Use

The San Diego County General Plan provides a consistent framework for land use and development decisions and identifies long-range goals and policies for the development of land within its jurisdiction. The General Plan includes the following components: vision statement and guiding principles, land use, circulation, conservation and open space, housing, safety, noise, and implementation measures for the General Plan. The General Plan also establishes specific community plans to focus goals and policies to the specific issues, characteristics and visions of the individual communities throughout the County. The proposed Project is located primarily in the community of Lakeside (for both the San Vicente Reservoir and proposed upper reservoir site) and a small portion of the San Vicente Reservoir is also located within the community of Ramona (San Diego County, 2011a; 2001b; 2011c).

The lands immediately surrounding the San Vicente Reservoir are identified as Cornerstone Lands as part of the City of San Diego's MSCP. Cornerstone Lands are lands surrounding reservoirs that are considered to be essential for creating a viable habitat preserve system and consist of lands that have been maintained in a largely undisturbed condition by the City of San Diego Water Department (San Diego Water Authority, 2008; City of San Diego, 2015b.).

As part of the MSCP, various subarea plans were developed, including the City of San Diego's MSCP Subarea Plan (City of San Diego, 2008), which identifies MHPAs developed by the City in cooperation with the wildlife agencies, property owners, developers and environmental groups. Within the MHPAs, only limited development can occur to help ensure the long-term viability and recovery of 85 "covered" species and to preserve a network of habitat and open space and protect biodiversity. Specific areas around the San Vicente Reservoir were identified for inclusion in the MHPA. However, the MSCP Subarea Plan includes exemptions associated with the San Vicente Dam Raise Project, such as for filling the reservoir to 800 feet AMSL, a new marina, quarry operations, access roads, staging areas, a horizontal buffer of 300 feet around the expanded reservoir (as measured from 800 feet AMSL), and other Project supporting uses (San Diego Water Authority, 2008; City of San Diego, 2008).

The proposed upper reservoir would be located within the unincorporated community of Lakeside, with a portion of the site on State of California and City of San Diego lands. The proposed site currently has no development and very limited access. The Lakeside Community Plan designates the site as Multiple Rural use, which allows one dwelling unit on parcels of 4, 8 or 20 acres. Lands associated with the reservoir and other permanent Project-related facilities would need to be purchased by the Water Authority and City, and easements would need to be obtained for construction of the underground facilities (Black & Veatch, 2014).

### **3.8 Aesthetic Resources**

The Project area is within the Cuyamaca Mountains near the unincorporated community of Lakeside. The San Vicente Reservoir area is characterized by primarily undeveloped, steep topography with extensive rock outcrops and vegetated with coastal sage scrub and mixed

chaparral. Lowell Island is located within the center of the reservoir and consists of steep slopes with mixed chaparral and coastal sage scrub vegetation and boulders and rock outcrops.

The completed dam raise project resulted in an additional full pool surface area of the reservoir of about 584 surface acres, for a total surface area of 1,664 acres, adding to the dominance of the reservoir to the surrounding visual setting. The dam along with the recreational facilities, including marina, boat launch and associated picnic and parking areas, are a predominant visual feature of the reservoir area. The proposed upper reservoir area is undeveloped with similar steep topography and vegetation, and is not visible from the surrounding landscape or any point within the lower reservoir or new dam (Water Authority, 2008).

### **3.9 Cultural Resources**

#### **Previous Investigations**

A total of 57 previous investigations have occurred within the area of the proposed Project. Of these, a total of 14 investigations intersect the Project's area of potential affect (APE) to any degree. The most important and relevant for the Project are the evaluation of 14 cultural resources for the increase in the capacity of San Vicente Reservoir (Willey et al. 2002), the Carryover Storage and San Vicente Dam Raise Project (Hector and Wolf 2008), and the Sunrise Powerlink Project (Noah and Gallegos 2008; Garcia-Herbst et al. 2010).

#### **Previously Recorded Cultural Resources**

A total of 202 cultural resources have been previously recorded within the Study Area. These include 164 prehistoric sites or sites in which the prehistoric components are the most important. There are 34 historic sites and four sites with both major prehistoric and historic occupational components. Many sites were visited on more than one occasion over the course of these previous investigations and in a few cases, the sites were found to be natural bedrock elements or natural stones. Five sites were found to be destroyed or buried by natural or human forces. Some 15 different prehistoric site types are represented. The most numerous are boulder or bedrock milling features, some with associated artifacts. Isolated lithics with one-to-three artifacts are the next most numerous resource type, followed by lithic scatters, and temporary camps. The latter sites are the most likely to have subsurface components, in addition to two habitation sites. Of particular interest are the seven petroglyph sites, all represented by yoni and/or lingam features. These are natural rocks that have been modified by the prehistoric inhabitants to resemble human genitalia. These sites tend to occur near San Vicente Reservoir. Another site type is defined as granary foundations; irregular circular arrangements of cobbles on horizontal boulder or bedrock surfaces. These are interpreted to be the foundations of large woven vegetal baskets that were used to store acorns, seeds, nuts, and other foodstuffs. As mentioned, only two habitation sites are previously documented in the Project area. These are larger habitation sites with evidence of hearth features, more diverse artifacts types in greater quantity, and accumulated midden deposits.

The 34 historic sites recorded in the Study Area are most numerous trash scatters, either with or without structural foundations. Six sites represent ruins, foundations, or still standing and occupied homesteads or ranch houses. Next in quantity are known historic roads. Less common are military sites, including a discarded munitions dumping area from World War II era Camp Elliot. One military site is a Cold War era missile silo complex. Unidentified remains of a plane wreck may also be of military origin. Two unique historic sites are the San Vicente Dam and remains of the San Diego Aqueduct.

Four sites have sufficient quantities of both prehistoric artifacts from temporary camps and also artifacts of adjacent historic homesteads to be classed as multicomponent sites. A few sites classified above as prehistoric do have some historic components as well.

Four sites in the Study Area appear to be located directly within the current Project alignment (proposed Project APE). They include two historic roads, one historic military site of discarded ordinance, and one lithic isolate.

Site P-37-012821 is the Boulder Oaks Spur of Foster Truck Trail/Atkinson Toll Road. The Atkinson Toll Road was constructed in 1871 and the Western Spur of the Foster Truck Trail was built between 1928 and 1939. The proposed Project would use the existing access road that overlies this route to the new proposed access road. This road is graded annually and was used for construction of the Sunrise Powerlink Project. Although historic, the portion of the road that would be used for the proposed Project is a maintained paved dirt road that lacks historical integrity.

Site P-37-030197 is the Stowe-to-Poway Wagon Road. This road, established some time before 1898, follows Sycamore Canyon from the community of Santee through the turn-of-the-century hamlet of Stowe, and on to Poway. The route may have an earlier history as a log or wood haul road. The proposed transmission line would bisect the road at right angles near Beeler Canyon. The road continues to be used. Additional research is recommended to determine previous agency evaluations and treatment of the road.

Site P-37-014261 is a large area of discarded ordinance from World War II and early Cold War era Camp Elliot. The transmission line would bisect the northern portion of the site, as has already occurred by construction of the Sunrise Powerlink Project. The site was evaluated as not significant or eligible to any registers during the Sunrise Powerlink Project regulatory process. Further research would be needed to determine what final agency determinations or treatments occurred for that project. Site P-37-013793 is a prehistoric lithic isolate located along the proposed transmission line route. Such isolates are considered, de facto, as not significant.

Site P-37-013793 is a prehistoric lithic isolate located along the proposed transmission line route.



Identification of Indian tribes that may attach religious and cultural significance to historic properties within the project boundary or in the project vicinity

The Barona Tribe has been consulted, and upon their request, the Barona tribal attorney has been added to the list of contacts for the project. The Native American Heritage Commission (NAHC) did not respond to the request for consultation as a part of preparation of this PAD, but they will be consulted during preparation of the Draft License Application, and all tribes that are identified will be contacted and consulted regarding the potential for the proposed Project to affect cultural resources within the Project area and region as a part of required consultation under section 106 of the National Historic Preservation Act (NHPA) and related statutes.

### **3.10 Socio-Economic Resources**

The San Vicente Project is located in San Diego County, California, approximately 30 miles northeast of downtown San Diego. The San Vicente Reservoir is bordered on the south by the community of Lakeside, on the east by the Barona Indian Reservation, and on the north and west by mostly undeveloped land that is within the jurisdiction of the County of San Diego.

Most of the land surrounding the San Vicente Reservoir is undeveloped and consists of steep canyon slopes with extensive rock outcroppings. Low-density residential development intermingled with agricultural lots is present south and southeast of the reservoir. A few isolated residences are located at higher elevations surrounding the reservoir. Some of the residential lots in the vicinity also contain equestrian and agricultural structures. Pockets of light manufacturing and storage uses are located along Vigilante Road and State Route 67 (SR-67). Industrial extractive uses (i.e., rock quarrying operations) are located along the northerly end of SR-67 (both sides). Other existing land uses near the reservoir include Sycamore Canyon Regional Open Space Park and Oak Oasis County Park. The eastern edge of Sycamore Canyon Regional Open Space Park is approximately one mile west of the reservoir. The western extent of Oak Oasis County Park is 0.25 mile east of the reservoir.

During construction, approximately 200 workers may be employed on the site. Once operational, the Project would be staffed by approximately five on-site operators. All required workers are expected to be readily available from within the Southern California employment pool.

### **3.11 Tribal Resources**

No tribal lands are located within the proposed Project's boundaries. Land disturbing activities can disturb Tribal cultural resources, or disrupt traditional cultural activities. The potential for impact to Tribal Resources will be further defined during the licensing process and Tribal consultation. As part of the licensing process, the Water Authority and City will coordinate with the State Historic Preservation Office and Tribal Historic Preservation Officers in accordance with requirements of Section 106 of the National Historic Preservation Act, as well as, the California Environmental Quality Act (CEQA).

Qualified cultural resource consultants will work to identify locations requiring additional surveys. Results of surveys will be documented and reviewed with agency and tribal representatives. If applicable, a Historic Properties Management Plan will be prepared for the Project that will identify appropriate measures of protection for identified cultural resource sites, including management and protection of Native American values.

### **3.12 River Basin Description**

The San Vicente Reservoir lies within the Fernbrook Hydrologic Subarea of the San Vicente Hydrologic Area of the San Diego Hydrologic Unit, as defined by the Comprehensive Water Quality Control Plan for the San Diego Region (Figure 3.12-1) (RWQCB, 1994). The San Diego Hydrologic Unit covers approximately 440 square miles and is drained by the San Diego River and its tributaries. Several other reservoirs are located within this hydrologic unit, including Lake Murray, El Capitan Reservoir, Lake Jennings, and Cuyamaca Reservoir.

Surface water in the San Vicente Creek watershed flows into and is impounded by the San Vicente Reservoir. This reservoir also receives imported water that comprises the vast majority of stored water in the reservoir. Major water uses within the Project boundary include domestic water supply for municipal and industrial use serving portions of the City of San Diego and recreational use at the San Vicente Reservoir.

#### **Dams and Diversion Structures**

The San Vicente Creek is impounded by the San Vicente Reservoir. The San Vicente Dam raise project was completed in 2014 with construction of a roller compacted concrete (RCC) dam 337-foot high. The maximum water surface elevation in the reservoir is approximately 764 feet and the minimum normal water surface elevation *for operation of the Project* is anticipated to be 618 feet; (dead pool storage of the reservoir is elevation 539 feet).

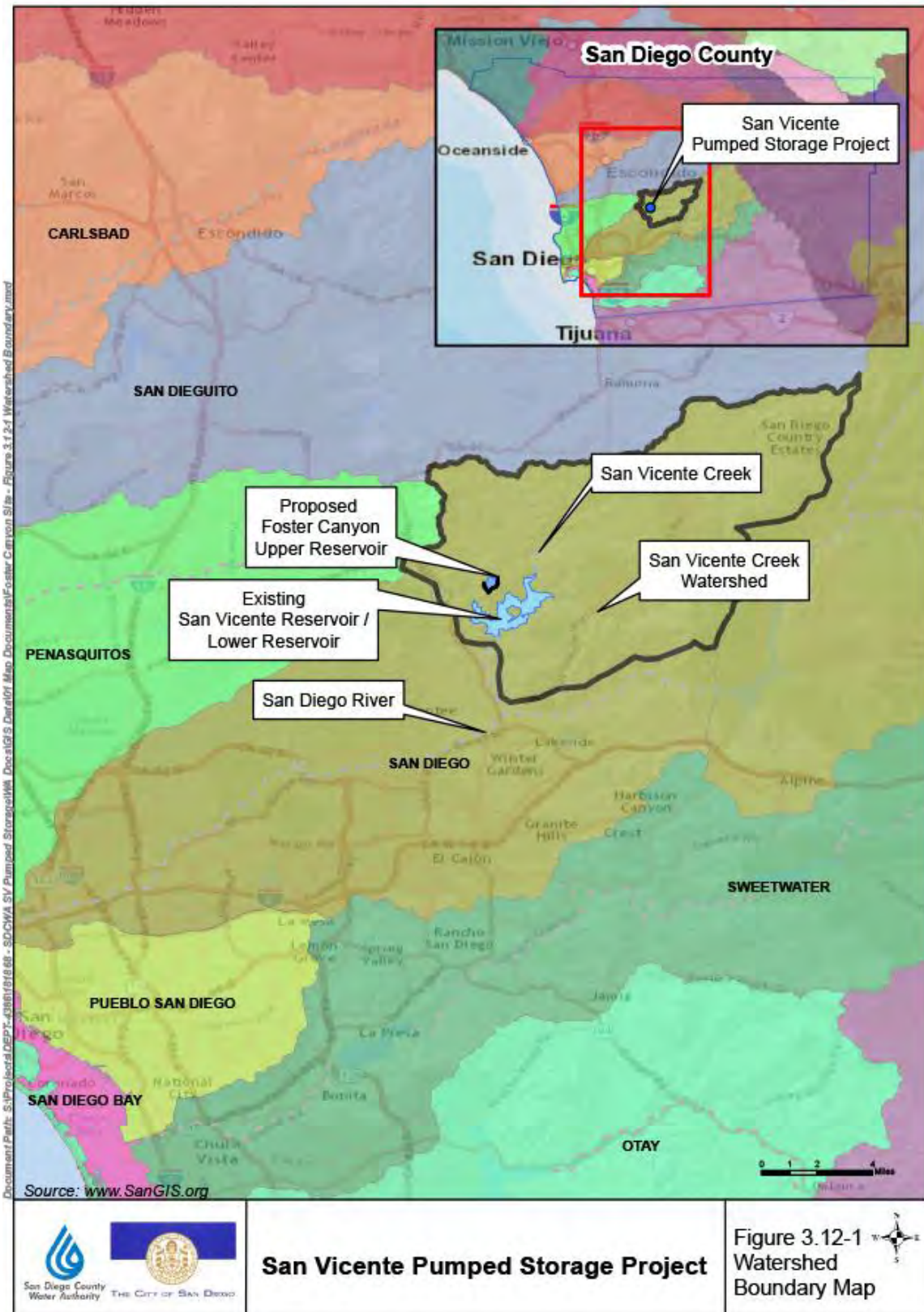
#### **Tributary Rivers and Streams**

The San Vicente Reservoir is located on San Vicente Creek, with several smaller drainages also tributary to the reservoir. The San Vicente Creek watershed (upstream of the dam) covers an area of approximately 74 square miles. The watershed includes several ephemeral drainages, including Padre Barona Creek in the east, San Vicente and West Branch creeks in the north, and Foster Creek in the northwest. San Vicente Creek continues south downstream of the existing reservoir to the San Diego River, which empties into the Pacific Ocean at Mission Bay.

Water releases into San Vicente Creek downstream of the San Vicente Dam occurred occasionally in the past over the spillway when the reservoir level reached the spillway elevation. These releases are extremely unlikely to occur following the recent dam raise and would not provide connectivity with the San Diego River due to downstream development activity in the creek bed. Although the reservoir receives the majority of its water as imported

supply, it also receives natural runoff from the San Vicente Watershed and local transfers from one other reservoir.

**Figure 3.12-1 Watershed Boundary Map**



## **4.0 Preliminary Issues and Studies**

Based on the resource descriptions and impacts discussion presented in Section 3.0, the preliminary environmental issues associated with the San Vicente Project are presented below. Further assessment may require conducting studies and information gathering activities, in addition to review of relevant qualifying federal and State or Tribal plans, and relevant resource management plans.

### **4.1 Geology and Soils**

There are no known geology and soils issues that would affect the construction and operation of the Project. Typical issues associated with construction and operation in difficult geology and soil conditions are described in Section 3.1 above. Additional studies will include:

- A geotechnical investigation will be prepared to further define specific issues related to the upper reservoir and dam, tunnels, inlet/outlet structures, access roads, and power transmission lines. Mitigation measures, including best management practices, will be employed to address soil erosion during construction and post-construction activities.

### **4.2 Water Resources**

There are no known water resource issues that would affect the construction and operation of the Project. Water for the initial upper reservoir fill and ongoing operations will be obtained from purchased imported water. Initial water quality modeling prepared for the City of San Diego's Pure Water Program shows that the Project will not have an adverse impact on water quality in the San Vicente Reservoir. Additional studies will include:

- Water quality modeling studies, including a shoreline erosion analysis, to assure that daily reservoir fluctuations will not impact water quality.

### **4.3 Fish and Aquatic Resources**

Fish Entrainment Risk Assessment: Proposed Project inlet/outlet structures may pose a risk of entrainment for weaker swimming fish present near the intakes small enough to pass through the trash racks and into the inlet/outlet structures. Entrainment of fish at the proposed Project would affect individual fish but it is not known if it would affect fish populations in the lower Project reservoir. Additional studies will include:

- A literature review and assessment of fishery affects to assess the risk of fish entrainment, including consideration of the expected mortality rate of fish entrained, potential for impacts to fish populations in the existing lower reservoir, and potential for fish populations to be supported in the proposed upper reservoir.

#### **4.4 Wildlife and Botanical Resources**

The proposed Project has the potential to impact the biological goals developed in the MSCP for establishing a regional preserve system, including goals for assembling biological cores and linkages (City of San Diego 1998). Key biological constraints generally include sensitive natural communities (coastal sage scrub, chaparral, riparian, lakeshore fringe wetland), special-status species (rare plants, Quino, Gnatcatcher, Vireo), jurisdictional wetlands, designated critical habitat and preserve areas, and existing Regional Preserves.

The following surveys and studies will be undertaken as a part of preparation of the Draft License Application and subsequent environmental review:

- General biological survey, including vegetation mapping, special-status species habitat assessment, and jurisdictional delineation of wetlands and other waters of the U.S. and State to determine extent of USACE, RWQCB, and Department jurisdictional wetlands and other waters.
- Presence/absence protocol-level surveys for rare plants, Quino, Gnatcatcher, Vireo, and potentially other special-status species.
- Biological Assessment pursuant to ESA for federally listed species, and assessment pursuant to the CESA of potential impacts to State listed species.
- Demonstration of consistency with City and County MSCP and Subarea Plans, including siting and design criteria.
- Equivalency analysis for impacts to MHPA Cornerstone Lands and PAMA.
- Potential amendments to applicable Resource Management Plans.

#### **4.5 Floodplains, Wetlands, Riparian and Littoral Habitat**

No floodplains will be affected by the proposed Project. Potential wetlands, riparian and littoral habitat effects could occur in development of the I/O works on the lower reservoir, and in development of the new upper reservoir. Studies identified in section 4.4 above for wildlife and botanical resources will address most of these potential affects as well. Additional study aspects will include:

- Conduct a detailed aquatic and riparian habitat analysis of all areas identified in the jurisdictional delineation, especially in the area of the tunnels, roads, and powerline corridor.
- Identify construction and operations details that may affect aquatic and riparian biological resources, including, but not limited to scheduling, work force, length of construction, and other Project details.

## **4.6 Rare, Threatened, and Endangered Species**

The proposed San Vicente Project will need to assess the biological resources at the proposed upper reservoir site and ancillary Project features, including transmission lines, tunnels, and roads. Studies identified in section 4.4 above for wildlife and botanical resources will address most of these potential affects as well. Additional study aspects will include:

- Reconnaissance surveys to determine the presence of habitat for each listed species and map the extent of that habitat.
- Protocol-level surveys for those species for which survey protocols exist (e.g., Arroyo toad, Gnatcatcher, Vireo).
- Focused surveys in potential on-site habitat for other special-status species.
- Focused surveys in areas adjacent to the Project for special-status species that might be affected by Project-associated activities (e.g., bats, nesting raptors)

## **4.7 Recreation and Land Use**

Recreational facilities are well established at the proposed lower reservoir, and are not proposed to be altered by the proposed Project. The small upper reservoir is not proposed for recreational use, except for passive hiking activities associated with trail systems established for MSCP purposes. Therefore, no studies of new recreational uses or facilities are proposed. A study will be undertaken to evaluate potential impacts of project development on existing recreational uses at the San Vicente reservoir, and on recreational uses contemplated in applicable Resource Management Plans in the vicinity of the proposed upper reservoir. The study will include:

- Short-term potential restrictions on recreational use and access at the San Vicente Reservoir during periods of Project construction and potential for conflicts with existing land use and management plans within the Project area will be studied as a part of the environmental assessment for the proposed Project.
- Detailed studies and consultation will include identification of existing land use and resource management plans as they may affect land acquisition, easements and mitigation requirements to enable development of the upper reservoir area, associated Project facilities and access, and the gen-tie powerline consistent with regional land use and resource management plans.

## **4.8 Aesthetics Resources**

Primary affects relevant to aesthetics and visual alteration of the proposed Project area will occur as a result of equipment and earthworks during construction. Study elements to be undertaken in support of environmental review include:



- Conduct assessment of existing visual character of the upper reservoir area and overall project area.
- Assessment of potential impacts on visual resources associated with project construction and staging areas, including terrain alteration and grading, construction equipment operation, and lighting.
- Assessment of potential impacts on visual resources of the proposed upper project reservoir, and other project facilities, including the proposed transmission line.

## **4.9 Cultural Resources**

Based upon results of the record search and existing environmental mapping, no substantial cultural resource constraints have been identified with regard to potential affects to large or highly significant cultural resources. Study elements to be undertaken in support of environmental review include:

- Conduct intensive cultural resource survey of the proposed Project's Area of Potential Effects (APE), including the upper reservoir area, gen-tie powerline corridor, and new access road.

## **4.10 Socio-Economic Resources**

It is expected that the power generated at the San Vicente Project will meet local electrical load resulting in the majority of economic benefits in the local area. In addition, the regional economy would benefit from the incomes generated by a major construction project associated with the project, and this would indirectly benefit regional assessed values through the increase of County-wide sales. There are no socio-economic issues warranting further study.

## **4.11 Tribal Resources**

As part of the licensing process, the Water Authority and City will coordinate with the State Historic Preservation Office and Tribal Historic Preservation Officers in accordance with requirements of Section 106 of the National Historic Preservation Act, as well as, with local tribes. Each of the tribes identified by the NAHC will be formally consulted during preparation of the license application regarding the potential for the proposed Project to affect tribal and/or cultural resources within the Project area and region. In addition to the investigation identified in section 4.9 for cultural resources above, study elements to be undertaken in support of environmental review with respect to Tribal resources include:

- Qualified cultural resource consultants will work in consultation with affected tribes to identify locations requiring additional surveys. Results of surveys will be documented and reviewed with agency and tribal representatives. If applicable, a Historic Properties Management Plan will be prepared for the project that will identify appropriate measures

of protection for identified cultural resource sites, including management and protection of Native American values.

#### **4.12 River Basin**

The proposed Project will utilize stored water in the existing San Vicente Reservoir, and will not utilize or involve any waters diverted from a stream, or have any potential to affect water resources and related biological and cultural resources within the river basin. Therefore, no studies are proposed for this issue area.

## **5.0 Summary of Contacts**

This section provides an appendix summarizing the contacts with Federal, state, and interstate resources agencies, Indian tribes, non-governmental organizations, or other members of the public in connection with the preparation of this San Vicente Project Pre-Application Document.

### **5.1 Contacts with Stakeholders**

The Water Authority and City developed a Project mailing list based upon the FERC initial consultation contact list for California, and supplemented with agency mailing lists and individual requests.

On May 21, 2015, federal, state and local resource agencies, including the Bureau of Indian Affairs and the Native American Heritage Commission were sent a letter requesting any existing information pertinent to the preparation of the PAD; (see PAD Consultation Letter below). This letter was sent to regulatory agencies that may have a role in ultimate permitting for the proposed Project. Other stakeholders, including local landowners and other interested parties were sent a separate letter notifying them that the Water Authority and City were preparing a PAD, and that they would be receiving additional information when the PAD was submitted to FERC; (see PAD Notification letter below). The distribution list for both the consultation letter and the notification letter is included in below in Table 5.1-1, Project Mailing List. All parties on the mailing list will be notified of the availability of the PAD and NOI concurrent with its submittal to FERC.

Section 5.2 includes the letters received in response to the information request.

**Table 5.1-1 Project Mailing List**

Federal, State, Interstate And Local Agencies	PAD Letter	Comment / Reply
U.S. ARMY CORPS OF ENGINEERS COMMANDER SAN FRANCISCO DISTRICT OFFICE, 1455 MARKET ST, #1760 SAN FRANCISCO, CA 94103	Consultation	No
U.S. BUREAU OF INDIAN AFFAIRS ROBERT EBEN, ACTING SUPERINTENDENT, ATTN: AGENCY HYDROLOGIST 1451 RESEARCH PARK DRIVE, SUITE 100 RIVERSIDE, CA 92507	Consultation	No
NATIVE AMERICAN HERITAGE COMMISSION DAVE SINGLETON, PROGRAM ANALYST 1550 HARBOR BLVD, SUITE 100 WEST SACRAMENTO, CA 95691	Consultation	No
U.S. FISH AND WILDLIFE SERVICE G. MENDEL STEWART, FIELD SUPERVISOR 2177 SALK AVENUE, SUITE 250 CARLSBAD, CA 92008	Consultation	Yes
MCAS MIRAMAR MS. ANTOINETTE PEREZ, DIRECTOR OF LAND USE AND REAL ESTATE BUILDING 6317 MCAS MIRAMAR PO BOX 452007 SAN DIEGO, CA 92145-2007	Consultation	No
MCAS MIRAMAR MR. DAVID BOYER, DIRECTOR, NATURAL RESOURCES DIVISION BUILDING 6317 MCAS MIRAMAR PO BOX 452000 SAN DIEGO, CA 92145-2000	Consultation	No
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE EDMUND PERT, CDFW REGIONAL MANAGER 3883 RUFFIN ROAD SAN DIEGO, CA 92123	Consultation	Yes
STATE OF CALIFORNIA WILDLIFE CONSERVATION BOARD JOHN P DONNELLY, DIRECTOR 1807 13TH STREET, STE. 103 SACRAMENTO, CA 95814	Consultation	No

Federal, State, Interstate And Local Agencies	PAD Letter	Comment / Reply
CALIFORNIA DEPARTMENT OF WATER RESOURCES ED WILSON, DIRECTOR OF PUBLIC AFFAIRS 1416 9TH STREET SACRAMENTO, CA 95814	Consultation	No
CALIFORNIA STATE WATER RESOURCES CONTROL BOARD OSCAR BIONDI, SENIOR WATER QUALITY ENGINEER 1001 I STREET, 14TH FLOOR SACRAMENTO, CA 95814	Consultation	No
CALIFORNIA PUBLIC UTILITIES COMMISSION TIMOTHY SULLIVAN, EXECUTIVE DIRECTOR 505 VAN NESS AVE SAN FRANCISCO, CA 94102-3214	Consultation	No
CITY OF ESCONDIDO CLAY PHILLIPS, CITY MANAGER 201 NORTH BROADWAY ESCONDIDO, CA 92025	Notification	No
CITY OF LEMON GROVE KATHY HENRI, CITY MANAGER 3232 MAIN STREET LEMON GROVE, CA 91945	Notification	No
CITY OF POWAY DAN SINGER, CITY MANAGER 13325 CIVIC CENTER DRIVE POWAY, CA 92064	Consultation	No
CITY OF SAN DIEGO MAYOR KEVIN FAULCONER 202 C STREET SAN DIEGO, CA 92101-4806	Consultation	No
CITY OF SAN DIEGO JEFF PASEK 1200 THIRD AVENUE, SUITE 1700 SAN DIEGO, CA 92101	Consultation	Yes
CITY OF SANTEE TIM MC DERMOTT, ACTING CITY MANAGER 10601 MAGNOLIA AVENUE SANTEE, CA 92071	Consultation	No
COUNTY OF SAN DIEGO BRIAN ALBRIGHT, DIRECTOR 5500 OVERLAND AVENUE, SUITE 410 SAN DIEGO, CA 92123	Consultation	Yes

Federal, State, Interstate And Local Agencies	PAD Letter	Comment / Reply
HONORABLE U.S. SENATOR DIANNE FEINSTEIN C/O BILL KRATZ, DISTRICT DIRECTOR 880 FRONT STREET, SUITE 3296 SAN DIEGO, CALIFORNIA 92101	Notification	No
HONORABLE U.S. SENATOR BARBARA BOXER C/O CARIDAD SANCHEZ, DISTRICT DIRECTOR 600 B STREET, SUITE 2240 SAN DIEGO, CA 92101	Notification	No
HONORABLE U.S. CONGRESSMAN DARRELL ISSA 49 <sup>TH</sup> CONGRESSIONAL DISTRICT 1800 THIBODO ROAD, SUITE #310 VISTA, CA 92081	Notification	No
HONORABLE U.S. CONGRESSMAN DUNCAN HUNTER 50 <sup>TH</sup> CONGRESSIONAL DISTRICT 1611 N. MAGNOLIA AVE., SUITE # 310 EL CAJON, CA 92020	Notification	No
HONORABLE U.S. CONGRESSMAN JUAN VARGAS 51 <sup>ST</sup> CONGRESSIONAL DISTRICT 333 F STREET, SUITE A CHULA VISTA, CA 91910	Notification	No
HONORABLE U.S. CONGRESSMAN SCOTT PETERS 52 <sup>ND</sup> CONGRESSIONAL DISTRICT 4350 EXECUTIVE DRIVE, SUITE # 105 SAN DIEGO, CA 92121	Notification	No
HONORABLE U.S. CONGRESSWOMAN SUSAN DAVIS 53 <sup>RD</sup> CONGRESSIONAL DISTRICT 2700 ADAMS AVE., SUITE # 102 SAN DIEGO, CA 92116	Notification	No
OFFICE OF THE GOVERNOR OF CALIFORNIA GOVERNOR OF CALIFORNIA STATE CAPITOL BUILDING, SUITE 1173 SACRAMENTO, CA 95814	Notification	No
HONORABLE ATTORNEY GENERAL, KAMALA HARRIS CALIFORNIA DEPARTMENT OF JUSTICE P.O. BOX 944255 SACRAMENTO, CA 94244-2550	Notification	No
HONORABLE SPEAKER OF THE ASSEMBLY TONI ATKINS 78 <sup>TH</sup> ASSEMBLY DISTRICT 1350 FRONT ST., ROOM 6054 SAN DIEGO, CA 92101	Notification	No

Federal, State, Interstate And Local Agencies	PAD Letter	Comment / Reply
HONORABLE SENATOR PAT BATES 36 <sup>TH</sup> SENATE DISTRICT 1910 PALOMAR POINT WAY, SUITE 105 CARLSBAD, CA 92008	Notification	No
HONORABLE SENATOR JOEL ANDERSON 38 <sup>TH</sup> SENATE DISTRICT 500 FESLER STREET #201 EL CAJON, CA 92020	Notification	No
HONORABLE SENATOR MARTY BLOCK 39 <sup>TH</sup> SENATE DISTRICT C/O CHRIS WARD, CHIEF OF STAFF 701 B STREET, SUITE 1840 SAN DIEGO, CA 92101	Notification	No
HONORABLE BEN HUESO 40 <sup>TH</sup> SENATE DISTRICT 303 H STREET, SUITE 200 CHULA VISTA, CA 91910	Notification	No
HONORABLE ASSEMBLYMAN BRIAN JONES 71 <sup>ST</sup> ASSEMBLY DISTRICT C/O MASON HERRON, DISTRICT DIRECTOR 10152 MISSION GORGE ROAD SANTEE, CA 92071	Notification	No
HONORABLE ASSEMBLYWOMAN MARIE WALDRON 75 <sup>TH</sup> ASSEMBLY DISTRICT 350 W. 5TH AVENUE, SUITE 110 ESCONDIDO, CA 92025	Notification	No
HONORABLE ASSEMBLYMAN ROCKY CHAVEZ 76 <sup>TH</sup> ASSEMBLY DISTRICT 804 PIER VIEW WAY, SUITE 100 OCEANSIDE, CA 92054	Notification	No
HONORABLE ASSEMBLYMAN BRIAN MAIENSCHEN 77 <sup>TH</sup> ASSEMBLY DISTRICT 12396 WORLD TRADE DRIVE, SUITE #118 SAN DIEGO, CA 92128	Notification	No
HONORABLE ASSEMBLYWOMAN SHIRLEY WEBER 79 <sup>TH</sup> ASSEMBLY DISTRICT 1350 FRONT STREET, SUITE 6046 SAN DIEGO, CA 92101	Notification	No
HONORABLE ASSEMBLYWOMAN LORENA GONZALEZ 80 <sup>TH</sup> ASSEMBLY DISTRICT 1350 FRONT STREET, SUITE 6022 SAN DIEGO, CA 92101	Notification	No



Federal, State, Interstate And Local Agencies	PAD Letter	Comment / Reply
COUNTY OF SAN DIEGO, COUNTY ADMINISTRATION CENTER DIANNE JACOB, SUPERVISOR 1600 PACIFIC HIGHWAY, ROOM 335 SAN DIEGO, CA 92101	Notification	No
<b>Indian Tribes</b>		
BARONA TRIBE ART BUNCE, TRIBAL ATTORNEY P.O. BOX 1416 ESCONDIDO, CA 92033	Notification	No
<b>Non-Governmental Organizations</b>		
SAN DIEGO GAS & ELECTRIC CO AMBER STARBUCK, PUBLIC AFFAIRS MANAGER 8330 CENTURY PARK COURT SAN DIEGO, CA 92123	Consultation	No
ADAMS BROADWELL JOSEPH & CARDOZO JANET LAURAIN 601 GATEWAY BLVD., SUITE 1000 SOUTH SAN FRANCISCO, CA 94080	Notification	No
KIMBALL VALLEY ROAD ASSOCIATION MARK HUTTON, SECRETARY P.O. BOX 81 RAMONA, CA 92065	Notification	No
LOZEAU DRURY, LLP RICHARD DRURY 410 12TH STREET, SUITE 250 OAKLAND, CA 94607	Notification	No
MUSSEY GRADE ROAD ALLIANCE DIANE CONKLIN P.O. BOX 683 RAMONA, CA 92065	Notification	No
<b>Local Landowners and Members of the Public</b>		
ADAM S & MARTHA O MORRIS 15145 ALMOND ORCHARD LANE SAN DIEGO, CA 92131	Notification	No
ANTHONY TAI Q PHAM 15111 ALMOND ORCHARD LN SAN DIEGO, CA 92131	Notification	No

Federal, State, Interstate And Local Agencies	PAD Letter	Comment / Reply
ARNOLD & VALERIE REVOCAB SCHMIDT 3175 CAUBY ST 90 SAN DIEGO, CA 92110	Notification	No
ARNOLD J SCHMIDT 3175 CAUBY ST 90 SAN DIEGO, CA 92110	Notification	No
ARTHUR CORDTZ TRUST 1236 LAW STREET SAN DIEGO, CA 92109	Notification	No
BABBITT TRUST 11240 DEPRISE CT SAN DIEGO, CA 92131	Notification	No
BILLY E & SHAUNIE S DAVIS 11226 WHEATLAND PLACE SAN DIEGO, CA 92131	Notification	No
CHRISTOPHER MICHAEL & TRAC BROWN 11216 DEPRISE CV SAN DIEGO, CA 92131	Notification	No
CIELO 182 LLC 1570 LINDA VISTA DRIVE SAN MARCOS, CA 92078	Notification	No
CUI FAMILY TRUST 15121 ALMOND ORCHARD LN SAN DIEGO, CA 92131	Notification	No
DAVIS REVOC TRUST 11235 DEPRISE CV SAN DIEGO, CA 92131	Notification	No
DENNIS K & KAREN L WALDEN 11214 WHEATLAND PL SAN DIEGO, CA 92131	Notification	No
DWIGHT L & CINDI L GREENE PO BOX 1027 POWAY, CA 92074	Notification	No
EVERETT P SIEHE 16080 SYCAMORE CANYON ROAD POWAY, CA 92064	Notification	No
FAZEN LIVING TRUST 15127 ALMOND ORCHARD LN SAN DIEGO, CA 92131	Notification	No

Federal, State, Interstate And Local Agencies	PAD Letter	Comment / Reply
GARY TROWBRIDGE TRUST 12632 CALLE DE ROB POWAY, CA 92064	Notification	No
GREGORY S CAMPBELL 15183 MAPLE GROVE LANE SAN DIEGO, CA 92131	Notification	No
HANSON AGGREGATES PACIFIC SOUTHWEST PO BOX 52427 ATLANTA, GA 30355	Notification	No
HARISH & HETAL HOSALKAR 15151 ALMOND ORCHARD LANE SAN DIEGO, CA 92131	Notification	No
JAMES & JENNIFER ALEXANDER TRUST 15115 ALMOND ORCHARD LN SAN DIEGO, CA 92131	Notification	No
JIMMIE & BETTIE BUCHANAN, 2002 TR PO BOX 412 POWAY, CA 92074	Notification	No
JOHN R TIVANIAN 12630 CALLE DE ROB POWAY, CA 92064	Notification	No
KEVIN & ANGELA SIGISMONDO 11205 WHEATLAND PL SAN DIEGO, CA 92131	Notification	No
KEVIN C HAMILTON 11208 DEPRISE CT SAN DIEGO, CA 92131	Notification	No
KHALID & KARIM ALLOS 16980 FOSTER TRUCK TRAIL LAKESIDE, CA 92040	Notification	No
KHALID M & KHELOUD ALLOS 16980 FOSTER TRUCK TRAIL LAKESIDE, CA 92040	Notification	No
KIM FAMILY TRUST 11248 DEPRISE CT SAN DIEGO, CA 92131	Notification	No
KUNARD FAMILY TRUST 11202 WHEATLAND PL SAN DIEGO, CA 92131	Notification	No

Federal, State, Interstate And Local Agencies	PAD Letter	Comment / Reply
LEE PITMAN 9801 CHOCOLATE SUMMIT DRIVE EL CAJON, CA 92021	Notification	No
LOUIS G & FAITH URIDEL FLYING-U-RANCH AIRPORT UNION MILLS, IN 46382	Notification	No
MADELEINE A BRILES LIVING TRUST 2701 ARNOLDSON AVE SAN DIEGO, CA 92122	Notification	No
MAHER BABELLI 11256 DEPRISE CV SAN DIEGO, CA 92131	Notification	No
MANOWITZ FAMILY TRUST 11217 WHEATLAND PLACE SAN DIEGO, CA 92131	Notification	No
MAURO J L AVALOS 13813 LORRAINE CT LAKESIDE, CA 92040	Notification	No
MOORE FAMILY REVOC LIVING TRUST 4255 TAMBOR COURT SAN DIEGO, CA 92124	Notification	No
NAVARRO LIVING TRUST 321 ALPINE TRAIL ROAD ALPINE, CA 91901	Notification	No
OMAR M KHAWAJA 15165 MAPLE GROVE LN SAN DIEGO, CA 92131	Notification	No
PIRIGYI FAMILY TRUST 11221 DEPRISE CV SAN DIEGO, CA 92131	Notification	No
RICHARD D WIETFELDT 11224 DEPRISE CV SAN DIEGO, CA 92131	Notification	No
RIGO & PEDRO OLOZAGASTE 7979 CALICO STREET SAN DIEGO, CA 92126	Notification	No
ROGER P & NOELLE BARNO TRUST 15205 VIA SANTA VIENTA SAN DIEGO, CA 92131	Notification	No

Federal, State, Interstate And Local Agencies	PAD Letter	Comment / Reply
RYAN HUA 2014 TRUST 11232 DEPRISE CV SAN DIEGO, CA 92131	Notification	No
SCOTT & HONORE ANTHONY 15133 ALMOND ORCHARD LN SAN DIEGO, CA 92131	Notification	No
SMYTHE FAMILY TRUST 11219 DEPRISE CV SAN DIEGO, CA 92131	Notification	No
STONEBRIDGE ESTATES MASTER ASSN 2727 HOOVER AVENUE NATIONAL CITY, CA 91950	Notification	No
SYCAMORE ESTATES LLC 2750 WOMBLE RD SAN DIEGO, CA 92106	Notification	No
TAMMY L & JIMMY R BUCHANAN 16250 SYCAMORE CANYON ROAD POWAY, CA 92064	Notification	No
TRA T PHAN 11243 DEPRISE CV SAN DIEGO, CA 92131	Notification	No
VICTOR E & MARIE M BIANCHINI 15139 ALMOND ORCHARD LN SAN DIEGO, CA 92131	Notification	No
WILLIAM P TR GORSKI 14991 OAKWOOD LANE CHINO HILLS, CA 91709	Notification	No
XUEJUN ZHANG 15205 MAPLE GROVE LANE SAN DIEGO, CA 92131	Notification	No

## 5.2 PAD Consultation Letter - May 21, 2015



May 21, 2015

To Whom It May Concern,

The San Diego County Water Authority (Water Authority) and City of San Diego (City) as co-applicants have been issued a preliminary permit from the Federal Energy Regulatory Commission (FERC) to pursue development of the San Vicente Pumped Storage Project (FERC Project Number 14642-000). The Water Authority and City are moving forward with preparations for the FERC licensing process, a necessary step in Project development. The purpose of this letter is to initiate a dialogue with you or your organization with regard to this Project, and to solicit your assistance with gathering information on natural and cultural resources in the Project area.

The Project is the same hydroelectric pumped storage project for which the FERC previously granted a preliminary permit, Project No. 12747-000 on July 2, 2010. A complete description of the current proposed Project is attached.

Between now and the end of July 2015, the Water Authority and City will initiate the formal FERC licensing process for the Project by preparing and filing a Notice of Intent (NOI) and a Preliminary Application Document (PAD). The contents of the PAD are specified by federal regulations (18 CFR 5.5 and 5.6). In general, a PAD contains: a description of the proposed project, a description of the existing environment (including geology and soils; water resources; fisheries; botanical resources; wildlife resources; rare, threatened, and endangered species; recreation and land use; aesthetic resources; cultural resources; socio-economic resources; and Tribal resources), a preliminary list of issues and studies needed with respect to each resource, and a list of proposed protection, mitigation, and enhancement measures.

The purpose of the PAD is to provide existing information relevant to the project proposal that is already in the applicant's possession, or that the applicant can obtain with the exercise of due diligence. Following completion of the PAD, this existing, relevant, and reasonably available information is distributed to FERC, agencies, and tribes to enable them to identify issues and related information needs. This will help to develop study requests and study plans, and prepare documents analyzing the license application to be subsequently filed. The PAD is also a precursor to the environmental analysis section of the license application. The Preliminary Application Document is scheduled to be submitted by the end of July 2015.

The Water Authority and City are soliciting input from agencies and tribes on information to be included in the PAD. We are looking for data, reports, reviews, or analyses that cover any of the topics identified above for the geographic area of the San Vicente Pumped Storage Project.



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Please provide any information by June 22, 2015 to:

Mr. Mark Tegio  
San Diego County Water Authority  
4677 Overland Avenue  
San Diego, CA 92123  
Email: [mtegio@sdewa.org](mailto:mtegio@sdewa.org)

We may be following up with you by phone on this request in the near future so that we may answer your questions, and potentially schedule a meeting to discuss the project in further detail.

The Water Authority and City plan to continue informal consultations with agencies, tribes and stakeholders throughout the coming months. In addition, there are opportunities for formal input throughout the FERC licensing process.

Thank you for your prompt attention to this request.

Sincerely,



Frank Belock  
Deputy General Manager  
San Diego County Water Authority



Bob Mulvey  
Assistant Public Utilities Director  
City of San Diego

San Diego County Water Authority  
May 21, 2015  
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## **Project Description**

### **San Vicente Pumped Storage Hydroelectric Project San Diego County Water Authority and the City of San Diego**

This preliminary Project Description is intended to provide a quick overview of project details, goals, and benefits of the Proposed Project.

#### **Project Details**

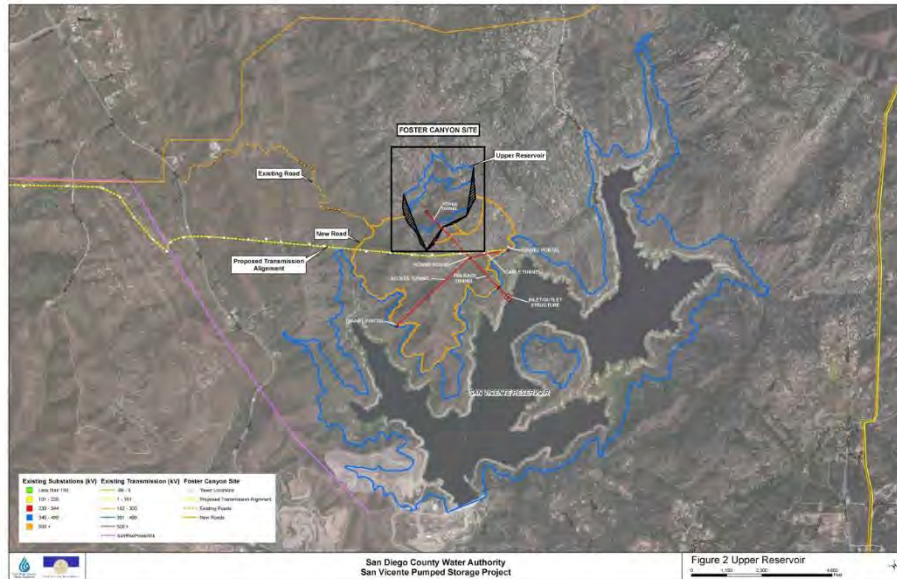
- The San Diego County Water Authority (Water Authority) and City of San Diego (City) as co-applicants have been issued a preliminary permit from the Federal Energy Regulatory Commission (FERC) to pursue development of the San Vicente Pumped Storage Project (FERC Project Number 14642-000, issued May 14, 2015).
- The proposed Project would provide up to 500 megawatts (MW) of generation capacity capable of generating up to approximately 4,000 megawatt hours of electricity per 8-hours daily operation to help meet part of the region's power requirements, and support transmission grid operations essential to integrating a higher percentage of renewable wind and solar power generation sources.
- The proposed Project would use energy to pump water from the existing San Vicente Reservoir (lower reservoir) up to a new Foster Canyon Reservoir (upper reservoir) for storage during periods of low electrical demand, and generate electricity by releasing the water from the upper reservoir through the generating units and back to the lower reservoir during periods of high electrical demand, and as needed to support transmission grid operations.
- The exchange of water between the two reservoirs would be designed such that no water is consumed, and not interfere with existing water supply, water quality, fisheries, or recreational uses of the San Vicente Reservoir.
- The project utilizes a small portion of the total San Vicente Reservoir's water capacity, such that at maximum pumping and generation, the San Vicente Reservoir would fluctuate approximately two feet up or down.
- New small dams would be constructed to form the upper reservoir, and would be provided with a spillway section to provide safety against over-pumping. Any spillway overflow would be routed back to the lower reservoir.

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- A tunnel system and underground powerhouse would connect the two reservoirs. The powerhouse would contain four 125 MW reversible pump-turbines to provide maximum flexibility in both generation and pump-back mode.
- The new San Diego Gas & Electric Company (SDG&E) Sunrise Powerlink 500 kV transmission line passes close to the San Vicente Reservoir. A new double-circuit 230 KV line would be built from the proposed Project's powerhouse extending approximately five miles to the 230 kV Sycamore Canyon Substation (Sycamore) for regional transmission interconnection.



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## Goals and Objectives

Specific goals and objectives of the project identified by the Water Authority and the City include:

### Revenue Stream to Offset Agencies' Water Rates within the Region

- A primary goal for the Water Authority and the City is to develop a revenue source from its shared water resources based upon electricity generation and related ancillary services that can be applied to each agency's capital spending requirements in a manner that will offset water costs and therefore prices charged to the region's water ratepayers.

### Compatibility with the City's Indirect Potable Reuse Project

- The City of San Diego is in the advanced planning stages of developing an Indirect Potable Reuse (IPR) project that will pump purified water, which would be blended with imported water, into the San Vicente Reservoir for storage and incidental dilution. The water would then be available for additional treatment and reuse in the City's drinking water delivery system. Therefore, another primary goal of the proposed pumped storage project is that it must be developed in a manner that does not impede or conflict with IPR project development goals.



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**Compatibility with Other Uses of San Vicente Reservoir**

- The San Vicente Reservoir is an important component of the region's drinking water supply system, including water supply that serves normal operations, emergency, and carryover storage uses; water quality; boating; sport fishing; and other recreational uses. The Water Authority and the City intend that the proposed Project's feasibility depends upon its ability to be developed and operated in a manner that first and foremost preserves drinking water supply as the primary use of the reservoir, and will also not conflict with other existing uses.

**Closed-Loop System for Hydroelectric Energy Generation That Does Not Consume Water or Impact a Stream Environment**

- The Water Authority and City desire to develop a hydroelectric generation project that makes efficient use of the existing San Vicente Reservoir and a new upper reservoir in a closed loop system that avoids any environmental effects on a stream system. The new upper reservoir will be developed in an upland area with no natural water body. A portion of the water stored in San Vicente reservoir can then be pumped up to the new reservoir for energy storage and released back down for energy generation, with the water comprising a working fluid that is not consumed in the process.

**Regional and Statewide Project Benefits**

The Proposed Project can provide other important benefits to the region and the State, including:

**Support California's Energy Policy**

- California's energy policy calls for maintaining a reliable, efficient, and affordable energy system that minimizes the environmental impacts of energy production and use. The proposed Project is an energy storage project, identified in State law as an essential component of the State's energy system with particular benefits for integrating increased amounts of renewable energy resources into the electrical transmission and distribution grid in a manner that minimizes emissions of greenhouse gases. The proposed Project would provide these energy storage benefits, including: providing assistance with integration of renewable energy into the transmission grid; avoiding or deferring the need for new fossil fuel-powered peaking power plants and expansion of the transmission grid; reducing the use of electricity generated from fossil fuels to meet peak load requirements; reducing emissions; and providing ancillary services otherwise provided by fossil-fueled generating facilities thus reducing emissions of carbon dioxide and criteria pollutants.

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**Provide Generation to Meet Part of California's Peak Power Requirements and Ancillary Services for Management of the Transmission Grid**

- The proposed Project would be capable of providing 500 MW of generating capacity, with an energy storage volume capable of providing maximum generating discharge for up to 8 hours. Water stored in the upper reservoir would provide approximately 4,000 megawatt hours of on-peak generation. Pumped storage can provide a range of specific transmission operations – known collectively as “ancillary services” – that include spinning reserves, voltage regulation, load following, Black Start, and protection against over-generation of renewable energy sources. The ancillary services provided by pumped storage hydroelectric generation ensures reliability and supports the stable transmission of energy from generation sites to customer loads.

**Contribute to Reducing Greenhouse Gas Emissions**

- Efficient grid operations reduce waste (reducing GHG emissions), by allowing full integration of renewable energy generation sources that do not produce GHG emissions, and provides reduced GHG peak power generation by displacing traditional natural gas peak power generation.



### 5.3 PAD Notification Letter - May 21, 2015



*May 21, 2015*

To Whom It May Concern,

The San Diego County Water Authority (Water Authority) and City of San Diego (City) as co-applicants have been issued a preliminary permit from the Federal Energy Regulatory Commission (FERC) to pursue development of the San Vicente Pumped Storage Project. The Water Authority and City are moving forward with preparations for the FERC licensing process, a necessary step in Project development. A description of the proposed Project is attached.

By this letter, the Water Authority and City are notifying landowners, stakeholders and interested parties that the agencies are beginning the process of preparing a Preliminary Application Document and a Notice of Intent to file a license application with FERC for consideration of approval of the proposed Project. The Preliminary Application Document is scheduled to be complete and submitted to FERC by late July 2015. The Preliminary Application Document is lengthy, and will contain a detailed description of the proposed Project, a description of the existing environment, a preliminary list of environmental issues and studies needed, and a list of proposed protection, mitigation, and enhancement measures. At the time the submittal is made to FERC in July, you will also be receiving an electronic copy of the Preliminary Application Document with a letter instructing you on how to submit comments on the proposed Project directly to FERC. In addition, you will have many opportunities for formal input throughout the environmental and FERC licensing process in the future.

In the meantime, if you have any questions on the proposed Project, please contact Kelly Rodgers, the Project Manager for the Water Authority, at (858) 522-6831.

Sincerely,

A handwritten signature in blue ink, appearing to read "Frank Belock".

Frank Belock  
Deputy General Manager  
San Diego County Water Authority

A handwritten signature in blue ink, appearing to read "Bob Mulvey".

Bob Mulvey  
Assistant Public Utilities Director  
City of San Diego

San Diego County Water Authority  
May 21, 2015  
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## **Project Description**

### **San Vicente Pumped Storage Hydroelectric Project San Diego County Water Authority and the City of San Diego**

This preliminary Project Description is intended to provide a quick overview of project details, goals, and benefits of the Proposed Project.

#### **Project Details**

- The San Diego County Water Authority (Water Authority) and City of San Diego (City) as co-applicants have been issued a preliminary permit from the Federal Energy Regulatory Commission (FERC) to pursue development of the San Vicente Pumped Storage Project (FERC Project Number 14642-000, issued May 14, 2015).
- The proposed Project would provide up to 500 megawatts (MW) of generation capacity capable of generating up to approximately 4,000 megawatt hours of electricity per 8-hours daily operation to help meet part of the region's power requirements, and support transmission grid operations essential to integrating a higher percentage of renewable wind and solar power generation sources.
- The proposed Project would use energy to pump water from the existing San Vicente Reservoir (lower reservoir) up to a new Foster Canyon Reservoir (upper reservoir) for storage during periods of low electrical demand, and generate electricity by releasing the water from the upper reservoir through the generating units and back to the lower reservoir during periods of high electrical demand, and as needed to support transmission grid operations.
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- The project utilizes a small portion of the total San Vicente Reservoir's water capacity, such that at maximum pumping and generation, the San Vicente Reservoir would fluctuate approximately two feet up or down.
- New small dams would be constructed to form the upper reservoir, and would be provided with a spillway section to provide safety against over-pumping. Any spillway overflow would be routed back to the lower reservoir.

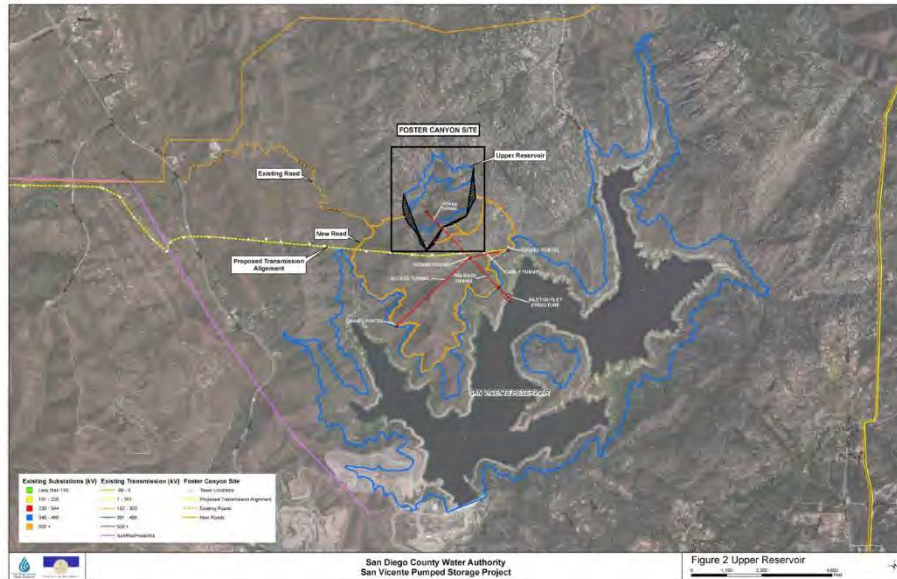
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- A tunnel system and underground powerhouse would connect the two reservoirs. The powerhouse would contain four 125 MW reversible pump-turbines to provide maximum flexibility in both generation and pump-back mode.
- The new San Diego Gas & Electric Company (SDG&E) Sunrise Powerlink 500 kV transmission line passes close to the San Vicente Reservoir. A new double-circuit 230 KV line would be built from the proposed Project's powerhouse extending approximately five miles to the 230 kV Sycamore Canyon Substation (Sycamore) for regional transmission interconnection.





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## Goals and Objectives

Specific goals and objectives of the project identified by the Water Authority and the City include:

### Revenue Stream to Offset Agencies' Water Rates within the Region

- A primary goal for the Water Authority and the City is to develop a revenue source from its shared water resources based upon electricity generation and related ancillary services that can be applied to each agency's capital spending requirements in a manner that will offset water costs and therefore prices charged to the region's water ratepayers.

### Compatibility with the City's Indirect Potable Reuse Project

- The City of San Diego is in the advanced planning stages of developing an Indirect Potable Reuse (IPR) project that will pump purified water, which would be blended with imported water, into the San Vicente Reservoir for storage and incidental dilution. The water would then be available for additional treatment and reuse in the City's drinking water delivery system. Therefore, another primary goal of the proposed pumped storage project is that it must be developed in a manner that does not impede or conflict with IPR project development goals.

San Diego County Water Authority  
May 21, 2015  
Page 5 of 6

**Compatibility with Other Uses of San Vicente Reservoir**

- The San Vicente Reservoir is an important component of the region's drinking water supply system, including water supply that serves normal operations, emergency, and carryover storage uses; water quality; boating; sport fishing; and other recreational uses. The Water Authority and the City intend that the proposed Project's feasibility depends upon its ability to be developed and operated in a manner that first and foremost preserves drinking water supply as the primary use of the reservoir, and will also not conflict with other existing uses.

**Closed-Loop System for Hydroelectric Energy Generation That Does Not Consume Water or Impact a Stream Environment**

- The Water Authority and City desire to develop a hydroelectric generation project that makes efficient use of the existing San Vicente Reservoir and a new upper reservoir in a closed loop system that avoids any environmental effects on a stream system. The new upper reservoir will be developed in an upland area with no natural water body. A portion of the water stored in San Vicente reservoir can then be pumped up to the new reservoir for energy storage and released back down for energy generation, with the water comprising a working fluid that is not consumed in the process.

**Regional and Statewide Project Benefits**

The Proposed Project can provide other important benefits to the region and the State, including:

**Support California's Energy Policy**

- California's energy policy calls for maintaining a reliable, efficient, and affordable energy system that minimizes the environmental impacts of energy production and use. The proposed Project is an energy storage project, identified in State law as an essential component of the State's energy system with particular benefits for integrating increased amounts of renewable energy resources into the electrical transmission and distribution grid in a manner that minimizes emissions of greenhouse gases. The proposed Project would provide these energy storage benefits, including: providing assistance with integration of renewable energy into the transmission grid; avoiding or deferring the need for new fossil fuel-powered peaking power plants and expansion of the transmission grid; reducing the use of electricity generated from fossil fuels to meet peak load requirements; reducing emissions; and providing ancillary services otherwise provided by fossil-fueled generating facilities thus reducing emissions of carbon dioxide and criteria pollutants.

San Diego County Water Authority  
May 21, 2015  
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**Provide Generation to Meet Part of California's Peak Power Requirements and Ancillary Services for Management of the Transmission Grid**

- The proposed Project would be capable of providing 500 MW of generating capacity, with an energy storage volume capable of providing maximum generating discharge for up to 8 hours. Water stored in the upper reservoir would provide approximately 4,000 megawatt hours of on-peak generation. Pumped storage can provide a range of specific transmission operations – known collectively as “ancillary services” – that include spinning reserves, voltage regulation, load following, Black Start, and protection against over-generation of renewable energy sources. The ancillary services provided by pumped storage hydroelectric generation ensures reliability and supports the stable transmission of energy from generation sites to customer loads.

**Contribute to Reducing Greenhouse Gas Emissions**

- Efficient grid operations reduce waste (reducing GHG emissions), by allowing full integration of renewable energy generation sources that do not produce GHG emissions, and provides reduced GHG peak power generation by displacing traditional natural gas peak power generation.

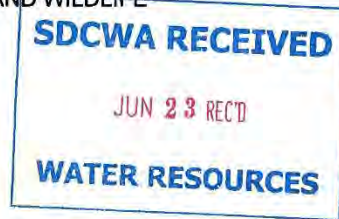


## 5.4 Response Letters to Initial Request for Information



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

EDMUND G. BROWN JR., Governor  
CHARLTON H. BONHAM, Director



June 18, 2015

Mr. Mark Tegio  
San Diego County Water Authority  
4677 Overland Avenue  
San Diego, CA 92123  
mtegio@sdcwa.org

**Subject: Comments on the Federal Energy Regulatory Commission Licensing Process by the San Diego County Water Authority and the City of San Diego for the San Vicente Pumped Storage Project (FERC Project Number 14642-000)**

Dear Mr. Tegio:

The California Department of Fish and Wildlife (Department) has reviewed the above-referenced Notice for the San Vicente Pumped Storage Project dated May 21, 2015. The following statements and comments have been prepared pursuant to the Department's authority as Trustee Agency with jurisdiction over natural resources affected by the project (California Environmental Quality Act, [CEQA] Guidelines § 15386) and pursuant to our authority as a Responsible Agency under CEQA Guidelines section 15381 over those aspects of the proposed project that come under the purview of the California Endangered Species Act (Fish and Game Code § 2050 *et seq.*) and Fish and Game Code section 1600 *et seq.* The Department also administers the Natural Community Conservation Planning (NCCP) program. The San Diego County Water Authority (SDCWA) and the City of San Diego (City) participate in the NCCP program by implementing their approved Multiple Species Conservation Program (MSCP) Subarea Plans (SAP). The Department is also the landowner of the property for proposed project alternatives for Foster Canyon and Alternative C.

The proposed Project would use energy to pump water from the existing San Vicente Reservoir (lower reservoir) up to a new Foster Canyon Reservoir (upper reservoir) for storage during periods of low electrical demand, and generate electricity by releasing the water from the upper reservoir through the generating units and back to the lower reservoir during periods of high electrical demand, and as needed to support transmission grid operations. The exchange of water between the two reservoirs would be designed such that no water is consumed, and not interfere with existing water supply, water quality, fisheries, or recreational uses of the San Vicente Reservoir. The project would utilize a small portion of the total of San Vicente Reservoir's water capacity, such that at maximum pumping and generation, the San Vicente Reservoir would fluctuate approximately two feet up or down. New small dams would be constructed to form the upper reservoir, and would be provided with a spillway section to provide safety against over-pumping. Any spillway overflow would be routed back to the lower reservoir. A tunnel system and underground powerhouse would connect the two reservoirs. The powerhouse would contain four 125 MW reversible pump-turbines to provide maximum flexibility in both generation and pump-back mode. A new double-circuit 230 KV line would be built from the proposed project's powerhouse extending approximately five miles to the 230 kV Sycamore Canyon Substation (Sycamore) for regional transmission interconnection.

*Conserving California's Wildlife Since 1870*

Mr. Mark Tegio  
San Diego County Water Authority  
June 18, 2015  
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The Department offers the following comments and recommendations to assist the SDCWA and the City in assembling the required contents of a Preliminary Application Document (PAD) in order to avoid or minimize potential project impacts on biological resources.

**Specific Comments**

1. The Department is concerned about the location of the proposed project in relation to the Pre-Approved Mitigation Area (PAMA) for the South San Diego County Subarea Plan (SC-SAP). The project area within the PAMA contains important remaining large blocks of native habitat in the SC-SAP. These areas are known to support several federally and/or state-listed species (e.g., arroyo toad, coastal California gnatcatcher, least Bell's vireo), which were analyzed for coverage under the SC-SAP. If the proposed project were to result in impacts within the SC-SAP PAMA, higher mitigation ratios may be required for impacts to habitat. A primary goal of the SC-SAP is to minimize habitat fragmentation and provide connections between core habitat areas in order to facilitate genetic exchange, daily and/or seasonal movements, and dispersal for covered species. The proposed project occurs within a regional PAMA linkage in an area considered of high value. The Department is concerned about the continued fragmentation of the MSCP preserve system that results from the siting of facilities, such as that proposed, within the PAMA. We recommend that these types of facilities be sited outside of the PAMA.
2. The Department requests that the proposed San Vicente Pumped Storage Hydroelectric Project alternative designated as the Foster Canyon Site, and the alternative known as Alternative C, be removed from consideration from all planning and permitting documents because they are both located within Department-owned property. Impacts from a project of this magnitude would go far beyond the footprint of what is outlined in the documentation provided to date. The Department and its partners have made great strides in linking together a chain of conserved lands to act as wildlife corridors within this region. A construction project of this size would take an extended period of time to complete, resulting in the disruption of wildlife movement and/or disturbance to wildlife. As indicated in the provided documents, proposed new roads and existing roads on Department property would serve as construction routes, which would both directly and indirectly negatively affect flora and fauna over a large area. Once construction is complete, continued maintenance and management of these roads and facilities would be needed. This continued maintenance would have a negative long-term effect on the functionality of the wildlife corridor and core area. The Department is concerned that permitting a project of this magnitude within Department-owned or conserved lands purchased for resource protection and compatible public uses could compromise partnerships and planning efforts already in place with multiple agencies and jurisdictions.
3. The documentation received to date does not enumerate impacts to fisheries, instead only noting that they will not be impacted. However, no mechanisms or mitigation processes were addressed that would limit effects on fisheries or that would mitigate losses associated with this project. Of great concern are the potential effects of water level fluctuation and special concerns derived from water transfer activities (see below). Mitigation in the form of staff funding to document effects, provide habitat improvement and conduct fish stocking projects should be evaluated. Future surveys would be

Mr. Mark Tegio  
San Diego County Water Authority  
June 18, 2015  
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necessary to determine the total effect such activities would have on fish populations. The project should also comply with Fish and Game Code Section 5943, and allow public access to dam waters.

- a. Water level fluctuation is estimated to be between 1-2 feet. If water level fluctuations exceed 2 feet then impacts to juvenile fish would occur; eggs would desiccate, juvenile fishes would be more heavily predated upon, and optimal foraging and survival strategies for young fish would be negatively impacted.
- b. Water transfers that occur between the upper and lower reservoir also pose concerns to fisheries. These potential effects include: direct impingement mortality of juvenile fishes, changes in water quality and chemistry, altering lower reservoir dynamics through mixing processes, and altering oxygen levels at various depths.
- c. San Vicente Reservoir is a known location for invasive quagga mussels. The plan does not mention quagga mussels, nor how the penstocks would be maintained clear of mussel growth. Waters that are heavily treated with chemicals in an effort to deter mussel growth would be detrimental to fish survival and would impact nearby recruitment.

#### **General Comments**

1. The Department has responsibility for wetland and riparian habitats. It is the policy of the Department to strongly discourage development in wetlands or conversion of wetlands to uplands. We oppose any development or conversion which would result in a reduction of wetland acreage or wetland habitat values, unless, at a minimum, project mitigation assures there will be "no net loss" of either wetland habitat values or acreage. Development and conversion 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 maintain their value to on-site and off-site wildlife populations. Mitigation measures to compensate for impacts to mature riparian corridors must be included in the project and must compensate for the loss of function and value of a wildlife corridor.
  - a) The project area supports aquatic, riparian, and wetland habitats; therefore, a jurisdictional delineation of the creeks and their associated riparian habitats should be included in the project design. The delineation should be conducted pursuant to the U. S. Fish and Wildlife Service wetland definition adopted by the Department.<sup>1</sup> Please note that some wetland and riparian habitats subject to the Department's authority may extend beyond the jurisdictional limits of the U.S. Army Corps of Engineers.

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<sup>1</sup> Cowardin, Lewis M., et al. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service.

Mr. Mark Tegio  
San Diego County Water Authority  
June 18, 2015  
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- b) The Department also has regulatory authority over activities in streams and/or lakes that will divert or obstruct the natural flow, or change the bed, channel, or bank (which may include associated riparian resources) 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 the Department pursuant to section 1600 *et seq.* of the Fish and Game Code. Based on this notification and other information, the Department determines whether a Lake and Streambed Alteration Agreement (LSA) with the applicant is required prior to conducting the proposed activities. The Department's issuance of a LSA for a project that is subject to CEQA will require CEQA compliance actions by the Department as a Responsible Agency. The Department as a Responsible Agency under CEQA may consider the local jurisdiction's (lead agency) Negative Declaration or Environmental Impact Report for the project. To minimize additional requirements by the Department pursuant to section 1600 *et seq.* and/or under CEQA, the document 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.<sup>2</sup>
2. The Department considers adverse impacts to a species protected by the California Endangered Species Act (CESA) to be significant without mitigation. Take of any endangered, threatened, or candidate species that results from the project is prohibited, except as authorized by state law (Fish and Game Code, §§ 2080, 2085). 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, the Department recommends that the project proponent seek appropriate take authorization under CESA prior to implementing the project. Appropriate authorization from the Department may include an incidental take permit (ITP) or a consistency determination in certain circumstances, among other options (Fish and Game Code §§ 2080.1, 2081, subds. (b),(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 the Department 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.
3. The Department recommends a range of feasible alternatives to ensure that alternatives to the proposed project are fully considered and evaluated; the alternatives should avoid or otherwise minimize impacts to sensitive biological resources, particularly areas vital to continued conservation as specified in the SC-SAP and those areas previously analyzed for

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<sup>2</sup> A notification package for a LSA may be obtained by accessing the Department's web site at [www.wildlife.ca.gov/habcon/1600](http://www.wildlife.ca.gov/habcon/1600).



Mr. Mark Tegio  
San Diego County Water Authority  
June 18, 2015  
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connectivity of habitats for species covered under MSCP subarea plans. Specific alternative locations should be evaluated in areas with lower resource sensitivity.

4. The Department recommends that floristic, alliance-based and/or association-based mapping and vegetation impact assessments be consulted for analysis of impacts from the project and neighboring vicinity. Adjoining habitat areas should be included in this assessment where site activities could lead to direct or indirect impacts offsite. The Department's California Natural Diversity Data Base in Sacramento should be contacted at [www.wildlife.ca.gov/biogeodata/](http://www.wildlife.ca.gov/biogeodata/) to obtain current information on any previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code. Species to be addressed should include all those relevant to conservation under the associated subarea plans. This should include sensitive fish, wildlife, reptile, and amphibian species. 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, may be necessary in those areas with insufficient background data. Acceptable species-specific survey procedures should be developed in consultation with the Department and the U.S. Fish and Wildlife Service.
5. An analysis of potential adverse impacts from lighting, noise, human activity, exotic species, and drainage may be necessary. The latter subject should address: project-related changes on drainage patterns on 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 discussions 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. The project as proposed would include indirect impacts on biological resources, including resources in nearby public lands, open space, adjacent natural habitats, riparian ecosystems, and designated and existing reserve lands associated with the NCCP program. Impacts on, and maintenance of, wildlife corridor/movement areas, including access to undisturbed habitats in adjacent areas, should be fully evaluated in the PAD. The zoning of areas for development projects or other uses that are nearby or adjacent to natural areas may inadvertently contribute to wildlife-human interactions. A discussion of possible conflicts and mitigation measures to reduce these conflicts should be included in the environmental document.
6. The proposed project area property was acquired for preservation by agencies and jurisdictions to perpetually protect the targeted habitat values from direct and indirect negative impacts associated with development projects. The proposed project should include design elements able to offset the project-induced qualitative and quantitative losses of wildlife habitat values.
7. The Department 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,

Mr. Mark Tegio  
San Diego County Water Authority  
June 18, 2015  
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and substrates) should occur outside of the avian breeding season which generally runs from February 1- 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, the Department 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.

8. The Department generally does not support the use of relocation, salvage, and/or translocation as mitigation for impacts to rare, threatened, or endangered species. Studies have shown that these efforts are experimental in nature and largely unsuccessful.
9. Plans for restoration and revegetation should be prepared by persons with expertise in southern California ecosystems and native plant revegetation techniques. Each plan should include, at a minimum: (a) the location of the mitigation site; (b) the plant species to be used, container sizes, and seeding rates; (c) a schematic depicting the mitigation area; (d) 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.

We appreciate the opportunity to comment on the referenced document. We are hopeful that further consultation between you and us will ensure the protection we find necessary for the biological resources that would be affected by this project. Questions regarding this letter and further coordination on these issues should be directed to Eric Hollenbeck at (858) 467-2720 or [Eric.Hollenbeck@wildlife.ca.gov](mailto:Eric.Hollenbeck@wildlife.ca.gov).

Sincerely,



Gail K. Sevens  
Environmental Program Manager  
South Coast Region

cc: Eric Porter, U.S. Fish and Wildlife Service, Carlsbad  
Oscar Biondi, San Diego County Water Authority  
Scott Morgan, State Clearinghouse, Sacramento  
Timothy Konner, FERC West Branch, Division of Hydropower Licensing  
Myra Herrmann, City of San Diego  
Jeff Pasek, City of San Diego  
Joshua Grover, CDFW, Sacramento  
Terri Stewart, CDFW, San Diego





## County of San Diego

**MARK WARDLAW**  
DIRECTOR  
PHONE (858) 694-2962  
FAX (858) 694-2555

PLANNING & DEVELOPMENT SERVICES  
5510 OVERLAND AVENUE, SUITE 310, SAN DIEGO, CA 92123  
[www.sdcountry.ca.gov/pds](http://www.sdcountry.ca.gov/pds)

**DARREN GRETHER**  
ASSISTANT DIRECTOR  
PHONE (858) 694-2962  
FAX (858) 694-2555

December 29, 2014

Kimberley D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, D.C. 20426

**COMMENTS ON THE NOTICE OF PRELIMINARY PERMIT APPLICATION FILED BY THE  
SAN DIEGO COUNTY WATER AUTHORITY TO STUDY THE FEASIBILITY OF THE SAN  
VICENTE PUMPED STORAGE PROJECT, DOCKET NUMBER P-14642-000**

The County of San Diego (County) has received and reviewed the Federal Energy Regulatory Commission (FERC) notice of preliminary permit for the San Diego County Water Authority (CWA) San Vicente Pumped Storage Project, dated October 20, 2014 and appreciates this opportunity to comment. The sole purpose of this preliminary permit request is to grant the permit holder priority to file a license application during the permit term.

While the County appreciates the need for renewable energy and supports efforts to diversify our energy supply with clean energy projects, it is of the utmost importance that these projects are planned, located, and developed in a way that is sensitive to the County's natural resources and communities. County Planning & Development Services (PDS) and Department of Parks and Recreation (DPR) staff have reviewed the project and have the following comments regarding the factors for consideration in the project feasibility study:

1. All four Alternatives Sites are located or will pass through designated Multiple Species Conservation Program (MSCP) lands, as seen in the attached map. The feasibility study should include an evaluation of impacts to biological resources and consistency with the County MSCP Sub Area Plan and include coordination with DPR staff, especially for those Alternatives that may impact Boulder Oaks Preserve.
2. Staff are currently in the process of revising the Resource Management Plan for Boulder Oaks Preserve, which includes a proposed trail system. The feasibility study will need to consider the types of impacts that would be associated with tunneling under the Preserve.

The County appreciates the opportunity to continue to participate in the review process for this project. We look forward to receiving future environmental documents related to this project or providing additional assistance at your request. If you have any questions regarding these

Ms. Kimberly D. Bose  
December 29, 2014  
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comments, please contact Sheri McPherson at (858) 694-3064 or email at [sheri.mcperson@sdcounty.ca.gov](mailto:sheri.mcperson@sdcounty.ca.gov).

Sincerely,

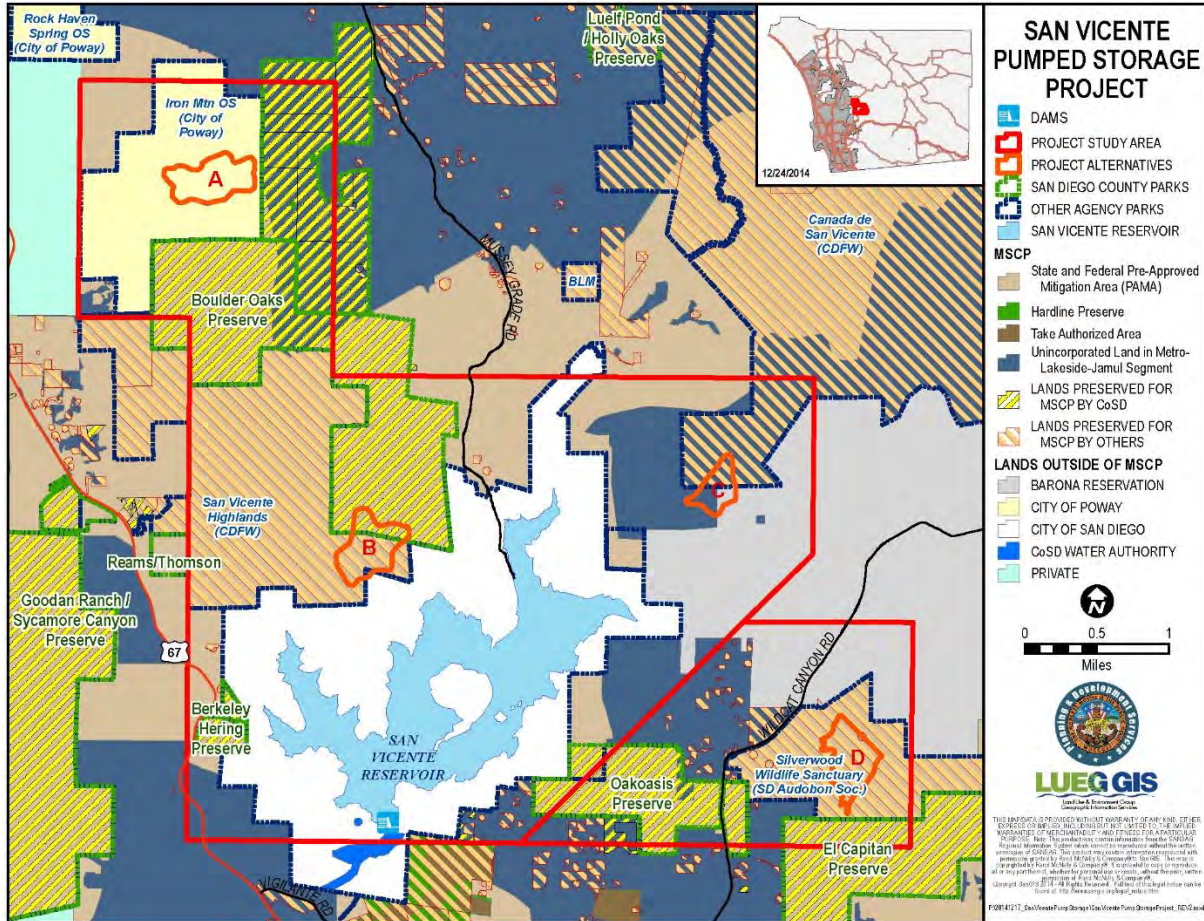


DARREN GRETLER, Assistant Director  
Planning & Development Services

Attachment: County of San Diego Map of Land Use, Preserves and Mitigation Lands

e-mail cc:

Adam Wilson, Policy Advisor, Board of Supervisors, District 2  
Conor McGee, CAO Staff Officer, LUEG  
Domingo Vigil, CAO Staff Officer, LUEG  
Jennifer Price, Land Use/Environmental Planner, Department of Parks and Recreation  
Dave Holt, District Manager, Department of Parks and Recreation  
Sheri McPherson, Land Use/Environmental Planner, Planning & Development Services



Print

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**Subject:** FW: San Vicente Pumped Storage Project PAD  
**From:** Tegio, Mark (MTegio@sdewa.org)  
**To:** harvey-jeff@sbcglobal.net;  
**Cc:** KRodgers@sdewa.org; KGage@sdewa.org;  
**Date:** Wednesday, June 24, 2015 5:28 PM

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Comments from the County.

---

**From:** Sloan, Christine [mailto:Christine.Sloan@sdcounty.ca.gov]  
**Sent:** Wednesday, June 24, 2015 5:10 PM  
**To:** Tegio, Mark  
**Cc:** Albright, Brian; Hilton, Renee  
**Subject:** San Vicente Pumped Storage Project PAD

Dear Mr. Tegio:

Re.: The County Water Authority May 21, 2015 letter regarding information related to the San Vicente Pumped Storage Project and information needed for the Preliminary Application Document (PAD)

The County submitted comments on the preliminary permit application on December 29, 2014. In that letter we requested an analysis of the proposed project's impacts to the Multiple Species Conservation Program pre-approved mitigation areas and the impacts of underground pipes through County Preserves. We look forward to reviewing and commenting on the impact analysis and plan to participate in the formal FERC licensing process.

In regards to the above-referenced letter, the County of San Diego Department of Parks and Recreation is forwarding to you links of the Resource Management Plans and associated biological studies for the three County Preserves affected by the proposed project. The plans come from the general link of [http://www.sandiegocounty.gov/content/sdc/parks/management\\_plans.html](http://www.sandiegocounty.gov/content/sdc/parks/management_plans.html)

Please let me know if you have any questions about the links, below.

[http://www.sandiegocounty.gov/content/dam/sdc/common\\_components/images/parks/doc/BoulderOaks\\_ASMD\\_Final\\_6\\_26\\_08.pdf](http://www.sandiegocounty.gov/content/dam/sdc/common_components/images/parks/doc/BoulderOaks_ASMD_Final_6_26_08.pdf)  
[http://www.sandiegocounty.gov/content/dam/sdc/common\\_components/images/parks/doc/Appendix\\_A\\_Final\\_Boulder\\_Oaks\\_Biodiversity.pdf](http://www.sandiegocounty.gov/content/dam/sdc/common_components/images/parks/doc/Appendix_A_Final_Boulder_Oaks_Biodiversity.pdf)  
[http://www.sandiegocounty.gov/content/dam/sdc/common\\_components/images/parks/doc/El\\_Capitan\\_FINAL\\_RMP\\_with\\_Figures\\_June\\_2009.pdf](http://www.sandiegocounty.gov/content/dam/sdc/common_components/images/parks/doc/El_Capitan_FINAL_RMP_with_Figures_June_2009.pdf)  
[http://www.sandiegocounty.gov/content/dam/sdc/common\\_components/images/parks/doc/El\\_Cap\\_Bio\\_121208\\_.pdf](http://www.sandiegocounty.gov/content/dam/sdc/common_components/images/parks/doc/El_Cap_Bio_121208_.pdf)  
[http://www.sandiegocounty.gov/content/dam/sdc/common\\_components/images/parks/doc/OakOasisFINALRMPwithFigures\\_June\\_2009.pdf](http://www.sandiegocounty.gov/content/dam/sdc/common_components/images/parks/doc/OakOasisFINALRMPwithFigures_June_2009.pdf)  
[http://www.sandiegocounty.gov/content/dam/sdc/common\\_components/images/parks/doc/OakOasis\\_Draft\\_RMP\\_APPENDIX\\_A.pdf](http://www.sandiegocounty.gov/content/dam/sdc/common_components/images/parks/doc/OakOasis_Draft_RMP_APPENDIX_A.pdf)

Thank you,

Christine

Christine A. Sloan

<https://us-mg5.mail.yahoo.com/neo/launch?.partner=sbc&.rand=bgd6uq3n6cchb>

6/24/2015



Print

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Chief Resource Management Division  
San Diego County Parks & Recreation  
5500 Overland Avenue, Suite 410  
San Diego, CA 92123  
Office: (858) 966-1370  
[www.sdparks.org](http://www.sdparks.org)

*Parks Make Life Better!*

<https://us-mg5.mail.yahoo.com/neo/launch?.partner=sbc&.rand=bgd6uq3n6cchb>

6/24/2015



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Ecological Services  
Carlsbad Fish and Wildlife Office  
2177 Salk Avenue, Suite 250  
Carlsbad, California 92008



In Reply Refer To:  
FWS-SD-15B0231-15CPA0254

JUN 19 2015

Mr. Frank Belock  
Deputy General Manager  
San Diego County Water Authority  
4677 Overland Avenue  
San Diego, California 92123

Mr. Bob Mulvey  
Assistant Public Utilities Director  
City of San Diego  
9192 Topaz Way, MS 901A  
San Diego, California 92123

Attention: Mark Tegio, San Diego County Water Authority

Subject: Request for Comment on the San Vicente Pumped Storage Project (FERC Project  
Number 14642-000), San Diego County, California

Dear Mr. Belock and Mr. Mulvey:

We received the San Diego County Water Authority (Authority) and City of San Diego (City) request for comments on the proposed San Vicente Pumped Storage Project on May 26, 2015. The Authority and City are seeking comments to assist with the Federal Energy Regulatory Commission (FERC) hydroelectric licensing process. The proposed project would pump water from the San Vicente Reservoir (lower reservoir) to a new upper reservoir site and generate hydroelectric power as water is transferred back to the lower reservoir. Currently, the preferred location for the upper reservoir is Foster Canyon (Site B); however, three alternative locations have been identified in the FERC Notice of Application for a Preliminary Permit (FERC No. 14642-000).

The primary concern and mandate of the U.S. Fish and Wildlife Service (Service) is the protection of fish and wildlife resources and their habitats. The Service has legal responsibility for the welfare of migratory birds, anadromous fish, and threatened and endangered animals and plants occurring in the United States. As such, we are responsible for administering the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*); the Bald and Golden Eagle Protection Act, as amended (16 U.S.C. 668) (BGEPA); and the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712) (MBTA). The proposed project is located within the plan area boundary of the San Diego County MSCP Subarea Plan (Subarea Plan) under the Multiple Species Conservation Program (MSCP; City of San Diego 1998). The MSCP provides a framework for regional conservation planning throughout southwestern San Diego County.



Frank Belock and Bob Mulvey (FWS-SD-15B0231-15CPA0254)

2

The primary construction contemplated for the proposed project would be a new “upper” reservoir above the existing San Vicente Reservoir. According to alternatives developed to date, the upper reservoir would cover between 60 to 100 acres. Although a new reservoir has potential to support wetland species, the reservoir would be drained and filled frequently for operations, and we consider the potential wildlife benefits to be minimal. Thus, we consider any impacts to native habitats from upper reservoir construction and operation to be permanent. Additional project features including approximately 5 miles of transmission lines, access roads, pump stations, and approximately 2 miles of tunnels between the reservoirs would cause both temporary and permanent impacts.

The San Vicente Reservoir is surrounded by lands that have been conserved for their natural resource value. The San Vicente Reservoir Cornerstone Lands (Cornerstone Lands; City of San Diego) immediately surround the existing reservoir, and the following conserved properties surround the Cornerstone Lands: San Vicente Highlands Open Space Preserve [California Department of Fish and Wildlife (Department)], Boulder Oaks Open Space Preserve [County of San Diego (County)], Monte Vista Ranch (Department), Oak Oasis Open Space Preserve (County), Berkeley Hering Open Space Preserve (County), Lakeside Ranch (Endangered Habitats Conservancy), and Kimball Valley (County). In addition, the Barona Indian Reservation (Reservation) is located east of the Cornerstone Lands. Any proposed upper reservoir site is likely to impact land specifically protected to preserve their natural resources values or the Reservation.

As an example, the proposed Foster Canyon upper reservoir site (Site B) is within the San Vicente Open Space Preserve and Boulder Oaks Open Space Preserve. These lands are an integral part of the MSCP preserve network and were established for the conservation benefit of multiple species, including federally listed species. Furthermore, these properties were primarily purchased with funding from the California Wildlife Conservation Board (WCB). The grants from the WCB were provided expressly for the purpose of protecting wildlife and other natural resources. Similarly, Site A would impact Iron Mountain, conserved lands owned and managed by the City of Poway. Site C would impact Monte Vista Ranch, owned and managed by the Department, and the Reservation. Site D would impact the Silverwood Wildlife Sanctuary, owned and managed by the San Diego Audubon Society, and the Reservation. Any existing or future project alternatives should avoid potential impacts to existing conservation areas and lands that are targeted for conservation by the MSCP.

The proposed project has the potential to impact the biological goals developed in the MSCP for establishing a regional preserve system, including goals for assembling biological cores and linkages (City of San Diego 1998). For example, the Foster Canyon upper reservoir site is near the center of Core Area 11 and would eliminate approximately 100 acres of native habitat within the core. The MSCP defines core areas as “generally supporting a high concentration of sensitive biological resources which, if lost or fragmented, could not be replaced or mitigated elsewhere.” An impact of this magnitude has the potential to compromise the biological function of this core area. With few exceptions, the currently un-conserved lands surrounding the Cornerstone Lands are within the Pre-Approved Mitigations Area (PAMA) for the San Diego County MSCP Subarea Plan (Subarea Plan), and most of these lands are expected to be conserved through implementation of the Subarea Plan in order to achieve the Subarea Plan conservation goals. Thus, although there remain some un-conserved lands that may have potential as upper reservoir sites, these areas are generally targeted for conservation under the MSCP Subarea Plan to assemble the regional preserve. Any existing or future project alternatives will need to address potential impacts to the MSCP.

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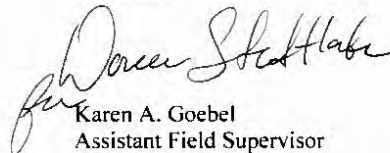
3

Depending on the selection of the upper reservoir site, the proposed project has the potential to affect species listed under the Act and/or BGEPA. The federally threatened coastal California gnatcatcher (*Poliophtila californica californica*) has been observed at several locations surrounding the San Vicente Reservoir. The federally endangered least Bell's vireo (*Vireo bellii pusillus*) has been observed at along two inlets to the San Vicente Reservoir. The federally endangered southwest arroyo toad (*Anaxyrus californicus*) is known to occur along the San Diego River northeast of the San Vicente Reservoir, and this area is designated critical habitat for the species. The federally endangered quino checkerspot butterfly (*Euphydryas editha quino*, Quino) was observed on the San Vicente Open Space Preserve. The Hermes copper butterfly (*Lycaena hermes*) is a federal candidate species and was observed at the Sycamore Canyon Preserve to the west of the San Vicente Reservoir prior to the Cedar Fire in 2003. The federally endangered San Diego ambrosia (*Ambrosia pumila*) has been observed within the potential range of upper reservoir sites to the northeast and southwest of the San Vicente Reservoir. Golden eagles (*Aquila chrysaetos*) are known to utilize the area north of the San Vicente Reservoir for foraging, and nests have been documented northeast of the San Vicente Reservoir and on Iron Mountain. Surveys for these species and other biological resources are not comprehensive. Any alternative will need to assess the potential for project-related impacts to federally listed species and other biological resources from the proposed upper reservoir site and the ancillary project features, including transmission lines, tunnels, and roads.

All project alternatives developed to date would impact lands that are currently conserved or are targeted for conservation purposes in order to meet MSCP conservation goals. We recommend the Authority and City consider the feasibility of the proposed project in light of the potential impacts to regional conservation planning efforts.

We appreciate the opportunity to provide early comments on the proposed project. If you have any questions, please contact Eric Porter at 760-431-9440, extension 285.

Sincerely,



Karen A. Goebel  
Assistant Field Supervisor

cc:

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## **5.5 Public Utility Regulatory Policies Act**

As a part of its proposal to develop the San Vicente Pumped Storage Project, the Water Authority and City are not seeking benefits under Section 210 of the Public Utility Regulatory Policies Act of 1978 (PURPA).

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## 7.0 Abbreviations and Acronyms

ADA	Americans with Disabilities Act
AF	Acre-foot or Acre-feet
AMSL	Above Mean Sea Level
APE	area of potential effect
BGEPA	Bald and Golden Eagle Protection Act
BLM	United States Bureau of Land Management
BMP	best management practices
CDFW	California Department of Fish and Wildlife
CDNPA	California Desert Native Plants Act
CEII	Critical Energy Infrastructure Information
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
cfs	cubic feet per second
CHU	critical habitat unit
CNDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
Corps	United States Army Corps of Engineers
CRWQCB	California Regional Water Quality Control Board
CSP	Carryover Storage Project
cy	Cubic yards
Department	California Department of Fish and Wildlife
DSOD	California Division of Safety of Dams
DWR	California Department of Water Resources
El.	Elevation
ES	Emergency Storage
ESA	Endangered Species Act
ESP	Emergency Storage Project
FERC	Federal Energy Regulatory Commission

FESA	Federal Endangered Species Act
FOIA	Freedom of Information Act
fps	Feet per second
GWh	gigawatt hour
HCP	Habitat Conservation Plan
I/O	Inlet/Outlet
ILP	Integrated Licensing Process
MCE	maximum credible earthquake
MCL	maximum contaminant level
MGD	million gallons per day
MHPA	Multi-Habitat Planning Areas
MSCP	Multi-Species Conservation Plan
Msl	mean sea level
MUC	multiple use class
MW	Megawatt
MWDSC	Metropolitan Water District of Southern California
MWh	megawatt hour
NAHC	Native American Heritage Commission
NCCP	Natural Communities Conservation Plan
NEPA	National Environmental Policy Act
NOI	Notice of Intent
NRCS	Natural Resources Conservation Service
OHV	off-highway vehicle
PAD	Pre-Application Document
PAMA	Pre-Approved Mitigation Areas
PMF	probable maximum flood
PPM	parts per million
Project	San Vicente Pumped Storage Project
RCC	roller-compacted concrete

RO	reverse osmosis
RWQCB	Regional Water Quality Control Board
SC-SAP	South San Diego County Subarea Plan
SCE	Southern California Edison
SDCWA	San Diego County Water Authority
SMARA	California Surface Mining and Reclamation Act
SWRCB	State Water Resources Control Board
TBM	tunnel boring machine
TDS	total dissolved solids
TLP	Traditional Licensing Process
USACE	U.S. Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WA	[San Diego County] Water Authority
WHMA	Wildlife Habitat Management Area
WUS	Waters of the United States
YBP	years before present