

Lake Hodges HOS
Biological Assessment



Prepared for the City of San Diego



Public Utilities Department
Engineering and Program Management Division
Environmental Section

July 29, 2016

A handwritten signature in black ink that reads "Summer Adleberg".

Prepared By: _____
Summer Adleberg, Environmental Biologist

Table of Contents

- 1.0 Introduction 1**
 - 1.1 Background 1**
 - 1.2 Project Location 2**
 - 1.3 Existing Conditions 2**
- 2.0 Methods 5**
 - 2.1 General Biological Surveys 5**
 - 2.2 Jurisdictional Delineation 6**
 - 2.3 Nomenclature 6**
- 3.0 Results 6**
 - 3.1 Soils 6**
 - 3.2 Vegetation Communities 6**
 - 3.2.1 Wetland Communities 6**
 - 3.2.2 Upland Communities 7**
 - 3.3 Sensitive Species 7**
 - 3.4 Sensitive Plant Species 7**
 - 3.5 Sensitive Animal Species 8**
 - 3.6 Jurisdictional Wetlands and Waters of the U.S. 10**
 - 3.7 Functionality and Value 11**
- 4.0 Impacts 11**
 - 4.1 Direct Impacts 11**
 - 4.1.1 Vegetation Communities 11**
 - 4.1.2 Jurisdictional Areas 12**
 - 4.1.3 Sensitive Plant Species 12**
 - 4.1.4 Sensitive Animal Species 12**
 - 4.2 Indirect Impacts 13**
 - 4.2.1 Habitat Fragmentation 13**
 - 4.2.2 Water Quality 13**
 - 4.2.3 Lighting 13**
 - 4.2.4 Noise 13**
 - 4.2.5 Invasive Species 14**
 - 4.2.6 Human Activity 14**
 - 4.2.7 Best Management Practices (BMP's) 14**

4.2.8	Grading/land development	14
4.2.9	Canyon Functions	14
4.2.10	Brush Management	14
5.0	Mitigation	14
5.1	Mitigation for Direct Impacts.....	14
5.2	Mitigation for Indirect Impacts.....	15
6.0	Revegetation Recommendations	16

Appendices

Appendix A	Flora
Appendix B	Fauna
Appendix C	Photos and Maps
Appendix D	Coastal California Gnatcatcher Report
Appendix E	Jurisdictional Delineation Data Sheet
Appendix F	Habitat Restoration Plan for Lake Hodges HOS Project

Lake Hodges HOS Biological Assessment

1.0 Introduction

A Hypolimnetic Oxygenation System (HOS) is being sought to maintain a desired level of dissolved oxygen (DO) in the hypolimnion of Hodges Reservoir (reservoir or Lake Hodges) to improve water quality by managing and controlling excessive algal productivity. HOS shall be designed to provide 9,900 pounds per day (lbs/day) of oxygen to the reservoir. Dissolved oxygen shall be distributed to the reservoir's bottom, to prevent anaerobic conditions from occurring and eliminate internal nutrient cycling.

The design information detailed in this report is from the internal Memorandum (City 2015) that supplements the *Lake Hodges Water Quality Assessment Study Final Conceptual Planning Report*, dated June 30, 2014, by defining the scope of work at Site 2 (Former Reservoir Operator Residence and Storage Facility Area) to implement Alternative 1: Installation of an HOS in Hodges Reservoir.

This report summarizes the biological resources present within and adjacent to the proposed project area, analyzes potential impacts to sensitive resources, and proposes mitigation or minimization measures to compensate for potential impacts associated with this project.

1.1 Background

The Hodges Reservoir Hypolimnetic Oxygenation System (HOS) is identified by the following:

Official Project Name	WBS #	Council District	Community Planning Area	Water CIP Priority Rank
Hodges Reservoir Hypolimnetic Oxygenation System	B15195	5	SPV - San Pasqual Valley	61.5

Owned and operated by the City of San Diego (City) Public Utilities Department, Hodges Reservoir is in the San Dieguito Hydrologic Unit in San Diego County, California, and has a maximum capacity of 30,251 acre-feet (AF) with 303 square miles of upstream catchment area. Hodges Reservoir is an important part of the San Diego County Water Authority's (SDCWA) Emergency Storage Project as it provides the ability to store imported water supplies and local water supplies in times of excess. Hodges Reservoir has a dominant and overarching beneficial use as a drinking water supply source to the San Dieguito Water District (SDWD)/Santa Fe Irrigation District (SFID). Construction of the Hodges Pump Station, as part of the SDCWA Emergency Storage Project, connected Hodges Reservoir to Olivenhain Reservoir allowing Hodges Reservoir to be used for storage and supply to the regional water supply system (operated by the SDCWA) and, thus, additional usable local water resource for the City. These management options provide regional water system flexibility in times of drought.

However, Hodges Reservoir has several water quality challenges that have restricted the ability to move water in and out. Major water quality issues include algal productivity and eutrophication. Water quality impairments include pH, manganese, turbidity, nitrogen and phosphorous that exceeds standards, as well as elevated mercury and methylmercury in reservoir fish.

To address the major water quality issues at Hodges Reservoir, the *Lake Hodges Water Quality Assessment Study Final Conceptual Planning Report* (City of San Diego 2014) recommends that an HOS be installed at Site-1, which is in close vicinity to Hodges Dam. The scope of work at Site-1 includes the installation of three Vacuum Swing Adsorption (VSA) units to produce the required daily oxygen demand

at the reservoir. Upon completion of the sediment core characterization study conducted by City staff in April 2015, it was determined that the sediment oxygen demand is 2.5 times more than what was assumed in the *Lake Hodges Water Quality Assessment Study Final Conceptual Planning Report*. A larger in-water system (Speece Cone and Submersible Pump) will be needed, and approximately three to six additional VSA units will be required to meet the oxygen demand at the reservoir. Site-1 is physically constrained, and there is insufficient space to install the additional VSA units. It was decided that the HOS shall be installed at the secondary site location (Site-2) which is located at the abandoned reservoir operator residence (See attached drawing Sheet 2 of 5). Site-2 is more spacious with relatively easy access, but will require an electrical upgrade to high-voltage three-phase power. It was also determined that it will be cost-effective to construct a liquid oxygen (LOX) supply facility and a delivery system which will consist of a cryogenic tank with an evaporator (See attached drawing Sheet 5 of 5) in lieu of constructing VSA units that require considerable electrical demand. Site-2 has easy access to accommodate LOX delivery trucks scheduled to refill the cryogenic tanks on a bi-weekly basis.

A more detailed description of the background and recommended alternatives to manage and control algal productivity and address the water quality impairments at Lake Hodges can be found in the *Lake Hodges Water Quality Assessment Study Final Conceptual Planning Report*, completed June 30, 2014, which can be found in the Public Utilities Department library, or an electronic copy can be requested from the Public Utilities Department.

1.2 Project Location

City owned open space adjacent to Hodges Reservoir in the San Dieguito Hydrologic Unit in San Diego County, California (Figure 1). This project is generally located in the Multiple Habitat Planning Area (MHPA). However, all impacts will occur within 300 feet horizontally from the high water level of the water elevation of the spillway and within the existing footprint of the employee residence. These areas are considered to be excluded from the MHPA as a part of the City's reservoir management program (City of San Diego 1997).

1.3 Existing Conditions

Hodges Reservoir is an important part of the San Diego County Water Authority Emergency Storage Projects and is needed to increase the ability to deliver water within San Diego County during this significant water supply shortage. The dominant and overarching beneficial use of Hodges Reservoir is as source of drinking water supply to the San Dieguito Water District/Santa Fe Irrigation District. Improvements to water quality in Hodges Reservoir are necessary in order to supply additional usable resource of local water for the City to deliver to its water treatment plants.

The Water Quality Control Plan for the San Diego Region (9), commonly known as the Basin Plan, lists ten beneficial uses for Hodges Reservoir: Municipal and Domestic Supply; Agricultural Supply; Industrial Service Supply; Industrial Process Supply; Contact Water Recreation; Warm Fresh Water Habitat; Cold Freshwater Habitat; Wildlife Habitat; and Rare, Threatened or Endangered Species. The highest priority beneficial use of Hodges Reservoir is drinking source water supply.

The Regional Water Quality Control Board, 2008 Clean Water Act Sections 305(b) and 303(d) Integrated Report states that Hodges Reservoir currently does not meet water quality objectives for the following five parameters: pH, manganese, turbidity, nitrogen, and phosphorous. This assessment means that one or more of the reservoirs beneficial uses are no longer supported. High algal productivity in the reservoir is fueled by excessive loading of nutrients; specifically, nitrogen and phosphorous. Nutrient loading may be external (surface water runoff into the reservoir) or internal [release of nutrients from sediment to the water column, on an annual cycle). At Hodges Reservoir internal nutrient loading is about ten times greater than external loading. In deep water areas of the reservoir, decomposition of biomass results in

anoxic conditions. Internal nutrient loading results when the deep water of the reservoir goes through an annual cycle of anoxic conditions followed by a period of well-oxygenated deep water. Under anoxic conditions nitrogen and phosphorous accumulate in lake bottom sediments, and then are released when the sediment-water interface is well-oxygenated.

Under anoxic conditions at the deep sediment-water interface, sulfate-reducing bacteria mediate the methylation of mercury, converting naturally occurring elemental mercury into a form that is bioavailable. The methylmercury is then bioaccumulated up through the food chain from micro-organisms to small fish to larger fish, ultimately posing a risk of toxicity to wildlife and humans at the top of the food chain.

1.4 Project Description

The Design/Build Contractor shall design, install and put into operation an oxygen supply and delivery system, coupled with a hypolimnetic oxygenation speece cone diffuser system (See attached drawing Sheet 3 of 4) to meet the objectives specified above. The Design/Build Contractor shall be responsible for designing, supplying and installing all piping and materials for all systems, including but not limited to: oxygen supply facility and foundation, oxygen supply piping and appurtenances, controls, scada system, electrical power, in-lake submersible pump, speece cone, diffuser components, and a driveway capable of supporting 80,000 lbs with adequate turning radius for a 65 foot semi-truck to maneuver in and out of the liquid oxygen (LOX) supply facility (Figure 2).

The in-lake HOS system shall be confined to the region approximately 3,000 feet upstream from Lake Hodges dam and approximately 700feet south east from the abandoned reservoir operator residence. The in-lake portion of the system shall consist of a single header discharge plenum 20 inches in diameter and 100 feet long, one (1) Speece Cone 12 feet in diameter and 25 feet high, and one 100 HP submersible pump. The HOS system shall be placed on a multi-tiered rock base. After design and construction, the Design/Build Contractor shall initially operate the system and demonstrate capability to achieve design flow distribution conditions during a performance test with City staff.

Construction Activities will occur at 3 locations: LOX supply facility located at the abandoned reservoir keeper residence, boat launch located 1,300 feet west of the Lake Hodges Visitor Center, and the in-lake HOS system. Construction staging will be within the footprint of the industry standard fire buffer which is a 50-ft radius from the perimeter of the LOX supply facility. No improvements or impacts are proposed at the boat launch project site. Staging, launching and access will be within existing developed areas at this location.

Typical construction equipment will be utilized to perform the work at the LOX Supply Facility. Hydraulic truck cranes, cement truck, semi-trailer truck, and dump trucks will be in and out of the site to deliver heavy equipment, supplies, and materials. Lighting equipment and a portable gas generator will be on site to provide lighting and electrical power during construction. The contractor shall prevent asbestos emissions from emanating during demolition activities of the reservoir keeper residence, and perform all necessary requirements for the removal and disposal of asbestos and or any other hazards prior to normal demolition. A backhoe and/or excavator will be utilized to demo the structure, a hydraulic hammer attached to the backhoe to break up the existing concrete foundation, and a dump truck to haul away the trash, debris, and recycle the concrete. Dump trucks shall deliver gravel for the proposed driveway and a road roller-compactor to compact the gravel. A cement truck shall deliver cement for the proposed concrete pad foundation for the LOX supply facility. A hydraulic truck crane will be utilized to lift the cryogenic tank and evaporator from the semi-truck trailer and onto the concrete foundation. The contractor shall have a 10 foot wide construction corridor to the water shoreline. A bobcat with a trencher attachment shall be utilized to dig a trench for the installation of the electrical and

oxygen supply line from the LOX supply facility to the water shoreline. A concrete anchor block (18” tall x 30” Wide x 18” Depth) shall be installed within the vicinity of the water shoreline where the electrical and oxygen supply lines transition from trench to surface. The electrical and oxygen line (strapped to concrete blocks or supported by helical anchors) will continue to run along the ground surface at the bottom of the lake from the shoreline to the HOS.

All access will be within existing dirt and asphalt roads, only minor improvements (i.e., minor grading within the existing footprint) are proposed as a part of this project. All access road improvements will be conducted within the existing access road footprint.

On-shore Activities

The on-shore project activities include demolition of existing reservoir keeper residence; construction of concrete slab and equipment foundation; installation of a cryogenic tank; installation of an evaporator; installation of security fence and bumper posts; installation of two anchor blocks; trenching for oxygen and electrical line; and laying of aggregate road. Construction limits for the above listed activities are described in detail below:

Table 1: On-shore Project Components and Construction Activities		
ON-shore Activity	Construction Limits (Square Feet/Acre)	Description
Concrete slab and equipment foundation*	900/0.021	Will replace existing reservoir keeper’s residence foundation.
Cryogenic tank	NA	One tank at 13,000 gallon storage capacity within concrete slab.
Evaporator	NA	One tank at production capacity (approximately 9,900 lbs/day) within concrete slab.
Security fence and bumper posts		Chain link security fence will be 6 feet high and approximately 144 linear feet. 36 bumper posts at a height of 3 feet will be installed.
Two anchor blocks	5/0.0001	Two at approximately 24 inches by 15 inches by 12 inches.
Trench for oxygen and electrical line	3,270/0.075	Approximately 327 feet long, 10 feet wide and 5 feet deep. Will connect on-shore facility to in-water facility.
Aggregate road	18,272/0.42	Will act as fire buffer.
Total Construction Area	21, 547/0.4951	NA

Note: * All impacts associated with this component are included within the aggregate road impact area.

In-water Activities

In water activities shall require delivery of equipment, materials, and supplies to the boat launch facility. Semi-trailer trucks will be utilized to deliver the barge components with a crane, rip rap, gravel, and HOS components (speece cone, submersible pump, discharge piping, support pad) to the boat launch area. A hydraulic truck crane shall be utilized to unload the components of the barge onto the water and all equipment and materials delivered by the semi-truck onto the barge. The boat launch parking lot may be temporarily utilized to assemble the HOS components. The barge shall travel back and forth from the boat launch facility to the in water HOS site to deliver personnel, equipment, and materials. The barge shall use a crane to lower the rip rap, gravel, and the components of the HOS System to the bottom of the lake. It may be necessary to remove or pump out the sludge/muck at the bottom of the lake so that divers

can establish the parameters for the installation of the multi-tiered rock base and the equipment support pad. Underwater divers shall assist and coordinate proper placement of the materials and equipment, and connect all ancillary piping onto the HOS.

The in-water project activities include placement of drain rock blanket; installation of speece cone and submersible pump; and placement of oxygen and electrical lines with helical torque anchors. The in-water components will be assembled on-shore at the boat launch on the north east side of the lake. The in-water components will then be barged to the proposed project site approximately 470 feet south of the lake margin near the old reservoir keeper’s residence. All activities (on-shore), staging areas, and access roads will be conducted in existing paved roads or previously disturbed areas. Construction limits for the in-water activities are described in detail below:

Table 1: In-water Project Components and Construction Activities		
In-water Activity	Construction Limits (Square Feet/Acre)	Description
Multi Tier Rock Foundation <ul style="list-style-type: none"> • Equipment Pad* • Speece Cone Pad* 	3,032/0.070	Large debris and rocks will be moved and a leveled drain rock blanket installed. Base of foundation approximately 112 feet by 31 feet, slopes up at a 1:1 ratio (approximately 40 degrees) and supports a stainless steel or concrete platform with speece cone.
Speece cone	NA	Approximately 12 foot diameter and 25 feet high; sits on a stainless steel platform; 15 feet by 40.
Submersible pump	NA	Attached to stainless steel platform, 100 horse powers.
Oxygen line	NA	Two inch diameter copper line in 3 inch diameter conduit lay on the bottom of the reservoir approximately 470 linear feet.
Electrical line	NA	Three inch diameter conduit lay on the bottom of the reservoir approximately 470 linear feet.
Helical torque anchors.	NA	Approximately 47 metal rods 1 inch diameter and 4 feet in length; 3 feet embedment along oxygen and electrical lines. Additionally; 4 metal rods 4 inch diameter and 12 feet embedment at the corners of stainless steel platform to the rock blanket.
Total Construction Area	3,032/0.070	NA

Notes: * Impacts from these components will be within the boundary of the rock foundation and not included in the impact total.

2.0 Methods

2.1 General Biological Surveys

A general biological survey and vegetation mapping was conducted June 10, 2015 by PUD biologist, Summer Adleberg, to analyze current conditions and potential new impacts to biological resources within

and adjacent to the proposed project. All plant and animal observations were noted along with general site conditions. The survey was conducted during daytime hours and as a result some nocturnal wildlife species would not have been observed. A focused, seasonally appropriate survey for the coastal California gnatcatcher (*Polioptila californica californica*) (CAGN) was conducted between April 13 and May 4, 2015 (Rocks Biological 2015). The construction drawings, Trimble GPS unit, and aerial photos (2012) were used to map habitats and determine impacts from the proposed project. Plant species were identified in the field or later in the office. Animals were identified in the field by direct visual observation with the aid of binoculars or indirectly by calls, tracks, or scat.

2.2 Jurisdictional Delineation

A wetland delineation of the site was performed by PUD biologists Summer Adleberg and Sean Paver to determine jurisdictional Waters of the State, and Waters of the United States, including wetlands. The delineation was performed on July 13, 2015. Typically, wetlands and jurisdictional waters fall under one, two, or all of the following jurisdictions: United States Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and the City. Each agency has a slightly different definition of “wetlands”; therefore, the extent of each agency’s jurisdiction can vary on a given project. USACE jurisdiction was identified by determining the boundary of the ordinary high water mark (OHWM) and any three parameter wetlands using methods noted in the USACE Regional Supplement to the Wetland Delineation Manual: Arid West Region (Environmental Laboratory 2008).

2.3 Nomenclature

Vegetation was classified using the R.F. Holland system of natural communities as described in *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986), and as modified by Oberbauer (Oberbauer 1996, Oberbauer et al. 2008). Plant names and sensitive species status are derived from Lightner’s San Diego County Native Plants, Berkley’s CalFlora, and/or California Native Plant Society (CNPS).

3.0 Results

3.1 Soils

The proposed project area sits at approximately 220 feet above mean sea level (MSL). The majority of the proposed project area consists of soils from the San Miguel Series, rocky silt loam with 9 to 70 percent slopes. This series consists of well-drained; medium to very rapid runoff with very slow permeability. The adjacent areas are made primarily of open water.

3.2 Vegetation Communities

Two vegetation types; Diegan coastal sage scrub and disturbed land; and one wetland community; open water, were documented within the proposed project area. Several vegetation types were documented adjacent to the access roads; Diegan coastal sage scrub, chamise chaparral, live oak woodland, disturbed habitat, southern mixed chaparral, southern coast live oak riparian forest, non-native grassland, and urban/developed (Figure 3). No impacts are anticipated in these vegetation types and are not addressed further.

3.2.1 Wetland Communities

Open Water (Reservoir)

Hodges Reservoir consists of year round water. Water levels fluctuate continuously due to operational requirements resulting in seasonal variations within the interface between open water and lakeshore fringe. Open water habitat limits were determined based on the lake full line (spill line). A characteristic of open water includes the portion of the lake margin that contains 10-20% vegetation and would be covered by water in an average precipitation year. This area is referred to as lakeshore fringe.

The lakeshore fringe consists of a small band of vegetation; approximately 18 inches thick, is present along the margin of Lake Hodges and consists of less than 20% vegetative cover. This area is dominated by sweet clover (*Melilotus officinalis*), mule fat (*Baccharis salicifolia*), and horse weed (*Conyza canadensis*). Additional species present include everlast (*Pseudonaghalium californicum*), tree tobacco (*Nicotiana glauca*), umbrella plant (*Cyperus involucratus*), sowthistle (*Sonchus oleraceus*), and San Diego wreathplant (*Stephanomeria diegensis*). The location and condition of this transitional vegetation varies based on reservoir level.

3.2.2 Upland Communities

Disturbed Diegan Coastal Sage Scrub (Tier II)

Diegan coastal sage scrub found onsite is characterized by black sage (*Salvia mellifera*), coastal sagebrush (*Artemisia californica*), flattop buckwheat (*Eriogonum fasciculatum*), and laural sumac (*Malosma laurina*). The direct area of impact and trenching consists of disturbed Diegan coastal sage scrub and includes a higher than normal percentage of mallow (*Malva* spp.), ripgut brome (*Bromus diandrus*), purple false brome (*Brachypodium distachyon*), mustard (*Brassica* spp.), and tocalote (*Centaurea melitensis*). Occasional species include scarlet pimpernel (*Lysimachia arvensis*), tarweed (*Deinandra fasciculata*), deerweed (*Acmispon glaber*), erodium (*Erodium* spp.), scarlet bugler (*Penstemon centranthifolius*), poison oak (*Toxicodendron diversilobum*), wild oat (*Avena fatua*), and spiny redberry (*Rhamnus crocea*).

Disturbed Land (Tier IV)

Disturbed land consists of mostly bare areas, which have been modified by human activities including some decomposed granite, old concrete, fencing, and piles of gravel. Disturbed soils accommodate limited growth of non-native grasses and forbs including wild oat, ripgut brome, mustard, rabbitsfoot grass (*Polypogon monspeliensis*), tocalote, and salt grass (*Distichlis spicata*). There are individuals of pepper tree (*Schinus* spp.), eucalyptus (*Eucalyptus globulus*), and scattered unidentified ornamentals.

Urban/Developed

Urban and developed includes those areas that have been constructed upon and/or are physically altered beyond the ability to recover with native vegetation. Within in the proposed project area this includes the old reservoir keeper's residence.

3.3 Sensitive Species

3.4 Sensitive Plant Species

Three sensitive plant species are known to occur within the open space areas adjacent to Lake Hodges;

Encinitas baccharis (*Baccharis vanessae*), wart-stemmed ceanothus (*Ceanothus verrucosus*), and San Diego barrel cactus (*Ferocactus viridescens*). During various surveys conducted from April to June 2015, no sensitive plant species were observed within the proposed project area. Several wart-stemmed ceanothus individuals were observed in the area north of the access road and west of the proposed project area. No activities are proposed in this area and no impacts on this species are anticipated. Sensitive plant species that were not observed or detected but have the potential to occur in or adjacent to the project area are listed in Table 1.

Table 1: Status of Potential Flora			
Species	Sensitivity Listing(s)	Habitat	Expected On-Site Status
San Diego Barrel Cactus <i>Ferocactus viridescens</i>	CNPS – List 2B.1 MSCP Covered	Diegan Coastal Sage Scrub, hillside, crest of slopes, cobble	Not detected. Would have been observed if present.
Encinitas Baccharis <i>Baccharis vanessae</i>	Federal – Threatened State – Endangered CNPS – 1B.1 MSCP Covered	Southern maritime chaparral and dense southern mixed chaparral	Not expected. Lack of suitable undisturbed habitat on-site.
Wart-stemmed Ceanothus <i>Ceanothus verrucosus</i>	Federal – Species of Concern CNPS – 2B.2 MSCP Covered	Southern maritime chaparral and southern mixed chaparral	Observed in an area northwest of the project site, not detected or expected in the proposed project area due to lack of suitable habitat.

3.5 Sensitive Animal Species

Twenty-one MSCP covered wildlife species are known to occur in the Lake Hodges/San Pasquel Valley open space areas. However; suitable habitat for only 13 species occurs within or immediately adjacent to the proposed project area. Sensitive animal species that were not observed or detected but have the potential to occur in or adjacent to the project area are listed in Table 2. One MSCP covered species was observed during surveys, the costal California gnatcatcher (Figure 4).

Coastal California gnatcatcher (*Poliophtila californica ssp. californica*)

Status: FT/SSC; MSCP Covered

Distribution: California

Habitat and Biology: Coastal slopes in Southern California, from southern Ventura County south to El Rasario, Baja California. In San Diego County this species is found in coastal sage scrub vegetation with high proportions of California sage brush.

Status in the Survey Area: A pair of coastal California gnatcatchers was observed during presence absence surveys conducted between April 13 and May 4, 2015 (Rocks Biological 2015). The pair was initially observed more than approximately 1,500 feet from the proposed project area. During subsequent surveys the male was observed approximately 800 feet west of the proposed project area.

Western pond turtle (*Clemmys marmorata*)

Status: --/SSC; MSCP Covered

Distribution: Formerly this species was found from Western Washington and British Columbia through Northern Baja California.

Habitat and Biology: A wide variety of wetland habitats including; ponds, streams, lakes, reservoirs, ephemeral shallow wetlands, gravel pits, stock ponds, and sewage lagoons, where water persists throughout the year. However, Western pond turtle's prefer habitats with slow flowing water with woody or rocky debris that allow for refugia sites (USGS 2003).

Status in the Survey Area: Historically this species was known to occur in Lake Hodges Reservoir. Anecdotal observations of pond turtles being fished and taken for consumption from the San Dieguito River near Lake Hodges have been documented. In general reservoirs may not provide optimal habitat due to the fluctuating water levels and the effect that has on shoreline vegetation. Surveys conducted in 2003 of Lake Hodges Reservoir did not detect Western pond turtles (USGS 2003). This species was not observed during any of the field visits or during the general biological surveys. There are no known observations of this species within 1,500 feet of the proposed project. The shoreline within the proposed project area lacks woody vegetation, debris, and rocky outcrops that would allow for refuge. Impacts to Western pond turtles are not anticipated.

Table 2: Status of Potential Fauna

Species	Sensitivity Listing(s)	Habitat	Expected On-Site Status
Orange-Throated Whiptail <i>Aspidoscelis hyperythrus</i> ssp. <i>beldingi</i>	CDFW – Species of Special Concern MSCP	Diegan Coastal Sage Scrub is present in area.	High potential to occur in DCSS, but not detected during recent surveys.
San Diego Horned Lizard <i>Phrynosoma coronatum</i> ssp. <i>blainvillei</i>	CDFW - Species of Special Concern MSCP Covered	Diegan Coastal Sage Scrub of moderate suitability is present in area.	High potential to occur in DCSS, but not detected during recent surveys.
American Peregrine Falcon <i>Falco peregrinus anatum</i>	CDFW – Fully Protected MSCP - Covered	Typically nests on cliffs and ledges, including man-made structures. Forages in open areas such as disturbed habitat, native, and non-native grasslands	Expected to forage but not nest on-site.
Cooper's Hawk <i>Accipiter cooperii</i>	CDFW – Watch List MSCP Covered	Oak, riparian deciduous or other woodland habitats usually near water.	Expected to forage but not nest on-site.
Northern Harrier <i>Circus cyaneus</i>	CDFW - Species of Special Concern MSCP Covered	Occurs in grassland, agricultural fields, fresh and saltwater marshes and desert sinks	Expected to forage but not nest on-site.
Tricolored blackbird <i>Agelaius tricolor</i>	CDFW – Species of Special Concern State – Endangered MSCP Covered	Occurs in cattail and tule marshes; forages in fields.	Not expected. No suitable habitat occurs on-site.
Rufous-crowned sparrow <i>Aimophila ruficeps</i> <i>canescens</i>	CDFW - Species of Special Concern MSCP Covered	Grassy and rocky slopes, with sparse and low shrubs.	High potential to occur in DCSS, but not detected during recent surveys.

Table 2: Status of Potential Fauna

Species	Sensitivity Listing(s)	Habitat	Expected On-Site Status
Coastal Cactus Wren <i>Campylorhynchus brunneicapillus ssp. couesi</i>	CDFW - Species of Special Concern MSCP Covered	Areas of sage scrub with robust stands of prickly pear and cholla.	Not expected. Lack of contiguous stands of suitable habitat on-site.
Least Bell's Vireo <i>Vireo bellii pusillus</i>	Federal – Endangered State – Endangered MSCP Covered	Moist woodlands, typically early successional riparian habitat	Not expected. No suitable habitat occurs on-site.
Mule Deer <i>Odocoileus hemionus fuliginatus</i>	MSCP Covered	Widely distributed.	Scat observed in adjacent areas.
Mountain lion <i>Felis concolor</i>	MSCP Covered	Widely distributed.	Not expected due to lack of connectivity to large stances of adjacent habitat; Del Dios Highway and I-15.

3.6 Jurisdictional Wetlands and Waters of the U.S.

A jurisdictional delineation was performed within the survey area for USACE, CDFW, City, and Regional Water Quality Control Board (RWQCB) jurisdictional resources. Each agencies jurisdiction was determined through identification of hydrophytic vegetation, hydric soil, and/or hydrology based on each agencies individual requirements.

3.6.1 USACE Jurisdiction

USACE jurisdiction was identified by determining the boundary of the ordinary high water mark (OHWM) and any three parameter wetlands using methods noted in the USACE Regional Supplement to the Wetland Delineation Manual: Arid West Region (Environmental Laboratory 2008). Based on a site visit with the USACE on July 24, 2015 the OHWM was determined to be the lake full line (spill line) which is currently approximately 30 feet above the current water line. USACE jurisdictional areas were mapped at each of the proposed lake margin and an aerial map (Figure 5).

An area of approximately 18 inches along the lakeshore fringe was evaluated for the presence of a wetland and classified as having wetland hydrology and hydric soils; however, it was determined that hydrophytic vegetation was not be present and this area was not classified as a wetland. Lakeshore fringe vegetation is sparse and does not provide quality habitat for wildlife or is considered a functioning wetland. Construction activities in this area would consist of placement on ground of the electrical and oxygen line. No impacts in this area are anticipated as a result of these activities.

3.6.2 CDFW Jurisdiction

CDFW jurisdictional resources are delineated by the outer edge of riparian vegetation or the top of the bank of the reservoir. A total of 0.070 acres of CDFW jurisdictional resources occur within the proposed project area. Riparian vegetation was not documented adjacent to the open water within the proposed project area.

3.6.3 City Jurisdiction

The City Jurisdiction is typically determined by identifying wetland vegetation occurring within City boundaries or has been delineated as wetlands by the USACE and/or CDFW. Lake Hodges, although an artificially constructed wetland, is considered a City wetland as stated in the City's 2012 Biology Guidelines. There is no associated vegetation in the project area that support native wetland vegetation and/or sensitive species (i.e. nesting birds or sensitive plant species)(City 2012).

3.6.4 RWQCB

The RWQCB takes jurisdiction over all waters of the state and all waters of the United States as mandated by both the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act; therefore, the RWQCB's jurisdiction follows that of the USACE.

3.7 Functionality and Value

The RWQCB, 2008 Clean Water Act Sections 305(b) and 303(d) Integrated Report states that Lake Hodges currently does not meet water quality objectives for the following five parameters: pH, manganese, turbidity, nitrogen and phosphorous. This assessment means that one or more of the lake's beneficial uses are no longer fully supported. The impairments identified under the 303(d) list are primarily a result of eutrophic conditions due to the nutrient loading. Algae production from nutrient loading is the primary concern, especially since algae decomposition in the reservoir's deeper water causes nutrient cycling and can reduce and release iron and manganese and produce methylmercury. This project is being pursued to directly address these water quality objectives.

4.0 Impacts

The proposed project would result in temporary direct impacts to 0.075 acre of upland habitat. Permanent impacts would occur to 0.100 of disturbed habitat from construction of the on-shore facility.

The project proposes to implement approximately 0.070 acre of components of the project in open water, these activities would not be considered an impact because they would not reduce wildlife habitat or decrease aquatic resource function. Implementation of the open water components would result in a net benefit to aquatic function.

4.1 Direct Impacts

4.1.1 Vegetation Communities

The proposed project would result in temporary, direct impacts on 3,270 square feet (0.075 acres) of disturbed Diegan coastal sage scrub habitat. A Revegetation Plan will be developed and all temporary impacts will be revegetated in accordance with the City's Biological Guidelines. Additionally, permanent impacts on approximately 0.100 acre of disturbed/developed land are anticipated from construction of the on-shore facility.

Table 3: Anticipated Impacts			
Habitat	City Category	Temporary	Permanent
Diegan Coastal Sage Scrub	Tier II uncommon uplands	0.075	0.000
Disturbed Habitat	Tier IV other uplands	0.000	0.100
Total	NA	0.075	0.100

4.1.2 Jurisdictional Areas

The proposed project would not result in direct, permanent or temporary impacts (adverse effect) in open water habitat. A 3,032 square foot (0.070 acre) rock drain blanket and two conduit pipes would be placed at the bottom of Hodges Reservoir; however, these activities will not result in the net loss of aquatic resources function or services. It is anticipated that construction of these in-water components will cause temporary displacement of accumulated sludge/muck; however, this sediment will be removed off site. Replacement of the sludge/muck with a rock drain blanket would not reduce habitat for wildlife; including invertebrates and micro biota. The rock drain blanket will not replace any amount of WOUS with dry land or result in any measurable change in elevation of lake bottom.

Placement of the HOS components (speece cone, submersible pump, discharge piping, support pad) will occur within the footprint of the rock drain blanket and no additional impacts are anticipated from these activities.

4.1.3 Sensitive Plant Species

No impacts to sensitive plant species are anticipated. All occurrences of wart-stemmed ceanothus were documented outside of the proposed project area. Additionally, a biologist will be onsite during ground disturbing and vegetation removal activities to ensure impacts to sensitive species are avoided.

4.1.4 Sensitive Animal Species

The proposed project would result in temporary, direct impacts on 3,270 square feet (0.075 acres) of disturbed Diegan coastal sage scrub habitat; which is suitable habitat for coastal California gnatcatcher. However; according to the City of San Diego's Significance Determination Guidelines under CEQA, the direct impacts of 0.075 acre suitable habitat are not significant and would not require mitigation because it is not anticipated to exceed the threshold of 0.1-acre. All clearing, grubbing and grading activities within Diegan coastal sage scrub habitat will be conducted outside of the breeding season (March 1 – August 15). Additionally, a Revegetation Plan will be developed and all temporary impacts will be revegetated in accordance with the City's Biological Guidelines.

4.1.5 MHPA and Cornerstone Lands

The proposed project occurs within The Hodges Reservoir/San Pasqual Valley Cornerstone Lands core area. However, all impacts will occur within 300 feet horizontally from the high water level of the water elevation of the spillway and within the existing footprint of the employee residence. These areas are considered to be excluded from the MHPA as a part of the City's reservoir management program (City of San Diego 1997).

4.2 Indirect Impacts

Indirect impacts are potential impacts that occur as a result of carrying out and completing the proposed project and include habitat fragmentation, water quality, lighting, noise, invasive species, human activity, and grading/land development.

4.2.1 Habitat Fragmentation

The proposed project involves creating an on-shore facility, underground pipe, and in-water structure. The on-shore facility will be built within the existing dam keeper's residence and surrounding auxiliary structures footprint. Free movement of wildlife will not be impeded beyond the current conditions. The underground trench will be revegetated and will not prevent the movement of wildlife or isolate existing habitat from one another. The in-water structure will be designed so that it will not impede the flow or movement of water or in water wildlife species.

4.2.2 Water Quality

The proposed project involves creating an on-shore facility, underground pipe, and in-water structure. No materials used in the construction will be toxic, and all fueling, repair, and maintenance of construction equipment will take place outside of the drainages and outside of the MHPA. Construction Best Management Practices (BMP's) will be followed to prevent the release or discharge of toxins/sediments.

4.2.3 Lighting

Project activities will take place during daylight hours and any temporary or permanent lighting that may be required will be shielded or directed away from sensitive habitat.

4.2.4 Noise

Noise from construction or future maintenance could result in a temporary indirect impact to nearby nesting bird species, if present. On-shore construction activities will take place outside the bird nesting season, to the greatest extent practicable, to prevent indirect impacts to nesting birds. In the event that construction activities continue into the bird breeding season, a qualified biologist will conduct the appropriate surveys to ensure construction noise or activities will not impact nesting birds. No noise impacts from in-water construction activities are anticipated. In-water activities will not occur within approximately 300 feet of suitable nesting bird habitat, most activities will occur under water, and all activities are anticipated to be temporary. In-water construction activities can occur at anytime.

Impacts as a result of typical operations and maintenance activities are not expected to be significant due to the minimal amount of noise and time that is required to complete maintenance activities and conduct monthly liquid oxygen deliveries.

4.2.5 Invasive Species

The proposed project will not introduce or increase the spread of non-native/invasive species into the project area or surrounding areas. All areas impacted as a result of construction will be revegetated and monitored for erosion and weeds for 25 months.

4.2.6 Human Activity

Increases in human activity in natural areas as a result of this project are not expected. The onshore facility would be within the footprint of an existing building and would have a security fence installed to prevent access. This project will not create new access; therefore it will not result in significant impacts from human intrusion.

4.2.7 Best Management Practices (BMP's)

Implementation of best management practices such as sediment and erosion control (silt fences, straw wattles, fiber rolls, gravel bags), fugitive dust suppression on access paths, trash control (covered trash cans), spill prevention (secondary containment of all fuels, oils, solvents, etc, and drip pans under all equipment), and delineation of project limits (fencing along sensitive habitats), will prevent significant indirect effects from construction activities.

4.2.8 Grading/Land Development

The proposed project will impact sensitive vegetation communities, as discussed above. No grading or development will occur outside of the impact footprint. Temporarily graded areas (excluding access roads) will be restored following the completion of the project to prevent erosion and stabilize soils.

4.2.9 Canyon Functions

Not applicable.

4.2.10 Brush Management

The proposed project will implement Brush Management in accordance with the National Fire Protection Association 55: Compressed Gas and Cryogenic Fluids Code. The proposed project will implement a 50-foot fire buffer per the Minimum Separation Distance Between Bulk Liquid Oxygen System and Exposure Hazards. The fire buffer will consist of a decomposed granite driveway and will not require regular maintenance.

5.0 Mitigation

The proposed project would not significantly impact sensitive vegetation communities. The following measures are proposed to avoid, minimize, and mitigate for direct and indirect impacts. Mitigation ratios are based on the City of San Diego's Land Development Code Biology Guidelines (2002).

5.1 Mitigation for Direct Impacts

The proposed project will directly impact approximately 0.075 acres of upland habitat and 0.100 of disturbed/developed land. According to the City of San Diego's Significance Determination Guidelines under CEQA, the direct impacts that would occur to 0.075-acre of disturbed Diegan coastal sage scrub habitat are not significant and would not require mitigation because the impact does not exceed the threshold of 0.1-acre. No mitigation is required for Tier IV habitats (disturbed/developed land).

The proposed project would displace sludge/muck from construction of the 3,032 square foot (0.070 acre) rock drain blanket. In order to minimize sediment movement from these activities, the sludge/muck would be removed or pumped off-site to an appropriate disposal location (e.g., landfill).

Permanent impacts from placement of the in-water infrastructure are not anticipated because they would not reduce habitat for wildlife; including invertebrates and micro biota. The rock drain blanket will not replace any amount of WOUS with dry land or result in any measurable change in elevation of lake bottom. The project is to improve water quality with no permanent or temporary impacts to vegetated wetlands and no loss of aquatic function therefore no compensatory mitigation is required. The project will improve aquatic functions of the reservoir.

The Hodges Reservoir currently does not meet water quality objectives for the following five parameters: pH, manganese, turbidity, nitrogen, and phosphorous. Adequate dissolved oxygen levels are vital for aquatic life and decreases in dissolved oxygen can lead to fish kills and bad odors from anaerobic decomposition. Additionally; small changes in pH and high levels of turbidity and manganese, can harm aquatic biota and are undesirable in domestic water supplies. In excess these can cause unpleasant tastes, deposits, stains, and discoloration to drinking water (RWQCB 2001). The proposed project would be implemented in order to reduce the impacts from the current water conditions and meet the water quality objectives set out in the Water Quality Control Plan for the San Diego Basin (RWQCB 2001).

5.2 Mitigation for Indirect Impacts

To reduce indirect impacts associated with the construction of this project the following measures shall be required and be placed on construction plans to ensure compliance:

1. A pre-construction meeting will take place onsite to identify any sensitive resources and/or additional parameters for work prior to construction.
2. All vegetation clearing, ground disturbing, and demolition activities shall be completed outside the bird breeding season - September 16 to January 31 (Breeding Season - February 1 to September 15).
3. For all other construction activities a preconstruction bird nesting survey shall be conducted within 500 feet and no more than 72 hours prior to initiation of construction activities if work occurs during the months of February 1 to September 15. If CAGN are determined to be present; Construction noise monitoring shall be conducted at least twice weekly on varying days, or more frequently depending on the construction activity, to verify that noise levels at the edge of occupied habitat are maintained below 60 dB (A) hourly average or to the ambient noise level if it already exceeds 60 dB (A) hourly average. If not, other measures shall be implemented in consultation with the biologist and the City, as necessary, to reduce noise levels to below 60 dB(A) hourly average or to the ambient noise level if it already exceeds 60 dB(A) hourly average. Such measures may include, but are not limited to, limitations on the placement of construction equipment and the simultaneous use of equipment.
4. Work limits will be flagged and/or fenced prior to start of work to avoid additional impacts to biological resources.
5. Predefined staging areas will be used for parking vehicles, equipment and stockpiling of materials.
6. All equipment must utilize existing access roads and work areas within the authorized limited of work. No work activities may occur outside the preapproved limits of disturbance.

7. All trash and debris must be picked up and removed from the site at the end of each workday.
8. All work will be conducted during daylight hours only, eliminating the need for nighttime lighting. In the event nighttime lighting is needed, lighting shall be directed away from sensitive habitats.
9. Appropriate BMP's will be used during and after construction to address erosion and sediment control.
10. A biological monitor will be onsite during the work to ensure compliance with environmental regulations.
11. Trenches and excavations shall be covered or fenced to prevent wildlife entrapment.
12. Photographs will be taken of the project area before, during, and after the work to document the condition of the site and the extent of any impacts to the surrounding area.
13. Soils and sediment that are temporarily stockpiled will be returned to their original locations or disposed of at the appropriate landfill.
14. All new permanent light fixtures shall be directed away from sensitive habitat and nighttime lighting shall only be used as necessary to operate the facility.
15. During in-water construction of the rock drain blanket remove or pump out the sludge/muck and dispose off-site at an approved location (e.g., landfill).

In addition to unique measures recommended for the proposed project (i.e., bullets 11-13), standard City mitigation measures for MHPA Land Use Adjacency Guidelines and biological protection during construction which correlate to the recommended measures 1-10 and 14-15 in this section should also be included in the environmental document.

6.0 Revegetation Recommendations

Areas temporarily impacted by this project shall be subject to revegetation criteria per the City of San Diego Landscape Guidelines (Figure 6). This will include re-vegetation in areas not needed for future activities and ensuring effective erosion control. Restoring temporarily impacted vegetation will include hydroseeding and/or container plantings with native Diegan coastal sage scrub species. Revegetated areas shall be monitored and maintained for a minimum of 25 months. Upland areas impacted that require revegetation shall use the appropriate native species for the habitat type. A detailed revegetation plan shall be prepared following the completion of construction.

REFERENCES

California Department of Fish and Game. Natural Diversity Database. SanGIS layer SANGIS.ECO_NATURAL_DIVERSITY_PTS.

Calflora: Information on California plants for education, research and conservation, based on data contributed by dozens of public and private institutions and individuals, including the Consortium of Calif. Herbaria. 2013. Berkeley, California: The Calflora Database. Available: <http://www.calflora.org/>

City of San Diego. 1997. City of San Diego Multiple Species Conservation Program. City Planning and Community Investment Department. San Diego, California

City of San Diego. 2001. Land Development Code Biology Guidelines. City of San Diego. May 19, 2001.

City of San Diego. 2002. Guidelines for conducting Biological Surveys, City of San Diego, July 2002.

City of San Diego. 2011. Significance Determination Under the Environmental Quality Act- Biological Resources, January 2011.

City of San Diego 2012. San Diego Municipal Code Land Development Code; Biology Guidelines

City of San Diego 2014. Lake Hodges Reservoir Water Quality Assessment Study Final Conceptual Planning Report. June 30, 2014.

Lightner, J. 2011. *San Diego County Native Plants*. Third Edition. San Diego Flora, San Diego, California.

Oberbauer, Thomas, Meghan Kelly, and Jeremy Buegge. March 2008. Draft Vegetation Communities of San Diego County. Based on "Preliminary Descriptions of the Terrestrial Natural Communities of California", Robert F. Holland, Ph.D., October 1986.

RWQCB 2011. Water Quality Control Plan for the San Diego Basin. Regional Water Quality Control Board, September 8, 1994 with amendments effective on or before April 4, 2011.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>

USGS 2003. Distribution and Status of the Arroyo Toad (*Bufo californicus*) and Western Pond Turtle (*Emys marmorata*) in the San Diego MSCP Surrounding Areas, Final Report 2005.

Appendix A Flora List

Scientific Name	Common Name
Anacardiaceae	
<i>Malosma laurina</i>	Laurel sumac
<i>Rhus integrifolia</i>	Lemonadeberry
* <i>Schinus terebinthifolius</i>	Brazilian pepper tree
<i>Toxicodendron diversilobum</i>	Poison Oak
Apiaceae	
* <i>Apium graveolens</i>	Celery
* <i>Foeniculum vulgare</i>	Fennel
Areaceae	
* <i>Phoenix canariensis</i>	Canary Island date palm
Asteraceae	
<i>Ambrosia psilostachya</i>	Ragweed
<i>Artemisia californica</i>	Coastal sagebrush
<i>Artemisia palmeri</i>	San Diego sagewort
<i>Baccharis pilularis</i>	Coyote brush
<i>Baccharis Sarothroides</i>	Broom baccharis
<i>Baccharis Salisifolia</i>	Mule fat
<i>Centaurea melitensis</i>	Tocalote
<i>Deinandra fasciculata</i>	Tarplant
<i>Erigeron canadensis</i>	Horseweed
* <i>Glebionis coronaria</i>	Crown daisy
<i>Isocoma menziesii</i>	Goldenbush
Brassicaceae	
* <i>Brassica nigra</i>	Black mustard
* <i>Raphanus sativus</i>	Wild radish
Cypeaceae	
<i>Cyperus eragrostis</i>	Umbrella sedge
Fabaceae	
* <i>Melilotus indicus</i>	Sweet clover
Fabaceae	
<i>Lotus scoparius</i>	Deerweed
Fagaceae	
<i>Quercus agrifolia</i>	Coast live oak
<i>Quercus berberidifolia</i>	Scrub oak
Lamiaceae	
<i>Salvia mellifera</i>	Black Sage
* <i>Marrubium vulgare</i>	Hore-hound
Malvaceae	
<i>Malacothamnus fasciculatus</i>	Chaparral mallow
Myrtaceae	
* <i>Eucalyptus sp.</i>	Eucalyptus

Poaceae	
* <i>Avena barbata</i>	Wild oat
* <i>Bromus diandras</i>	Ripgut
* <i>Avena fatua</i>	Wild rye
* <i>Bromus madritensis</i>	Red brome
* <i>Cortaderia jubata</i>	Pampas grass
* <i>Pennisetum setaceum</i>	Fountain grass
Platanaceae	
<i>Platanus racemosa</i>	Western sycamore
Polygonaceae	
<i>Eriogonum fasciculatum</i>	Flat-top buckwheat
* <i>Rumex crispus</i>	Curly Dock
Primulaceae	
<i>Anagallis arvensis</i>	Scarlet pimpernel
Rhamnaceae	
<i>Rhamnus crocea</i>	Spiny redberry
Rosaceae	
<i>Adenostoma fasciculatum</i>	Chamise
<i>Heteromeles arbutifolia</i>	Toyon
Scrophulariaceae	
<i>Penstemon centranthifolius</i>	Scarlet bugler
Solanales	
<i>Nicotiana glauca</i>	Tree tobacco

* denotes Non-Native

Appendix B Fauna List

Scientific Name	Common Name
BIRDS	
Agithalidae	
<i>Psaltriparus minimus</i>	Bushtit
Accipitridae	
<i>Buteo jamaicensis</i>	Red-tailed hawk
Anatidae	
<i>Ana platyrhynchos</i>	Mallard
Ardeidae	
<i>Ardea alba</i>	Great Egret
<i>Ardea herodias</i>	Great Blue Heron
<i>Nycticorax nycticorax</i>	Black-crowned Night Heron
Charadriidae	
<i>Charadrius vociferus</i>	Killdeer
Columbidae	
<i>Zenaida macroura</i>	Mourning dove
Corvidae	
<i>Aphelocoma californica</i>	Western scrub-jay
<i>Corvus brachyrhynchos</i>	American Crow
<i>Corvus corax</i>	Common Raven
Cuculidae	
<i>Geococcyx californianus</i>	Greater Roadrunner
Emberizidae	
<i>Melospiza crissalis</i>	California Towhee
Fringillidae	
<i>Carpodacus mexicanus</i>	House finch
<i>Spinus psaltria</i>	Lesser goldfinch
Hirundinidae	
<i>Hirundo rustica</i>	Barn Swallow
<i>Petrochelidon pyrrhonota</i>	Cliff Swallow
Icteridae	
<i>Icterus cucullatus</i>	Hooded Oriole
Laridae	
<i>Sterna forsteri</i>	Forster's Tern
<i>Hydroprogne caspia</i>	Caspian Tern
Mimidae	
<i>Toxostoma redivivum</i>	California thrasher
Odontophoridae	
<i>Callipepla californica</i>	California quail

Pandionidae	
<i>Pandion haliaetus</i>	Osprey
Parulidae	
<i>Geothlypis trichas</i>	Common Yellowthroat
Phalacrocoracidae	
<i>Phalacrocorax auritus</i>	Double-crested Cormorant
Picidae	
<i>Picoides nuttallii</i>	Nuttall's Woodpecker
Poliophtidae	
<i>Poliophtila caerulea</i>	Blue-gray Gnatcatcher
<i>Poliophtila californica</i>	Coastal California Gnatcatcher
Rallidae	
<i>Fulica americana</i>	American coot
Trochilidae	
<i>Calypte anna</i>	Anna's hummingbird
Trogodytidae	
<i>Thryomanes bewickii</i>	Bewick's Wren
Tyrannidae	
<i>Tyrannus vociferans</i>	Cassin's Kingbird
Vireonidae	
<i>Vireo huttoni</i>	Hutton's Vireo
Mammals	
Canidae	
<i>Canis latrans</i>	Coyote
Leporidae	
<i>Sylvilagus auduboni</i>	Desert Cottontail

Appendix C Photos and Maps



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7

Figure 1 - Site 2
Lake Hodges HOS Project: Location Map

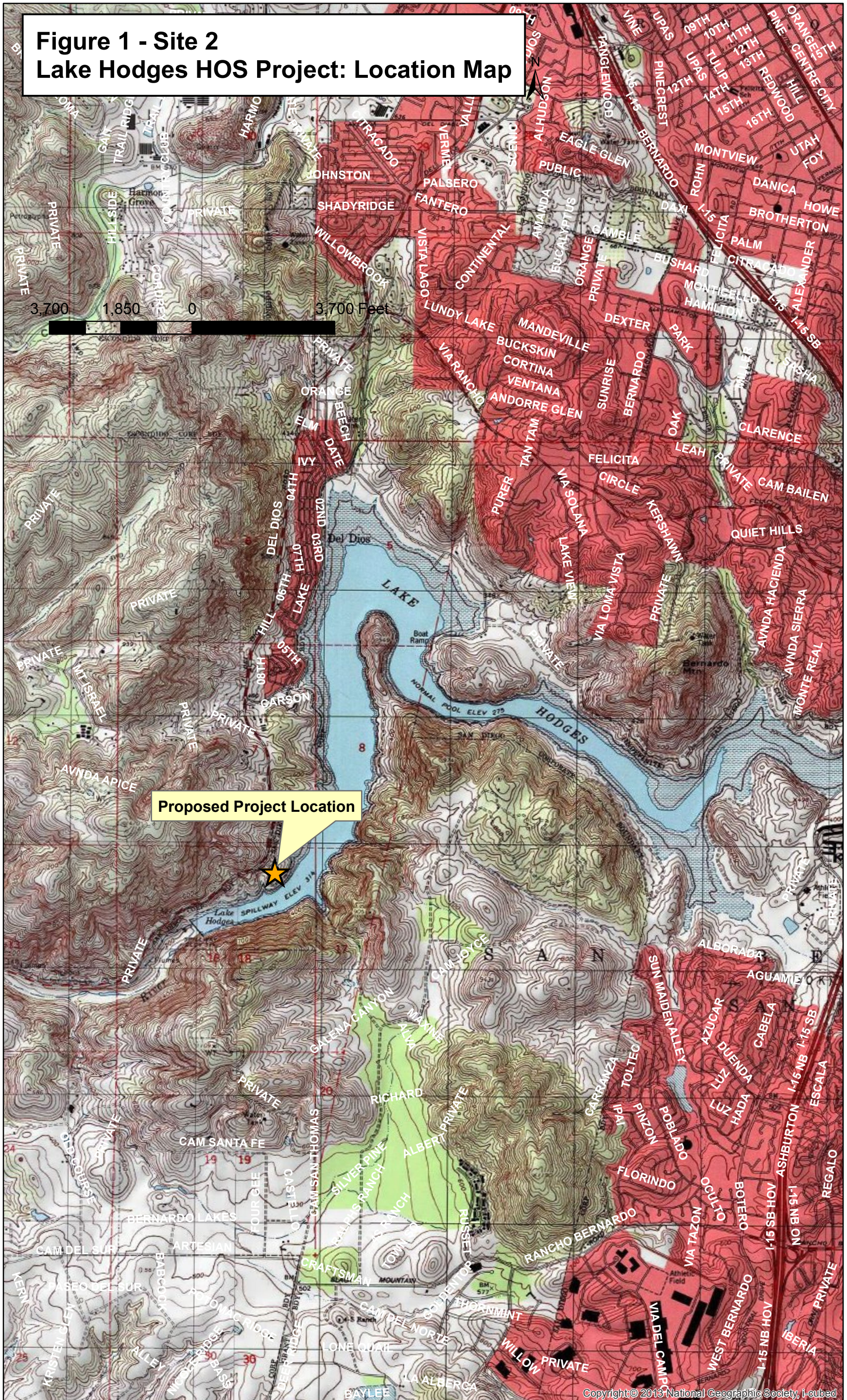
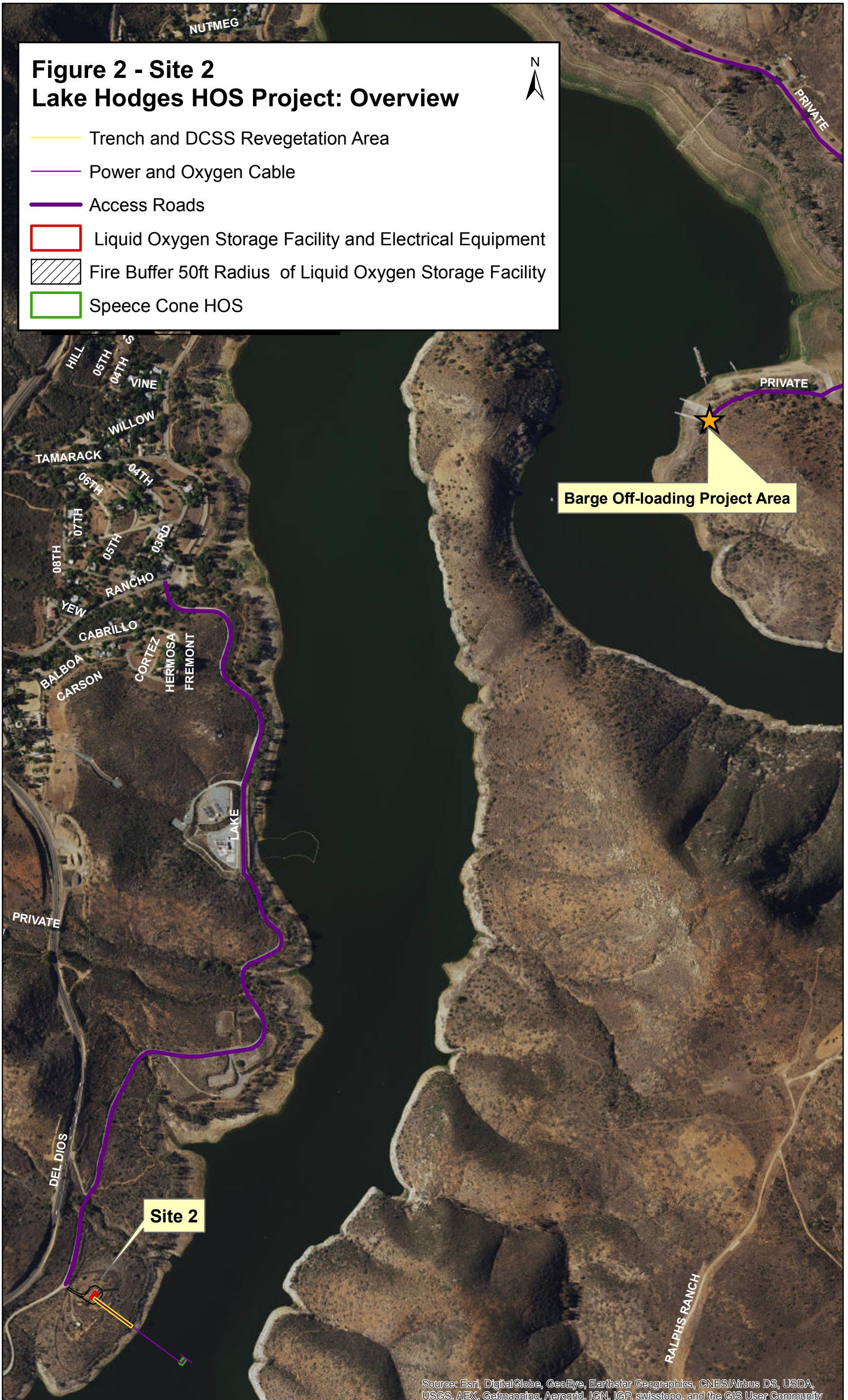


Figure 2 - Site 2 Lake Hodges HOS Project: Overview

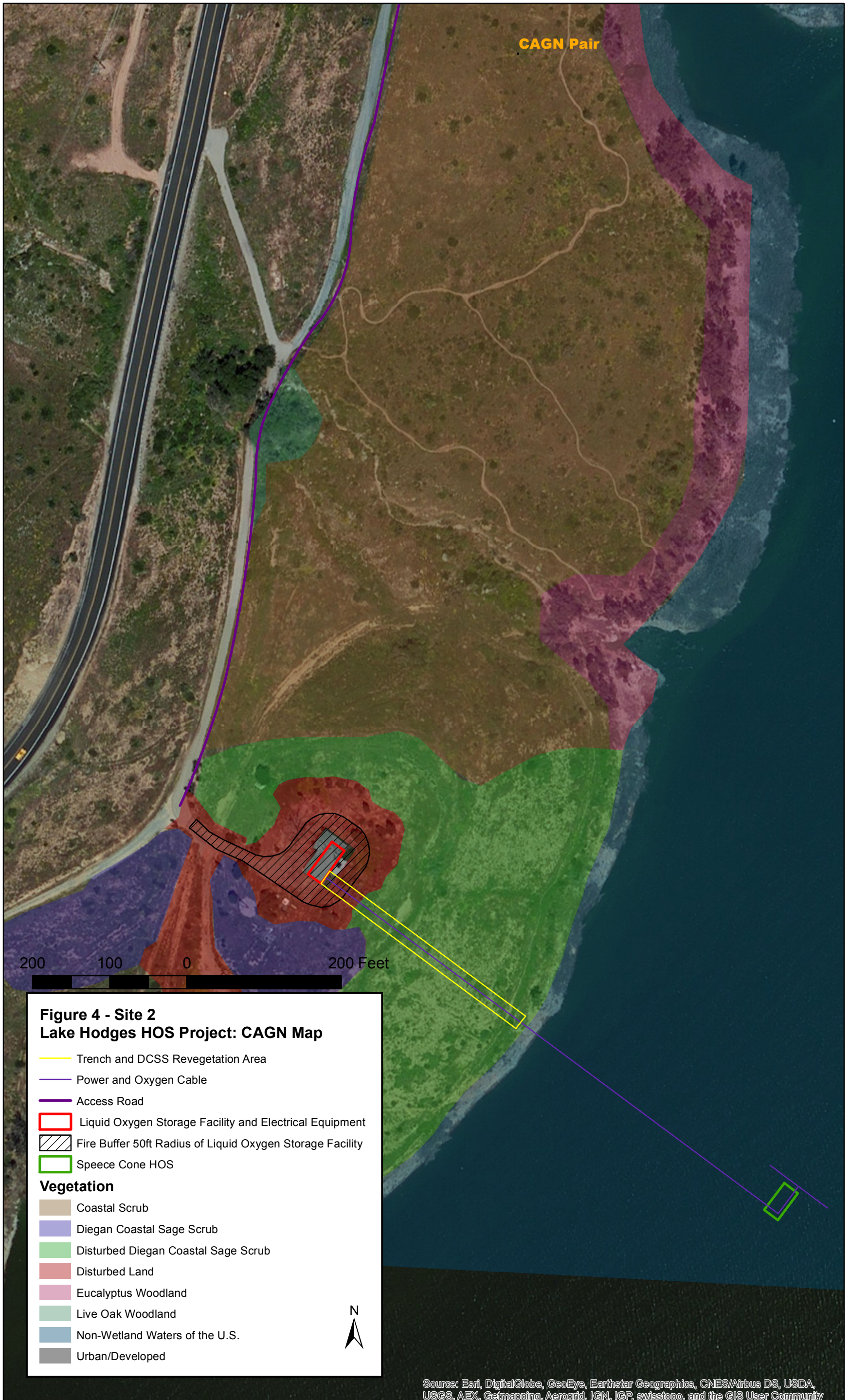


- Trench and DCSS Revegetation Area
- Power and Oxygen Cable
- Access Roads
- Liquid Oxygen Storage Facility and Electrical Equipment
- Fire Buffer 50ft Radius of Liquid Oxygen Storage Facility
- Speece Cone HOS



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community





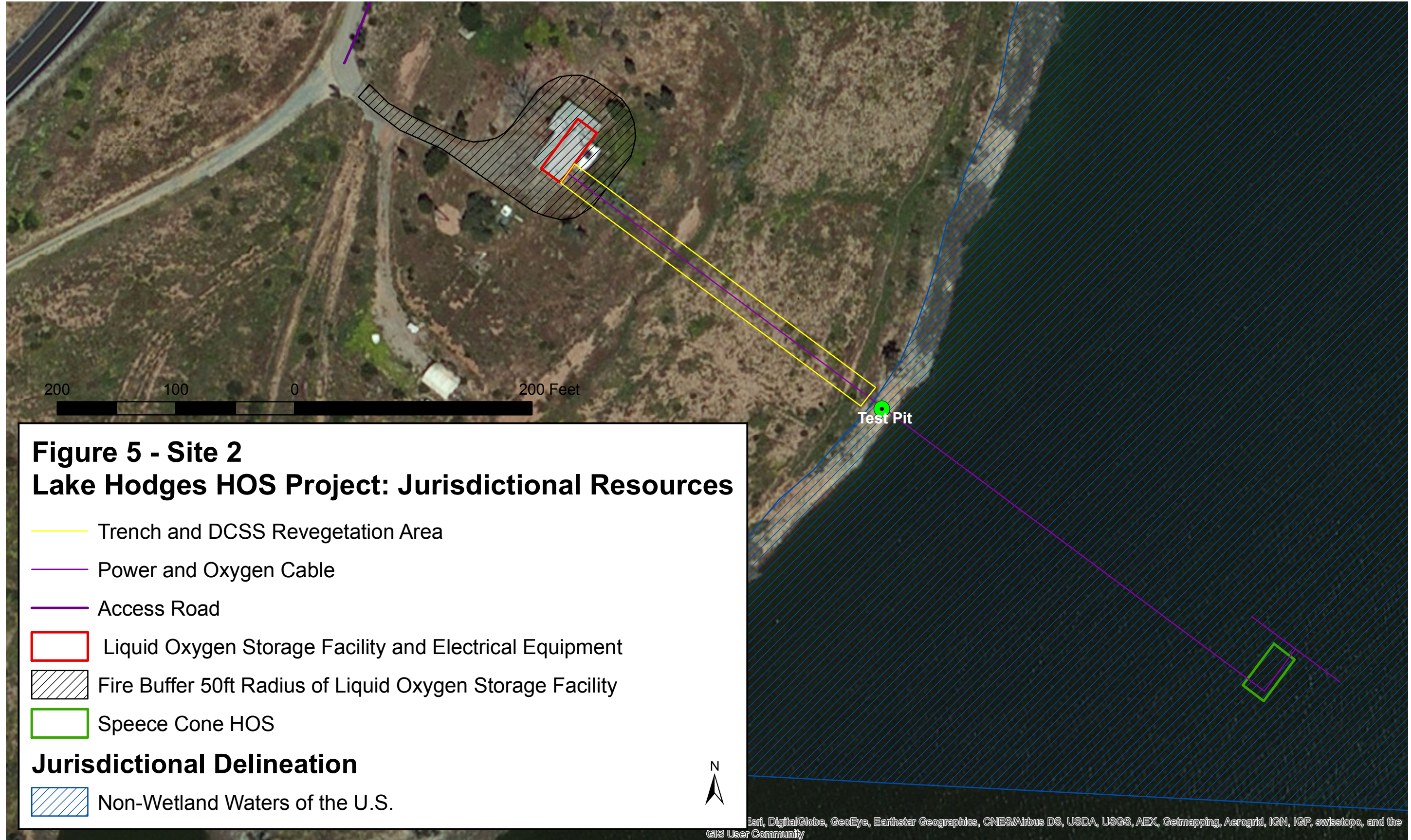


Figure 5 - Site 2
Lake Hodges HOS Project: Jurisdictional Resources

- Trench and DCSS Revegetation Area
- Power and Oxygen Cable
- Access Road
- Liquid Oxygen Storage Facility and Electrical Equipment
- Fire Buffer 50ft Radius of Liquid Oxygen Storage Facility
- Speece Cone HOS

Jurisdictional Delineation

- Non-Wetland Waters of the U.S.





Figure 6 - Site 2
Lake Hodges HOS Project: Revegetation Map

- Liquid Oxygen Storage Facility and Electrical Equipment for submersible pump
- Fire Buffer 50ft Radius from perimeter of Liquid Oxygen Storage Facility
- Speece Cone HOS
- Revegetation Area
- Trench
- Power and Oxygen Cable





June 12, 2015

U.S. Fish and Wildlife Service
Attn: Ms. Stacey Love
Carlsbad Fish and Wildlife Office
2177 Salk Ave., Ste. 250
Carlsbad, CA 92008

Subject: 45-Day Report for Coastal California Gnatcatcher Surveys at the Lake Hodges Water Quality and Quagga Mitigation Measures Project, City of San Diego, California

Ms. Love:

This letter presents findings of Coastal California Gnatcatcher (*Polioptila californica californica*; CAGN) protocol surveys conducted for the Lake Hodges Water Quality and Quagga Mitigation Measures Project in the City of San Diego, California. CAGN were observed during all surveys in the northern portion of the project area.

The surveys described in this report were performed on behalf of the City of San Diego's Public Utilities Department. The San Diego Region Regional Water Quality Control Board's *Clean Water Act Sections 305(b) and 303(d) Integrated Report 2008* states that Lake Hodges does not meet water quality objectives for pH, manganese, turbidity, nitrogen, or phosphorous. The impairments identified are primarily a result of eutrophic conditions due to nutrient loading. Resulting algal production is the primary concern, especially since algae decomposition in deeper waters can reduce and release iron and manganese and produce methylmercury. In order to address these issues, the City of San Diego and the San Diego County Water Authority propose the following improvements:

- A concrete masonry unit onshore building with fire-resistant roof
- A 600-ampere main electrical service with components and capacity to support all HOS equipment
- Three ESA oxygen generation units with a capacity of about 1 tpd each
- Programmable logic controller connected to the City's supervisory control and data acquisition (SCADA) system
- Skid-mounted Speece Cone with a rock or concrete base that is approximately 10x20x3 feet that will require lake bottom resurfacing to be placed on the bottom of the lake
- An intake screen, connecting piping, and discharge manifold/diffuser mounted on the Speece Cone skid
- Submersible pump (75-horsepower name plate)
- Power cable and oxygen pipeline connecting the shoreline facilities to the Speece Cone

The project is located within the Rancho Santa Fe & Escondido 7.5' USGS Quadrangles, along the southwestern shore of Lake Hodges (Figure 1). The project is located within the Multi-Habitat Planning Area (MHPA) of the City of San Diego's Multiple Species Conservation Program (MSCP) and supports Diegan coastal sage scrub (DCSS), the typical habitat for CAGN. In accordance with the City of San Diego *Biology Guidelines*, surveys for the federally-listed threatened CAGN are required for all potential impacts on suitable CAGN habitat within the MHPA.

The two potential installation sites and all access roads were surveyed, as well as a 175-foot buffer from all features, for a total survey area of approximately three acres (Figure 2). All DCSS and open southern mixed chaparral habitats within the project and buffer area were surveyed. Non-suitable habitats identified in the survey area include eucalyptus trees/ornamental, southern riparian woodland, disturbed areas, and developed areas. DCSS habitats within the survey area were dominated by California sagebrush (*Artemisia californica*), flat-topped buckwheat (*Eriogonum fasciculatum* var. *fasciculatum*), laurel sumac (*Malosma laurina*), white sage (*Salvia apiana*), lemonade berry (*Rhus integrifolia*), and bush mallow (*Malacothamnus fasciculatus*).

Survey methodology followed the U.S. Fish and Wildlife Service presence/absence protocol (1997), which requires three surveys at least one week apart. During each survey, all suitable CAGN habitats were surveyed. Taped vocalizations were used to elicit a response from CAGN in the area. Survey dates, times, and conditions are included in Table 1. A list of the 41 bird species observed during the surveys is included as Appendix A.

A CAGN pair was observed during all three surveys. The pair was observed in the northern segment of the survey area, primarily east of the access road. The male from this pair responded to playback from various locations throughout this habitat (Figure 2). No other CAGN were detected during the surveys.

Table 1. Survey Conditions During California Gnatcatcher Surveys at the Lake Hodges Water Quality and Quagga Mitigation Measures Project, City of San Diego, California

Date	4/13/15	4/22/15	5/4/15
Survey Time	0620-1025	0615-0940	0615-0920
Temp (°F) Start-End	59-66	61-57	61-62
Sky Cover (%)	100-0	100-100	100-100
Wind Speed (mph)	0-1 to 0-1	0-2 to 0-2	0-2 to 0-2
Personnel	Shannon Walsh (authorized individual TE-221290-3.1), Summer Adleberg, Sean Paver	Shannon Walsh (authorized individual TE-221290-3.1), Summer Adleberg	Shannon Walsh (authorized individual TE-221290-3.1), Summer Adleberg, Sean Paver

Please don't hesitate to call me at (619) 508-3803 if you have any questions.

I certify that the information in this survey report and attached exhibit fully and accurately represent my work.

Sincerely,



Shannon Walsh
Authorized Individual TE-221290-3.1

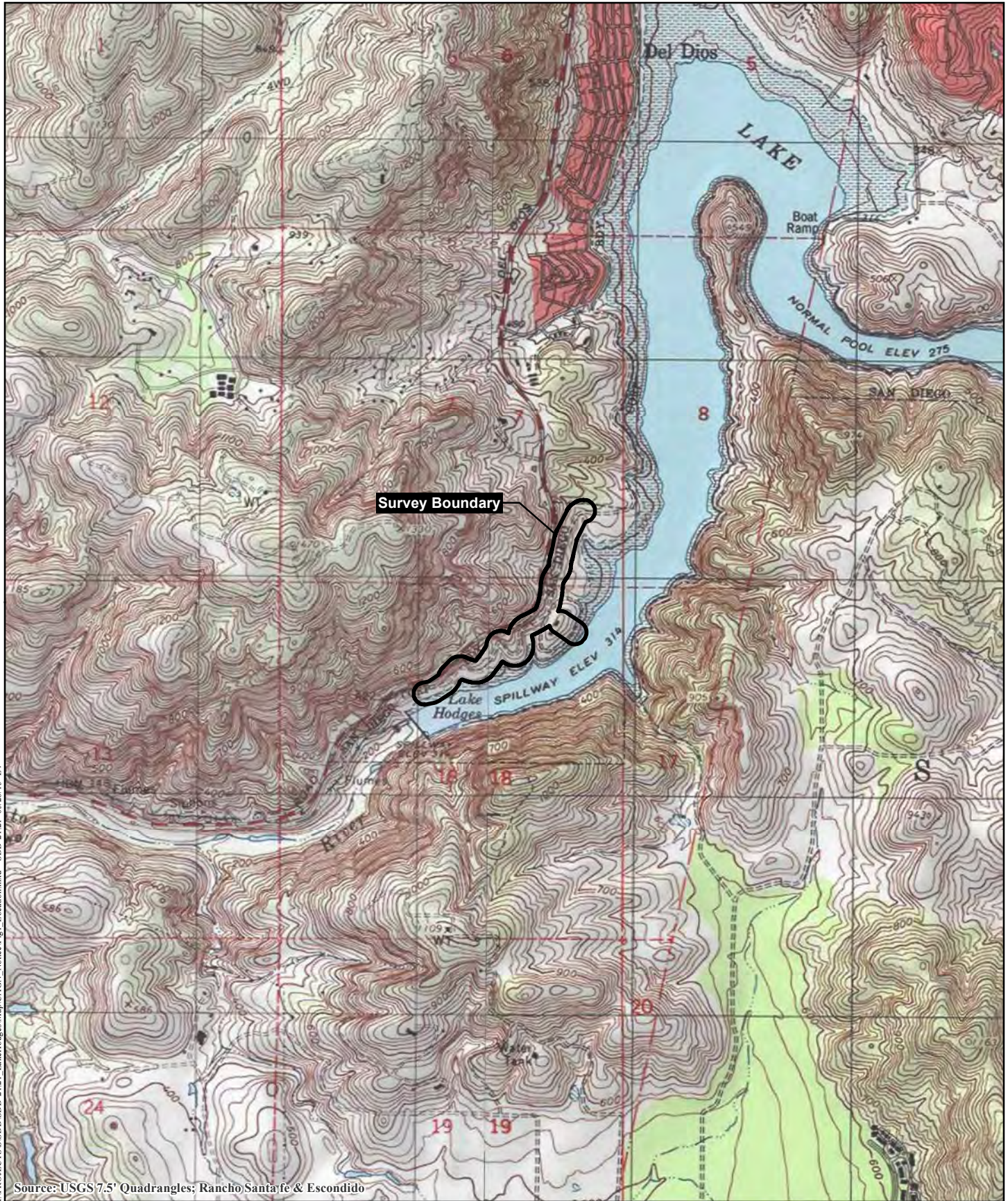
6/12/2015
Date

CC: Ms. Summer Adelberg, City of San Diego Public Utilities Department
Mr. Shelby Howard, HELIX Environmental Planning, Inc.

Enclosures: Appendix A – Bird Species Observed During Coastal California Gnatcatcher
Protocol Surveys at the Lake Hodges Water Quality and Quagga Mitigation
Measures Project, City of San Diego, California, 2015
Figure 1 – Project Location
Figure 2 – CAGN Observed Location

Appendix A. Bird Species Observed During Coastal California Gnatcatcher Protocol Surveys at the Lake Hodges Water Quality and Quagga Mitigation Measures Project, City of San Diego, California, 2015

Code	Common Name	Scientific Name
AMCO	American coot	<i>Fulica americana</i>
AMCR	American crow	<i>Corvus brachyrhynchos</i>
ANHU	Anna's hummingbird	<i>Calypte anna</i>
BASW	barn swallow	<i>Hirundo rustica</i>
BEWR	Bewick's wren	<i>Thryomanes bewickii</i>
BCNH	black-crowned night heron	<i>Nycticorax nycticorax</i>
BGGN	blue-gray gnatcatcher	<i>Polioptila caerulea</i>
BUSH	bushtit	<i>Psaltriparus minimus</i>
CAGN	California gnatcatcher	<i>Polioptila californica</i>
CALT	California towhee	<i>Melospiza crissalis</i>
CATH	California thrasher	<i>Toxostoma redivivum</i>
CAQU	California quail	<i>Callipepla californica</i>
CATE	Caspian tern	<i>Hydroprogne caspia</i>
CAKI	Cassin's kingbird	<i>Tyrannus vociferans</i>
CLSW	cliff swallow	<i>Petrochelidon pyrrhonota</i>
CORA	common raven	<i>Corvus corax</i>
COYE	common yellowthroat	<i>Geothlypis trichas</i>
DCCO	double-crested cormorant	<i>Phalacrocorax auritus</i>
FOTE	Forster's tern	<i>Sterna forsteri</i>
GBHE	great blue heron	<i>Ardea herodias</i>
GREG	great egret	<i>Ardea alba</i>
GRRO	greater roadrunner	<i>Geococcyx californianus</i>
HOOR	hooded oriole	<i>Icterus cucullatus</i>
HOFI	house finch	<i>Carpodacus mexicanus</i>
HUVI	Hutton's vireo	<i>Vireo huttoni</i>
KILL	killdeer	<i>Charadrius vociferus</i>
LEGO	lesser goldfinch	<i>Spinus psaltria</i>
MALL	mallard	<i>Anas platyrhynchos</i>
MODO	mourning dove	<i>Zenaida macroura</i>
NOMO	northern mockingbird	<i>Mimus polyglottos</i>
NUWO	Nuttall's woodpecker	<i>Picoides nuttallii</i>
OSPR	osprey	<i>Pandion haliaetus</i>
PHAI	phainopepla	<i>Phainopepla nitens</i>
RTHA	red-tailed hawk	<i>Buteo jamaicensis</i>
SNEG	snowy egret	<i>Egretta thula</i>
SOSP	song sparrow	<i>Melospiza melodia</i>
SPTO	spotted towhee	<i>Pipilo maculatus</i>
WEGR	western grebe	<i>Aechmophorus occidentalis</i>
WESJ	western scrub-jay	<i>Aphelocoma californica</i>
WIWA	Wilson's warbler	<i>Cardellina pusilla</i>
WREN	wrentit	<i>Chamaea fasciata</i>



Project Location

LAKE HODGES WATER QUALITY AND QUAGGA MITIGATION MEASURES PROJECT

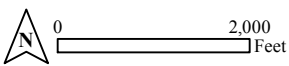
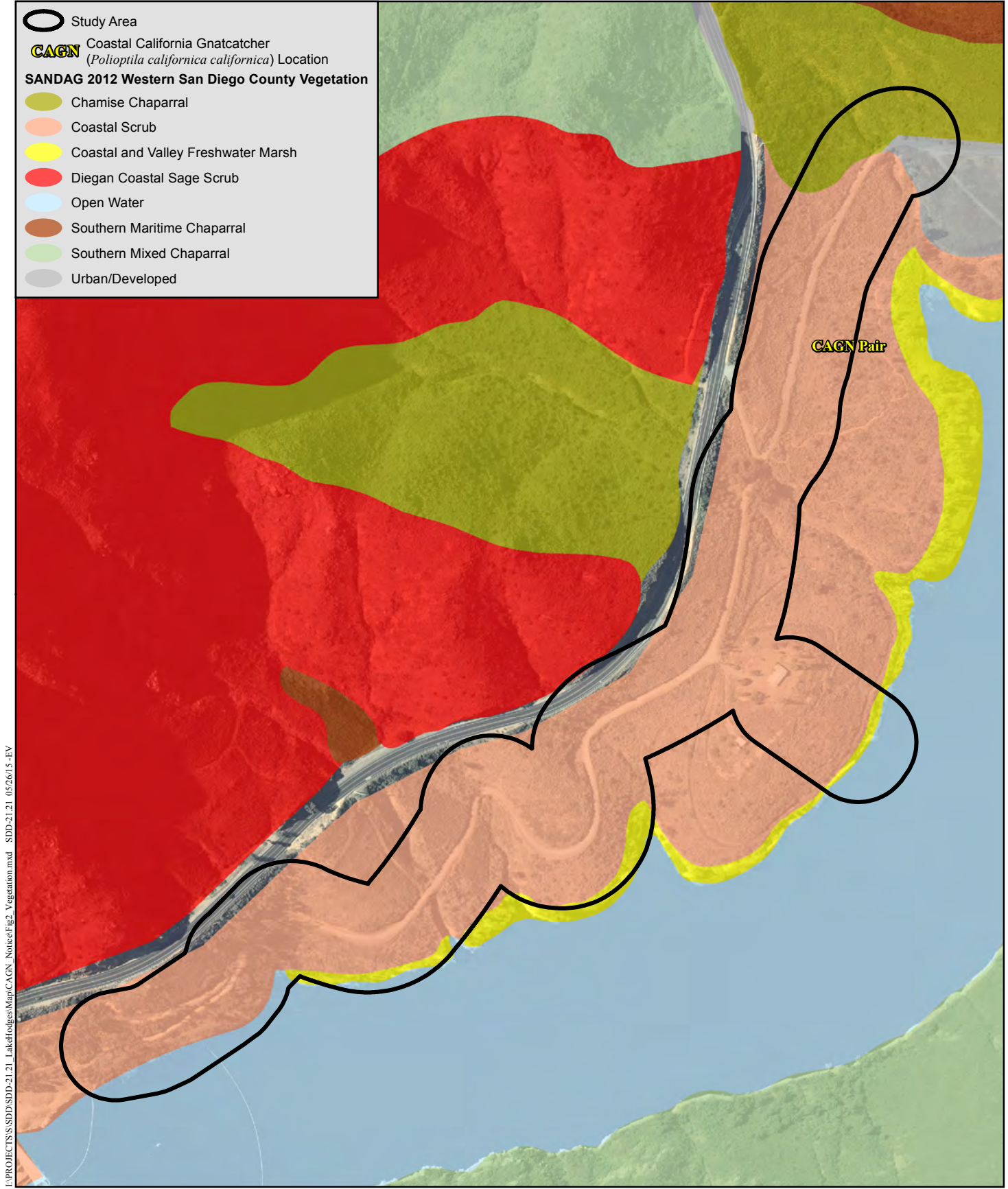


Figure 1



I:\PROJECTS\SDD\SDD-21.21_LakeHodges\Map\CAGN_Notice\Fig2_Vegetation.mxd SDD-21.21_05/26/15 -EV

Vegetation

LAKE HODGES WATER QUALITY AND QUAGGA MITIGATION MEASURES PROJECT

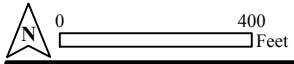
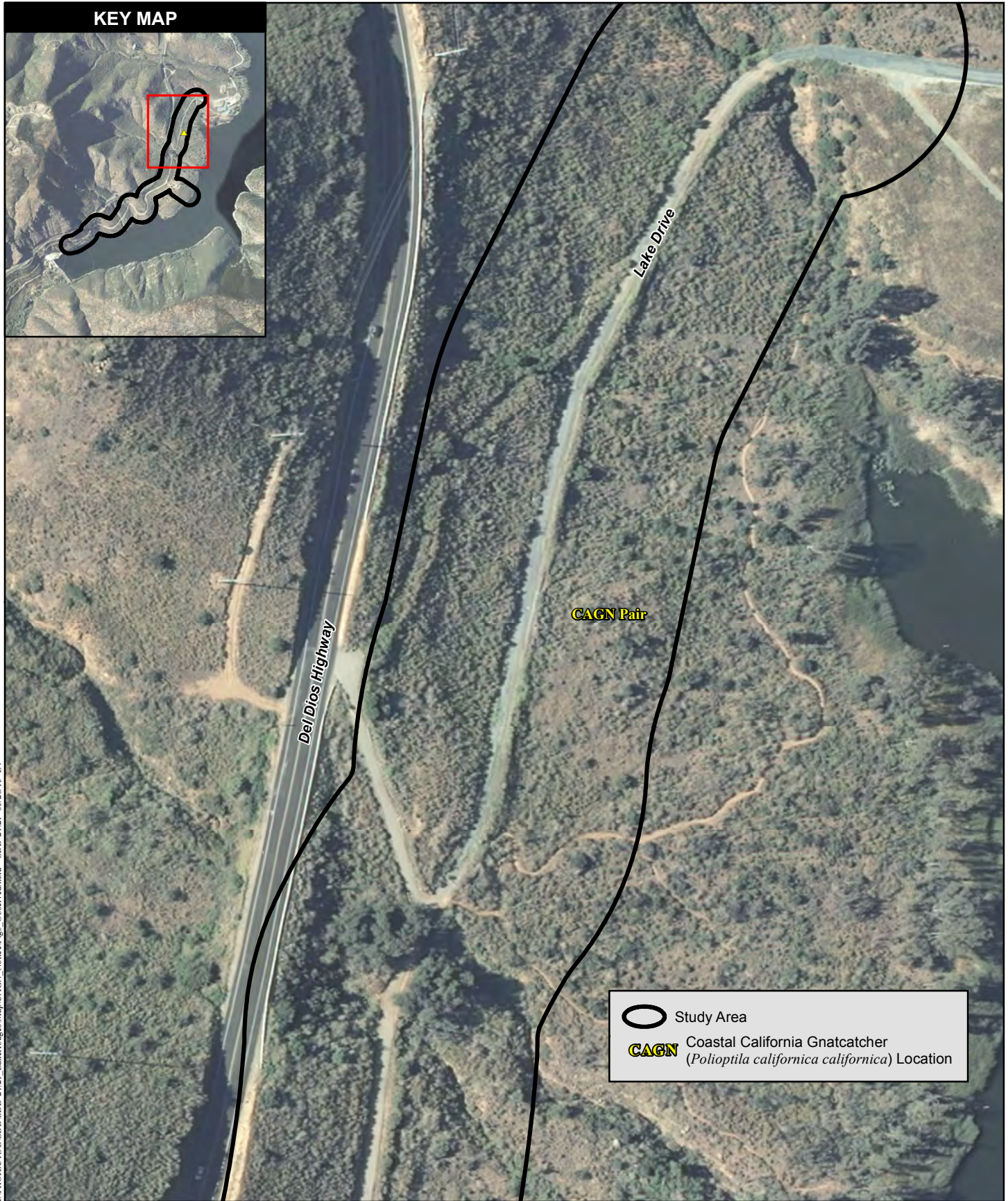


Figure 2



I:\PROJECTS\SDD\SDD-21.21_LakeHodgesMap\CAGN_Notice\Fig3_Observed.mxd SDD-21.21_05/26/15-FV

CAGN Observed Location

LAKE HODGES WATER QUALITY AND QUAGGA MITIGATION MEASURES PROJECT

Figure 3

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: _____ City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: _____
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____
Remarks: _____ _____ _____	

VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: _____ Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes _____ No _____
Herb Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				
Remarks: _____ _____ _____				

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR C)**
- 1 cm Muck (A9) **(LRR D)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR C)**
- 2 cm Muck (A10) **(LRR B)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) **(Nonriverine)**
- Sediment Deposits (B2) **(Nonriverine)**
- Drift Deposits (B3) **(Nonriverine)**
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) **(Riverine)**
- Sediment Deposits (B2) **(Riverine)**
- Drift Deposits (B3) **(Riverine)**
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____
 Water Table Present? Yes _____ No _____ Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Habitat Revegetation Project at Lake Hodges HOS Project

Scope of Work

The goal of this revegetation Project is to restore habitat temporarily impacted by these activities associated with the Lake Hodges HOS project through hydrseeding and installation of container plants and 25 months of maintenance.

Site Preparation

Site preparation will include initial weeding, trash removal, and any necessary repairs to erosion control materials. Site preparation shall commence once the Lake Hodges Project is complete and prior to the rainy season of October 1. Trash and weed debris collected from the project site shall be disposed of at a legally acceptable landfill facility.

Plant Installation and Hydroseed

Planting pits for container plants shall be a minimum width of two times the root ball. All planting pits shall be filled with water and allowed to completely drain prior to plant installation. After the planting pits have been presoaked, the holes will be backfilled to the appropriate planting depth and plants will be set in the center of the hole, half of the hole will be backfilled, and thoroughly apply more water. Once the water has settled, the remainder of the planting hole shall be backfilled and tamped down to remove air pockets. Immediately after planting, each container plant will be watered until the soil around the roots is moist from the bottom of the hole to the top of the ground. A watering basin, approximately twice the size of the plant canopy shall be created. A mulch layer will be applied to retain soil moisture in the planting basin.

All plants shall have originated from seed or cuttings obtained from San Diego County locations and within the same watershed (San Diego River watershed) where possible. All plants shall have been grown under climatic and in soil conditions comparable to those of the project site.

Planting Palette 1		
Common Name	Species	Number (1 gallon)
California sagebrush	<i>Artemisia californica</i>	12
Brittlebush	<i>Encelia californica</i>	8
California buckwheat	<i>Eriogonum fasciculatum</i>	12
Black sage	<i>Salvia mellifera</i>	8
Goldenbush	<i>Isocoma menziesii</i>	10
	<u>Total</u>	50

The temporarily impacted areas shall be hydro seeded with an appropriate seed mix (see below) and a soil mulch taccifer immediately following construction activities. For areas where the hydro mulching truck cannot reach the seed shall be spread by hand and raked into the soil. Watering of the seeding areas shall occur as-needed.

Hydroseed Mix 1		
Common Name	Scientific Name	Seed Mix - lbs/acre
Deer weed	<i>Acmispon glaber</i>	6
Coastal sagebrush	<i>Artemisia californica</i>	5
Tarweed	<i>Dienandra (hemizonia) Fasciculata</i>	5
California buckwheat	<i>Eriogonum fasciculatum</i>	6
Golden yarrow	<i>Eriophyllum Confertiflorum</i>	4
Spreading goldenbush	<i>Isocoma Menziesii</i>	3
Purple needlegrass	<i>Stipa Pulchra</i>	4
Black sage	<i>Salvia Mellifera</i>	4
Total pounds	N/A	37

Supplemental manual irrigation will be required for plant establishment. After the plant establishment period, if precipitation amounts are less than average or plants appear to be dry or dying hand watering or use of a watering truck may be required. Supplemental manual irrigation will be implemented if deemed necessary by the Project Biologist.

Maintenance

Maintenance to be performed will include removal of trash and debris from the site, watering of container plants as necessary, erosion control repairs, and removal of non-native plant species from the site. Trash and weed debris collected from the project site shall be disposed of at a legally acceptable landfill facility.

Success Criteria

All areas within the temporarily disturbed habitat shall demonstrate no erosion after 25 months. All areas shall achieve native cover equal to the adjacent habitat. No areas shall support invasive weeds or perennial weeds over 1% or annual weeds over 10%. The City shall be responsible for meeting the success goals.

Permit Conditions

The Project is located in an environmentally sensitive area and any work associated with the revegetation area must remain in the designated locations. All work performed for the Project must adhere to any and all applicable permit conditions.



Figure 6 - Site 2
Lake Hodges HOS Project: Revegetation Map

- Liquid Oxygen Storage Facility and Electrical Equipment for submersible pump
- Fire Buffer 50ft Radius from perimeter of Liquid Oxygen Storage Facility
- Speece Cone HOS
- Revegetation Area
- Trench
- Power and Oxygen Cable

