Biological Resources Evaluation for the Dos Osos Reservoir Replacement Project Orinda, California

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1.0 INTRODUCTION

East Bay Municipal Utility District (EBMUD) biologists conducted a biological resources evaluation for the EBMUD's Dos Osos Reservoir Replacement Project (Project) in the City of Orinda (Contra Costa County), California. This report describes the findings of site assessments, which evaluated the Project for (1) the potential to support special status species or their habitats; and (2) presence of other sensitive biological resources protected by local, state, and federal laws and regulations. This report also describes potential impacts to special status species and sensitive biological resources that may occur as a result of the Project and lists potential measures that may compensate for those impacts. This biological resources evaluation provides general information on the potential presence of sensitive species and habitats, for the purpose of guiding the CEQA process. Protocol level surveys for listed species may be required for Project approval by local, state, or federal agencies. Limited surveys were conducted as part of this evaluation, primarily to detect the presence of rare plants. This evaluation is based on information available at the time of the assessment and on site conditions that were observed on the dates of the site visits.

1.1 Project Setting

The Project is located east of Eureka Peak in the City of Orinda, Contra Costa County (Figure 1). The existing Dos Osos Reservoir is on the margins of a residential community and is bordered by homes to the north and EBMUD-owned watershed lands to the south. The existing reservoir, constructed in 1955, consists of a 0.24 million gallon (MG) steel welded tank on a 0.2 acre paved foot print with access off a private gravel road at 8 Los Norrabos in the El Toyonal neighborhood (Figure 1). The new dual Dos Osos Reservoirs site is located within EBMUD watershed lands approximately 300 feet southwest of the existing reservoir. The new dual reservoirs site is in hilly grazed annual grassland currently accessible by an unpaved fire trail. The existing reservoir is located at the margin of the annual grassland and coast live oak woodland. The Dos Osos Pumping Plant is located in a residential neighborhood 1,100 feet to the north of the existing reservoir at 263 El Toyonal. The pumping plant is bordered by homes and coast live oak woodlands. The existing Dos Osos Reservoir site, the new dual reservoir site and the pumping plant site are collectively referred to as the Project site throughout this document.

1.2 Proposed Project Description

EBMUD's Water Distribution Planning Division (WDPD) conducted a regional study of water infrastructure to evaluate the need to rehabilitate and/or replace aging infrastructure, improve water quality operations efficiency, and improve domestic and emergency water service reliability. The study recommended the replacement of the 0.24 MG Dos Osos Reservoir, which is over 60 years old and near the end of its useful life (EBMUD 2015). Currently, the steel welded tank shell requires recoating due to its age and condition. The corrugated metal roofing, roof frame and stairs leading to the roof all require replacement. The Dos Osos Reservoir is approximately 8 times larger than needed to provide water to the 82 homes it supplies. Excess storage and low demands within the pressure zone have led to water quality operational challenges in winter months due to poor water turnover and low chlorine residual.

To address these deficiencies, the existing reservoir will be replaced with dual 0.12-MG steel bolted tanks at a 70-foot higher elevation on adjacent EBMUD-owned watershed property (Figure 2). The new dual tanks will be located near the northern perimeter of the EBMUD watershed parcel approximately 300 feet southwest of the existing reservoir. The dual steel-bolted reservoirs will be approximately 21 feet high with approximate diameters of 33 feet. The tanks will be spaced approximately 15 feet apart. Each reservoir will be equipped with a 12'x12' valve pit, sample and chemical station, cathodic protection panel, Remote Telemetry Unit (RTU) panel with associated 10-ft antennas on each roof, stairway, and fall protection. The reservoirs will have aluminum dome roofs and will be painted green. The foot print of the new reservoir tank site will be approximately 0.2 acres.

To provide year-round access to the proposed reservoir location, an approximately 800-foot long, asphalt concrete access road (maximum slope 15%) will be constructed starting at the private Los Norrabos roadway, continuing uphill from the existing Dos Osos Reservoir entrance (Figure 2.). At approximately 100 feet upslope of the existing reservoir entrance, the proposed access road will turn south just past the Dos Osos Reservoir parcel line to enter EBMUD watershed lands. Once inside watershed lands, the access road will continue southerly upslope before switching back to meet the existing EBMUD fire road where it will follow the fire road for approximately 260 feet before reaching the proposed reservoir site. Roughly 5 trees will need to be removed for the construction of the proposed access road. The foot print of the paved access road will be approximately 0.2 acres.

Approximately 800 feet of 12-inch steel pipeline will connect the dual reservoirs to the existing inlet-outlet line in Los Norrabos. The pipeline will follow the proposed access road alignment. An 8-inch steel overflow line will also be installed under the road. The overflow line will run from the dual reservoirs along the access road alignment for approximately 700 feet before turning northeast for 50 feet to connect to the existing Dos Osos Reservoir 8-inch cast-iron overflow line. The proposed overflow line will connect to the existing Dos Osos Reservoir overflow line at approximately 250 feet above the existing rock rip-rap outfall (Figure 2).

Two earthen berms will be constructed to screen the dual reservoirs from the northeastern and northwestern vantage points. The two proposed earthen berms will be a) north of the proposed dual reservoirs site, parallel to the parcel perimeter, to screen views from properties to the north; and b) northeast of the proposed dual-reservoirs site, between the new dual reservoirs and the existing fire access road, parallel to the fire access road, to screen long-distance views from residences on Los Norrabos and viewpoints east of Camino Pablo in the City of Orinda. The berms and the area upslope of the retaining wall will be planted with native trees for screening.

The existing 0.24-MG Dos Osos Reservoir, located at 8 Los Norrabos, will be demolished upon completion of construction and successful testing of the new dual Dos Osos Reservoirs and Dos Osos Pumping Plant. All steel, roofing, stairs, concrete vaults, concrete foundations, electrical, and mechanical equipment will be removed from the site. Upon completion of all demolition work, the valve pit will be backfilled, and the site will be graded and compacted.

The Dos Osos Pumping Plant, located at 263 El Toyonal, will be upgraded with pump units that can accommodate a higher total dynamic head that will result from the increased elevation of the new tanks. The existing backup six-inch pressure-regulating valve inside the Dos Osos Pumping Plant structure will be opened and put into service. This pressure-regulating valve or regulator (known as the Westside Regulator) will be a dedicated emergency valve to provide fire flow to the lower Westside Pressure Zone from the new dual Dos Osos Reservoirs. A portable pump will be installed at the Dos Osos Pumping Plant site during the upgrade of the pump units to prevent disruptions in water service. Due to difficult access for fuel trucks and the proximity to a quiet residential community, an electric portable pump will be used at this site. Upgrades to the Dos Osos Pumping Plant will occur within the existing structure and no changes will be made to the exterior foot print. An existing 0.75-inch air valve will be upgraded with an above-grade, 0.75-inch, slow-venting air valve at the intersection of Alta Vista and Lomas Contadas. The valve will be replaced by hand and no ground disturbance will occur.

Excavation and grading will occur to create a pad for the new tanks and for the construction of the new roadbed. Heavy equipment anticipated to be used during construction include: backhoes, excavators, hoe rams, jack hammers, bulldozers, front-end loaders, fork lifts, flatbed delivery trucks, asphalt pavers, vibratory compactors, rollers, street sweeper, water trucks, shotcrete and concrete trucks, high lift crane, various passenger vehicles, electric portable pumps, and truck-mounted equipment for soil nail installation and welding of pipelines. The construction foot print for the project will be approximately 0.5 acres. Construction is anticipated to begin 2023. The Project will take approximately 1.5 years to complete.

2.0 REGULATORY BACKGROUND

The following sections explain the regulatory context of the biological evaluation, including applicable laws and regulations that were applied to the field investigations and analysis of potential Project impacts.

2.1 Special Status Biological Communities

Special status biological communities include communities and habitats that fulfill special functions or have special values, such as wetlands, streams, and riparian habitat, and sensitive natural plant communities. These communities and habitats are protected under federal regulations such as the Clean Water Act, state regulations such as the Porter-Cologne Act, the California Department of Fish and Wildlife (CDFW) Streambed Alteration Program, the California Environmental Quality Act (CEQA), or local ordinances or policies (e.g. City or County Tree Ordinances or General Plan Elements). Non-sensitive biological communities are not afforded special protection under CEQA, and other state, federal, and local laws, regulations

and ordinances. However, these communities may provide suitable habitat for some special status plant or wildlife species.

Waters of the United States

The U.S. Army Corps of Engineers (Corps) regulates "Waters of the United States" under Section 404 of the Clean Water Act (CWA). "Waters of the U.S." are defined broadly as waters susceptible to use in commerce, including interstate waters and wetlands, all other waters (intrastate waterbodies, including wetlands), and their tributaries (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands stated in the Corps Wetlands Delineation Manual (Environmental Laboratory 1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that are inundated for sufficient duration and depth to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as "other waters" and are often characterized by an ordinary high water mark. Other waters, for example, generally include lakes, rivers, and streams. The placement of fill material into "Waters of the U.S." generally requires an individual permit, nationwide permit or letter of permission from the Corps under Section 404 of the CWA.

Waters of the State

The term "Waters of the State" is defined by the Porter-Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The California State Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope, but has special responsibility for wetlands, riparian areas, and headwaters. These waterbodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. RWQCB jurisdiction includes "isolated" wetlands and waters that may not be regulated by the Corps under Section 404. "Waters of the State" are regulated by the RWQCB under the State Water Quality Certification Program which regulates discharges of fill and dredged material under Section 401 of the CWA and the Porter-Cologne Water Quality Control Act. Projects that require a Corps permit, or fall under other federal jurisdiction, and have the potential to impact "Waters of the State," are required to comply with the terms of the Water Quality Certification determination. If a project does not require a federal permit, but does involve dredge or fill activities that may result in a discharge to "Waters of the State," the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements.

Streams, Lakes, and Riparian Habitat

Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by CDFW under Sections 1600-1616 of the State Fish and Game Code. Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term stream, which includes creeks and rivers, is defined in the California Code of Regulations as follows: "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation" (14 CCR 1.72). In addition, the term stream can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches,

and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG ESD 1994). Riparian is defined as, "on or pertaining to, the banks of a stream." Therefore, riparian vegetation is defined as, "vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself" (CDFG ESD 1994). Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFW.

Sensitive Natural Communities

Other sensitive biological communities not discussed above include habitats that fulfill special functions or have special values. Natural communities considered sensitive are those identified in local or regional plans, policies, regulations, or by the CDFW. CDFW ranks sensitive communities as "threatened" or "very threatened" and keeps records of their occurrences in its California Natural Diversity Database (CNDDB). Sensitive plant communities are also identified by CDFW on their List of California Natural Communities Recognized by the CNDDB. Impacts to sensitive natural communities identified in local or regional plans, policies, and regulations or by the CDFW or the U.S. Fish and Wildlife Service (USFWS) must be considered and evaluated under CEQA (California Code of Regulations: Title 14, Div. 6, Chap. 3, Appendix G).

Wildlife Movement Corridors

Impacts that substantially interfere with the movement of any native fish or wildlife species must be considered under CEQA. Wildlife movement corridors are considered sensitive by resource and conservation agencies. In general, any activities in or adjacent to defined wildlife movement corridors that could potentially disturb, restrict movement or activity, disrupt natal areas, or facilitate increased predation of wildlife species may be considered a significant adverse impact.

Wildlife movement corridors are defined as areas that connect suitable wildlife habitat areas in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features such as canyon drainages, riparian areas and ridgelines facilitate wildlife movement. Areas that are contiguous with adjacent open space may also provide corridors for wildlife travel. Wildlife movement corridors act as habitat linkages that allow access to mates, food, and water. Corridors also allow the dispersal of individuals away from high population density areas and facilitate gene flow between populations (Beier and Loe 1992). Impacts to wildlife movement corridors can perpetuate habitat fragmentation by disrupting habitat linkages, which increase a local population's vulnerability to extirpation.

2.2 Special Status Species

Special status species include those plants and wildlife species that have been formally listed, as endangered or threatened, or are candidates for such listing under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA). Plants and animals considered "fully protected" or "species of special concern" by CDFW are also considered special status species. Birds, roosting bats and rare or unusual plants are also afforded special consideration.

Federal Endangered Species Act

The USFWS and the National Marine Fisheries Service (NMFS) oversee implementation of the ESA. The USFWS has jurisdiction over plants, wildlife, and most freshwater fish. The NMFS has jurisdiction over anadromous fish, marine fish and mammals. Per the ESA it is illegal to take Endangered or Threatened species. "Take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect species. Take of listed species can be authorized through either the Section 7 consultation process for actions undertaken by federal agencies, or through the Section 10 permit process for actions undertaken by non-federal agencies where a Section 404 permit or other federal approval is not required.

Section 7 of the Act mandates that all federal agencies consult with the USFWS and NMFS to ensure that federal agencies' actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species. Critical habitat refers to areas occupied by a listed species or locations essential to the conservation of a listed species that may require special management considerations. The ESA prohibits the take of any fish or wildlife species listed as threatened or endangered, including the destruction of habitat that could hinder species recovery. Section 7 consultation with USFWS or NMFS is required for projects that have a "federal nexus" if the project may affect a listed species or their habitat.

Section 10 of the ESA requires the issuance of an "incidental take" permit before any public or private action may be conducted that would potentially take an Endangered or Threatened species. The permit requires preparation and implementation of a habitat conservation plan that would offset the take of individuals that may occur, incidental to implementation of the project, by providing for the overall preservation of the affected species through specific habitat management and mitigation measures.

California Endangered Species Act

The CESA states that all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, and plants, and their habitats, threatened with extinction and those experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation, will be protected or preserved. Private developers whose projects do not involve a state lead agency under CEQA may not take a listed species without formally consulting with the CDFW and agreeing to measures that will limit impacts to the listed species. CDFW also encourages informal consultation on any project that may affect a candidate species. Incidental take may be permitted for CESA listed species under section 2081 of the Fish and Game Code. Appropriate mitigation to offset impacts to listed species is required to obtain CESA incidental take permits. Section 2080.1 allows an applicant who has obtained a federal incidental take statement pursuant to an ESA Section 7 consultation, or a federal Section 10(a)(1)(B) incidental take permit, to request a consistency determination from CDFW that authorizes take under the CESA.

California Environmental Quality Act

CEQA Guidelines (Section 15065(a)) indicate that impacts to state and federally listed rare, threatened, or endangered plants or animals are significant. Impacts to species that meet certain criteria but are not officially listed may also be considered significant. This includes

ranks 1A, 1B, and 2 of the CNPS Inventory of Rare and Endangered Vascular Plants of California, which qualify for listing by CDFW. CEQA Guidelines Section 15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria, as in the case of ESA and CESA "candidate species". CDFW Species of Special Concern, USFWS Birds of Conservation Concern and sensitive species included in USFWS Recovery Plans may also receive consideration under CEQA. Agencies must specifically address potential impacts to sensitive species and provide mitigation measures if the impact is significant.

Migratory Bird Treaty Act

Most birds in the United States, including non-status species, are protected by the Migratory Bird Treaty Act of 1918. Under this legislation, destroying active nests, eggs, and young is illegal. Additional protection is given under the federal Bald Eagle Protection Act (e.g., bald eagle, golden eagle), under CEQA Section 15380(d) and under California Fish and Game Code Section 3503.

2.3 Conservation Plans

Under CEQA, the lead agency must determine if a project will conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP) or other approved local, regional, or state habitat conservation plan.

An HCP is a binding long-term agreement between the applicant and the USFWS to avoid, minimize, and mitigate for potential impacts to federally-listed threatened and endangered species. Once an HCP is adopted, an incidental take permit is issued, which authorizes lawful activities to take place in the presence of listed species. No Surprises assurances are provided by the government to non-Federal landowners that if "unforeseen circumstances" arise, the Services will not require additional commitments or restrictions beyond the level agreed to in the HCP.

An NCCP identifies and provides for the regional protection of plants, animals, and their habitats, while allowing compatible and appropriate economic activity. The NCCP process enables agencies, local jurisdictions, and other interested parties to work cooperatively with CDFW to protect ecosystems at the landscape scale to conserve multiple species. NCCP partners set aside habitat areas with high conservation values, which may not be developed, and execute management and monitoring plans for these protected areas. In exchange, the program fosters economic growth by allowing approved development in areas of lower conservation value.

2.4 Local Policies and Ordinances

The City of Orinda General Plan was adopted in 1987. Conservation goals within the plan include: maintaining wildlife by preserving habitats and minimizing impacts to creeks and reservoirs. Applicable guiding policies listed within the plan include: 1) preservation of rare and endangered species; 2) preservation of valuable wildlife habitats and connecting open space to retain wildlife corridors; 3) preservation of oak woodlands and heritage trees; 4) protection of

creeks and riparian areas from pollution, erosion and siltation; and 5) support the preservation of EBMUD watershed lands and retain existing recreational open space (City of Orinda 1987).

The Contra Costa County Ordinance Code has provisions for the protection of a wide range of native tree species including heritage trees (CCC 2015). The code protects trees in areas: designated as visually significant ridge line vegetation; adjacent to or part of a riparian, foothill woodland, oak savanna area; and within open space or recreational areas (CCC 2015).

Conflicts with any local policies or ordinances protecting biological resources are evaluated as part of the CEQA process. Pursuant to California Government Code Section 53091, EBMUD, as a local agency and utility district serving a broad regional area, is not subject to building and land use zoning ordinances (such as tree ordinances) for projects involving facilities for the production, generation, storage, or transmission of water. However, it is the practice of EBMUD to work with host jurisdictions and neighboring communities during project planning and to conform to local environmental protection policies to the extent possible.

3.0 METHODS

On June 9, June 29, and September 2, 2015, the Project site was traversed on foot to determine (1) plant communities present, (2) if existing conditions provide suitable habitat for any special status plant or wildlife species, and (3) if sensitive habitats are present. Three botanical surveys were conducted by a qualified botanist to determine presence/absence of rare plant species within the Project site. Surveys were coordinated with the bloom times of potentially occurring rare plant species and were conducted on June 29, 2015, March 3, 2016 and May 27, 2016. A habitat assessment was conducted by a qualified entomologist on January 21, 2016 to determine the suitability of the Project site to support the Bridge's coast range shoulderband snail (*Helminthoglypta nickliniana bridgesii*).

3.1 Biological Communities

Prior to the site visits, the climate, aspect and soils at the Project site were examined to determine if local conditions could support sensitive biological communities. The Biological communities present in the Project site were classified based on existing plant community descriptions described in *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988). When possible, these descriptions were supplemented with information provided in the California Wildlife Habitat Relationship System (2015). Variants of community types or non-vegetated areas are also specified. A description of the biological setting is provided in Section 4. Sensitive Biological communities identified in the literature review or observed onsite are described in Section 4. The presence or absence of sensitive plant communities and rare plant species was evaluated during botanical surveys.

The Project site was surveyed to determine if any wetlands, waters or riparian areas potentially subject to jurisdiction by the Corps, RWQCB, or CDFW were present. The assessment was based primarily on the presence of wetland plant indicator species and any observed indicators of wetland hydrology or wetland soils. The preliminary waters assessment was based primarily

on the presence of ponded areas or flowing water, or evidence indicating their presence such as a high water mark or a defined drainage course. The National Wetlands Inventory (USFWS NWI 2015) was also queried to identify nearby wetlands or waters that may be affected by the Project.

3.2 Special Status Species

The potential for special status species to occur in the Project site was evaluated by first determining which special status species occur in the vicinity of the Project site through a literature and database search. Special status species included those listed as endangered, threatened, rare or proposed for listing by USFWS or CDFW. California Native Plant Society lists (1B and List 2) and locally rare plant lists were also reviewed. Database searches for known occurrences of special status species focused on a 5 mile area around the Project site. The following sources were reviewed to determine which special status plant and wildlife species have been documented to occur in the vicinity of the Project site:

- California Natural Diversity Database records (CNDDB 2015)
- Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2015)
- Special Animals List (CDFW 2015)
- USFWS Official Species List (USFWS 2015)
- CNPS Electronic Inventory records (CNPS 2015)
- CNPS list of Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties (Lake 2010)
- EBMUD Managed Species Database (EBMUD FWD 2015)

The Project site was surveyed to search for suitable habitats for species identified in the literature review as occurring in the vicinity. The potential for each special status species to occur in the Project site was then evaluated according to the following criteria:

1) **No Potential**. Habitat on and adjacent to the Project site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
2) **Low Potential**. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the Project site is unsuitable or of very poor quality. The species is not likely to be found on the site.
3) **Moderate Potential**. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the Project site is unsuitable. The species has a moderate probability of being found on the site.
4) **High Potential**. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the Project site is highly suitable. The species has a high probability of being found on the site.
5) **Present**. Species is observed on the Project site or has been recorded (i.e. CNDDB, other reports) on the Project site recently.

Site visits and habitat assessment surveys were conducted to identify whether suitable habitat for special status species occurs in the Project site. Site visits and habitat

assessments are not intended to determine the actual presence or absence of a species; however, if a special status species was observed, its presence was recorded and discussed. Targeted rare plant surveys were conducted to detect the presence of sensitive plants identified as having potential to occur in the literature review. Species found to have potential to occur at the Project site based on the literature review, habitat assessments and botanical surveys are discussed in Section 4.

3.3 Conservation Plans

The Project was evaluated to determine if it fell within an area covered under an HCP or NCCP. The appropriate agencies were contacted to determine if activities were covered under or conflicted with existing plans.

4.0 FINDINGS

The following sections present the findings of the literature review, site visits, habitat assessments and botanical surveys conducted for the Project.

4.1 Biological Setting

Climate

The Project site is characterized as having a Mediterranean climate with cool, rainy winters and warm, dry summers. The Project is located on the east slope of Eureka Peak in the Berkeley Hills. Berkeley Hills are a range of the Pacific Coast Ranges that extend north from Castro Valley to San Pablo Bay. The Berkeley Hills affect the local climate by their elevation and situation. The hills block the oceanic marine layer, which is most developed during the summer months, creating a "fog shadow" effect on the areas directly east. Areas to the east of the hills are consequently warmer than areas west of the hills. In winter, the reverse occurs, with the fog confined to areas east of the hills. The elevation of the hills also has an effect on rainfall, increasing the amount of precipitation in Orinda compared with surrounding areas east of the Hills. The average annual rainfall for Orinda is 24 inches. In the spring and fall, hot, dry, and gusty winds blow across the ridges of the Berkeley Hills, posing a significant fire danger. Average temperatures in Orinda range from 55°F in winter and 71°F in summer. Orinda is located in a hilly area and microclimates create temperature variations between short distances.

Soils

The Project site is within a steep loamy upland area at the crest of the Berkeley Hills. The Berkeley Hills are overlain by Tertiary sedimentary and volcanic rocks. No unique soil types (e.g., limestone, serpentine, gabbro) were identified in the Web Soil Survey near the Project site (NRCS 2015). Soils include Los Gatos and Gilroy clay loam. Los Gatos soils are found on steep to very steep areas at elevations of 200 to 4,000 feet. They are formed in residuum from sandstone, shale and metasedimentary rock. The Los Gatos series is well drained and have a high run-off rate with moderate permeability. The surface and subsoils are moderately acidic. The Gilroy series consists of moderately deep, well drained soils that formed in material weathered from basic igneous and metamorphic rocks. The surface and subsoil are mainly

moderately acid to neutral throughout, tend to become less acid with depth and are moderately alkaline in some pedons just above the bedrock. The Gilroy series is well drained; with medium to rapid runoff; moderately slow permeability, and a moderate to moderate-high erosion rating depending on the steepness of slopes. These types of native soils may support special status plant species.

Vegetation and Habitat Communities

The Project site is primarily within an annual grassland habitat as defined by Mayer and Laudenslayer (1988). Annual grassland habitats are open grasslands composed primarily of introduced annual grass species. Vegetative structure in annual grasslands depends largely on weather patterns and livestock grazing. Grass species composition is greatly influenced by seasonal and annual fluctuations in weather patterns. Grass species observed on site were typical of annual grasslands and included: wild oats (*Avena fatua* and *Avena barbata*), soft chess brome (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*) and Italian wildrye (*Festuca perennis*). Common forbs included California poppy (*Eschscholzia californica),* rough cat's ear (*Hypochaeris radicata*) and longbeak stork's bill (*Erodium botrys*).

Many wildlife species use annual grasslands for foraging. Special grassland habitat features such as cliffs, caves, ponds, or woody plants are used for breeding, resting, and escape cover (Mayer and Laudenslayer 1988). Wildlife characteristic of grasslands include: western fence lizard, garter snake, and western rattlesnake, California ground squirrel, Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), badger (*Taxidea taxus*), and coyote (*Canis latrans*). Sensitive birds known to breed in annual grasslands include the burrowing owl (*Athene cunicularia*) and short-eared owl (*Asio flammeus*). Grasslands provide key foraging habitat for numerous raptor species.

The grassland is bordered by coast live oak woodland to the north and east. The existing reservoir is located on the margin of annual grassland and coast live oak woodland habitat. The Dos Osos Pumping Plant is also surrounded by coast live oak woodland habitat. Both sites are bordered by Monterey pines (*Pinus radiata*) that were planted in these locations for screening. From Sonoma County south, coastal oak woodlands are usually dominated by coast live oak (*Quercus agrifolia*) (Mayer and Laudenslayer 1988). Big leaf maple (*Acer macrophyllum*), valley oak (*Quercus lobata)*, California bay (*Umbellularia californica*), madrone (*Arbutus menziesii)* and elderberry (*Sambucus nigra*) may also be present. Typical understory plants in dense coast live oak woodlands include shade tolerant shrubs such as California blackberry (*Rubus ursinus*), creeping snowberry (*Symphoricarpos mollis*), coffeeberry (*Frangula californica)*, toyon (*Heteromeles arbutifolia*), and herbaceous plants such as bracken fern (*Pteridium aquilinum var. pubescens*), poison oak (*Toxicodendron diversilobum)*, California polypody (*Polypodium californicum*), and miner's lettuce (*Claytonia perfoliata*).

Oak woodlands are considered vital habitats for the conservation of many bird and mammal species. Over 110 species of birds have been found to nest in coast live oak habitats (Mayer and Laudenslayer 1988). At least 60 species of mammals use oak habitats in some way. Oak trees

provide acorns, snags, trunk cavities, and litter that are used for food, nesting and cover by many species. California quail (*Callipepla californica*), gray squirrels (*Sciurus griseus*), and black-tailed deer (*Odocoileus hemionus columbianus*) are often completely dependent on acorns in fall. California slender salamander (*Batrachoseps attenuatus*), ensatina (*Ensatina eschscholtzii*), and California newt (*Taricha torosa*) can be found underneath surface litter and logs in oak habitats. A variety of special-status bat species, such as the pallid bat (*Antrozous pallidus*), may roost in mature oak snags or cavities. The San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) dens in the blackberry and poison oak understory of this community. Coast live oak woodlands may provide migration and dispersal corridors for a variety of wildlife species.

Coyote brush scrub habitat is present to surrounding the Project site. Coyote brush scrub is a common and widespread scrub community found along the California coast, Coast Ranges and the Sierra Nevada foothills. Coyote brush scrub is characterized by the presence of coyote brush (*Baccharis pilularis*) and an indistinct assemblage of shrub, sub-shrub and herbaceous understory associates (Sawyer et al. 2009). These scrub types consist of low shrubs up to six feet tall with a well-developed herbaceous or low woody understory. Vegetative cover is usually dense with scattered grassy openings. Stands of coyote brush may transition to forest and woodland habitats or exist as persistent, relatively stable communities. The scrub patch adjacent to the site is in the late seral stage of succession, characterized by mature stands of coyote brush with emergent oak and bay trees. Characteristic scrub species include poison oak, California blackberry, California rose (*Rosa californica*), and poison hemlock (*Conium maculatum*) among others. Bush monkeyflower (*Mimulus aurantiacus*), deer weed (*Acmispon glaber)* and California sagebrush (*Artemisia californica*) are also often present in local coyote brush scrub habitats.

Scrub habitat provides foraging and nesting habitat for bird species that are attracted to ecotones or the scrub canopy such as: white-crowned sparrow (*Zonotrichia leucophrys*), California quail, California towhee (*Melozone crissalis*), dusky flycatcher (*Empidonax oberholseri*), wrentit (*Chamaea fasciata*), and the loggerhead shrike (*Lanius ludovicianus*). Mammals such as the San Francisco dusky-footed woodrat, brush rabbit (*Sylvilagus bachmani*), Botta's pocket gopher, deer mice (*Peromyscus maniculatus*) and gray fox (*Urocyon cinereoargenteus*) use this habitat for cover and foraging. Coyote brush scrub habitat provides habitat for reptiles such as common kingsnake (*Lampropeltis getula*), Alameda whipsnake and western fence lizard (*Sceloporus occidentalis*).

Ruderal habitat is present along the unpaved access road, fire road, adjacent to the pumping plant and within the existing tank site. Ruderal habitat occurs where native vegetation has been removed by grading or other surface disturbances and it is characteristic of roadsides and vacant lots. These areas often become recolonized by invasive exotic species, scattered shrubs and trees. Structures within ruderal areas can provide habitat for many native and non-native wildlife species that are adapted to human disturbance.

4.2 Sensitive Biological Communities

Wetlands, Waters and Riparian Habitat

No wetlands, waters or riparian areas under the jurisdiction of the Corps, RWQCB or CDFW occur within the Project site. The nearest waterway is an ephemeral unnamed drainage in the headwaters San Pablo Creek. The drainage is located 200 feet to the southeast of the Project site. The tributary connects to an underground segment of San Pablo Creek about a mile downstream at the Orinda Village shopping center.

The National Wetlands Inventory identified three freshwater emergent wetlands within a mile radius of the Project (USFWS NWI 2015). The nearest cattle stock pond is located 0.8 miles to the southeast of the Project site. No obligate hydrophytes were identified within the Project site.

Sensitive Natural Communities

A review of the CNDDB indicates that 2 sensitive natural communities occur within 5 miles of the Project site: Northern Maritime Chaparral and Serpentine Bunchgrass. Neither of these communities occurs at the Project site.

The Northern Maritime Chaparral community is a fairly open chaparral (50-80% cover, usually fairly easy to walk through). It is dominated by several narrowly restricted Manzanita or Ceanothus species, and associated with sandy substrates within the zone of coastal fog incursion, usually on rolling to hilly terrain. Fire appears necessary for continued reproduction. It occurs from Santa Cruz to Sonoma County near the coast, usually as islands in mixed evergreen Forests of coast live oak, redwood (*Sequoia sempervirens*), and douglas-fir (*Pseudotsuga menziesii)*, or adjacent to Northern Coastal Scrub (Holland 1986). Two northern maritime chaparral communities were identified in the CNDDB within 5 miles of the Project site. One is located in the East Bay Regional Park District's Huckleberry Preserve and the other is located on EBMUD property just south of the Briones Reservoir off Bear Creek Rd.

The Serpentine Bunchgrass Grassland community is dominated by perennial bunchgrasses such as *Bromus, Melica, Nassella, Poa, Calamagrostis,* and *Festuca* genera. Total cover typically is low, but is markedly dominated by native species. Serpentine soils are scattered widely through the Coast Ranges (Holland 1986). One serpentine bunchgrass community was identified in the CNDDB within 5 miles of the Project site. The community is located in Redwood Park, west of the Upper San Leandro Reservoir.

Wildlife Movement Corridors

The Project site is located along a ridgeline to the east of Siesta Valley on land protected by the East Bay Municipal Utility District. This area is situated between open space in the Berkeley Hills to the west and protected watershed lands to the east surrounding San Pablo and Briones Reservoirs. Siesta Valley borders the ridge above the Caldecott Tunnel, which acts as an important corridor for wildlife traveling north or south across Highway 24 (CCC 2001). The Caldecott corridor links Tilden, Wildcat Canyon and Siesta Valley to the north with Sibley, Huckleberry and Redwood Regional Parks to the south. Land above the Caldecott Tunnel is the

only significant point of passage for animals between the two large open space areas described above (CCC 2001).

The Project site falls within open space that contributes to the greater Caldecott wildlife corridor. This area connects outlying populations and supports dispersal through the Berkeley Hills. Mountain lions, coyotes, bobcat, gray fox, black tailed deer, small mammals and reptiles including the threatened Alameda whipsnake may utilize this habitat. Numerous species may move through the Project site for daily home range activities, such as foraging or escape from predators. The Project will not create a barrier to, or substantially interfere with wildlife movements through the Caldecott corridor. The small size and situation of the Project site makes it unlikely to significantly impinge on animal movements. The paved Project foot print is expected to replace less than 0.3 acres of grassland habitat. Areas with dense riparian or scrub habitat that provide cover for wildlife movement will not be significantly impacted. Coast live oak woodland canopy will be retained to the extent possible within the short section affected by the paved access road. Human disturbances from construction may have a temporary impact on animals dispersing or moving through this area during work hours. Long term impacts from human disturbance will be minimal because the tank will only be accessed a few times a month. The site borders a horse arena and residential neighborhood to the north, which contribute similar anthropogenic nuisances to wildlife.

4.3 Sensitive Plant Species

Appendix A describes all potentially occurring sensitive species from the CNDDB 5-mile query, USFWS list and EBMUD database query. Sensitive plant or animal species found within 1-mile of the Project are discussed individually below.

Appendix B lists the rare and endangered plant species queried from a nine quad search of the statewide CNPS Inventory (CNPS 2015). Locally rare, unusual or significant plants identified in the literature review as occurring in the Orinda Region area also listed in Appendix B (Lake 2010). None of the statewide or locally rare sensitive plant species identified in the literature review were observed at the Project site during botanical surveys. However, two additional locally rare plant species, the California ponysfoot and rayless arnica, were discovered and are described below. A letter describing rare plant survey results and a complete list of plants observed during botanical surveys can be found in Appendix C.

Bent-flowered fiddleneck (*Amsinckia lunaris*)
Status: Fed-None State-Special Plant CNPS-1B.2 ALA/CC-A2
Bent-flowered fiddleneck is an annual herb, less than 60 cm tall, that is endemic to California. It occurs in coastal bluff scrub, cismontane woodland, and valley and foothill grassland below 1,650 feet in elevation. The species blooms from March through June. Potential land use factors that might explain the species distribution patterns (e.g. grazing and fire regimes) need further investigation. There are two CNDDB records of this species within 1-mile of the Project site. One population is located along San Pablo Ridge, north of Vollmer Peak and South of Wildcat Canyon Rd. The other population is located west of Siesta Valley on a ridgeline near Grizzly Peak

Blvd. Both of these populations appear to be in grazed grasslands on EBMUD property. Habitat suitability for this species is moderate within the grasslands at the Project site. However, this species was not observed during botanical surveys and has no potential to occur (Parr 2016).

Pallid Manzanita (*Arctostaphylos pallida*)
Status: Fed-Threatened State-Endangered CNPS-1B.1 ALA/CC-A1
Pallid manzanita is a fire-adapted shrub that requires the maritime climatic influence. The plant grows to a height of 4 meters or more and flowers from December through March. The plant has a very limited distribution in Alameda and Contra Costa Counties. It is found in broad-leafed upland forests, closed cone coniferous forests, cismontane woodlands, chaparral and coastal scrub habitats. The largest, most dense stands occur in shales and cherts, with smaller populations in sandstones. Pallid manzanita often grow on rocky ridges and outcrops with little or no topsoil. Chaparral habitats on the shady side of ridges may also support the species.

No critical habitat for pallid manzanita has been designated. Based on CNDDB records, the closest known populations are located a little over two miles away north-west of the Project site in Tilden Regional Park. The next closest population is located in Sibley Regional Park 2.5 miles to the South of the Project site. No populations of pallid manzanita have been documented in the Siesta Valley Area. Habitat within the Project site is unsuitable for the species given the grassland community and clay soils present at the site. The species was not observed during botanical surveys and has no potential to occur (Parr 2016).

Rayless arnica (*Arnica discoidea*)
Status: Fed-None State-None CNPS-None ALA/CC-B
Rayless arnica is in the sunflower family. It is a rhizomatous perennial herb native to the western United States (iNaturalist 2015). The species is associated with foothill woodlands, forests and chaparral habitat. It blooms from April to June. It is an uncommon species with fewer than five populations known locally; however, all EBMUD East Bay watershed lands are considered within the natural range of the species. The species may be difficult to distinguish due to its floral characteristics. The species was observed during rare plant surveys and is present at the Project site (Parr 2016).

Oakland star-tulip (*Calochortus umbellatus*)
Status: Fed-None State-None CNPS-4.2 ALA/CC-A2
Oakland star-tulip is a perennial bulbiferous herb in the Lily family. The plant is found within chaparral, valley grassland, yellow pine forest and mixed evergreen forest. The plant has an affinity for serpentine soils. The species can be found in rocky gaps in chaparral communities and under tree or shrub canopy on moist hillsides. It blooms from March through May. The species is a California endemic found primarily in the San Francisco Bay area. The species is locally rare and is known to occur within the Orinda region (Lake 2010). There are two occurrences of Oakland star-tulip within EBMUD's managed species database, which are located 0.4 miles to the east of the Project site within coast live oak woodland. Habitat suitability for this species is moderate within the grassland, scrub and oak woodlands at the

Project site. However, this species was not observed during targeted botanical surveys and has no potential to occur (Parr 2016).

California ponysfoot (*Dichondra donelliana*)
Status: Fed-None State-None CNPS-None ALA/CC-A1
California ponysfoot is in the morning glory family. It is a creeping perennial herb occurring along the north coast, Sierra Nevada foothills, central coast and the San Francisco Bay Area. The species is associated with coastal prairie and northern coastal scrub communities. It is an uncommon species found on open slopes and in moist fields. It blooms from January through March. The species is likely often overlooked because of its diminutive nature and habit of growing in tall grasses (I. Parr, personal communication, August 7, 2015). Although the species is locally rare, it is not considered sensitive by CNPS. The species is not endemic to California and has not been confirmed to be a native species (I. Parr, personal communication, August 7, 2015). This species is considered locally rare with less than two known occurrences. The species was observed during rare plant surveys and is present at the Project site (Parr 2016).

Western leatherwood (*Dirca occidentalis*)
Status: Fed-None State-Special Plant CNPS-1B.2 ALA/CC-A2
This western leatherwood is a deciduous shrub occurring in closed-cone pine forest, north coastal coniferous forest, and wetland-riparian areas. It is endemic to the San Francisco Bay Area. It grows on moist and shaded slopes. Yellow flowers emerge prior to leafing from January to April. There are 28 occurrences in EBMUD's managed species database of the western leatherwood within a 1 mile radius of the Project site. The two clusters identified in the database are located 0.75 miles to the east and the west of the Project site. There are four records of the species in the CNDDB within a one mile radius. One of the CNDDB occurrence buffers overlaps the Project site; however, this occurrence was mapped as a "best guess" referencing a siting along the east slope of Eureka Peak. Habitat suitability for the species is moderate within the oak woodlands at the Project site. However, this species was not observed during botanical surveys, and has no potential to occur (Parr 2016).

Diablo helianthella (*Helianthella castanea*)
Status: Fed-None State-Special Plant CNPS-1B.2 ALA/CC-A2
Diablo helianthella is a perennial herb endemic to the San Francisco Bay Area, occurring in the Diablo Range, Berkeley Hills, and San Bruno Mountain. Diablo helianthella is associated with thin, rocky, well-drained soils. It is found in grassy openings in woodlands, chaparral, and coastal scrub, often at the transition zone between woodland and chaparral. The bloom period for the species is March through June. There are seven occurrences of the species within one mile of the Project site recorded in EBMUD's managed species database. The closest observation is 0.2 miles from the Project site. There are three occurrences in the CNDDB within one mile of the Project site. Habitat suitability for this species is moderate within the Project site within the woodland and grassland ecotone. However, this species was not observed during botanical surveys and has no potential to occur within the Project site (Parr 2016).

Santa Cruz tarplant (*Holocarpha macradenia*)
Status: Fed-Threatened State-Endangered CNPS- 1B.1 ALA/CC- A1
The Santa Cruz tarplant is an endangered annual herb endemic to Northern California. The plant likes to inhabit terraced locations of coastal prairie, coastal scrub and valley or foothill grasslands with sandy or clay soils at elevations below 700 feet (CNPS 2015). The plant blooms from June through October. All known extant populations within Contra Costa County are introduced (CNPS 2015). The last remaining natural population in the San Francisco Bay Area was extirpated by development in 1993 (CNPS 2015). The plant is threatened by urbanization, agriculture, non-native plants, and a lack of appropriate ecological disturbance (CNPS 2015).

The USFWS designated 2,902 acres of critical habitat for the species in Contra Costa, Santa Cruz, and Monterey Counties in October 2002. Primary constituent elements include: (1) Soils associated with coastal terraces prairies, including the Watsonville, Tierra, Elkhorn, Santa Inez, and Pinto series, (2) Plant communities that support associated species such as: *Nassella sp.(*needlegrass), *Danthonia californica*(California oatgrass), members of the genus *Hemizonia* (other tarplants), *Perideridia gairdneri* (Gairdner's yampah), *Plagiobothrys diffusus* (San Francisco popcorn flower), and *Trifolium buckwestiorum* (Santa Cruz clover), and (3) Physical processes, that maintain the soil structure and hydrology that produce the seasonally saturated soils.

An area designated as critical habitat is located on San Pablo Ridge within Wildcat Canyon Regional Park about 6 miles north-west of the Project site. The Project site does not fall within critical habitat for the species. All wild populations are extirpated in Contra Costa County and no propagation efforts have occurred in the Siesta Valley area that could provide a source of seeds to the site. The species was not observed during botanical surveys and has no potential to occur in the Project site (Parr 2016).

Tall Layia (*Layia hieracioides*)
Status: Fed-None State-None CNPS-None ALA/CC-A2
Tall layia is an annual herb in the daisy family. It is found in open, semi-shady, or disturbed sites. It can be found in coastal sage scrub, mixed evergreen forest, foothill woodland and chaparral communities. It flowers from April through July. It is endemic to California, where it is known from around the San Francisco Bay Area. The species is considered locally rare and is known to occur in the Orinda Region (Lake 2010). There are four occurrences of tall layia within EBMUD's managed species database. The closest observation is within a coast live oak woodland 0.3 miles from the Project site. Habitat suitability for the species is moderate in the Project site in the oak woodland and grassland ecotone. However, this species was not observed during botanical surveys and has no potential to occur within the Project site (Parr 2016).

Oregon meconella (*Meconella oregana*)
Status: Fed-None State-Special Plant CNPS-1B.1 ALA/CC – A2
Oregon meconella is a small annual herb native to Oregon, California, Washington and British Columbia. It is found within coastal prairie and coastal scrub habitats. It grows on sandy bluffs,

meadows and stream banks, at elevations of less than 1,000 feet (iNaturalist 2015). The plant blooms March through May. Flowers are white and extend from long, thin solitary stalks. The plant is often hidden among grasses at lower elevations. Five occurrences are known in California. The CNDDB has one occurrence of the plant located 0.7 miles to the north-west of the Project site. However, the mapped location is believed to be inaccurate. This plant community has been surveyed by EBMUD staff and the recorded location is within grassland and coyote brush ecotone on San Pablo Ridge, approximately 1.5 miles from the Project site (EBMUD FWD 2015). The population is located on a steep slope with numerous rocky outcrops. The plant was last observed in 2009. Habitat suitability is low within the Project site due to the absence of moist sandy soils. This species was not observed during botanical surveys and has no potential to occur within the Project site (Parr 2016).

Marin knotweed (Polygonum marinense)
Status: Fed-None State-None CNPS-3.1
Marin knotweed is an annual herb found in coastal salt or brackish marshes and swamps (CNPS 2015). The species blooms from April through October and grows to a maximum height near 40 centimeters. It is endemic to California, where it is known from just a few locations north and east of San Francisco Bay. The species is known from less than 20 occurrences and may be threatened by coastal development and foot traffic (CNPS 2015). The CNDDB buffer for this species encompasses the entirety of Oakland and the exact location is not mapped. This species has no potential to occur at the Project site because coastal marsh habitat is absent.

California skullcap (*Scutellaria californica*)
Status: Fed-None State-None CNPS-None ALA/CC-A2
The California skullcap is a perennial herb in the mint family. It is a small plant growing up to half a meter high, bearing small, white or yellowish snapdragon-like flowers (iNaturalist 2015). It is endemic to California and is found in the scrub and low elevation woodlands. The flowers bloom from June through July (Lake 2010). The species is known to occur in the Orinda Region (Lake 2010). Four occurrences of the species were found in the Siesta Area within 1 mile of the Project site. The nearest occurrences of the plant are 1) within a grassland/woodland ecotone 0.3 miles to the south of the Project site and 2) within Coast Live Oak woodlands 0.3 miles to the east of the Project site. Habitat suitability for the species is moderate within the Project site along the edge of the oak woodland. However, this species was not observed during botanical surveys and has no potential to occur within the Project site (Parr 2016).

Most beautiful jewel-flower (*Streptanthus albidus ssp. peramoenus*)
Status: Fed-None State-None CNPS-1B.2 ALA/CC- A2
The species is a rare purple flowering annual herb. The bloom period is from March to October. It is found in serpentine soils within chaparral, open oak woodland and valley or foothill grasslands between 120-730 meters in elevation. The plant is potentially threatened by development, grazing, road construction and recreational activities (CNPS 2015). The closest population to the Project site found within the CNDDB is located 0.8 miles to the west off Claremont Canyon and Fish Ranch Rd. Habitat suitability for the species is low within the

Project site because serpentine soils are not present. This species was not observed during botanical surveys and has no potential to occur within the Project site (Parr 2016).

4.4 Sensitive Wildlife Species

Appendix A lists the CNDDB occurrences of sensitive species within five miles of the Project site and species identified on the USFWS Official Species List for the Project. A copy of the USFWS Species List is provided in Appendix D. Sensitive wildlife species for which CNDDB occurrences have been noted within 1-mile of the Project site are describe individually below. All USFWS identified species are also discussed in detail below, even if they have no potential to occur in the Project site. None of the species were observed in the Project site during site visits. The results of the Habitat Assessment for the Bridge's coast range shoulderband snail are described below and the full assessment can be found in Appendix E.

Amphibians

California tiger salamander (*Ambystoma californiense*)

Status: Fed- Threatened State-Species of Special Concern

The central population of the California tiger salamander is listed as federally threatened where Sonoma and Santa Barbara populations are listed as endangered. The salamander is large and stocky with a broad rounded snout. It has small eyes that protrude from its head. The species is black dorsally and laterally with white or pale yellow spots or bars (USFWS 2004). The species is restricted to grasslands, low foothills and oak savannahs with pools or ponds that are necessary for breeding (USFWS 2004). They are most often found in vernal pools and seasonal stock ponds but have been found in a variety of man-made wetlands. The species spends much of its life underground, using burrows made by small mammals. The salamander emerges in November and most breeding occurs from December through February. Adults are known to travel as far as a mile to breeding sites. Eggs hatch in 2-4 weeks and larvae metamorphose in 4-5 months.

Critical habitat for the central population of California tiger salamander was designated in September 2005. Primary constituent elements include: 1) standing bodies of freshwater, 2) barrier free upland habitats that contain small mammal burrows, 3) upland areas between occupied locations that allow for dispersal, and 4) landscape features that support vernal pool complexes within an upland matrix.

The Project site does not fall within critical habitat. No California tiger salamanders occurrences are listed in the CNDDB within a 5 mile radius of the Project site. The East Bay Regional Park District has been monitoring California tiger salamander populations on 97,000 acres of park land in Alameda and Contra Costa counties since 1990 (Bobzien and DiDonato 2007). Based on their surveys, California tiger salamander occurrences in East Bay Regional Park lands are limited to east of highway 680 in Contra Costa County and south of highway 580 in Alameda County. The Project is located within a mile of one seasonal cattle stock pond. However, hundreds of pond and creek surveys have been completed adjacent to the Project site under the EBMUD Low Effect East Bay Habitat Conservation Plan (EBMUD Watershed Lands HCP) and

no California tiger salamanders have been found. Further, the Project site is isolated from known populations. There is no potential for the species to occur within the Project site.

California red-legged frog (*Rana draytonii*)
Status: Fed- Threatened State-Species of Special Concern
The California red-legged frog (CRLF) occurs from sea level to elevations of about 5,200 feet. It has been extirpated from 70 percent of its former range and now is found primarily in coastal drainages of central California, from Marin County, California, south to northern Baja California, Mexico (USFWS 2002a). California red-legged frog uses a variety of areas, including aquatic, riparian, and upland habitats. Breeding sites of the California red-legged frog are found in aquatic habitats including: pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds and lagoons. Additionally, CRLF frequently breed in artificial impoundments such as stock ponds (USFWS 2002a). Breeding typically starts in November and continues into April (USFWS 2002a). CRLF deposit eggs between December and early April. Eggs are attached to vegetation in shallow water. Larvae metamorphose in 3.5 to 7 months, typically between July and September. The frog is known to travel over 1.5 miles from breeding locations (Bulger et al. 2003). Dispersal may occur overland or via riparian areas. CRLF may aestivate in small mammal burrows and moist leaf litter (USFWS 2002a).

The USFWS designated critical habitat for this species in April 2006 and was revised in 2010. Primary constituent elements include: 1) Standing bodies of freshwater for breeding, 2) Perennial or ephemeral freshwater ponds or streams that provide habitat for refuge, dispersal or foraging, 3) Upland areas within 1 mile of aquatic habitat that support aquatic habitats and provide food, shelter and predator avoidance, and 3) Dispersal habitat within uplands or riparian areas located within 1 mile of each other that support movement between sites. The Project is not located within critical habitat for the species. The closest critical habitat unit is CCS-1 for the Berkeley Hills located approximately 4 mile away.

There are multiple sightings of CRLF in ponds and wetlands to the north and east of the Project site; however, there are no CNDDB observations within a 1 mile radius (CNDDB 2015). The closest observation of CRLF is 1.3 miles away at the Wagner Ranch School pond (EBMUD FWD 2015). CRLF are present in several other ponds and wetlands within the San Pablo and Briones Watersheds. These frogs may use San Pablo Creek to move between habitats, particularly in the breeding season. Variable flows in San Pablo Creek make the habitat marginal for CRLF breeding and no CRLF have been observed in the creek. There is no aquatic habitat at the site and limited potential for upland estivation or dispersal at the site. For these reasons, the species has low potential to occur within the Project site. This species was not observed during the site assessment.

Reptiles

Western pond turtle (*Actinemys marmorata*)
Status: Fed-None State-Species of Special Concern
The western pond turtle is the only native aquatic turtle species found in California. This species is found from the San Francisco Bay north, west of the crest of the Cascades and Sierras, into

Washington and British Columbia. They occur in ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches, with abundant vegetation, and either rocky or muddy bottoms, in woodland, forest, and grassland. In streams, they prefer pools to shallower areas. Logs, rocks, cattail mats, and exposed banks are required for basking. They may enter brackish water and even seawater. Most nesting sites are located within 1,000 feet of aquatic habitat; however, females have been tracked travelling over a mile to nest (Abel 2010).

The Project site is located within a mile of a seasonal stock pond that may provide habitat for the species. There is no aquatic habitat at the Project site or riparian corridors that lead to the Project site from the pond. There are no occurrences in the CNDDB or EBMUD databases within a 1 mile radius of the Project site. The closest occurrence is located in an EBMUD stock pond 1.6 miles north-west of the Project site EBMUD FWD 2015). There is low potential for western pond turtle to occur within the Project site.

Alameda whipsnake (*Mastocophis lateralis*)
Status: Fed-Threatened State-Threatened
The Alameda whipsnake (or Alameda striped racer) is a slender, fast-moving, diurnally active snake with a slender neck, broad head and large eyes. Adults reach a length of 3 to 4 feet. Their dorsal surface is sooty black with a distinct yellow-orange stripe down each side. The anterior portion of their ventral surface is orange-rufous colored, the midsection is cream colored and the tail is pinkish. The Alameda whipsnake's range is restricted to western and central Contra Costa and Alameda Counties. They are typically found in chaparral, northern coastal sage scrub and coastal sage communities (USFWS 2006a). Home ranges of Alameda whipsnakes tend to be concentrated around patches of chaparral or other open canopy scrub habitat. Grassland and riparian areas adjacent to scrub habitat provide important movement and connection corridors and may be part of an individual's home range (Swaim 1994). The snake has been documented in grassland, savanna and riparian habitats at distances greater than 500 feet from scrub or chaparral communities (Swaim 2000). Core areas (areas of concentrated use) of the Alameda whipsnake most commonly occur on east, south, southeast, and southwest facing slopes. However, recent information indicates that whipsnakes do make use of north facing slopes in more open stands of scrub habitat. Rock outcrops with deep crevices or abundant rodent burrows are important habitat components for overnight dens, refuges from predators and excessive heat, and foraging. The Alameda whipsnakes have two seasonal peaks in activity, one during the spring mating season and the other during late summer/early fall.

The USFWS designated critical habitat for this species in October 2006. The Project site falls within critical habitat unit 6. Primary constituent elements for the Alameda whipsnake include (1) scrub/shrub communities with a mosaic of open and closed canopy, (2) woodland or annual grassland plant communities contiguous to lands containing scrub/shrub communities with a mosaic of open and closed canopy, and (3) lands containing rock outcrops, talus and small mammal burrows within or adjacent to (2) and/or (3) (USFWS 2006a). The Project site is located in grassland on a south-easterly aspect within a mosaic of scrub and oak woodlands. This area has abundant small mammal burrows and rock outcrops are likely to occur nearby.

There are numerous local occurrences listed within the CNDDB for the species; however, site specific information is not made publicly available due to sensitivity concerns. EBMUD has documented 12 observations of Alameda whipsnake less than 1 mile from the Project site (EBMUD FWD 2015). Six of these snakes were captured in Siesta Valley as part of a study conducted by EBMUD in 2013 and 2014 (Price et al. 2014). The occurrence nearest the Project site was observed in 1990 and is located 0.4 miles of the south-west of the site. The grassland where the new tanks will be constructed is located within 300 feet of a scrub patch identified as core habitat for the species per EBMUD's Watershed Lands HCP. There is a high potential for the Alameda whipsnake to occur within the Project site.

Birds

California clapper rail (*Rallus longirostris obsoletus)*

Status: Fed-Endangered State-Endangered

The species is one of the largest in the rail family. The bird has a hen like appearance, a long slightly downward-curving bill, rufous colored breast, and black and white barred flanks (USFWS 2013). The distribution of California clapper rails is restricted almost entirely to the marshes of the San Francisco Bay Estuary (USFWS 2013). Throughout their distribution, California clapper rails occur within a range of salt and brackish marshes. In south and central San Francisco Bay and along the perimeter of San Pablo Bay, rails typically inhabit salt marshes dominated by pickleweed (*Salicornia virginica*) and Pacific cordgrass (*Spartina foliosa*). Nests are built in minimally elevated areas to prevent inundation during high tide. Small natural berms along tidal channels with relatively tall vegetation are choice nesting locations (USFWS 2013). The breeding period is prolonged, starting in mid-March and extending into August (USFWS 2013). No critical habitat has been designated for the California clapper rail. There is no marsh habitat present near the Project site and there is no potential for the species to occur.

California least tern (*Sternula antillarum*)

Status: Fed-Endangered State-Endangered

The species is a small tern found along the coast. The bird has a distinctive black cap and black stripes running from the cap across the eyes to the beak, which contrast with a white forehead. Upper parts are gray and the breast is white. Their bills and legs are orange. The tail is short and forked. The species nests in colonies on relatively open beaches kept free of vegetation by tidal action (USFWS 2006b). They are very gregarious and forage, roost, nest and migrate in colonies. Nesting begins in April or May. Fall migration commences the last week of July and first week of August when adults move south along the California coast (USFWS 2006b). No critical habitat has been designated for the California least tern. There is no coastal beach habitat in the Project vicinity and the species has no potential to occur in the Project site.

Special-Status Bird Species

Special status bird species that are protected under the Migratory Bird Treaty Act and/or by the California Fish and Game Code have potential to nest within the Project site. The fully protected white-tailed kite, state threatened Swainson's hawk and a suite of other raptor species have the potential to occur near the Project site. Several raptors, including the American kestrel (*Falco sparverius*), barn owl (*Tyto alba*), Cooper's hawk (*Accipiter cooperii*), great horned owl (*Bubo*

virginianus), red-tailed hawk (*Buteo jamaicensis*), western screech owl (*Megascops kennicottii*), sharp-shinned hawk (*Accipiter striatus*), and short-eared owl may nest on or near the Project site. Song birds of conservation concern including the bell's sparrow (*Amphispiza belli belli*) and loggerhead shrike (*Lanius ludovicianus*) also have potential to occur. Bird species may use trees, shrubs, man-made structures or the ground for nesting habitat. There is high potential for bird nesting to occur in the Project site.

Fish

Delta Smelt (*Hypomesus transpacificus*)

Status: Fed-Threatened State-Endangered

Delta smelt are a euryhaline species, endemic to the Sacramento-San Joaquin estuary. They are a translucent, slender bodied fish, typically 60 to 70 mm, long with a steely blue sheen on their sides (Moyle 2002). Delta smelt tolerate wide-ranging salinities and water temperatures. Delta smelt feed primarily on small planktonic crustaceans, and occasionally on insect larva. Although they are restricted in range, delta smelt use different parts of the estuary at different life history stages. During the late winter and spring, Delta smelt migrate upstream into freshwater or slightly brackish areas to spawn. Spawning occurs primarily during April through mid-May in sloughs and shallow edge areas in the upper Delta, in the Sacramento River above Rio Vista and in Montezuma Slough (Moyle 2002).

Critical habitat for Delta smelt was designated by USFWS in December 1994. Designated critical habitat includes areas of all water bounded by and contained in Suisun Bay and the existing contiguous waters contained within the Delta. The primary constituent elements essential to the conservation of the delta smelt are: physical habitat, water, river flow, and salinity concentrations required to maintain delta smelt habitat for spawning, larval and juvenile transport, rearing, and adult migration. The Project site does not fall within designated critical habitat and is outside of the known range for the species. There is no salt or brackish water habitat in the Project vicinity and the species has no potential to occur in the Project site.

Central Coast Steelhead (*Oncorhynchus mykiss irrideus)*

Status: Fed-Threatened State-Special Animal

The Central California Coast steelhead distinct population segment (DPS) was listed as a federally threatened species in 2000 (65 FR 36074). The DPS includes all naturally spawned steelhead populations below natural and manmade impassable barriers in California streams from the Russian River (inclusive) to Aptos Creek (inclusive), and the drainages of San Francisco, San Pablo, and Suisun bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin Rivers (NMFS 2015). Adults migrate through the San Francisco Bay and San Pablo Straits to freshwater spawning and rearing areas. Steelhead have the ability to spawn repeatedly, and can return to the Pacific Ocean after spawning in freshwater. Juvenile steelhead may spend up to four years residing in fresh water prior to migrating to the ocean as smolts.

San Pablo and Wildcat creeks once supported steelhead runs, and while steelhead cannot currently migrate up either stream to spawn, lower reaches could support transient individuals.

East Bay rainbow trout are genetically identical to the Central Coast steelhead. In many East Bay streams, they are resident species and do not exhibit anadromy. San Pablo Creek had a large steelhead run prior to the construction of San Pablo Dam in 1919. The last recorded sighting of a large steelhead population was in 1953 (Leidy 2005). While anadromous salmonids used San Pablo Creek historically, no direct evidence of a viable run occurring in the watershed exists (Leidy et al 2005 and Leidy 2007). The historical steelhead run was extirpated due to the construction of passage barriers in the lower reaches of the stream (Leidy et al 2007). EBMUD fisheries biologists have conducted annual presence absence sampling in San Pablo Creek from 2006 through 2015 and no salmonids were found from I-80 to Hwy 24 (EBMUD FWD 2015).

Critical habitat was designated for Central Coast steelhead by NMFS in September 2005 which includes San Francisco and San Pablo bays. Primary constituent elements include: 1) Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development, 2) Freshwater rearing sites with appropriate water quality and physical habitat conditions, 3) Freshwater migration corridors free of obstruction and excessive predation with water quantity and quality conditions and natural cover, and 4) Estuarine areas free of obstruction and excessive predation with appropriate water quality and physical habitat conditions. No freshwater streams or riparian habitat occur within the Project site. There is no potential for the species to occur within the Project site.

Mammals

Pallid bat (*Antrozous pallidus*)

Status: *Fed-None State-Species of Special Concern*

The Pallid Bat ranges from western Canada to central Mexico. They are found throughout California except in the high Sierra from Shasta to Kern Counties and the northwest coast, primarily at lower and mid-elevations. They occur in a number of habitats, including coniferous forests, deciduous woodlands, brushy terrain, rocky canyons, open farm land, and desert. In northern California, this species is associated with oak habitat. Pallid bats are primarily a crevice roosting species, and select daytime roosting sites where they can retreat from view. The pallid bat often roosts colonially in rock crevices, structures, and trees with suitable hollows. They have been located in tree cavities in oak, Ponderosa pine, coast redwood and giant Sequoia. There is one CNDDB record of this species within 1-mile of the site. Mature oak trees may provide roosting habitat for this species in the Project site and there is moderate potential for the species to occur in the Project site. The species was not observed during site assessments.

Townsend's big-eared bat (*Corynorhinus townsendi)*

Status: *Fed-None State-Species of Special Concern*

The species inhabits a variety of plant communities including coastal conifer and broad-leaf forests, oak and conifer woodlands, arid grasslands, and deserts. Roosting sites include caves, mine tunnels, abandoned buildings, and other structures. They do not tuck themselves into cracks and crevices like many bat species do, but prefer to roost in the open hanging from walls and ceilings (Pierson and Rainey 1998). Females aggregate in colonies at nursery sites in the spring and remain there until young become independent in the fall (Pierson and Rainey 1998). The species is highly sensitive to human disturbances and a single visit by humans can cause

bats to abandon roosts. There are no structures with suitable openings for the Townsend's big-eared bat to roost within the Project site. There is one CNDDB record of occurrence for the species within a mile of the Project site. The species may use habitat in the Project vicinity to forage. The species has a low potential to occur within the Project site.

Berkeley kangaroo rat (*Dipodomys heermanni berkeleyensis*)
Status: *Fed-None State-Extirpated*
Kangaroo rats were historically found in chaparral and scrub communities and adjacent grasslands (USFWS 2002b). Kangaroo rats are nocturnal burrowing rodents. They are adapted to arid conditions, having physiological adaptations to conserve water (USFWS 2002b). Little is known about the favored habitat of the Berkeley kangaroo rat. Field notes reference Berkeley kangaroo rats being collected on bare ridges near rocky outcrops and on thin soils with scattered chaparral species and small annual grasses (USFWS 2002b). In the original description of the species, the Berkeley kangaroo rat was known only from the open hill tops immediately east of the City of Berkeley. Specimens were collected in 1922 (Eureka Peak near the head of Siesta Valley) and in 1927 (lake in Orinda Park near Eureka Peak). By 1936, 12 specimens had been collected on Mt. Diablo. One specimen was collected at Strawberry Canyon in 1938. The last museum record is of a specimen was collected in 1940 at the Calaveras Reservoir Dam in Alameda County. There is no indication that Berkeley kangaroo rats were trapped after that date at any of the above locations, so the animal has been presumed to be extinct. There are 3 CNDDB records (last observation 1938) of this species within a 1 mile radius of the site. Habitat for this species occurs on the Project site; however, there is low potential for occurrence because the species has not been seen for 75 years. This species was not observed during the site assessments.

San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*)
Status: Fed- None State-Species of Special Concern
The San Fransisco dusky-footed woodrat is a medium sized rat. It is brown or grey above with white or dusky coloring on the feet, large ears and a hairy tail. The species is mostly nocturnal and active year round. They can be found in coast live oak woodlands, coyote brush scrub, riparian areas and other habitats with dense trees and shrubs. In riparian areas, the highest densities of woodrats and their nests (middens) are often encountered in willow thickets with an oak overstory. Woodrats typically build middens of sticks and other debris on the ground, in the lower branches of trees and occasionally in human-made structures. Middens are often reused and more than one woodrat may occupy the same nest. No San Francisco dusky-footed woodrat nests were observed during the site assessment but the species is ubiquitous within the San Pablo Watershed. The species has been observed in numerous locations within 1 mile of the Project site (EBMUD FWD 2015), and has a high potential to occur in the Project site.

American badger (*Taxidea taxus*)
Status: Fed- None State-Species of Special Concern
The American badger is a carnivore in the family Mustelidae (weasels). They range throughout California except for the humid coastal forests in the northwest portion of the state (Williams 1986). Populations have declined within the last century in California. The

badger is most abundant in grassland, savanna and mountain meadow habitats, but can be found anywhere with friable soils and high concentrations of burrowing rodents (Williams 1986). American badgers are generally nocturnal solitary foragers; however, in remote areas they are routinely observed foraging during the day. Badgers are less active in the winter and may spend extended periods of time in a state of torpor. Their front legs have large claws adapted for digging their prey out of underground burrows. They prey primarily upon ground squirrels (*Spermophilus spp.)* and pocket gophers (*Thomomys spp*.), although they may also take other rodents, reptiles, birds, eggs, insects, and carrion (Williams 1986).

Suitable habitat for American badger is present throughout the Project site and surrounding region. There is one historical occurrence of American badger within 1 mile of the Project site in Rattlesnake Canyon near Orinda, just east of the Project site (CNDDB 2015). Badger sign has not been observed in Siesta Valley or the larger San Pablo Watershed by EBMUD Biologists (EBMUD FWD 2015). However, there is potential for badgers to reoccupy this location. The species is considered to have a low potential to occur within the Project site.

Special Status Bat Species

In addition to the two bat species mentioned above, several sensitive bat species have at least some potential to occur within the Project site. Species include: the silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*), western mastiff bat (*Eumops perotis californicus*), long-eared myotis bat (*Myotis evotis*), long-legged myotis bat (*Myotis volans*), and Yuma myotis bat (*Myotis yumanensis*). These special status bat species typically use buildings, trees, bridges, and rock crevices for roosting habitat. Suitable roosting and foraging habitat is present for a number of special status bat species. Sensitive bat roosts have a moderate potential to occur within the Project site.

Invertebrates

Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)

Status: Fed- Threatened State-Special Animal

The vernal pool fairy shrimp is a small freshwater crustacean endemic to California and the Agate Desert of Southern Oregon (USFWS 2007). The vernal pool fairy shrimp occupies a variety of different vernal pool habitats, from small, clear, sandstone rock pools to large, turbid, alkaline, grassland valley floor pools (USFWS 2007). Although the species has been collected from large vernal pools, including one exceeding 25 acres, it tends to occur in smaller pools. It is most frequently found in pools measuring less than 0.05 acre found commonly in grass or mud bottomed swales, or basalt flow depression pools in unplowed grasslands. After temporary pools dry, offspring persist as desiccation-resistant embryos in the pool substrate (USFWS 2007). The embryos hatch following the return of winter rains and cold temperatures (USFWS 2007).

Critical habitat was designated for the species in August 2003, was revised in 2005 and 2006, and clarified in 2007. Primary constituent elements for the vernal pool fairy shrimp include: 1) Vernal pools, swales, and other ephemeral wetlands and depressions of appropriate sizes and depths that hold water for sufficient lengths of time for incubation, reproduction, dispersal,

feeding, and sheltering, but which are dry during the summer, and (2) The landscape features that support aggregations or systems of hydrologically interconnected pools, swales, and other ephemeral wetlands and depressions within a matrix of surrounding uplands which form vernal pool complexes. The Project site does not fall within designated vernal pool fairy shrimp critical habitat. No vernal pools are present within the Project site and the species has no potential to occur.

San Bruno elfin butterfly (*Callophrys mossii bayensis*)
Status: Fed- Endangered State-Special Animal
The San Bruno elfin butterfly is brown on the upperside, and reddish brown on the underside with a whitish, irregular median line. The larvae are bright red or yellow. The species inhabits rocky outcrops and cliffs in coastal scrub on the San Francisco Peninsula within San Mateo County (USFWS 1984). Remaining populations of San Bruno elfin butterfly are found in only three locations: Milagra Ridge, San Bruno Mountain, and Montara Mountain. The butterfly occurs only on north-facing slopes within the fog belt where its host plant, stonecrop (*Sedum spathulifolium*) is present (USFWS 1984). Stonecrop occurs in coastal grassland and low scrub on thin, rocky soils. Adults emerge in early spring, in February and March. After mating, females deposit eggs on the host plant, which hatch within a week. By June most have completed their larval development and leave the host plant to pupate in ground litter, where they are dormant until the following spring (USFWS 1984).

Final rules for critical habitat for the San Bruno elfin butterfly were proposed in 1977, but critical habitat was not designated. There is no potential for the species in the Project site because the species is restricted to a few locations in San Mateo County. The host plant is not present within the Project site.

Bridge's coast range shoulderband (*Helminthoglypta nickliniana bridgesii*)
Status: Fed-None State-Special Animal
This terrestrial snail is known from Contra Costa and Alameda counties from Berkeley and San Pablo to the eastern base of Mount Diablo. The species was last reviewed as a candidate for listing by the USFWS in 1994. The snail colonizes thistles or grass and has been found along San Pablo Creek and open west slopes in the Berkeley Hills (Pilsbry 1939). The snail inhabits open hillsides and can be found under rock piles, tall grasses or weeds (Pilsbry 1939). It has also been found in oak woodlands under woody debris or accumulations of leaf litter and in adjacent grasslands in small mammal burrows (Arnold 2016). There are four CNDDB records of this species within 5 miles of the site and two records within 1-mile of the site. Suitable habitat for this species occurs in the Project site and therefore the species has a high potential to occur (Arnold 2016). This species was not observed during an initial habitat assessment survey for the snail; however, repeated surveys would be necessary to conclude the species absence. The availability of numerous suitable habitat components at the Project site and the Project's proximity to historic occurrences give the species a high potential to occur. The snail is assumed to be present at the Project site.

Callippe Silverspot Butterfly (*Speyeria callippe callippe*)
Status: Fed- Endangered State-Special Animal
The callippe silverspot is a medium sized butterfly that is found exclusively within grassy hills surrounding San Francisco Bay that support its host plant, Johnny jump-up (*Viola pedunculata),* (USFWS 2009). Its upper wings are brown with extensive black spots and lines and its undersides have distinctive black and bright silver spots. On average adults are observed from mid-May through mid-July. Adult females lay their eggs in dirt and debris near the larval food plant or in surrounding dirt and debris. The species was known historically to occur in grassland habitat in the seven counties bordering San Francisco Bay. The service recognizes two populations of callippe silverspot butterflies located in San Bruno Mountains and Cordelia Hills. The population in Alameda has not been surveyed since 1973 is believed to be extirpated (USFWS 2009).

Critical habitat for the species was not designated because it was determined at the time of listing (1977) that it would not provide additional benefit for the species. The callippe butterfly has no potential to occur within the Project site. Hilly grasslands are present; however, the host plant was not observed during the site assessment. Furthermore, populations within Contra Costa County are believed to be extirpated and there are no known populations known in the East Bay Hills.

4.5 Conservation Plans

The new tank site will be developed on land covered under the EBMUD Watershed Lands HCP. The plan was adopted in 2008 and is implemented by EBMUD. There are two plant and five animal species covered under the EBMUD Watershed Lands HCP: pallid manzanita, Santa Cruz tarplant, rainbow trout, California red-legged frog, western pond turtle, Alameda whipsnake, and pallid bat.

Habitat for the pallid manzanita, Santa Cruz tarplant and rainbow trout is not present within the Project site. Aquatic habitat for the California red-legged frog and western pond turtle is also not present. There is low probability for dispersal of either species through the Project site due to their distance from pond or riparian habitat and because of the lack of cover.

Pallid bats may be present within the coast live oak woodland where the new road will be constructed; however, the EBMUD Watershed Lands HCP's protection measures solely target the preservation of the nursery colony located in Pinole Valley. A scrub patch identified as core habitat for the Alameda whipsnake under the HCP is located within few hundred feet of the Project site. The EBMUD Watershed Lands HCP mandates that no more than 1% of core habitat may be lost over the 30 year term of the plan. The core scrub habitat area will not be impacted as part of the Project. Avoidance and minimization measures will reduce the likelihood of take to for the pallid bat and Alameda whipsnake.

5.0 POTENTIAL IMPACTS

The following section presents potential impacts and recommended measures to avoid or reduce impacts to sensitive habitats and species. For the purposes of this biological resources evaluation, a project is considered to have a significant impact under CEQA if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

5.1 Biological Communities

Wetlands, Waters and Riparian Habitat

No wetlands or waters occur on the site. No impacts to wetlands or waters are anticipated as a result of the Project.

Sensitive Natural Communities

No sensitive biological communities occur on the site and therefore no impacts to sensitive biological communities are anticipated as a result of the Project. Potential impacts to non-sensitive biological communities are considered less than significant.

Wildlife Movement Corridors

The Project site falls within a wildlife movement corridor that is regionally significant. However, the Project is located on the margin of suburban development and is expected to have a negligible impact on the corridor as a whole. The situation and small size of the Project foot print will not substantially interfere with wildlife movement. During construction, animals may temporarily alter their behavior to avoid the area due to increased human disturbance from noise, vibration and traffic. These impacts are expected to be temporary and are less than significant.

5.2 Special Status Species

General Avoidance and Minimization Measures

Implementation of the following general mitigation measures will be taken to avoid harm to multiple species and reduce overall habitat impacts from the Project.

- Prior to Project commencement, all construction personnel should be trained to identify potentially occurring sensitive species. The training should include a description of species, regulatory status, protective measures and work boundaries.
- The outside edges of the construction areas should be delineated with orange barrier safety fencing to prevent encroachment of construction personnel and equipment beyond the approved limits of work.
- Wildlife exclusion fencing constructed of plywood, plastic, aluminum or silt fence material should be installed around the work area. Wildlife exclusion fencing should be buried (minimum 6 inches) to prevent animals passing under the fence and should be high enough (minimum 3 feet) to prevent amphibians, reptiles and small mammals from passing over the fence. Overhanging vegetation should be trimmed. The fencing should be inspected and repaired regularly. The fencing will be removed only when all construction equipment is removed from the Project site.
- A barrier to prevent these species from entering the work site will be placed across access roads into and out of the work site at the end of the day to prevent animal movement into the site overnight.
- An agency approved, qualified biologist will survey the Project site for sensitive and non-sensitive animal species prior to ground disturbance. Non-sensitive species will be relocated outside of the work area. If sensitive species are encountered, the jurisdictional agencies will be contacted to determine the appropriate course of action.
- The qualified biologist will be retained to monitor the construction site to avoid impacts to sensitive species. The biologist will be present at all times during initial ground-disturbing activities. The biologist will be on-call during subsequent construction activities.

Sensitive Plant Species

No USFWS, CDFW or statewide CNPS listed sensitive botanical resources were observed at the Project site (Parr 2016). However, two plant species considered locally rare by the East Bay Chapter of the CNPS were identified within the Project site during botanical surveys. The California ponysfoot and rayless arnica were discovered during the June 2015 survey. The California ponysfoot was not observed again during follow up surveys conducted in March and May 2016. These plants are situated within the Project foot print where the tanks will be placed and likely cannot be avoided. Grubbing, grading and the movement of equipment may impact these species. Although these plants are considered locally rare and are given consideration under CEQA, they are not afforded official Federal or State protection. The East Bay Chapter of the CNPS will be consulted to determine the appropriate mitigation for these species. Implementation of the following mitigation measures will decrease the potential for impacts.

- A qualified botanist will flag the location of rare plants during pre-construction surveys in all areas where ground disturbance will occur. Sensitive plant species will be avoided where feasible.

- If special status plant species onsite cannot be avoided, the appropriate agencies will be consulted and mitigation measures will be developed. These measures may include harvesting plants or their seeds for relocation to another suitable site or permanently preserving another area with the plant community through a conservation easement.

Nesting Special Status Bird Species

Avian species that are protected under the Migratory Bird Treaty Act have high potential to nest within the Project site. Disruption of nesting birds could occur as a result of increased human activity (e.g., due to the use of heavy equipment and human traffic) during the breeding season (approximately February through August). Bird species may use trees, shrubs, man-made structures or the ground for nesting habitat. Impacts to potential nesting habitat could occur during construction as a result of tree and shrub removal, ground disturbance, equipment movement, or by direct mortality. Construction activities could disturb nesting avian species and lead to nest abandonment or poor reproductive success. Implementation of the following mitigation measures will decrease the potential for impacts.

- If site clearing, demolition, and construction occur within bird nesting season, preconstruction surveys for nesting birds should be conducted by a qualified biologist to ensure that no nest will be disturbed during Project implementation. This survey shall be conducted no more than 14 days prior to the initiation of demolition/construction activities. During this survey, the biologist will inspect all trees and other habitats in and immediately adjacent to the Project site.
- If an active nest is found sufficiently close to work areas to be disturbed by these activities, the biologist, in consultation with CDFW, will determine the extent of a construction-free buffer zone around the nest. This will ensure that no nests of species protected by the Migratory Bird Treaty Act or State Code will be disturbed during Project implementation.
- The Project biologist should monitor the nest to document breeding and rearing behavior of the adult birds. If it is determined that construction activities are likely to cause nest abandonment, work should cease immediately and the CDFW and/or the USFWS Division of Migratory Bird Management should be contacted for guidance.

Special Status Bat Species

Roosting and foraging habitat is present for a number of special status bat species. These special status bat species typically use buildings, trees, bridges, and rock crevices for roost habitat. Foraging habitat is present over most of the adjacent habitats. Construction activities may result in the removal or disturbance of hibernation or maternal roost sites, if they are present in the Project site, due to noise or human intrusion. This constitutes a potentially significant impact as it may result in direct mortality and reduction in reproductive success. Because these species are able to travel great distances to forage, however, impacts to foraging habitats are considered less than significant. Implementation of the following mitigation measures will decrease the potential for impacts.

- Construction activities near potential bat roost habitat or removal of potential bat roost habitat should commence between August and March in order to avoid the bat maternity period.

- If this is not feasible, preconstruction bat roost surveys should be done. Pre-construction surveys for potential bat roost habitat shall be performed in all trees and buildings subject to removal or demolition for evidence of bat use (guano accumulation, visual detections).
- If bats are detected within trees or structures that must be removed, humane exclusion of bats from occupied roosts shall be performed in the fall prior to construction. A qualified wildlife biologist must be consulted for humane exclusions or evictions.
- If bat maternity roosts are identified adjacent to the Project site, an appropriate buffer zone will be created and the colony will be monitored by a qualified biologist to make sure they are not disturbed.

Alameda whipsnake

Removal of vegetation, earthwork and the operation of heavy equipment at the Project site has potential to cause direct mortality of the Alameda whipsnake. No scrub habitat patches will be impacted by the Project. Implementation of the following mitigation measures will decrease the potential for impacts.

- The Project applicant will consult with the USFWS and CDFW to establish a plan that details reasonable and prudent conservation measures to avoid take of Alameda whipsnake. Obtaining take permits for the species may be recommended by the agencies.
- Initial site clearing (e.g. vegetation removal or grading) should be limited to the period of peak activity of the whipsnake. From the beginning of the mating season in mid-March through the end of October individuals are most likely to be active and can escape harm.
- Exclusion fencing will have one way escape funnels for snake egress and be built to a sufficient height to prevent snake movement over the fence.
- If a whipsnake is detected at any time during construction, all work must immediately cease. Without appropriate permits, individuals may not be handled and must be permitted to move out of the Project site on their own accord. If permits have not been obtained for the Project, work will be suspended until the USFWS and CDFW issue Incidental Take authorization.

San Francisco Dusky-Footed Woodrat

No woodrats were detected within the Project site; however, the species has a high potential to occur in the coast live oak woodlands adjacent to the Project site. Road construction could lead to the loss of woodrat nests and the mortality of individuals. Implementation of the following mitigation measures will decrease the potential for impacts.

- A preconstruction survey should be performed prior to any land clearing activities. Any woodrat nests detected should be mapped and flagged for avoidance. If the nest falls within the Project site, the nest should be fenced off so it may be avoided.
- If a woodrat nest is in the Project site and it cannot be avoided, the nest should be disassembled by hand during the non-breeding season by a qualified biologist. The nest materials should be relocated off-site to prevent rebuilding. If occupied nests are within the Project site, CDFW must be contacted. Nests may not be disassembled if adults or young are present.

Bridge's coast range shoulderband

A habitat assessment for the snail, conducted in January 2016, indicated that suitable habitat is present for the species (Arnold 2016). No snails were discovered during a limited presence-absence survey at the site. However, due to the variety of suitable habitat components present and the proximity of local populations to the site, there is a high probability for the species to occur (Arnold 2016). For these reasons the snail will be presumed present at the project site.

The snail is considered a special animal by CDFW. The species also has a history of being reviewed as a candidate for federal listing. Since the snail is considered a special animal by CDFW, it is given consideration under CEQA. Grubbing, grading and the movement of equipment may cause direct mortality, if the species is encountered at the Project site. Implementation of the following mitigation measures will decrease the potential for impacts.

- Impacts to the scrub and riparian areas adjacent to the site will be avoided. Impacts to the oak woodlands where the access road will originate will be minimized to the extent feasible.
- The construction foot print surrounding the tank and access roads will be minimized to the extent feasible.
- Snail mortalities will be minimized by having a qualified invertebrate biologist relocate snails found within the Project foot print prior to ground disturbance.
- CDFW will be consulted to determine additional appropriate minimization or mitigation measures.

5.3 Conservation Plans

Incidental take from the development of new water distribution infrastructure is not covered under the EBMUD Watershed Lands HCP. However, the HCP does not preclude new development on covered lands and the Project does not conflict with the provisions of the HCP.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Significant impacts to biological communities, including jurisdictional wetlands or waters, will not occur as a result of the Project. The Project may impact the Siesta Valley wildlife corridor temporarily during construction. The effect of the paved tank foot print encroachment into the corridor is negligible.

No federal or state sensitive botanical resources were observed at the Project site; however, two locally rare plants were found. A qualified botanist will perform pre-construction plant surveys and identify the location of rare plants in the field for avoidance, if feasible. If sensitive plant species cannot be avoided, the appropriate agencies will be consulted to determine if mitigation is required.

Several sensitive bat and bird species have moderate potential to roost or nest within the Project site. Birds and bat species are not expected to be impacted with the incorporation of avoidance and minimization measures. The San Francisco dusky-footed woodrat has high potential to occur within the Project site and may be impacted. Based on a habitat assessment,

the Bridge's Coast Range shoulderband snail has been presume present at the Project Site and may be impacted. Pre-construction surveys will be conducted for wildlife species. If sensitive species are found within the Project site, work will be postponed so that CDFW can be consulted.

The Alameda whipsnake is state and federally listed as threatened and the Project is located within USFWS designated critical habitat. Activities on private lands that do not require Federal permits or funding are not affected by critical habitat designations. However, the ESA prohibits any individual from engaging in unauthorized activities that will harm listed wildlife. It is recommended that USFWS is consulted early in the planning process to determine if obtaining an Incidental Take Permit (ITP) under ESA Section 10, is recommended for the Project. Obtaining an ITP will require the development of an HCP. Coordination with CDFW for state concurrence or to obtain a separate state take permit is also recommended. Without an ITP and CDFW Section 2081 permit, it is not legal to handle or relocate Alameda whipsnakes and all work must immediately cease, in the event the snake is encountered. The detection of the species within the Project site would result in prolonged construction delays while CDFW and USFWS are consulted and the appropriate permits are acquired.

The Project site falls within an area covered by the EBMUD Watershed Lands HCP, but does not conflict with the goals or objectives therein. However, the EBMUD Watershed Lands HCP is limited in scope and does not cover the development of new water infrastructure. Removal of native trees within the oak woodland for the construction of the access road may conflict with local policies and ordinances. EBMUD is exempt from local tree ordinances; however, impacts to mature trees will be avoided to the extent feasible.

Representative photographs of the Project site can be found in Appendix F. Recommendations made in this report were based on the scope of the Project provided and the best information available at the time this assessment was written. Changes in the Project scope or new findings may necessitate the development of additional avoidance, minimization or mitigation measures to reduce negative impacts to biological resources.

7.0 REFERENCES

Abel, J. 2010. Western pond turtle summer habitat use in a coastal watershed. Master's Thesis, San Jose State University. May. xii +111 pp.

Arnold, R. A. 2016. Habitat Assessment Survey Report on the Bridge's Coast Range Shoulderband Snail. Report submitted to EBMUD for the Dos Osos Reservoir Repalcemetn Project in Orinda, CA.

Beier, P. and S. Loe. 1992. In My Experience: A Checklist for Evaluating Impacts to Wildlife Movement Corridors. Wildlife Society Bulletin (1973-2006) 20, 434–440.

Bobzien, S. and J.E. DiDonato. 2007. The status of the California tiger salamander (Ambystoma californiense), California red-legged frog (Rana draytonii), foothill yellow-legged frog (Rana boylii), and other aquatic herpetofauna in the East Bay Regional Park District, California. Annual report to US Fish and Wildlife Service.

Bulger, J.B., N.J. Scott, and R.B. Seymour. 2003. Terrestrial activity and conservation of adult California red-legged frogs (Rana aurora draytonii) in coastal forests and grasslands. Biological Conservation 110:85-95.

California Department of Fish and Game Environmental Services Division (CDFW ESD). 1994. A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607, California Fish and Game Code.

California Department of Fish and Wildlife California Natural Diversity Database (CNDDB). Biogeographic Data Branch. Accessed October 2015.

California Department of Fish and Wildlife (CDFW). Special Plant and Animal Lists. https://www.dfg.ca.gov/wildlife/nongame/list.html Accessed October 2015.

California Wildlife Habitat Relationship System (CWHR). Text accounts for Annual Grassland, Coastal Scrub and Coastal Oak Woodland. Accessed October 2015.

City of Orinda General Plan (Orinda). 1987. Chapter Four: Environmental Resources. http://www.cityoforinda.org/index.asp?Type=B_BASIC&SEC=%7B77B8E1DB-3AF1-44B8-9B2D-8D519063AC37%7D. Accessed October 2015.

CNPS, Rare Plant Program. 2015. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society, Sacramento, CA. Website http://www.rareplants.cnps.org. Accessed October 2015.

Contra Costa County, California (CCC). Ordinance Code Division 816 – Trees. https://www.municode.com/library/ca/contra_costa_county/codes/ordinance_code?nodeId=TIT8ZO_DIV816TR. October.

Contra Costa County Resource Management Plan. 2001.

East Bay Municipal Utility District (EBMUD). 1999. Orinda Fire Flow Comprehensive Engineering Study. Internal Report.

East Bay Municipal Utility District. 2015. Encinal, Westside and Dos Osos Pressure Zone Cascade: Facilities Improvement and Outage Plans. Internal Report.

East Bay Municipal Utility District Fisheries and Wildlife Division (EBMUD FWD). Managed Species Database. Accessed October 2015.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Department of the Army, Waterways Experiment Station, Vicksburg, Mississippi 39180-0631.

Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Report to the California Department of Fish and Game.

iNaturalist. 2015. http://www.inaturalist.org. Accessed October 2015.

Lake, D. 2010. Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties. Eighth Edition. California Native Plant Society, East Bay Chapter. Pinole, CA.

Leidy, R. A. 2007 Ecology, Assemblage Structure, Distribution, and Status of Fishes in Streams Tributary to the San Francisco Estuary, California.

Leidy, R.A., G.S. Becker, B.N. Harvey. 2005. Historical distribution and current status of steelhead/rainbow trout *(Oncorhynchus mykiss)* in streams of the San Francisco Estuary, California. Center for Ecosystem Management and Restoration, Oakland, CA.

Mayer, K.E., and W.F. Laudenslayer, Jr. 1988. A Guide to Wildlife Habitats of California. State of California, Resources Agency, Department of Fish and Game. Sacramento, CA. 166 pp.

Moyle, P. B. 2002. Inland fishes of California. University of California Press, Berkeley, USA

National Marine Fisheries Service (NMFS). 2015. Public Draft Coastal Multispecies Recovery Plan. National Marine Fisheries Service, West Coast Region, Santa Rosa, California.

Natural Resources Conservation Service. Web Soil Survey. http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/survey/ Accessed September 2015.

Parr, I. 2016. Botanical Resources Survey for the Dos Osos Water Tank Placement Project. Letter correspondence with Jessica Purificato. July, 15, 2016.

Pierson, E.D. and W.E. Rainey. 1998. Bat distribution in the forested region of northwestern California. California Department of Fish and Wildlife, Bird and Mammal Conservation Program Rep. 98-6. 36pp

Pilsbry, Henry Augustus, 1939. Land Mollusca of North America (north of Mexico). Volume II Part I. The Academy of Natural Sciences of Philadelphia, Monographs Number 3. Philadelphia, PA.

Price, J., J. Purificato, and B. Mulchaey. 2014. East Bay Municipal Utility District 2014 Annual Trapping Report for the Alameda Whipsnake Scientific collecting permit #001933. Submitted to the California Department of Fish and Wildlife by the East Bay Municipal Utility District Fisheries and Wildlife Division.

Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens 2009. A Manual of California Vegetation, 2nd Edition, California Native Plant Society. Sacramento, CA.

Swaim, K.E. 1994. Aspects of the ecology of the Alameda Striped Racer (Masticophis lateralis euryxanthus). Unpublished Masters Thesis. 140 pages

Swaim, K.E. 2000. Alameda Striped Racer habitat assessment for Carnegie State Vehicle Recreation Area and Alameda/Tesla Properties, Alameda and San Joaquin Counties, CA. Unpublished report prepared for California Department of Parks and Recreation, Twin Cities District. 16+ pp.

U.S. Fish and Wildlife Service (USFWS). 1984. Recovery Plan for the San Bruno Elfin and Mission Blue Butterflies. Portland, Oregon.

USFWS. 2002a. Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Portland, Oregon.

USFWS. 2002b. Draft Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay, California. Portland, OR.

USFWS. 2004. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the California Tiger Salamander; and Special Rule Exemption for Existing Routine Ranching Activities. Federal Register Vol. 69, No. 149.

USFWS. 2006a. Final Designation of Critical Habitat for the Alameda Whipsnake. Federal Register Vol. 71, No. 190.

USFWS. 2006b. California Least Tern 5-Year Review: Summary and Evaluation. Sacramento, CA.

USFWS. 2007. Vernal Pool Fairy Shrimp 5-Year Review: Summary and Evaluation. Sacramento, CA.

USFWS. 2009. Callippe Silverspot Butterfly 5-Year Review: Summary and Evaluation. Sacramento, CA.

USFWS. 2013. Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California. Sacramento, California.

USFWS. 2015. Official Federal Endangered Species Act List. Letter from the Sacramento Fish and Wildlife Office, CA. Received October 8, 2015.

U.S Fish and Wildlife Service National Wetlands Inventory (USFWS NWI). http://www.fws.gov/wetlands/ Accessed October 2015.

Williams, D. F. 1986. Mammalian species of concern in California. California Department of Fish and Game Report 86-1. California Department of Fish and Game, Sacramento, CA.

8.0 REPORT FIGURES

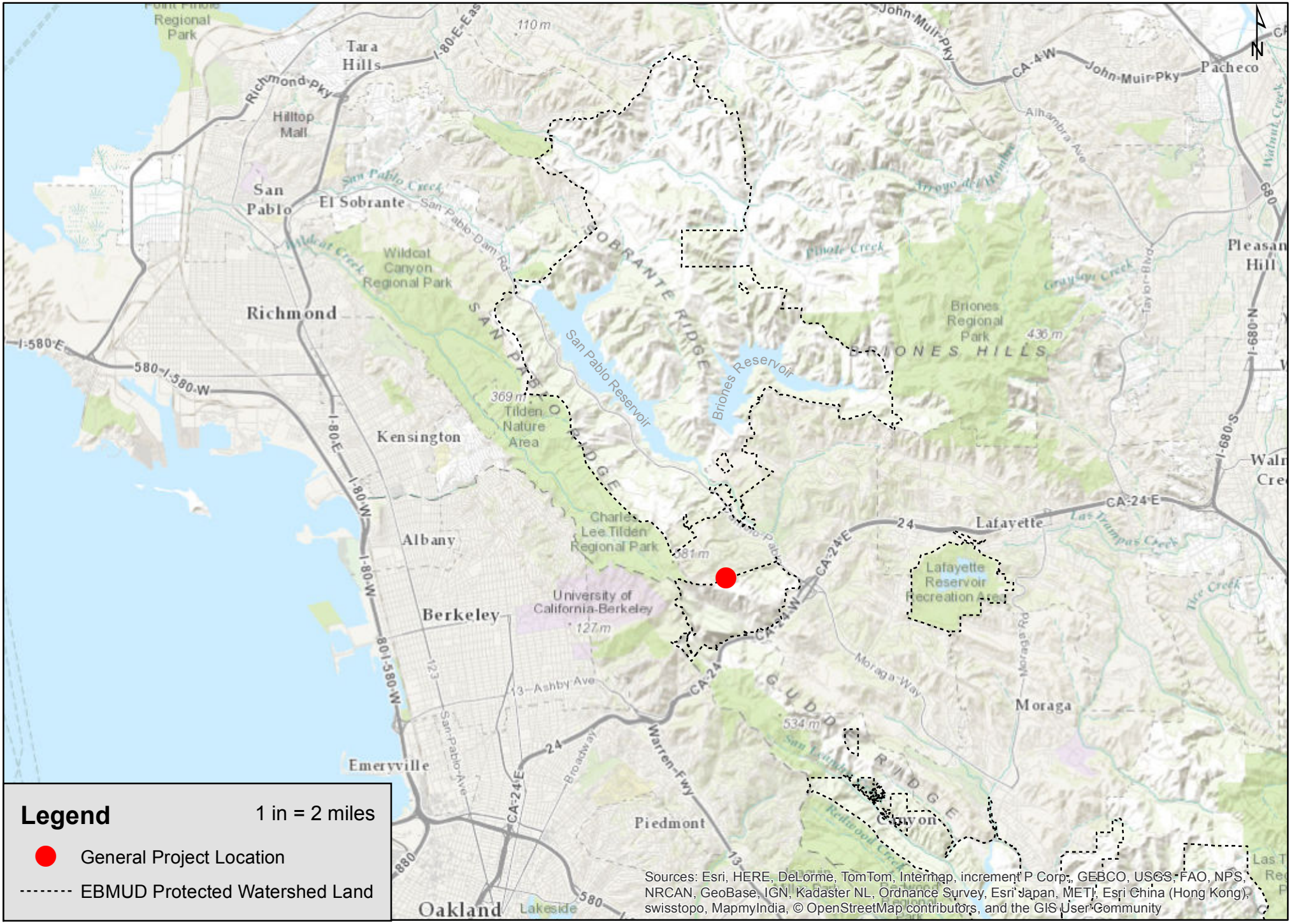


Figure 1. Project Location Overview: Dos Osos Reservoir Replacement

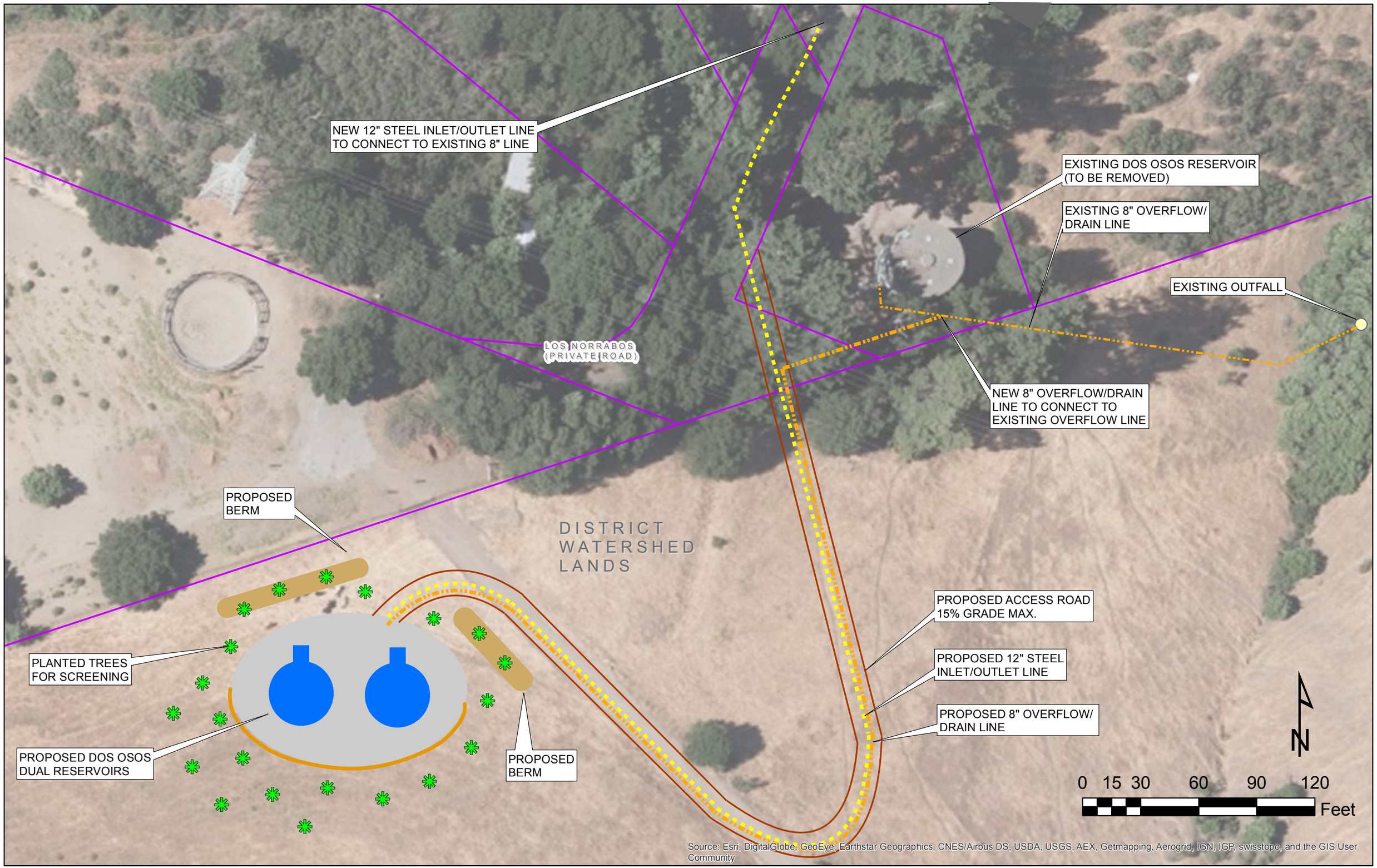


Figure 2. Dos Osos Site Plan

Appendix A:

List of Plant and Animal Species identified within 5 miles of the project site by CDFW in the California Native Diversity Database and by USFWS in the Official Species List for the Dos Osos Reservoir Placement Project

COMMON NAME	SCIENTIFIC NAME	STATUS FED/STATE/CNPS	HABITAT	OCCURRENCE POTENTIAL
Plants				
bent-flowered fiddleneck	*Amsinckia lunaris*	.../.../1B.2	Cismontane woodland and grassland. Blooms March - June.	No Potential. Known location 0.75 mile away in Siesta Valley. Species not found during botanical surveys.
pallid manzanita	*Arctostaphylos pallida*	FT/SE/1B.1	Broadleaf upland forest; closed-cone coniferous forest; cismontane woodland, chaparral, coastal scrub; on uplifted marine terraces on siliceous shale or thin chert. Blooms December - March.	No Potential. Suitable soils not present. Species not found during botanical surveys.
alkali milk-vetch	*Astragalus tener var. tener*	.../.../1B.2	Alkaline soils, playas, valley and foothill grasslands, vernal pools. Blooms March - June.	No Potential. Suitable soils and vernal pools not present. Species not found during botanical surveys.
round-leaved filaree	*California macrophylla*	.../.../1B.1	Clay soils, cismontane woodland and grassland in clay soils. Blooms March - June.	No Potential. Species not found during botanical surveys.
Mt. Diablo fairy-lantern	*Calochortus pulchellus*	.../.../1B.2	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. Blooms April - June.	No Potential. Species not found during botanical surveys.
Oakland star-tulip	*Calochortus umbellatus*	.../.../4.2	Serpentinite soils, broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Blooms March - May.	No Potential. Known location in oak woodland 0.5 miles east of the project site. Species not found during botanical surveys.
coastal bluff morning-glory	*Calystegia purpurata ssp. saxicola*	.../.../1B.2	Coastal bluff scrub, coastal dunes, coastal scrub and north coast coniferous forests. Blooms March - September.	No Potential. Species not found during botanical surveys.
Franciscan thistle	*Cirsium andrewsii*	.../.../1B.2	Coastal bluff scrub, broadleaved upland forest, coastal scrub; sometimes in serpentine seeps. Blooms March - July.	No Potential. Species not found during botanical surveys.
Santa Clara red ribbons	*Clarkia concinna ssp. automixa*	.../.../4.3	Chaparral and cismontane woodland. Blooms April - July.	No Potential. Species not found during botanical surveys.

COMMON NAME	SCIENTIFIC NAME	STATUS FED/STATE/CNPS	HABITAT	OCCURRENCE POTENTIAL
Plants (cont'd)				
Presidio clarkia	*Clarkia franciscana*	FE/SE/1B.1	Coastal scrub, grassland; in serpentine outcrops. Blooms May - July.	No Potential. Suitable soils not present. Species not found during botanical surveys.
Point Reyes bird's-beak	*Cordylanthus maritimus ssp. palustris*	…/…/1B.2	Coastal salt marshes and swamps. Blooms June - October.	No Potential. Suitable wetland habitat not present. Species not found during botanical surveys.
western leatherwood	*Dirca occidentalis*	…/…/1B.2	Broadleaved upland forest, closed-cone coniferous forest, north coast coniferous forest, riparian woodland, cismontane woodland, chaparral; on brushy, mesic slopes. Blooms January - April.	No Potential. Known location in riparian woodland 0.5 miles west of project site. Species not found during botanical surveys.
Tiburon buckwheat	*Eriogonum luteolum var. caninum*	…/…/1B.2	Serpentinite, chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Blooms May - September.	No Potential. Suitable soils not present. Species not found during botanical surveys.
minute pocket moss	*Fissidens pauperculus*	…/…/1B.2	Moss found in damp coastal soils in north coast coniferous forests.	No Potential. Suitable soils not present. Species not found during botanical surveys.
fragrant fritillary	*Fritillaria liliacea*	…/…/1B.2	Coastal scrub, grassland, coastal prairie; in various soils, including serpentine but usually clay. Blooms February - April.	No Potential. Species not found during botanical surveys.
Diablo helianthella	*Helianthella castanea*	…/…/1B.2	Chaparral, cismontane woodland, coastal scrub, grassland; usually in ecotone between chaparral and oak woodland, in partial shade. Blooms March - June.	No Potential. Known location 0.2 miles east of the project site. Species not found during botanical surveys.
Loma Prieta hoita	*Hoita strobilina*	…/…/1B.1	Chaparral, cismontane woodland, riparian woodland; on mesic, serpentine sites. Blooms May - October	No Potential. Suitable soils not present. Species not found during botanical surveys.
Santa Cruz tarplant	*Holocarpha macradenia*	FT/SE/1B.1	Coastal prairie, grassland; in sandy or clay soil. Blooms June - October. All wild populations extirpated from Alameda and Contra Costa Counties.	No Potential. All wild populations locally extirpated. Species not found during botanical surveys.

COMMON NAME	SCIENTIFIC NAME	STATUS FED/STATE/CNPS	HABITAT	OCCURRENCE POTENTIAL
Plants (cont'd)				
Oregon meconella	*Meconella oregana*	…/…/1B.1	Coastal prairie, coastal scrub; on open, moist sites. Blooms March - April.	No Potential. Occurs within 1 mile of project site. Species not found during botanical surveys.
robust monardella	*Monardella villosa ssp. globosa*	…/…/1B.2	Broadleaved upland forest, cismontane woodland, chaparral, grassland; in openings. Blooms June - July.	No Potential. Species not found during botanical surveys.
woodland woollthreads	*Monolopia gracilens*	…/…/1B.2	Serpentine soils within openings in broadleafed upland forest, chaparral, cismontane woodland, north coast coniferous forest, valley and foothill grassland. Blooms February - July.	No Potential. Suitable soils not present. Species not found during botanical surveys.
Marin knotweed	*Polygonum marinense*	…/…/3.1	Annual herb found in salt marshes and swamps. Blooms April - October.	No Potential. Suitable marsh habitat not present. Species not found during botanical surveys.
most beautiful jewel-flower	*Streptanthus albidus ssp. peramoenus*	…/…/1B.2	Cismontane woodland, chaparral, grassland; in serpentine outcrops on ridges and slopes. Blooms April - June.	No Potential. Suitable soils not present. Known location within 1 mile of project site. Species not found during botanical surveys.
slender-leaved pondweed	*Stuckenia filiformis ssp. alpina*	…/…/2B.2	Freshwater marshes and swamps. Blooms May - July.	No Potential. Suitable wetland habitat not present. Species not found during botanical surveys.
California seablite	*Suaeda californica*	FE/…/1B.1	Coastal salt marshes and swamps. Blooms July - October.	No Potential. Suitable marsh habitat not present. Species not found during botanical surveys.
saline clover	*Trifolium hydrophilum*	…/.../1B.2	Marshes and swamps, valley and foothill grasslands and vernal pools. Blooms April - June.	No Potential. Suitable wetland habitat not present. Species not found during botanical surveys.

COMMON NAME	SCIENTIFIC NAME	STATUS FED/STATE	HABITAT	OCCURRENCE POTENTIAL
Invertebrates				
vernal pool fairy shrimp	*Branchinecta lunchi*	FT/…	Occur in small depressions in sandstone outcrops surrounded by foothill grasslands, swales, earth slumps, or basalt-flow depression basins with grassy or muddy bottom. Inhabits vernal pools in unplowed grass lands in the Coast Ranges. Active between December and May.	No Potential. Suitable freshwater wetland habitat not present.
San Bruno elfin butterfly	*Callophrys mossii bayensis*	FE/…	Coastal, mountainous areas with grassy ground cover, mainly in the vicinity of San Bruno Mountain, San Mateo County. Colonies are located on steep, north-facing slopes within the fog belt. The adult flight period is late February to mid-April. Eggs are laid on stonecrop (*Sedum spathulifolium*).	No potential. Suitable habitat not present. Outside of species' historic range. No known occurrences in the East Bay Hills.
monarch butterfly	*Danaus plexippus*	…/ Wintering locations protected	Overwinter in wind protected tree groves of coastal California conifer, cypress or Eucalyptus. Caterpillars feed almost exclusively on milkweed (*Asclepias sp*.).	Low Potential. Mature trees on site provide marginal winter roost habitat.
bay checkerspot butterfly	*Euphydryas editha bayensis*	FT/…	Sparse native grassland or scrub in sperpentine soils. Larval host plants are California plantain (*Plantago erecta*), indian paintbrush (*Castilleja densiflora*) or purple owl'sclover (*C. exerta*).	Low Potential. Host plant present. No currently known populations in the East Bay Hills.
Bridges' coast range shoulderband	*Helminthoglypta nickliniana bridgesi*	…/…	Inhabits open hillsides of Alameda and Contra Costa counties. Found under rock piles, under tall grasses or weeds and under riparian woody debris.	Moderate Potential. Open hillsides surrounded by grass and herbaceous vegetation present.
Lee's micro-blind harvestman	*Microcina leei*	…/…	Found beneath sandstone rocks in xeric open oak grasslands. Only known from two occurrences in the Oakland-Berkeley Hills, near the UC Berkeley campus.	Low Potential. Suitable sandstone rock habitat not present.
callippe silverspot butterfly	*Speyeria callippe callippe*	FE/…	Grasslands with host plant Johnny jump-up (*Viola pedunculata*). Last remaining populations found in the eastern portions of the San Bruno mountains.	No potential. Host plant not present. No currently known populations in the East Bay Hills.

COMMON NAME	SCIENTIFIC NAME	STATUS FED/STATE	HABITAT	OCCURRENCE POTENTIAL
Fish				
Sacramento perch	*Archoplites interruptus*	…/CSC	Pools and slow flowing portions of creeks and rivers and with aquatic vegetation, also occurs in lakes and ponds. Occur in Jewel Lake in Tilden Regional Park.	No Potential. Suitable habitat not present.
delta smelt	*Hypomesus transpacificus*	FT/SE	Tolerant of a wide salinity range, inhabiting bays, tidal rivers and sloughs. For a large part of their one-year life span, delta smelt live along the freshwater edge of the salt/freshwater mixing zone, where the salinity is ~2 ppt. Migrate upstream from the mixing zone to spawn in fresh or slightly brackish water in river channels, tidal backwater sloughs or channel edgewaters. Populations were known to concentrate in the lower Delta and upper Suisun Bay after breeding.	No Potential. Suitable habitat not present. Project will not impact downstream habitat.
steelhead (Central California Coast ESU)	*Oncorhynchus mykiss irrideus*	FT/…	The ESU includes all naturally spawned populations of steelhead in California streams from the Russian River to Aptos Creek, and the drainages of San Francisco and San Pablo Bays eastward to the Napa River.	No Potential. Suitable habitat not present.
Reptiles				
western pond turtle	*Emys marmorata*	…/CSC	Prefers permanent, slow-moving creeks, streams, ponds, rivers, marshes, and irrigation ditches with protected areas for basking and vegetated shorelines. Uses upland sites for egg deposition.	Low Potential. Suitable habitat not present. Dispersal habitat may be present.
Alameda whipsnake	*Masticophis lateralis euryxanthus*	FT/ST	Inhabits south-east to south-west facing slopes and ravines where chaparral or coastal scrub form a vegetative mosaic with oak woodlands and grasses. Uses rock outcrops for refugia. Restricted to the coast ranges between San Francisco Bay and Monterey.	High Potential. Suitable habitat present. Within designated critical habitat. Ten occurrences within a one mile radius of the project site.

COMMON NAME	SCIENTIFIC NAME	STATUS FED/STATE	HABITAT	OCCURRENCE POTENTIAL
Amphibians				
California tiger salamander	*Ambystoma californiense*	FT/ST	Breeds in temporary or semi-permanent pools such as seasonal wetlands, vernal pools, stock ponds or slow-moving streams that do not support predatory fish. Seeks cover in small mammal burrows in grasslands and oak woodlands.	No Potential. Suitable breeding habitat not present and isolated from known populations.
foothill yellow-legged frog	*Rana boylii*	…/CSC	Inhabits permanent, slow-moving stream courses in the Coast Ranges and Sierra Nevada foothills. These streams usually contain a cobble substrate and a mixture of open canopy riparian vegetation.	No Potential. Suitable habitat not present. Historically occurred in San Pablo Creek. Presumed extirpated within EBMUD lands.
California red-legged frog	*Rana draytonii*	FT/CSC	Prefers semi-permanent and permanent stream pools, ponds, and creeks with emergent and/or riparian vegetation. Will occupy upland areas during the wet winter months.	Low Potential. Suitable breeding habitat not present.
Birds				
tricolored blackbird	*Agelaius tricolor*	BCC/CSC	Nests and seeks cover in emergent wetland vegetation, specifically cattails and tules. Forages on ground in croplands, grassy fields, and edges of ponds. Colonial nester.	No Potential. Suitable habitat not present
bell's sparrow	*Amphispiza belli belli*	BCC/WL	Generally prefers semi-open habitats with evenly spaced shrubs 1-2 m high. Found in dry chaparral and coastal sage scrub in Contra Costa County.	Moderate Potential. Marginal habitat adjacent o project site.
golden eagle	*Aquila chrysaetos*	BCC/CFP	Found primarily in open hilly or mountainous grasslands and oak savannah. Forages in a variety of habitats including grass lands, chaparral, and oak woodland with abundant mammals. Nests on cliffs, escarpments, and tall trees.	Moderate. Suitable foraging and marginal nesting habitat present.
short-eared owl	*Asio flammeus*	BCC/CSC	Found in open areas with low vegetation such as annual and perennial grasslands, prairies, dunes, meadows, irrigated lands, and emergent wetlands. Roost by day on ground, on low open perch, under low shrub, or in conifers.	Moderate. Suitable foraging habitat onsite.

COMMON NAME	SCIENTIFIC NAME	STATUS FED/STATE	HABITAT	OCCURRENCE POTENTIAL
Birds (cont'd)				
long-eared owl	*Asio otus*	…/CSC	Breeds mainly in dense coniferous or mixed woodland, including riparian woodlands. Nests in large used nests of other bird species or squirrel. Forages over open fields and marshes.	Low Potential. Marginal foraging habitat present.
burrowing owl	*Athene cunicularia*	BCC/CSC	Found in open, dry grasslands, deserts, prairies, farmland and scrublands with low growing vegetation. Occurs in areas with abundant active and abandoned mammal burrows; especially ground squirrels. Occurs in lowlands throughout California.	Low Potential. Marginal habitat present. No small mammal burrows onsite.
ferruginous hawk	*Buteo regalis*	BCC/WL	Occurs in open grasslands, sagebrush flats, desert scrub, low foothills and surrounding valleys, and fringes of pinyon-juniper habitats. In California, the ferruginous hawk is an uncommon winter resident and migrant at lower elevations in the Coast Ranges.	Moderate. Suitable foraging habitat present.
Swainson's Hawk	*Buteo swainsoni*	BCC/ST	Forages in grasslands, grain fields or livestock pastures adjacent to nesting habitat. Nests on large trees in open areas. Nests typically in solitary trees, bushes, or in small grove along shelterbelts.	Moderate. Suitable foraging habitat present.
western snowy plover	*Charadrius alexandrinus nivosus*	FT/CSC	Breed primarily on unvegetated coastal beaches including: sand spits, dunes, open areas around estuaries, and river mouths. In winter, found on many of the beaches used for nesting as well as on beaches where they do not nest such as man-made salt ponds and on estuarine sand and mud flats.	No Potential. Suitable habitat not present.
northern harrier	*Circus cyaneus*	…/CSC	Nests and forages in grasslands and agricultural fields. Nests on ground in shrubby vegetation, dense grass, or crops such as wheat and barley, often at the edge of marshes.	Low Potential. Suitable foraging habitat not present.

COMMON NAME	SCIENTIFIC NAME	STATUS FED/STATE	HABITAT	OCCURRENCE POTENTIAL
Birds (cont'd)				
olive-sided flycatcher	*Contopus cooperi*	BCC/CSC	Most often found in montane conifer forests where tall trees overlook canyons, meadows, lakes or other open terrain. Prefer openings with dead standing trees near water, burns and blow downs.	No Potential. Suitable habitat not present.
yellow rail	*Coturnicops noveboracensis*	BCC/CSC	Found in grain fields in winter and when migrating. Winters in both fresh and brackish marshes and deep grass. Uses many open habitats, from rice paddies to dry hayfields in fall. Breeds in freshwater emergent wetlands, grass or sedge marshes and wet meadows.	No Potential. Suitable habitat not present.
white-tailed kite	*Elanus leucurus*	…/CFP	Inhabits agricultural areas, low rolling foothills, valley margins with scattered oaks, river floodplains or marshes adjacent to deciduous woodlands. Forages in grasslands and meadows.	Moderate. Suitable foraging habitat present.
peregrine falcon	*Falco peregrinus*	BCC/CFP	Breeds mostly in woodland, forest, and coastal habitats. Breeds near water on high cliffs or banks and will nest on human-made structures.	Low Potential. Suitable breeding habitat not present.
common yellowthroat	*Geothlypis trichas sinuosa*	BCC/CSC	Occurs in salt marshes. Nests just above ground or over water, in thick herbaceous vegetation, often at base of shrub or sapling, sometimes higher in weeds or shrubs up to about 1 meter. Found in the Bay Area during migration and winter.	No Potential. Suitable habitat not present.
bald eagle	*Haliaeetus leucocephalus*	BCC/SE	Found near ocean shorelines, lakes, reservoirs, river systems, and coastal wetlands. Usually found less than 2 km from water that offers foraging opportunities. Foraging habitat consists of large bodies of water or rivers with abundant fish and adjacent perching sites such as snags or large trees.	Moderate. Suitable foraging habitat at San Pablo Reservoir.

COMMON NAME	SCIENTIFIC NAME	STATUS FED/STATE	HABITAT	OCCURRENCE POTENTIAL
Birds (cont'd)				
least bittern	*Ixobrychus exilis*	BCC/CSC	Occurrences have been associated particularly with cattail vegetated edges along deep, open waters. Breeds in tall emergent vegetation in primarily freshwater marshes. May use coastal brackish marshes with scattered bushes or woody growth.	No Potential. Suitable habitat not present.
loggerhead shrike	*Lanius ludovicianus*	BCC/CSC	Nests in woodland and scrub habitats at margins of open grasslands. Often uses lookout perches such as fence posts. Found in lowlands and foothills.	Moderate. Suitable foraging habitat onsite and nesting habitat adjacent to project area.
California black rail	*Laterallus jamaicensis coturniculus*	BCC/ST	Nests in high portions of salt marshes, shallow freshwater marshes, wet meadows, and flooded grassy vegetation. Most breeding areas vegetated by rushes, grasses, or sedges.	No Potential. Suitable habitat not present.
Alameda song sparrow	*Melospiza melodia pusillula*	BCC/CSC	Inhabits salt marsh habitats with dense vegetation, and uses upland habitats for refugia. Occurs only along the southern and eastern fringes of the San Francisco Bay.	No Potential. Suitable habitat not present.
San Pablo song sparrow	*Melospiza melodia samuelis*	BCC/CSC	Found in fringe areas where marsh vegetation is limited to edges of dikes, landfills, or other margins of high ground bordering salt or brackish water.	No Potential. Suitable habitat not present
California brown pelican	*Pelecanus occidentalis californicus*	FD/CFP	Found in estuarine, marine sub-tidal, and marine pelagic waters along the California coast. Nests on coastal islands of small to moderate size. Also uses mudflats, sandy beaches, wharfs, and jetties.	No Potential. Suitable habitat not present
California clapper rail	*Rallus longirostris obsoletus*	FE/SE	Inhabits tidal salt marshes of the greater San Francisco Bay. Some individuals may use brackish marshes during the spring breeding season.	No Potential. Suitable habitat not present
California least tern	*Sternula antillarum*	FE/SE	Occur along marine and estuarine shores where small fish are abundant. Nests on sand dunes close to water in loose colonies relatively free of disturbance along the coast from southern California to San Francisco Bay.	No Potential. Suitable habitat not present.

COMMON NAME	SCIENTIFIC NAME	STATUS FED/STATE	HABITAT	OCCURRENCE POTENTIAL
Mammals				
pallid bat	*Antrozous pallidus*	…/CSC	Open, dry habitats such as deserts, grasslands, and shrub lands with rocky areas for roosting. Roosts in caves, mine tunnels, crevices in rocks, buildings, and trees. Very sensitive to disturbance of roosting sites. Forages in open habitats.	Moderate. Mature trees on site may provide suitable roost habitat.
ring-tailed cat	*Bassariscus astutus*	…/CFP	Inhabits desert scrub, chaparral, pine-oak and conifer woodland. Usually within 1/2 miles of water. Dens in rock shelter, tree hollow, under tree roots, burrows dug by other animals, remote buildings, and beneath brush piles. Secretive, may be common in areas where seldom observed.	Low Potential. Marginal habitat present.
Townsend's big-eared bat	*Corynorhinus townsendii*	…/CSC	Roosts in caves, mine tunnels, abandoned buildings, and other structures. Inhabits a variety of plant communities including coastal conifer and broad-leaf forests, oak and conifer woodlands, arid grasslands, and deserts. Most commonly associated with mesic sites. Highly sensitive to disturbances.	Low Potential. Suitable roosting habitat present.
Berkeley kangaroo rat	*Dipodomys heermanni berkeleyensis*	…/…	Known from open grassy hilltops and open spaces in chaparral and blue oak or pine woodlands in Alameda and Contra Costa Counties. Needs fine, deep, well-drained soil for burrowing. Prefers arid or semi-arid habitats with short grasses and open patches of bare ground. Highly adapted to arid conditions and rarely needs to drink water.	Low Potential. Habitat present but species considered extirpated.
silver-haired bat	*Lasionycteris noctivagans*	…/…	Primarily a coastal & montane forest dweller feeding over streams, ponds & open brushy areas.	Moderate Potential. Mature trees on site may provide suitable roost habitat.
hoary bat	*Lasiurus cinereus*	…/…	Found throughout California. Habitats suitable for bearing young include all woodlands and forests with medium to large trees and dense foliage.	Moderate Potential. Mature trees on site may provide suitable roost habitat.

COMMON NAME	SCIENTIFIC NAME	STATUS FED/STATE	HABITAT	OCCURRENCE POTENTIAL
Mammals(cont'd)				
dusky footed woodrat	*Neotoma fuscipes annectens*	…/CSC	Evergreen or live oaks and other dense, thick-leaved trees and shrubs are important habitat components for this species. In riparian areas, highest densities of woodrats and their houses are often encountered in willow thickets with an oak overstory. Middens constructed on the ground or in trees.	High Potential. Suitable habitat present in adjacent oak woodlands and chaparral. No habitat within tank footprint.
big free-tailed bat	*Nyctinomops macrotis*	…/…	Found in rocky areas in rugged or hilly country including evergreen forest, woodlands, desert scrub, river floodplains, and stream courses in areas of mixed tropical deciduous forest and thorn forests. Roost primarily in crevices near the tops of cliffs, but sometimes are found in buildings, caves, or occasionally tree cavities.	Low Potential. Suitable roost habitat not present.
salt-marsh harvest mouse	*Reithrodontomys raviventris*	FE/SE	Restricted to saline emergent wetlands of San Francisco Bay and its tributaries. Habitat consists primarily of pickleweed salt and brackish marshes. Builds loose nests. Uses high ground to escape high tides and floods.	No Potential. Suitable habitat not present.
American badger	*Taxidea taxus*	…/CSC	Inhabits open grass lands, savannas, and mountain meadows near timberline. Requires abundant burrowing mammals, their principal food source, and loose, friable s oils. Distributed throughout California.	Low Potential. Grassland habitat present but there are no recent records of occurrence in the project vicinity.

Appendix B:

List of Plant Species identified in the CNPS Rare or Endangered Plant Inventory, *The Rare, Unusual or Significant Plants of Alameda or Contra Counties* and EBMUD's Managed Species Database for the Dos Osos Reservoir Replacement Project

Table 1. CNPS Rare and Endangered Plant Inventory Query (nine quads surrounding 37122H2)

SCIENTIFIC NAME	COMMON NAME	CNPS RANK
Amsinckia lunaris	bent-flowered fiddleneck	1B.2
Androsace elongata ssp. acuta	California androsace	4.2
Arctostaphylos pallida	pallid manzanita	1B.1
Astragalus tener var. tener	alkali milk-vetch	1B.2
Atriplex coronata var. coronata	crownscale	4.2
Balsamorhiza macrolepis	big-scale balsamroot	1B.2
Blepharizonia plumosa	big tarplant	1B.1
California macrophylla	round-leaved filaree	1B.2
Calochortus pulchellus	Mt. Diablo fairy-lantern	1B.2
Calochortus umbellatus	Oakland star-tulip	4.2
Calystegia purpurata ssp. saxicola	coastal bluff morning-glory	1B.2
Castilleja ambigua var. ambigua	johnny-nip	4.2
Centromadia parryi ssp. congdonii	Congdon's tarplant	1B.1
Chloropyron maritimum ssp. palustre	Point Reyes bird's-beak	1B.2
Chloropyron molle ssp. molle	soft bird's-beak	1B.2
Chorizanthe cuspidata var. cuspidata	San Francisco Bay spineflower	1B.2
Chorizanthe robusta var. robusta	robust spineflower	1B.1
Cicuta maculata var. bolanderi	Bolander's water-hemlock	2B.1
Cirsium andrewsii	Franciscan thistle	1B.2
Clarkia concinna ssp. automixa	Santa Clara red ribbons	4.3
Clarkia franciscana	Presidio clarkia	1B.1
Dirca occidentalis	western leatherwood	1B.2
Eleocharis parvula	small spikerush	4.3
Eriogonum luteolum var. caninum	Tiburon buckwheat	1B.2
Extriplex joaquinana	San Joaquin spearscale	1B.2
Fissidens pauperculus	minute pocket moss	1B.2
Fritillaria liliacea	fragrant fritillary	1B.2
Gilia capitata ssp. chamissonis	blue coast gilia	1B.1
Helianthella castanea	Diablo helianthella	1B.2
Hoita strobilina	Loma Prieta hoita	1B.1
Holocarpha macradenia	Santa Cruz tarplant	1B.1
Horkelia cuneata var. sericea	Kellogg's horkelia	1B.1
Iris longipetala	coast iris	4.2
Isocoma arguta	Carquinez goldenbush	1B.1
Juglans hindsii	Northern California black walnut	1B.1
Juglans californica	Southern California black walnut	4.2
Lasthenia conjugens	Contra Costa goldfields	1B.1

Table 1. Continued

SCIENTIFIC NAME	COMMON NAME	CNPS RANK
Lathyrus jepsonii var. jepsonii	Delta tule pea	1B.2
Leptosiphon acicularis	bristly leptosiphon	4.2
Lilaeopsis masonii	Mason's lilaeopsis	1B.1
Limosella australis	Delta mudwort	2B.1
Meconella oregana	Oregon meconella	1B.1
Micropus amphibolus	Mt. Diablo cottonweed	3.2
Monardella antonina ssp. antonina	San Antonio Hills monardella	3
Monolopia gracilens	woodland woolythreads	1B.2
Navarretia gowenii	Lime Ridge navarretia	1B.1
Plagiobothrys chorisianus var. chorisianus	Choris' popcorn-flower	1B.2
Plagiobothrys diffusus	San Francisco popcorn-flower	1B.1
Polygonum marinense	Marin knotweed	3.1
Ranunculus lobbii	Lobb's aquatic buttercup	4.2
Sanicula maritima	adobe sanicle	1B.1
Senecio aphanactis	chaparral ragwort	2B.2
Streptanthus albidus ssp. peramoenus	most beautiful jewel-flower	1B.2
Stuckenia filiformis ssp. alpina	slender-leaved pondweed	2B.2
Suaeda californica	California seablite	1B.1
Symphyotrichum lentum	Suisun Marsh aster	1B.2
Trifolium hydrophilum	saline clover	1B.2
Viburnum ellipticum	oval-leaved viburnum	2B.3

Table 2. *Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties*, located within the Orinda region. Plants identified in EBMUD' s managed species database within one mile of the Project area are noted.

SCIENTIFIC NAME	COMMON NAME	CNPS RANK	LOCAL LIST	EBMUD DATA
Adiantum aleuticum	Western five finger	NONE	A2	
Agrostis hallii	Hall redtop	NONE	A2	
Amsinckia lunaris	Bent-flowered fiddleneck	List 1B.2	A2	1 mile
Asarum caudatum	Longtail wild ginger	NONE	A2	
Calochortus umbellatus	Oakland star-tulip	List 4.2	A2	1 mile
Ceanothus thyrsiflorus	Blueblossom	NONE	A2	
Cirsium quercetorum	Alameda County thistle	NONE	A2	
Deschampsia holciformis	California hairgrass	NONE	A2	
Dirca occidentalis	Western leatherwood	List 1B.2	A2	1 mile
Elymus x hansenii	Rye grass	NONE	A2	
Helianthella castanea	Diablo helianthella	List 1B.2	A2	1 mile
Iris douglasiana	Douglas Iris	NONE	A2	
Layia gaillardioides	Woodland layia	NONE	A2	
Layia hieracioides	Tall layia	NONE	A2	1 mile
Lilium pardalinum ssp. pardalinum	Leopard lily	NONE	A2	
Lupinus arboreus	Coastal bush lupine	CAL-IPC	A2	
Meconella oregana	Oregon meconella	List 1B.1	A2	1 mile
Morella californica	California wax myrtle	NONE	A2	
Penstemon heterophyllus var. purdyi	Purdy's foothill penstemon	NONE	A2	
Prunella vulgaris ssp. lanceolata	Mountain Selfheal	NONE	A1	
Psilocarphus chilensis	Round woolly marbles	NONE	A1	
Scutellaria californica	California skullcap	NONE	A2	1 mile
Sidalcea diploscypha	Fringed sidalcea	NONE	A2	
Sisyrinchium californicum	California golden eyed grass	NONE	A1	
Stachys ajugoides var. ajugoides	Ajuga hedge nettle	NONE	A2	

Appendix C:

Results of the Botanical Resources Inventory for the Dos Osos Reservoir Replacement Project

July 15, 2016

Dos Osos Water Tank Placement

Purchase Order: 482-25812-AX
Project ID: 1010733
Vendor: 10126877

Ms. Jessica Purificato
East Bay Municipal Utilities District
500 San Pablo Dam Road
Orinda, CA 94563

Re: Botanical Resources Survey

Dear Ms. Purificato:

Sapere Environmental, Inc. is providing you with the results of our botanical resources survey for the Dos Osos Water Tank Placement at the Siesta Valley Open Space Preserve.

Introduction and Background

East Bay Municipal Utilities District (EBMUD) proposes to relocate two water distribution tanks onto a grazed grassland area located in the Siesta Valley open space preserve near Orinda, California. Botanical surveys were conducted in the summer of 2015 and the spring of 2016 to determine if sensitive botanical resources could be impacted by access, staging, and construction within the project footprint.

Methods

Biologists conducted a review of sensitive species with the potential to occur within the study area, then determined survey dates which would coincide with the bloom periods of each of these species. Two biologists surveyed the project footprint during each of these periods: June 29, 2015; March 3, 2016; May 27, 2016. Botanical specimens were identified using the *Jepson Manual: Vascular Plants of California* (2012).

Results

No sensitive botanical resources were observed at the Dos Osos study area. A list of the vascular plant species observed is included below.

Table 1. Plants in the Study Area

Scientific Name	Common Name	Family	Nativity	Status
Acaena pinnatifida var. *californica*	California sheep bur	Rosaceae	Native	NA
Achillea millefolium	white yarrow	Asteraceae	Native	NA
Achyrachaena mollis	blow wives	Asteraceae	Native	NA
Anagallis arvensis	scarlet pimpernel	Myrsinaceae	Non-Native	NA
Arnica discoidea	rayless arnica	Asteraceae	Native	Ub
Avena barbata	barbed wild oats	Poaceae	Non-Native	Cal-IPC Moderate
Avena fatua	common wild oats	Poaceae	Non-Native	Cal-IPC Moderate
Baccharis pilularis	coyote brush	Asteraceae	Native	NA
Brassica nigra	black mustard	Brassicaceae	Non-Native	Cal-IPC Moderate
Briza maxima	big rattlesnake grass	Poaceae	Non-Native	Cal-IPC Limited
Brodiaea elegans	harvest brodiaea	Themidaceae	Native	NA
Bromus carinatus var. *carinatus*	California brome	Poaceae	Native	NA
Bromus diandrus	ripgut brome	Poaceae	Non-Native	Cal-IPC Moderate
Bromus hordeaceus	soft chess	Poaceae	Non-Native	Cal-IPC Limited
Calystegia subacaulis	stemless morning glory	Convolvulaceae	Native	NA
Carduus pycnocephalus	Italian thistle	Asteraceae	Non-Native	Cal-IPC Moderate
Chlorogalum pomeridianum	common soap-root	Agavaceae	Native	NA
Cirsium vulgare	bull thistle	Asteraceae	Non-Native	Cal-IPC Moderate
Clarkia rubicunda	ruby chalice clarkia	Onagraceae	Native	w
Conium maculatum	poison hemlock	Apiaceae	Non-Native	Cal-IPC Moderate
Cynosurus echinatus	spiny dogtail grass	Poaceae	Non-Native	Cal-IPC Moderate
Dichondra donelliana	California ponysfoot	Convolvulaceae	Native	Ua1
Distichlis spicata	salt grass	Poaceae	Native	NA
Elymus elymoides	bottlebrush squirreltail	Poaceae	Native	NA
Elymus glaucus	blue wildrye	Poaceae	Native	NA
Elymus triticoides	creeping wildrye	Poaceae	Native	NA
Epilobium brachycarpum	common willow herb	Onagraceae	Native	NA
Erodium botrys	longbeak stork's bill	Geraniaceae	Non-Native	NA
Erodium cicutarium	redstem stork's bill	Geraniaceae	Non-Native	Cal-IPC Limited
Eschscholzia californica	California poppy	Papaveraceae	Native	NA
Festuca myuros	rattail fescue	Poaceae	Non-Native	Cal-IPC Moderate
Festuca perennis	Italian wildrye	Poaceae	Non-Native	Cal-IPC Moderate
Heracleum maximum	cow parsnip	Apiaceae	Native	NA
Hordeum murinum	foxtail barley	Poaceae	Non-Native	Cal-IPC Moderate
Hypochaeris radicata	rough cat's ear	Asteraceae	Non-Native	Cal-IPC Moderate
Leontodon saxatilis	hawkbit	Asteraceae	Non-Native	NA
Lupinus albifrons	silver bush lupine	Fabaceae	Native	NA
Lupinus bicolor	dove lupine	Fabaceae	Native	NA
Lupinus formosus	summer lupine	Fabaceae	Native	NA

Scientific Name	Common Name	Family	Nativity	Status
Madia sativa	coast tarplant	Asteraceae	Native	NA
Perideridia kelloggii	Kellogg's yampah	Apiaceae	Native	NA
Quercus agrifolia	coast live oak	Fagaceae	Native	NA
Raphanus raphanistrum	jointed charlock	Brassicaceae	Non-Native	NA
Ribes californicum	California gooseberry	Grossulariaceae	Native	NA
Rumex acetosella	sheep sorrel	Polygonaceae	Non-Native	Cal-IPC Moderate
Rumex crispus	curly dock	Polygonaceae	Non-Native	Cal-IPC Limited
Rumex pulcher	fiddle dock	Polygonaceae	Non-Native	NA
Sambucus nigra	blue elderberry	Adoxaceae	Native	NA
Sanicula bipinnatifida	purple sanicle	Apiaceae	Native	NA
Sanicula crassicaulis	Pacific black snakeroot	Apiaceae	Native	NA
Sidalcea malviflora ssp. *malviflora*	dwarf checkerbloom	Malvaceae	Native	w
Silybum marianum	common milkthistle	Asteraceae	Non-Native	Cal-IPC Limited
Sisyrinchium bellum	common blue-eyed grass	Iridaceae	Native	NA
Spergularia bocconi	Boccone's sand spurry	Caryophyllaceae	Non-Native	NA
Stipa pulchra	purple needlegrass	Poaceae	Native	NA
Symphoricarpos mollis	creeping snowberry	Caprifoliaceae	Native	NA
Symphyotrichum chilense	California aster	Asteraceae	Native	NA
Torilis arvensis	sock destroyer	Apiaceae	Non-Native	Cal-IPC Moderate
Toxicodendron diversilobum	poison oak	Anacardiaceae	Native	NA
Tragopogon porrifolius	purple salsify	Asteraceae	Non-Native	NA
Trifolium fragiferum	strawberry clover	Fabaceae	Non-Native	NA
Trifolium hirtum	rose clover	Fabaceae	Non-Native	Cal-IPC Moderate
Trifolium wildenovii	tomcat clover	Fabaceae	Native	NA
Triteleia laxa	Ithuriel's spear	Themidaceae	Native	NA
Umbellularia californica	California bay laurel	Lauraceae	Native	NA
Vicia sativa	spring vetch	Fabaceae	Non-Native	NA
Vicia villosa ssp. varia	woollypod vetch	Fabaceae	Non-Native	NA
Wyethia angustifolia	narrow-leaf mule's ears	Asteraceae	Native	NA

Key to Status Codes

Special-Status Species

FE	Federally Endangered
FT	Federally Threatened
SE	State Endangered
ST	State Threatened

California Rare Plant Ranking (CRPR)

1A	Plants Presumed Extinct
1B	Plants Rare, Threatened, or Endangered in California and elsewhere
2A	Plants Presumed Extirpated in California, but common elsewhere
2B	Plants Rare, Threatened, or Endangered in California, but common elsewhere
3	Review List - more information is needed
4	Plants of Limited Distribution (Watch List)

Unusual and Significant Plants List (U)

a1	2 known localities or less
a2	more than 2 localities, but seriously Threatened
b	3-5 localities, Threatened but not as seriously
w	Diane Lake's Watch List

CALIFORNIA INVASIVE PLANT COUNCIL RANKINGS (CAL-IPC)

High	Species which have severe ecological impacts
Moderate	Species which have substantial and apparent (but not severe) ecological impacts
Limited	Species which are invasive, but their ecological impacts are minor statewide

Conclusion

Because no sensitive botanical resources were observed at the Dos Osos site, no further recommendations are made at this time.

References

Bruce G. Baldwin, Goldman, Douglas H., Keil, David J., Patterson, Robert, Rosatti, Thomas, Wilken, Deiter H., eds. 2012. The Jepson Manual: Vascular Plants of California, Second Edition. University of California Press. Berkeley, CA.

Mason, Herbert L. 1957. A Flora of the Marshes of California. University of California Press, Berkeley, CA.

Appendix D:

USFWS Official Species List of Threatened and Endangered Species for the Dos Osos Reservoir Replacement Project

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
FEDERAL BUILDING, 2800 COTTAGE WAY, ROOM W-2605
SACRAMENTO, CA 95825
PHONE: (916)414-6600 FAX: (916)414-6713

Consultation Code: 08ESMF00-2016-SLI-0046 October 08, 2015
Event Code: 08ESMF00-2016-E-00090
Project Name: Dos Osos Reservoir Replacement

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2)

of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

The table below outlines lead FWS field offices by county and land ownership/project type. Please refer to this table when you are ready to coordinate (including requests for section 7 consultation) with the field office corresponding to your project, and send any documentation regarding your project to that corresponding office. Therefore, the lead FWS field office may not be the office listed above in the letterhead. Please visit our office's website (http://www.fws.gov/sacramento) to view a map of office jurisdictions.

Lead FWS offices by County and Ownership/Program

County	Ownership/Program	Species	Office Lead*
Alameda	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Alameda	All ownerships but tidal/estuarine	All	SFWO
Alpine	Humboldt Toiyabe National Forest	All	RFWO
Alpine	Lake Tahoe Basin Management Unit	All	RFWO
Alpine	Stanislaus National Forest	All	SFWO
Alpine	El Dorado National Forest	All	SFWO
Colusa	Mendocino National Forest	All	AFWO
Colusa	Other	All	By jurisdiction (see map)
Contra Costa	Legal Delta (Excluding ECCHCP)	All	BDFWO
Contra Costa	Antioch Dunes NWR	All	BDFWO
Contra Costa	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Contra Costa	All ownerships but tidal/estuarine	All	SFWO

El Dorado	El Dorado National Forest	All	SFWO
El Dorado	LakeTahoe Basin Management Unit		RFWO
Glenn	Mendocino National Forest	All	AFWO
Glenn	Other	All	By jurisdiction (see map)
Lake	Mendocino National Forest	All	AFWO
Lake	Other	All	By jurisdiction (see map)
Lassen	Modoc National Forest	All	KFWO
Lassen	Lassen National Forest	All	SFWO
Lassen	Toiyabe National Forest	All	RFWO
Lassen	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Lassen	BLM Alturas Resource Area	All	KFWO
Lassen	Lassen Volcanic National Park	All (includes Eagle Lake trout on all ownerships)	SFWO
Lassen	All other ownerships	All	By jurisdiction (see map)

Marin	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Marin	All ownerships but tidal/estuarine	All	SFWO
Mendocino	Russian River watershed	All	SFWO
Mendocino	All except Russian River watershed	All	AFWO
Napa	All ownerships but tidal/estuarine	All	SFWO
Napa	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Nevada	Humboldt Toiyabe National Forest	All	RFWO
Nevada	All other ownerships	All	By jurisdiction (See map)
Placer	Lake Tahoe Basin Management Unit	All	RFWO
Placer	All other ownerships	All	SFWO
Sacramento	Legal Delta	Delta Smelt	BDFWO
Sacramento	Other	All	By jurisdiction (see map)
San Francisco	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO

San Francisco	All ownerships but tidal/estuarine	All	SFWO
San Mateo	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Mateo	All ownerships but tidal/estuarine	All	SFWO
San Joaquin	Legal Delta excluding San Joaquin HCP	All	BDFWO
San Joaquin	Other	All	SFWO
Santa Clara	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
Santa Clara	All ownerships but tidal/estuarine	All	SFWO
Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Shasta	Hat Creek Ranger District	All	SFWO
Shasta	Bureau of Reclamation (Central Valley Project)	All	BDFWO
Shasta	Whiskeytown National Recreation Area	All	YFWO
Shasta	BLM Alturas Resource Area	All	KFWO

Shasta	Caltrans	By jurisdiction	SFWO/AFWO
Shasta	Ahjumawi Lava Springs State Park	Shasta crayfish	SFWO
Shasta	All other ownerships	All	By jurisdiction (see map)
Shasta	Natural Resource Damage Assessment, all lands	All	SFWO/BDFWO
Sierra	Humboldt Toiyabe National Forest	All	RFWO
Sierra	All other ownerships	All	SFWO
Solano	Suisun Marsh	All	BDFWO
Solano	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Solano	All ownerships but tidal/estuarine	All	SFWO
Solano	Other	All	By jurisdiction (see map)
Sonoma	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Sonoma	All ownerships but tidal/estuarine	All	SFWO
Tehama	Mendocino National Forest	All	AFWO
	Shasta Trinity National Forest		

Tehama	except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Tehama	All other ownerships	All	By jurisdiction (see map)
Yolo	Yolo Bypass	All	BDFWO
Yolo	Other	All	By jurisdiction (see map)
All	FERC-ESA	All	By jurisdiction (see map)
All	FERC-ESA	Shasta crayfish	SFWO
All	FERC-Relicensing (non-ESA)	All	BDFWO
***Office Leads:**			
AFWO=Arcata Fish and Wildlife Office			
BDFWO=Bay Delta Fish and Wildlife Office			
KFWO=Klamath Falls Fish and Wildlife Office			
RFWO=Reno Fish and Wildlife Office			
YFWO=Yreka Fish and Wildlife Office			

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Dos Osos Reservoir Replacement

Official Species List

Provided by:

Sacramento Fish and Wildlife Office
FEDERAL BUILDING
2800 COTTAGE WAY, ROOM W-2605
SACRAMENTO, CA 95825
(916) 414-6600

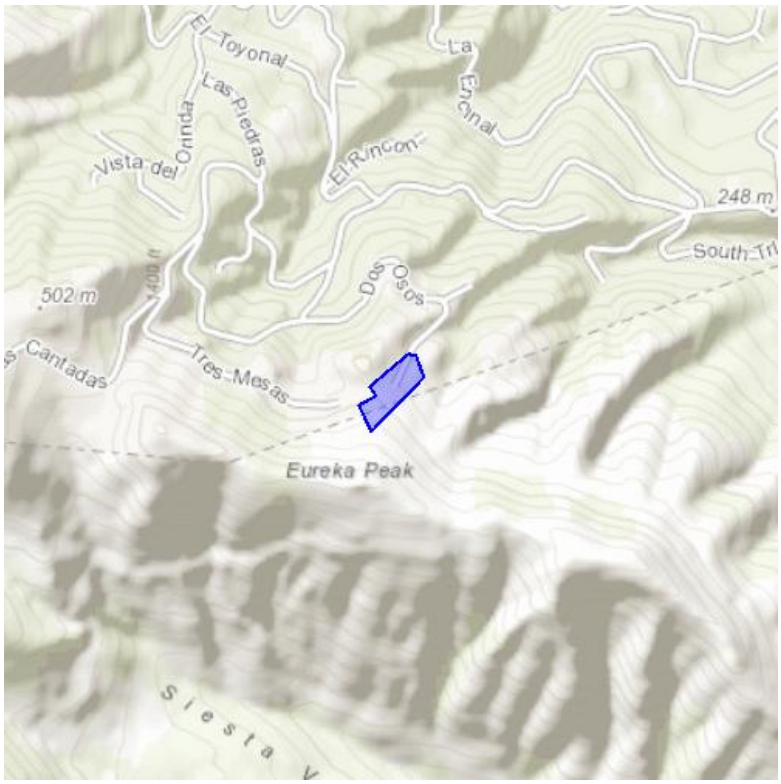
Consultation Code: 08ESMF00-2016-SLI-0046
Event Code: 08ESMF00-2016-E-00090

Project Type: WATER SUPPLY / DELIVERY

Project Name: Dos Osos Reservoir Replacement
Project Description: An existing reservoir tank will be replaced with dual 0.12-MG steel bolted reservoir tanks at a 70 foot higher elevation on an open space parcel approximately 800 feet to the southwest. A new paved access road will be constructed and the old tank will be demolished. The project footprint of the new tanks and access road will be approximately 0.3 acres.

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-122.20690582998773 37.880209585323975, -122.20810192162574 37.879219831169216, -122.20842048837139 37.879694624458196, -122.20800526929236 37.879860095303755, -122.20815724706648 37.88003732230767, -122.20726311206816 37.880637387921325, -122.20707782998333 37.88058947335135, -122.20690582998773 37.880209585323975)))

Project Counties: Contra Costa, CA

Endangered Species Act Species List

There are a total of 12 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Amphibians	**Status**	**Has Critical Habitat**	**Condition(s)**
California red-legged frog *(Rana draytonii)* Population: Entire	Threatened	Final designated	
California tiger Salamander *(Ambystoma californiense)* Population: U.S.A. (Central CA DPS)	Threatened	Final designated	
Birds			
California Clapper rail *(Rallus longirostris obsoletus)* Population: Entire	Endangered		
California Least tern *(Sterna antillarum browni)*	Endangered		
Crustaceans			
Vernal Pool fairy shrimp *(Branchinecta lynchi)* Population: Entire	Threatened	Final designated	
Fishes			
Delta smelt *(Hypomesus*	Threatened	Final designated	

transpacificus) Population: Entire			
steelhead *(Oncorhynchus (=salmo) mykiss)* Population: Northern California DPS	Threatened	Final designated	
Flowering Plants			
Pallid manzanita *(Arctostaphylos pallida)*	Threatened		
Santa Cruz tarplant *(Holocarpha macradenia)*	Threatened	Final designated	
Insects			
Callippe Silverspot butterfly *(Speyeria callippe callippe)* Population: Entire	Endangered		
San Bruno Elfin butterfly *(Callophrys mossii bayensis)* Population: Entire	Endangered		
Reptiles			
Alameda whipsnake *(Masticophis lateralis euryxanthus)* Population: Entire	Threatened	Final designated	

Critical habitats that lie within your project area

The following critical habitats lie fully or partially within your project area.

Reptiles	Critical Habitat Type
Alameda whipsnake *(Masticophis lateralis euryxanthus)* Population: Entire	Final designated

Appendix E:

Habitat Assessment Survey Report on the Bridge's Coast Range Shoulderband Snail for the Dos Osos Reservoir Replacement Project

Richard A. Arnold, Ph.D.
President

Entomological Consulting Services, Ltd.

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22 January 2016

Jessica Purificato, Fish & Wildlife Biologist II
East Bay Municipal Utility District
Fisheries and Wildlife Division
500 San Pablo Dam Road
Orinda, CA 94563

Re: Dos Osos Reservoir Replacement Project in Orinda, CA
Habitat Assessment Survey Report on the Bridge's Coast Range Shoulderband Snail

Dear Jessica:

This letter reports the findings of my habitat assessment survey for the Bridge's Coast Range Shoulderband snail at the proposed project site where the existing Dos Osos Reservoir will be replaced. I provide a brief project description, background information on the snail, and describe my habitat assessment survey methods and findings from my site visit conducted on January 21, 2016.

Project Setting and Description.

The existing Dos Osos Reservoir is located north of Eureka Peak, near the terminus of Los Norrabos Road in the El Toyonal neighborhood within the City of Orinda. It is situated on a 0.2-acre, paved footprint bordered by homes to the north and the Siesta Valley Watershed Property of the East Bay Municipal Utility District (EBMUD) to the south. The project site for the replacement reservoirs is located approximately 800 feet southwest (i.e., upslope) of the existing reservoir and is situated within the Siesta Valley. Two replacement reservoirs will be located where there is grazed annual grassland. In addition to the annual grassland this project site is surrounded by nearby areas of Coast Live Oak woodland, Coyote Brush scrub, and riparian woodland habitats.

Since the existing Dos Osos Reservoir is about 60 years old, it is near the end of its useful lifespan. The new, replacement reservoirs will be placed adjacent to each other at a slightly higher elevation (floor elevation 1,399 ft.) than the existing reservoir (floor elevation 1,318 ft.) to improve water distribution system operations of the pressure zone. Excavation and grading will occur to create a pad for the new dual tanks, an access road for their future operation and maintenance, and to bury water utility pipes. Approximately 0.3 to 0.5 acres will be impacted, including the removal of a maximum 20 trees.

Background Information.

Helminthoglypta nickliniana bridgesii (Newcomb, 1861) is a terrestrial snail that was described from a specimen collected in San Pablo, Contra Costa County, California. It is a subspecies of *Helminthoglypta nickliniana* (Lea, 1838), a species which is found in the central

Coast Range, from Sonoma County to Fresno County. This subspecies is commonly known as Bridge's Coast Range Shoulderband snail (hereafter "BCRSS").

BCRSS is similar in appearance to the introduced and more familiar Brown Garden Snail (*Helix aspersa*), but rather than having a cloudy-mottled color pattern, it has a golden-brown shell encircled by a neat single dark brown band. Under magnification, the shell surface resembles fine beadwork.

The BCRSS is distinguished from other subspecies of *Helminthoglypta nickliniana* by having a relatively large, depressed-globose shell with an open umbilicus half or less covered by the inner lip of the aperture. The fine sculpture of the shell surface consists of numerous close-set ridges parallel to the lip, which are cut into beads by diverging, diagonal, incised striations. This beaded sculpture is finer than in other subspecies.

In the East Bay region BCRSS ranges widely over the hills of Contra Costa and northern Alameda counties, between Berkeley and San Pablo in the west and the eastern portion of Mount Diablo. Pilsbry (1939) quoted A. G. Smith (a longtime Berkeley resident and malacologist) as saying that it

> "ranges over the open hillsides of the west slope of the Berkeley Hills in the suburbs of Berkeley known as Thousand Oaks … and Kensington …. It is also found along San Pablo Creek, where it apparently gives way to [*Helminthoglypta] diabloensis* further into the hills. Also, I have a lot of 4 shells of this subspecies from Perkins Canyon on the east slope of Mt. Diablo."

Additional historical localities based on specimens in museums and other reference collections include: San Pablo Ridge above Wildcat Creek; Point Isabel; near the eastern end of Caldecott Tunnel; Moraga Canyon; Coyote Gulch, Moraga; Marsh Creek Canyon, near Marsh Creek Springs; and Tilden Park (California Natural Diversity Data Base 2016; Buggy Data Base 2016). Several records are located within 5 miles of the proposed new reservoir site (Pilsbry 1939; California Natural Diversity Data Base 2016; Buggy Data Base 2016). Two CNDDB records are located within one mile of the project site.

Since Pilsbry's writing in 1939, the "open hillsides of the west slope of the Berkeley Hills" are no longer so open, and the habitat available to BCRSS has been greatly reduced through urban and suburban development throughout this portion of its geographic range. Despite these reductions in available habitat, considerable potential habitat remains in East Bay Regional Park District, EBMUD watershed lands, and on private properties.

With respect to habitat, Pilsbry (1939) further quoted A. G. Smith as having "found it in tall grass and weeds, under patches of Canada thistle, and sometimes sparingly in rock piles. Colonies when found are in thistles or grass." Dr. Barry Roth, a malacological consultant, and I have found BCRSS under clumps of wild artichoke in former pasture and under woody debris on

the ground under oaks along a stream in Moraga (approximately 6 mi. south of the Dos Osos Reservoir project site). We have also observed the BCRSS in a tree-shaded (California Bay and Coast Live Oak), steep-banked gully further incised at the bottom by a 6-8 ft. wide stream channel in Danville (about 12.5 mi. southeast of the project site). This location was also characterized by substantial leaf litter and considerable "branch-on-branch" wood.

Conservation Status.

BCRSS was formerly treated as a candidate species for endangered or threatened status by the U.S. Fish & Wildlife Service under the Endangered Species Act of 1973, but was dropped when the candidate categories were redefined and reduced in number. However, due to its limited range and occurrence, the BCRSS is considered a "Special Animal" by the California Department of Fish & Wildlife (CDFW) and is currently monitored by the California Natural Diversity Data Base (CNDDB). For these reasons, BCRSS is also treated as a "rare species" under the California Environmental Quality Act (CEQA).

Survey Methods.

I visited the project site with you to conduct my habitat assessment surveys on January 21, 2016. We hiked throughout the current reservoir site and the proposed project site and along the route of the proposed access road to view the habitats that characterize the project site and immediately surrounding area and assess their suitability to support the BCRSS.

Due to the presence and close proximity of different habitat types known to support the BCRSS, we also spent some time searching for snails. Our survey methods were standard for terrestrial snail detection: visual search of areas of promising vegetation cover, turning over and examination of downed branches, and checking the undersides of debris and rocks lying on the ground or partially buried in the soil. We also did some probing around tree and shrub roots, especially those that were partially exposed, probing and raking of leaf litter and leaf mold accumulations, and around the bases of known associated plants. These surveys were conducted in all portions of the proposed project site as well as in the nearby riparian habitat.

Results and Discussion.

The grazed annual grassland, Coyote brush scrub, Coast Live Oak woodland, and riparian habitats that occur within the project site or immediately surrounding area are all habitat types known to support the BCRSS. The tank site and access road project areas exhibit animal burrows in the soil where snails may seek shelter, downed branches in various stages of decay, accumulated leaf litter in the wooded habitat, and numerous, widely scattered rocks (cobbles to small boulders in size) on the ground or partially buried in the soil. This combination of features provides a nice variety of habitat conditions known to support the BCRSS. Given the proximity of historical BCRSS records and the suitable habitat conditions at the project site, I would not be surprised to find the snail at this location.

During our limited presence-absence survey for the BCRSS, observed invertebrates included slugs, isopods, and a millipede. No BCRSS were discovered during this survey. Possible explanations for the apparent "absence" of the snail may be that individuals are still hibernating, thus our survey timing may have been too early to detect active individuals, and that numbers are low due to the past four years of drought.

Conclusions.

Even though no individuals of the BCRSS were observed during my limited presence-absence survey, repeated surveys would be necessary to conclusively demonstrate absence of the snail at this project site. Given the presence of suitable habitats at the project site and the nearby known occurrences of the snail, I anticipate that the BCRSS is likely to be observed at the project site with more survey effort. For these reasons I recommend that EBMUD assume that the BCRSS is present at this project site and conclude that construction of the new reservoirs and access road and installation of new pipelines are likely to impact the snail and its habitat.

Potential avoidance, minimization or mitigation measures that can be implemented to reduce project impacts to the snail may include:

- Avoiding impacts to the scrub and riparian habitats adjacent to the project site
- Minimizing impacts to the oak woodland where the new access road will be constructed
- Minimizing ground disturbance to the extent feasible in the grasslands surrounding the tank and access road footprints
- Minimizing snail mortalities by having a qualified invertebrate biologist relocate snails found within the project footprint prior to ground disturbance. Snails may be placed in suitable habitat outside of the exclusion fencing to prevent subsequent ingress to the project site during work activities.
- Performing onsite habitat enhancements or off-site habitat enhancement at EBMUD's conservation bank (if BCRSS is found to occur there) purchasing conservation bank credits to mitigate for habitat loss.

References Cited.

Buggy Data Base. 2016. Data base of special-status and rare invertebrates. Data base maintained by Entomological Consulting Services, Ltd. Pleasant Hill, CA.

California Natural Diversity Data Base. 2016. Data base of special-status and rare species. Maintained by the California Department of Fish & Wildlife. Sacramento, CA.

Pilsbry, H. A. 1939. Land Mollusca of North America (north of Mexico). Academy of Natural Sciences of Philadelphia, Monograph 3, 1(1):I-xvii, 1-573.

If you have any questions about my report, please contact me.

Sincerely,

Richard A. Arnold

Richard A. Arnold, Ph.D.
President

Appendix F:

Photographs of the Dos Osos Reservoir Replacement Project Site

Photo 1. Existing Dos Osos Reservoir facing south

Photo 2. Situation of existing Dos Osos Reservoir within oak/pine woodland facing northeast

Photo 3. Oak woodland riparian area downhill of new tank site, facing east

Photo 4. Location of new dual tanks in grassland, facing west-southwest

Photo 5. Horse arena and access gate to new tank site, facing northeast

Photo 6. Dos Osos Pumping plant located at Westside Reservoir, facing west