Final

SAN JOSÉ–SANTA CLARA REGIONAL WASTEWATER FACILITY OUTFALL BRIDGE AND INSTRUMENTATION IMPROVEMENTS PROJECT

Biological Technical Memorandum

Prepared for
San José–Santa Clara Regional Wastewater Facility

March 2021

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SECTION 1
Introduction

This technical memorandum has been prepared for the City of San José (City) and the San José-Santa Clara Regional Wastewater Facility (Facility) in regard to the Outfall Bridge and Instrumentation Improvements Project (Project). The purpose of this memorandum is to review the Project in sufficient detail to determine to what extent the proposed construction and operational activities may impact special-status aquatic and terrestrial species, sensitive natural communities, critical habitat, and wetlands.

Within this document, the term "Project site" refers to all areas of anticipated direct impacts, including the outfall bridge and weir, daylight station, SO_2 building and transformer, SO_2 access road improvement area, fiber-optic cable installation area, and portions of the outfall channel where rip-rap will be placed and where divers will remove monitoring equipment at the outfall pipes. The term "study area" is used to identify the area investigated in the reconnaissance-level biological surveys and encapsulates adjacent areas to the Project site that could be indirectly impacted by Project activities. The study area includes the Project site, plus a 75-foot buffer. These are the areas in which direct or indirect impacts could occur to aquatic or terrestrial biological resources as a result of the Project. Figures 1-1, 1-2, and 1-3a-g of the *Outfall Bridge and Instrumentation Improvements Project Initial Study* (*Initial Study*) Project Description show the regional and local environments that surround the Project site, as well as the site plan showing the location of all project components.

1.1 Methods

1.1.1 Special-Status Species Database Lists

Special-status species lists were derived from the United States Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB), and California Native Plant Society (CNPS) Rare Plant Inventory (**Appendix B-1**). The primary sources of data referenced in support of this analysis are as follows:

- USFWS, Information for Planning and Consultation (IPaC) list of threatened and endangered species that may occur in the proposed Project location, and/or may be affected by Project activities (USFWS, 2019)
- National Marine Fisheries Service (NMFS) West Coast Region – California Intersection of Milpitas USGS 7.5" Topographic Quadrangle with NOAA Fisheries ESA Listed Species (NMFS, 2019)

- CNDDB, RareFind 5 computer program: Federal Endangered and Threatened Species that May Be Affected by Projects in the Milpitas, Mountain View, Newark, and Niles, California, U.S. Geological Survey 7.5-minute topographic quadrangles (CDFW, 2019a)
- Special Vascular Plants, Bryophytes, and Lichens List (CDFW, 2019b)
- Special Animals List (CDFW, 2019c)
- CNPS, Online Inventory of Rare and Endangered Plants for the Milpitas, Mountain View, Newark, and Niles, California, U.S. Geological Survey 7.5-minute topographic quadrangles (CNPS, 2019)

1.1.2 Reconnaissance Survey

Biological resources within the study area were verified by ESA biologists Joe Sanders and Sharon Dulava during a field reconnaissance survey conducted on August 14, 2019. The field reconnaissance consisted of a pedestrian survey along the levees surrounding the discharge outfall channel, and included the outfall bridge and weir, daylight station, SO_2 building and transformer, SO_2 access road improvement, and fiber-optic cable installation areas, where ESA biologists documented observations within the study area. The field surveys focused on identifying habitat for special-status plant and animal species. General habitat conditions were noted, and non-nesting individuals of the following species were incidentally observed:

- great blue heron (*Ardea herodias*)
- red-tailed hawk (*Buteo jamaicensis*)
- killdeer (*Charadrius vociferous*)
- common raven (*Corvus corax*)
- Canada goose (*Branta canadensis*)
- song sparrow (*Melospiza melodia*)
- black phoebe (*Sayornis nigricans*)
- American coot (*Fulica americana*)
- American white pelican (*Pelecanus erythrorhynchos*)
- California gull (*Larus californicus*)
- double-crested cormorant (*Phalacrocorax auritus*)
- mallard (*Anas platyrhynchos*)
- black-crowned night heron (*Nycticorax nycticorax*)
- great egret (*Ardea alba*)
- snowy egret (*Egretta thula*)
- red-winged blackbird (*Agelaius phoeniceus*)
- house finch (*Haemorhous mexicanus*)
- black-necked stilt (*Himantopus mexicanus*)

The findings of the reconnaissance surveys, the literature review, and the special-status species database queries were used to compile a list of special-status species that may occur in the study area and to characterize the local Project setting, as discussed in Section 2.

SECTION 2
Plant Communities, Wildlife Habitats and Special-Status Species in the Study Area

2.1 Environmental Setting

Regional Setting

The project is located within the Central California Coast Bioregion, which has a mild Mediterranean climate with generally warm, dry summers and cool, wet winters. This region includes marine, freshwater and terrestrial resources from the Santa Cruz Mountains on the north to Point Conception on the south. The edge of the continental shelf forms the western boundary; on the east, the region borders the Central Valley Bioregion. The region is characterized by rugged northwest-to-southeast trending mountain ranges including the Santa Cruz Mountains, Santa Lucia Ranges, San Rafael Mountains, Diablo Range, Gabilan Range and Temblor Range. These mountains are separated by a series of valleys, including the Santa Clara, Salinas and Santa Maria River valleys. Habitats in this diverse bioregion include, but are not limited to, coastal prairie scrub, chaparral, native and non-native grassland, mixed hardwoods, oak woodlands, redwood forests, and coastal salt marshes (USGS, 2019).

The San Francisco Estuary is the largest estuary on the West Coast and supports numerous aquatic habitats and biological communities. It encompasses 550 square miles and includes shallow mudflats, tidal marshes, and open waters. The San Francisco Estuary is an important wintering and migratory stopover site for hundreds of thousands of birds on the Pacific Flyway, and hosts more wintering shorebirds than any area on the west coast outside of Alaska (SFBCDC, 2019).

Local Project Setting

The Project site is adjacent to the Facility, located at 700 Los Esteros Road in the city of San José, Santa Clary County, California. The outfall channel extends northwest of the main portion of the Facility property, near the southernmost extent of San Francisco Bay as shown in Figure 1-2 Project Location in the *Initial Study*).

2.2 Vegetation Communities and Wildlife Habitats

Vegetation communities are assemblages of plant species (defined by species composition and relative abundance) that occur together in the same area. There are four vegetation communities present within the study area: tidal freshwater marsh, non-tidal seasonal marsh, open water, and

disturbed/ruderal, as well as developed areas that lack vegetation. These vegetation communities and developed areas are shown in **Figure 1**.

2.2.1 Tidal Freshwater Marsh

Tidal freshwater marsh is located along the eastern boundary of Artesian Slough and outboard side of the levee on the west side of outfall channel. Tidal freshwater marsh consists of vegetated areas subject to tidal influence. Within Artesian Slough, the freshwater flow from the Facility, combined with the low levels of tidal saltwater influence from San Francisco Bay, result in freshwater emergent plant species dominating this area. Dominant species observed in this habitat type in the study area include hardstem bulrush (*Schoenoplectus acutus*), narrow leaf cattail (*Typha angustifolia*), and western goldenrod (*Euthamia occidentalis*).

Tidal freshwater marsh typically supports a wide variety of wildlife, beyond species that exclusively utilize freshwater wetlands (ICF International, 2012). Wildlife species commonly found in this habitat include salt marsh harvest mouse (*Reithrodontomys raviventris*), western pond turtle (*Actinemys marmorata*), California Ridgway's rail (*Rallus obsoletus obsoletus*), California black rail (*Laterallus jamaicensis coturniculus*), California least tern (*Sterna antillarum browni*), American coot, mallard, great egret, black-crowned night heron, great blue heron, black-necked stilt, saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*), song sparrow, black phoebe, western snowy plover (*Charadrius alexandrinus nivosus*), cliff swallow (*Petrochelidone pyrrhonota*), tricolored blackbird (*Agelaius tricolor*), and red-winged blackbird.

2.2.2 Non-Tidal Seasonal Marsh

Non-tidal seasonal marsh is located east of the outfall channel's east levee and extends from the area east of the daylight station to the SO_2 building. Naturally-occurring non-tidal seasonal marsh occurs higher in the marsh than tidal salt marsh and is not frequently inundated by tidal water. However, many areas of non-tidal seasonal marsh in the South Bay, like those in the study area, have been cut off from tidal action by manmade obstructions such as levees, dikes, access roads, and other hydrologic impediments. Specifically, in the marsh area east of the levee, the habitat is surrounded by dikes, but subject to extremely muted tidal influence from a small damaged culvert leading from Artesian Slough. Dominant plant species comprising this habitat in the study area include pickleweed (*Sarcocornia pacifica*), alkali heath (*Frankenia salina*), and saltgrass (*Distichlis spicata*). Other species observed in non-tidal seasonal salt marsh habitat in the Project site include perennial pepperweed (*Lepidium latifolium*) and dodder (*Cuscuta pacifica [=salina]*).

Wildlife species commonly found in this habitat include salt marsh harvest mouse, California black rail, American coot, mallard, great egret, northern harrier (*Circus cyaneus*), and white-tailed kite (*Elanus leucurus*).

Figure 1 Vegetation Communities and Habitats

Portrait 8.5 x 11

2.2.3 Open Water

Open water includes all areas that are unvegetated (less than 5 percent vegetation cover) and remain inundated throughout the year. This includes the discharge outfall channel and Artesian Slough, both of which are subject to tidal influence. The discharge outfall channel is partially separated from Artesian Slough by an existing weir structure but is still subject to tidal flows originating from San Francisco Bay during high tides. The discharge outfall channel is inundated by tertiary treated wastewater effluent.

Many bird species will use open water habitat including mallard, American coot, California gull, gadwall (*Anas strepera*), Clark's grebe (*Aechmorphorus clarkii*), pied-billed grebe (*Podilymbus podiceps*), northern shoveler (*Anas clypeata*), double-crested cormorant, California brown pelican (*Pelecanus occidentalis californicus*), and Canada goose. Bird species that forage along the edges of open water include snowy egret, great egret and great blue heron. Aquatic species including Pacific lamprey (*Entosphenus tridentata*), Central Valley (CV) fall-run Chinook salmon Evolutionarily Significant Unit (ESU) (*Oncorhynchus tshawytscha*), Central California Coast (CCC) steelhead Distinct Population Segment (DPS) (*Oncorhynchus mykiss*), Central California roach (*Lavinia symmetricus symmetricus*), Sacramento sucker (*Catostomus occidentalis*), prickly sculpin (*Cottus asper*), mosquitofish (*Gambusia affinis*), bluegill (*Lepomis macrochirus*), and inland silverside (*Menidia beryllina*) are known to occur in the tidal waters of Artesian Slough. However, with the exception of mosquitofish, none of these species have been observed within the outfall channel. The lack of colonization within the outfall channel may result from the influx of freshwater from the Facility's Filtration Influent Pump Station effluent discharge location or from the limited tidal connection between the two waterways. The fish community of the outfall channel is exclusively non-native, and is comprised of largemouth bass (*Micropterus salmoides*), common carp (*Cyprinus carpio*), and mosquitofish (*Gambusia affinis*).

2.2.4 Disturbed/Ruderal

Disturbed/ruderal habitats occur on the edges of levee roads and on levee slopes in the study area. They are upland areas dominated by ruderal, nonnative herbaceous vegetation that are subject to regular vegetation management (i.e., mowing). Common species in this habitat type include bristly oxtongue (*Helminthotheca echioides*), black mustard (*Brassica nigra*), Italian thistle (*Carduus pycnocephalus*), and nonnative grasses such as harding grass (*Phalaris aquatica*), foxtail brome (*Bromus madritensis* ssp. *rubens*), and slender oat (*Avena barbata*).

Wildlife species observed during the reconnaissance survey in this area include black-crowned night heron, black phoebe, house finch, common raven, European starling (*Sturnus vulgaris*), and red-winged blackbird. Western burrowing owl (*Athene cunicularia hypugea*) may also occupy disturbed/ruderal habitat if suitable burrows are present.

2.2.5 Developed

Developed areas within the study area include the levee roads and turnaround areas, the bridge and weir, and the SO_2 building and transformer. Developed areas lack plant communities and generally do not provide habitat; however, these areas may provide corridors for terrestrial

wildlife such as raccoon (*Procyon lotor*) and Virginia opossum (*Didelphis virginiana*) moving from one habitat patch to another.

2.3 Sensitive Species in the Study Area

A list of special-status species with the potential to occur within the study area was compiled based on a query of the CNDDB Rarefind5 database, CNPS Rare Plant Inventory, and the USFWS IPaC tool. **Figures 2** and **3** present special-status plant and animal occurrences, respectively, documented in the CNDDB database within 3 miles of the study area. Conclusions regarding habitat suitability and the potential for species occurrence in the study area are based on the results described in previous studies (if available), the reconnaissance survey and wetland delineation on August 14, 2019 conducted by ESA, and the analysis of existing literature and the database queries described above.

Each species on these lists was assessed based on habitat requirements and distribution relative to vegetation communities that occur within the study area to determine its potential to occur. **Table 1** displays the special-status aquatic and terrestrial animals that were deemed to have a low, medium or high potential to occur. Species for which no suitable habitat is present in the study area were determined to have an unlikely potential to occur in the Project area and were excluded from the table. No federal- or state-listed plant or animal species were identified during the reconnaissance-level survey, and no presence/absence surveys are known to confirm their presence within the Project area.

2.3.1 Special-Status Plants

The following special-status plants were determined to have a moderate or high potential to occur within or adjacent to the study area:

- Congdon's tarplant
- Saline clover

Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*)

Congdon's tarplant typically occurs in seasonal wetlands with heavy clay, saline, or alkaline soils and in disturbed areas within grasslands. Suitable habitat for Congdon's tarplant exists in upland areas, including along the levees and the bench east of the east levee. The nearest recent occurrence, recorded in 2016, is 0.3 miles away. There is a high potential for this species to occur in the study area. Congdon's tarplant has CNPS Rare Plant Rank (CRPR) of 1B.1.

Saline clover (*Trifolium hydrophilum*)

Saline clover occurs in mesic, alkaline soils within open areas in marshes, grasslands, and vernal pools. Suitable habitat for saline clover exists in the tidal and non-tidal seasonal marsh east and west of the outfall channel. The nearest recent occurrence, recorded in 2002, is 3 miles away. There is a moderate potential for this species to occur in the study area. Saline clover has a CRPR of 1B.2.

Figure 2 Special-status Plants Within 3 Miles of the Study Area

Portrait 8.5 x 11

Figure 3 Special-status Wildlife Within 3 Miles of the Study Area

Portrait 8.5 x 11

TABLE 1
POTENTIALLY OCCURRING SPECIAL-STATUS SPECIES WITHIN THE STUDY AREA AND CRITICAL HABITAT AND ESSENTIAL FISH HABITAT WITHIN THE STUDY AREA

Common Name	Scientific Name	Status[1] (Federal/State/ Other)	Habitat Requirements	Potential to Occur
Fish				
Steelhead – Central California Coast DPS	*Oncorhynchus mykiss*	FT/-/-	Requires cold, freshwater streams with suitable gravel for spawning. Rears in rivers and tributaries to the San Francisco Bay.	**Low.** Known to occur in multiple South Bay streams including the neighboring Guadalupe River and Coyote Creek watersheds. Likely seasonally present in the waters adjacent to Artesian Slough (Leidy et al. 2005).
Chinook Salmon – Central Valley fall-run ESU	*Oncorhynchus tshawytscha*	-/SSC/-	Requires cold, freshwater streams with suitable gravel for spawning. Rears in rivers and tributaries to the San Francisco Bay.	**Low.** Known to occur in small numbers in multiple South Bay streams including the nearby Guadalupe River (Leidy 2007). Genetic analysis has determined that Chinook in South Bay streams are likely derived hatchery stock (Moyle, 2002).
North American Green Sturgeon – Southern DPS	*Acipenser medirostris*	FT/SSC/-	Adults found in coastal waters from Canada to Mexico. Requires cold, freshwater streams with suitable gravel for spawning; rears in seasonally inundated floodplains, rivers, tributaries, and Delta.	**Low.** Enter freshwater rivers from Canada south to the Sacramento River only to spawn—March to July. Most likely occur during migratory periods but are rarely recorded in South San Francisco Bay.
Longfin Smelt	*Spirinchus thaleichthys*	FC/ST/-	Juvenile and subadults predominately inhabit brackish water areas of the estuary and nearshore coastal waters. Adults return to spawn in the freshwater regions of the lower Sacramento River, near or downstream of Rio Vista, and the lower San Joaquin River downstream of Medford Island.	**Moderate.** Known to utilize portions of Artesian Slough and surrounding South Bay habitat when appropriate water quality conditions occur.
Pacific lamprey	*Entosphenus tridentatus*	-/SSC/-	Requires cold, freshwater streams with suitable gravel for spawning. Rears in rivers and tributaries to the San Francisco Bay.	**Low.** Known to occur in small numbers in multiple South Bay streams including the nearby Coyote Creek and Guadalupe River (Leidy 2007).
Reptiles				
Western pond turtle	*Emys marmorata*	-/SSC/-	Requires freshwater to brackish aquatic habitat with suitable access to basking and upland habitats.	**Moderate.** Potential to occur within Coyote Creek and Alviso Slough, towards the northern portion of the study area.
Birds				
Tricolored Blackbird	*Agelaius tricolor*	-/CE/BCC	Nests colonially over or near freshwater, in dense cattails, tules, or thickets of willow, blackberry, wild rose or other tall shrubs.	**Moderate.** Known to utilize the densely vegetated marsh portions of Artesian Slough for nesting habitat.

Common Name	Scientific Name	Status[1] (Federal/State/ Other)	Habitat Requirements	Potential to Occur
Great blue heron	*Ardea herodias*	--/*/--	Nests in colonies of 100s, primarily in trees, but will also nest on ground, bushes and structures, channel markers and artificial nest platforms. Forages on shorelines, river banks, and edges of marshes, estuaries, and ponds, as well as meadows, farmland and other open fields.	**Low.** No nesting habitat within study area. May forage within study area.
Western burrowing owl	*Athene cunicularia hypugaea*	-/SSC/-	Prefer open, treeless areas with low, sparse vegetation. Uses the burrows of fossorial mammals such as ground squirrels.	**Moderate.** Suitable nesting habitat observed on site.
Western snowy plover	*Charadrius alexandrines nivosus*	FT/SSC/--	Found on barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils piles deposited on beach or dune habitat, levees and flats at salt evaporation ponds, river bars, along alkaline or saline lakes, reservoirs and ponds. Feeds on terrestrial and aquatic invertebrates. Present year-round in the Bay Area.	**Low.** No nesting habitat within study area. May forage within study area.
Northern harrier	*Circus cyaneus*	-/SSC/-	Often frequents fresh and saltwater emergent vegetation habitat of the San Francisco Bay region.	**Moderate.** Potential to occur within wetland habitat adjacent to the study area.
White-tailed kite	*Elanus leucurus*	-/FP/-	Inhabit savannas, open woodlands, marshes, desert grasslands, partially cleared lands, and cultivated fields. Nests in trees that typically range from 10 to 160 feet tall.	**Moderate.** Common in South Bay marshes. Trees growing along Artesian Slough provide potential nesting habitat.
Saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	-/SSC/BCC	Found in Marin, Napa, Sonoma, Solano, San Francisco, San Mateo, Santa Clara, and Alameda counties within freshwater marshes in summer and salt or brackish marshes in fall and winter.	**Moderate.** Potential to occur within the fresh and saltwater marsh vegetation along Artesian and Alviso sloughs.
Bald eagle	*Haliaeetus leucocephalus*	Delisted/SE;FP/ --	Nest in trees, such as tall, sturdy confiers, except in regions where only cliff faces or ground sites are available. Nest near water. Diet is primarily fish, but opportunistic eaters – will eat birds, reptiles, amphibians, crabs, and mammals.	**Low.** No nesting habitat within study area. May forage within study area.
California gull	*Larus californicus*	-/-/BCC	Breed on sparsely vegetated islands and levees including in salt ponds in the San Francisco Bay.	**Low.** Known to forage and breed within south San Francisco Bay. Study area lacks suitable nesting habitat.
California black rail	*Laterallus jamaicensis coturniculus*	-/ST;FP/-	Found in marshes vegetated with pickleweed around San Francisco Bay.	**Moderate.** Marginally suitable habitat available east of project site.
Alameda song sparrow	*Melospiza melodia pusillula*	-/SSC/BCC	Found in the brackish marshes vegetated with pickleweed along the southern portion of the San Francisco Bay.	**Moderate.** Potential to occur within the marsh vegetation along Artesian Slough.

Common Name	Scientific Name	Status[1] (Federal/State/ Other)	Habitat Requirements	Potential to Occur
California Ridgway's rail	*Rallus obsoletus obsoletus*	FE/SE;FP/-	Ranges along the Pacific Coast within Monterey and San Luis Obispo Counties. Found in the tidal mudflats and sloughs of the San Francisco Bay-Delta.	**Moderate.** Known to occur in the tidal marsh habitat found at the confluence of Artesian Slough and Coyote Creek, as well as the Coyote Creek and Alviso Slough confluence.
California least tern	*Sternula antillarum browni*	FE/SE/--	Nest is a shallow scrape on sandy beaches on the coast and San Francisco Bay shoreline. Forages for small fishes shrimp and occasionally other invertebrates in bays, lagoons, estuaries, river and creek mouths, tidal marshes and lakes.	**Low.** No nesting habitat within study area. May forage within study area.
Mammals				
Salt marsh harvest mouse	*Reithrodontomys raviventris*	FE/SE;FP/-	Salt marsh harvest mice inhabit pickleweed habitat and other salt marsh vegetation within the greater San Francisco Bay region.	**Moderate.** Potential to occur within diked seasonal marsh east of project footprint. Known to occur immediately west of Study Area in New Chicago Marsh.
Salt marsh wandering shrew	*Sorex vagrans halicoetes*	--/SSC/--	Salt marsh habitat 6-8 feet above sea level, with abundant pickleweed and driftwood.	**Moderate.** Potential to occur within diked seasonal marsh east of project footprint. Historical occurrences immediately west of Study Area in New Chicago Marsh.
Plants				
Alkali milk-vetch	*Astragalus tener* var. *tener*	-/-/1B.2	Alkaline flats and low ground in playas, vernally moist grassland, and vernal pools. Elevation 1 - 170 meters. March – June	**Low.** Muted tidal marsh within study area provides marginal suitable habitat. Nearest recent occurrence (2003, occurrence #7) is 3 miles away in a constructed vernal pool.
Brittlescale	*Atriplex depressa*	-/-/1B.2	Usually on alkali clay soils in alkali scalds in chenopod scrub, playas, grassland, and vernal pools. Elevation 1 – 320 meters. April - October	**Low.** Muted tidal marsh within study area provides suitable habitat, but nearest recent occurrence from 2003 (occurrence #67) 3 miles away was determined to be *Atriplex minuscula* in 2010.
Lesser saltscale	*Atriplex minuscula*	-/-/1B.1	Alkaline and sandy soils in alkali sinks in chenopod scrub, playas, and grassland. Elevation 15 - 200 meters. May - October	**Low.** Muted tidal marsh provides suitable habitat. Nearest recent occurrence from 2003 (occurrence #43) is 3 miles away.
Congdon's tarplant	*Centromadia parryi* ssp. *congdonii*	-/-/1B.1	Alkaline soils, sometimes described as heavy, white clay, on terraces, swales, floodplains, and disturbed sites within grassland. Elevation 0 - 245 meters. May - October (November)	**High.** Upland areas provide suitable habitat. Nearest recent occurrence from 2016 (occurrence #41) is 0.3 miles away.

Common Name	Scientific Name	Status[1] (Federal/State/ Other)	Habitat Requirements	Potential to Occur
Point Reyes salty bird's-beak	*Chloropyron maritimum* ssp. *palustre*	-/-/1B.1	Coastal salt marsh. Elevation <10 meters. June – October	**Low.** Tidal marsh provides suitable habitat. Nearest recent occurrence is from the Nation Resource Database at Don Edwards National Wildlife Refuge, about 6 miles away. No recent CNDDB occurrences nearby.
Small spikerush	*Eleocharis parvula*	-/-/4.3	Brackish wet soil, coastal. Elevation <50 meters. (April) June – August (September)	**Low.** Tidal marsh provides suitable habitat, but no nearby occurrences.
Hoover's button-celery	*Eryngium aristulatum* var. *hooveri*	-/-/1B.1	Vernal pools, seasonal wetlands, occasionally alkaline. Elevation <50 meters. (June) July (August)	**Low.** Muted tidal marsh provides marginal suitable habitat. Nearest recent occurrence from 2009 (occurrence #15) is 3.3 miles away.
San Joaquin spearscale	*Extriplex joaquinana*	-/-/1B.2	Alkaline soils in seasonal alkali wetlands or alkali sink scrub in association with *Distichlis spicata* and *Frankenia.* Elevation 1 - 835 meters. April – October	**Low.** Muted tidal marsh provides marginal suitable habitat. Nearest recent occurrence from 2011 (occurrence #54) is 3 miles away.
Contra Costa goldfields	*Lasthenia conjugens*	FE/-/1B.1	Vernal pools, swales, wet meadows, alkaline playas, and low depressions in open grassy areas. Elevation 0 - 470 meters. March – June	**Low.** Muted tidal marsh provides marginal suitable habitat. Nearest recent occurrence (occurrence #30) is 3.1 miles away.
Prostrate vernal pool navarretia	*Navarretia prostrata*	-/-/1B.1	Mesic, alkaline soils in grasslands or in vernal pools. Elevation 3 - 1,210 meters. April – July	**Low.** Muted tidal marsh provides marginal suitable habitat. Nearest recent occurrence from 2009 (occurrence #15) is 3.8 miles away.
Hairless popcornflower	*Plagiobothrys glaber*	-/-/1A	Presumed extinct. Wet, saline, alkaline soils in coastal salt marshes and alkaline meadows. Elevation 15 - 125 meters. April – May	**Low.** Tidal and muted marsh provide suitable habitat, but this species is presumed to be extinct.
California alkali grass	*Puccinellia simplex*	-/-/1B.2	Alkaline and vernally mesic soils on sinks, flats, and lake margins. Elevation 2 - 930 meters. June – July	**Low.** Muted tidal marsh provides marginal suitable habitat. Nearest recent occurrence from 2003 (occurrence #39) is 3 miles away.
Chaparral ragwort	*Senecio aphanactis*	-/-/2B.2	Drying alkaline flats and dry, open, rocky sites in chaparral, cismontane woodland, and coastal scrub. Elevation 20 – 855 meters. February - May	**Low.** Muted tidal marsh provides marginal suitable habitat.
long-styled sand-spurrey	*Spergularia macrotheca* var. *longistyla*	-/-/1B.2	Alkaline marshes, mud flats, meadows, and hot springs. Elevation 0 - 220 meters. February - May	**Low.** Muted tidal marsh provides marginal suitable habitat.

Common Name	Scientific Name	Status[1] (Federal/State/ Other)	Habitat Requirements	Potential to Occur
California seablite	*Suaeda californica*	FE/-/1B.1	Margins of coastal salt marshes. Elevation < 5 meters. July - October	**Low.** Tidal and muted marsh provide suitable habitat, but in 2010USFWS determined 1986 occurrence (occurrence #14) 3 miles away to most likely be extirpated.
Saline clover	*Trifolium hydrophilum*	-/-/1B.2	Mesic, alkaline soils within open areas in marshes, grassland, and vernal pools. Elevation 0 - 300 meters. April - June	**Moderate.** Tidal and muted marsh provide suitable habitat. Nearest recent occurrence from 2003 (occurrence #45) is 3 miles away.
Critical Habitat				
Steelhead – California Central Coast DPS	*Oncorhynchus mykiss*		--	--
North American Green Sturgeon – Southern DPS	*Acipenser medirostris*		--	--
Essential Fish Habitat – Pacific Coast Salmon Fisheries Management Plan				
Chinook salmon – Central Valley fall-un	*Oncorhynchus tshawytscha*	--	--	--

[1] Description of status codes:
ESU = Evolutionarily Significant Unit, DPS = Distinct Population Segment

Federal Listings
FE = Listed as endangered under the FESAFT = Listed as threatened under the FESA
FC = Candidate for listing under the FESA
BCC = Bird of Conservation Concern (USFWS)

State Listings
SE = Listed as endangered under the CESA
ST= Listed as threatened under the CESA
SSC = Species of Special Concern (CDFW)
CE = Candidate Endangered (CDFW)
FP = Fully Protected (CDFW)

California Rare Plant Rank (CRPR)
Rank 1A = Plants presumed extirpated in California and either rare or extinct elsewhere.
Rank 1B = Plants rare, threatened, or endangered in California and elsewhere.
Rank 2A = Plants presumed extirpated in California, but more common elsewhere.
Rank 2B = Plants rare, threatened, or endangered in California, but more common elsewhere.
An extension reflecting the level of threat to each species is appended to each rarity category as follows:
.1 – Seriously endangered in California.
.2 – Fairly endangered in California.
.3 – Not very endangered in California.

2.3.2 Special-Status Wildlife

The following special-status wildlife were determined to have a moderate to high potential to occur within or adjacent to the study area:

- Longfin smelt
- Western pond turtle
- Tri-colored blackbird
- Northern harrier
- White-tailed kite
- Saltmarsh common yellowthroat
- Alameda song sparrow
- California black rail
- California Ridgway's rail
- Western burrowing owl
- Salt marsh harvest mouse
- Salt marsh wandering shrew

Longfin smelt (Spirinchus thaleichthys)

Longfin smelt is a small, slender-bodied pelagic fish that generally lives for two years although some three-year smelt have been observed. Longfin smelt have been recorded in low numbers in recent years in portions of South San Francisco in the study area (IEP, 2014). Longfin smelt are generally rare in Artesian Slough; however, they have been observed at the mid and far downstream points of the slough (nearest location is approximately ¾-mile north of Project site) and more frequently out into Lower Coyote Creek and Pond A19 (Erwin, 2017). As such, they have a moderate potential to occur within the Project site. Longfin smelt is a federal candidate for listing, and is California listed as threatened.

Western pond turtle (*Emys marmorata*)

Western pond turtle inhabits a wide variety of water bodies, including ponds, marshes, rivers, streams, and irrigation canals. This species can tolerate full-strength sea water for a short period of time, but normally is found in freshwater. Western pond turtle females migrate away from water bodies into surrounding uplands, where they construct underground nests and lay eggs from April to August. This species has potential to occur in Coyote Creek and Artesian Slough, primarily north of the Project site, and could use the levees to move overland. The tidal freshwater marsh west of the outfall channel west levee provides low quality habitat due to extensive emergent vegetation present. In addition, this area is separated from the Project site by a chain link fence. The outfall channel provides low quality habitat due to lack of basking sites (e.g., very steep levee banks) and presence of large predatory non-native fish. The nearest record of western pond turtle is approximately 2 miles southwest of the Project site in San Tomas Aquino Creek (CDFW 2019a). Western pond turtle is a California species of special concern.

Tricolored blackbird (*Agelaius tricolor*)

Tricolored blackbird is a permanent resident of the Central Valley but breeds in scattered coastal locations from Marin County to San Diego. This species nests colonially, with a typical minimum colony size of 50 pairs, in dense marsh vegetation such as cattails (*Typha* spp.) and bulrush (*Scirpus* spp.). Tricolored blackbird has potential to nest within the dense marsh vegetation along the edges of Artesian Slough and the freshwater marsh west of the outfall channel's west levee.

The nearest record of this species occurred within 0.25 mile of the Project site in 1995 (CDFW, 2019a). Tricolored blackbird is listed as endangered under the CESA.

Northern harrier (*Circus cyaneus*)

Northern harrier is common on the central coast where it breeds and forages in a range of open habitats, including freshwater, brackish and saltwater marshes, wet meadows, weedy borders of lakes, rivers and streams, grasslands, weed fields, pastures and some croplands. Northern harriers nest on the ground in patches of vegetation that provide some cover, and feed on a broad variety of small- to medium-sized rodents and passerines. Voles are a common prey item. The Project site provides suitable foraging habitat for northern harrier in the tidal and non-tidal marshes. Nearby power lines and fence lines provide hunting perches. Although northern harriers nest in marshes, those within 500 feet of the Project site lack substantial vegetative cover and are likely too close to human activity associated with the Facility to serve as suitable nesting habitat. Northern harrier is a California species of special concern.

White-tailed kite (*Elanus leucurus*)

White-tailed kites are found throughout California in a range of habitats including marshes, grassland, and oak woodlands, and commonly perches on top of treetops, wires and fenceposts. When foraging, the white-tailed kite frequently flies fairly slowly in arcs and circles, then hovers distinctively before dropping onto small mammal prey. Its diet consists almost entirely of mice and voles. The study area provides suitable foraging habitat for white-tailed kite in the tidal and non-tidal marshes. Nearby powerlines and fencelines provide hunting perches. Trees along the levee could provide nesting or roosting habitat for white-tailed kites, but are probably too low and close to human activity for white-tailed kites to nest there. White-tailed kite is a California fully protected species.

Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*)

Saltmarsh common yellowthroat is found in Marin, Napa, Sonoma, Solano, San Francisco, San Mateo, Santa Clara, and Alameda counties within freshwater marshes in summer and salt or brackish marshes in fall and winter. This species utilizes areas of tall grasses, tules, and willow thickets for cover and nesting substrate. There are multiple CNDDB records of this species north and west of the Project site. Saltmarsh common yellowthroat have potential to occur within the fresh and saltwater marsh vegetation along Artesian Slough and the outfall channel, and in the tidal freshwater marsh west of these features. The nearest record of this species, in 1998, is approximately 0.5 mile from the Project site (CDFW, 2019a). Saltmarsh common yellowthroat is a California species of special concern.

Alameda song sparrow (*Melospiza melodia pusillula*)

Alameda song sparrow is found in the brackish marshes vegetated with pickleweed along the southern portion of the San Francisco Bay. This species is known to nest within tall vegetation or in pickleweed within its marsh habitat. Alameda song sparrow has potential to occur within the fresh and saltwater marsh vegetation along Artesian Slough and the outfall channel, and in the tidal freshwater marsh west of these features. The nearest record of this species occurred in 2004

and was located less than 0.25 mile from the Project site (CDFW, 2019a). Alameda song sparrow is a California species of special concern.

California black rail (*Laterallus jamaicensis coturniculus*)

More than 90 percent of California black rails are located in the marshes of northern San Francisco Bay, primarily San Pablo Bay and Suisun Bay, (Manolis, 1978, and Evens et al., *in* Spautz, et al., 2005); however, they can occur in freshwater and brackish areas of the South Bay. Black rails prefer marshes that are close to water, are large (interior more than 50 meters from edge), away from urban areas, and saline to brackish with a high proportion of pickleweed, maritime bulrush (*Bolboschoenus maritimus*), gumplant (*Grindelia stricta)*, rush (*Juncus* spp.) and cattails (*Typha* spp.) (Spautz et al., 2005). California black rail nesting habitat occurs in marshes in the study area; however, this is offset somewhat by the regular Facility-related disturbance caused by activity on the outfall channel east levee, and the proximity to a landfill, which likely increases predation by non-native animals such as raccoons. Additionally, biologists with expertise in California black rail detection conducted a pre-construction survey on July 31, 2018, and biomonitoring during August and September of 2018, for the repair of the Pond A18 levee, including parking at the SO_2 building and walking along the northern part of the study area to access the Pond A18 levee, and did not observe or hear California black rail. California black rail is listed as threatened under the CESA, and is a California fully protected species.

California Ridgway's rail (*Rallus obsoletus obsoletus*)

California Ridgway's rail ranges along the Pacific Coast in Monterey and San Luis Obispo Counties and inhabits tidal mudflats and sloughs. There are numerous CNDDB records of this species north of the Project site at the confluence of Artesian Slough and Coyote Creek, and Coyote Creek and Alviso Slough. The complex vegetative structure and channel networks of the tidal marshes in the region provide excellent habitat for California Ridgway's rails. California Ridgway's rail preferred habitat is emergent salt and brackish tidal marshlands subject to direct tidal circulation and characterized by predominant coverage of pickleweed and cordgrass (*Spartina* sp.) (Goals Project, 2000).

California Ridgway's rail nesting habitat occurs in marshes in the study area due to the presence of suitable habitat combined with the regular Facility-related disturbance caused by activity on the outfall channel east levee, and the proximity to a landfill, which likely increases predation by non-native animals such as raccoons. Additionally, as with the California black rail above, biologists with expertise in California Ridgway's rail detection did not observe or hear California Ridgway's rail during pre-construction surveys and biomonitoring during August and September of 2018 for the repair of the Pond A18 levee. There are records of this species occurring northeast of the Project site in the Alviso pond complex; however, the most recent of those shown in the CNDDB is from an observation made in 1975 (CDFW, 2019a). More recent surveys by the biological staff of the Don Edwards San Francisco Bay National Wildlife Refuge have detected California Ridgway's rail presence in the restored tidal marsh habitat in Pond A21, directly north of the Project site (California Coastal Conservancy, 2014). California Ridgway's rail is a California and federally listed endangered species.

Western burrowing owl (*Athene cunicularia hypugaea*)

Western burrowing owl is a California resident that prefers open annual or perennial grasslands and disturbed sites with existing burrows, elevated perches, large areas of bare ground or low vegetation, and few visual obstructions. Ground squirrel colonies often provide a source of burrows and are typically located near water and areas with large numbers of prey species, primarily insects. Breeding takes place between March and August, with a peak in April and May. Breeding western burrowing owls are documented to the south and southwest of the Project area in annual grasslands (CDFW, 2019a). Ground squirrels and their burrows are present along levee edges within the study area. While no signs of western burrowing owls were detected, potentially suitable burrow nesting and overwintering sites were identified within the study area during reconnaissance surveys. Western burrowing owl is a California species of special concern.

Salt marsh harvest mouse (*Reithrodontomys raviventris*)

Preferred salt marsh harvest mouse habitat is the middle and upper portions of dense, perennial salt marshes; they will move into adjacent grasslands in spring and summer when the grasslands provide maximum cover (Goals Project, 2000). They will also use similar habitat in diked wetlands adjacent to the Bay. Recent research has identified salt marsh harvest mouse in marshes dominated by alkali bulrush (*Schoenoplectus maritimus*) (Shellhammer, et al., 2010) and in mixed vegetation not dominated by pickleweed, including Baltic rush (*Juncus balticus*), prickly lettuce (*Lactuca serriola*), and sow thistle (*Sonchus asper*). During high tides, salt marsh harvest mouse will use upland habitats for high tide refugia, as well as cross over levees. In tidal marshes, salt marsh harvest mice are documented to seasonally use grasslands 100 meters from any wetland edge (USFWS, 2013).

Salt marsh harvest mouse has been documented in Triangle Marsh, a brackish marsh 1.3 miles north of the study area (H.T. Harvey, 2006), and New Chicago Marsh, a diked salt marsh immediately west of the study area (CDFW, 2019a). Suitable habitat for salt marsh harvest mouse is present in the non-tidal marsh east of the outfall channel. While the tidal marsh bordering the edges of a tidal channel west of the outfall channel could support salt marsh harvest mouse, the marsh is less than 50 feet wide in many places and separated from New Chicago marsh by a road and upland habitat, and therefore, provides limited habitat value to the species. Upland habitat adjacent to wetland features in the study area is of low quality, primarily comprising developed areas and ruderal landscape, limiting the value of high tide refugia. Salt marsh harvest mouse is a California and federally listed endangered species, and a California fully protected species.

Salt marsh wandering shrew (*Sorex vagrans halicoetes*)

The salt marsh wandering shrew is currently confined to small remnant stands of salt marsh found in the South San Francisco Bay, specifically San Mateo, Santa Clara, Alameda and Contra Costa Counties. According to the *Life Histories and Environmental Requirements of Key Plants, Fish, and Wildlife* (Goals Project, 2000), this species appears to have some of the most restrictive food and habitat requirements of any mammal inhabiting the marshes of the greater San Francisco Bay Region, exceeding those of the salt marsh harvest mouse. Suitable habitat includes wet, medium high salt marshes in the six- to eight-foot elevation zone characterized by abundant driftwood and

other debris scattered among one- to two-foot high pickleweed (Collins, 1998). They are not known to occur in diked marshes. Suitable habitat for salt marsh wandering shrew is present in the non-tidal and tidal marshes east and west of the outfall channel, and is known to have occurred historically in New Chicago Marsh (CDFW, 2019a). Upland habitat adjacent to wetland features in the study area is of low quality, primarily comprising developed areas and ruderal landscape, limiting the value of high tide refugia. Salt marsh wandering shrew is a California species of special concern.

2.4 Sensitive Natural Communities

Sensitive natural communities are designated by various resource agencies, such as CDFW, or in local policies and regulations, and are generally considered to have important functions or values for wildlife and/or are recognized as declining in extent or distribution, and are considered threatened enough to warrant some level of protection. CDFW tracks communities of conservation concern through its *California Sensitive Natural Community List* (CDFW, 2019d). Natural Communities with ranks of S1 to S3 are considered Sensitive Natural Communities to be addressed in the environmental review processes of CEQA and its equivalents (CDFW, 2019d).

Sensitive plant communities identified by CDFW on their *California Sensitive Natural Community List* are summarized in **Table 2**. Only those Natural Communities with a rarity ranking of S1 to S3, as well as communities considered sensitive as marked with a 'Y' on the *California Sensitive Natural Community List*, are considered sensitive and are listed here.

TABLE 2
SENSITIVE NATURAL COMMUNITIES WITHIN THE STUDY AREA RELATIVE TO NATURAL COMMUNITIES IDENTIFIED IN THE HABITAT ASSESSMENT

Location	Vegetation Types Present	CDFW California Natural Community	Natural Community Alliance(s)[a]	State Rarity Ranking
Within Project site, along edge of open water in outflow channel	Common bulrush (*Schoenoplectus acutus*) and broad-leaf cattail (*Typha domingensis*)	Hardstem and California bulrush marshes	*Schoenoplectus (acutus, californicus) Herbacious Alliance*	S3
Within study area adjacent to Project site, east of outflow channel (non-tidal marsh)	Pickleweed (*Salicornia pacifica*)	Pickleweed mats	*Sarcocornia pacifica (Salicornia depressa) Herbaceous Alliance*	S3
Within study area adjacent to Project site, west of outflow channel (tidal marsh)	Dominated by pickleweed. Also alkali heath (*Frankenia salina*), and non-natives, perennial pepperweed (*Lepidium latifolium*), and rabbitsfoot grass (*Polypogon monspeliensis*).	Pickleweed mats	*Sarcocornia pacifica (Salicornia depressa) Herbaceous Alliance*	S3

SOURCES:

[a] Sawyer, J., T. Keeler-Wolf, J. M. Evens. 2009. A Manual of California Vegetation. Available: http://vegetation.cnps.org/.

[b] S1 = **Critically imperiled** in the state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state. S2 = **Imperiled** in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state. S3 = **Vulnerable** in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

2.5 Critical Habitat

The USFWS can designate critical habitat for species that have been listed as threatened or endangered. "Critical habitat" is defined in Section 3(5)(A) of the federal Endangered Species Act as those lands (or waters) within a listed species' current range that contain the physical or biological features that are considered essential to its conservation.

Critical habitat for the California Central Coast (CCC) steelhead Distinct Population Segment (DPS) and southern DPS of North American green sturgeon (*Acipenser medirostris*) is present immediately downstream of the weir within Artesian Slough. The CCC steelhead DPS includes naturally spawned anadromous populations originating below natural and manmade impassable barriers from the Russian River to and including Aptos Creek, and all drainages of San Francisco and San Pablo Bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin Rivers (USFWS, 2000). Critical habitat for green sturgeon includes the Sacramento River, the Sacramento-San Joaquin Delta, and Suisun, San Pablo and all of San Francisco Bay below the higher high water (NMFS, 2009).

There is no critical habitat for terrestrial species within the project area. The nearest critical habitat for a terrestrial species is western snowy plover (*Charadrius nivosus nivosus*), 3 miles from the project site, as shown in **Figure 4**, below (USFWS, 2019a; USFWS, 2019b).

2.6 Essential Fish Habitat

The Sustainable Fisheries Act of 1996, amended the Magnuson-Stevens Fishery Conservation and Management Act (MSA) to establish new requirements for Essential Fish Habitat (EFH) descriptions in Federal Fisheries Management Plans and to require Federal agencies to consult with NMFS on activities that may adversely affect EFH. EFH within the study area is covered under the Pacific Salmon Fisheries Management Plan (FMP) and is designed to protect habitat for commercially-important salmonid species. Central Valley fall-run Chinook salmon is the only species that may be seasonally present within the study area.

2.7 Waters of the U.S./Waters of the State

"Waters of the United States," are defined in the Code of Federal Regulations (33 CFR 328.3[a]; 40 CFR 230.3[s]) as rivers, streams, mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters. These waters fall under the jurisdiction of the U.S. Army Corps of Engineers (Corps) under Section 404 of the Clean Water Act (CWA). Additionally, the Corp regulates navigable waters under Section 10 of the Rivers and Harbors Act (R&HA). Navigable waters are defined as those waters that are subject to the ebb and flow of the tide or that are presently used, have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. The San Francisco Bay Regional Water Quality Control Board (RWQCB) regulates CWA Section 404 waters and R&HA Section 10 waters under Section 401 of the CWA. The RWQCB also regulates waters of the state under the Porter-Cologne Water Quality Control Act. Waters of the state are broadly defined as "any surface water or groundwater, including saline waters, within the boundaries of the state."

Figure 4 USFWS Critical Habitat in the Project Vicinity

An aquatic resources delineation was conducted by ESA botanist Joe Sanders and ESA biologist Sharon Dulava on August 14, 2019. Aquatic resources located within the survey area are shown in **Table 3** and Figure 1.

TABLE 3
AQUATIC RESOURCES IN THE PROJECT AREA

Wetland Type	*Below MHW Area in acres (square feet)	*Below MHHW Area in acres (square feet)
Waters		
Open Water (Channel)	0.663 (28,866 ft^2)	0.663 (28,878 ft^2)
Wetlands		
Tidal Freshwater Marsh (Emergent Wetland)	0.183 (7,973 ft^2)	0.204 (8,901 ft^2)
Total Area of Wetlands and Waters	**0.846 acres (36,839 ft^2)**	**0.867 acres (37,779 ft^2)**

SOURCE: ESA 2019

NOTES:

* The aquatic feature acreages up to mean high water (MHW) elevation at 6.79 ft (NAVD88) are within the mean higher high water (MHHW) elevation at 7.40 ft (NAVD88).
* Minor differences in numbers and Total are due to rounding error

SECTION 3
Impacts on Biological Resources

3.1 Impacts on Sensitive Terrestrial Species

The proposed Project could have a substantial adverse direct or indirect impacts on special-status wildlife species that are known to occur or have a moderate or high potential to occur in the Project study area. Areas within the study area contain suitable habitat that may support special-status terrestrial wildlife species including western pond turtle, tricolored blackbird, western burrowing owl, northern harrier, white-tailed kite, saltmarsh common yellowthroat, black rail, Alameda song sparrow, Ridgway's rail, salt marsh harvest mouse, and salt marsh wandering shrew.

Construction activities that could cause direct impacts on special-status wildlife include vegetation removal and ground disturbance, trenching, Project staging and access. Potential indirect impacts on special-status wildlife species would include noise, vibration, and increased activity levels associated with grubbing, earth moving, and heavy equipment operation during construction, and increased turbidity due to in-water work. Direct and indirect impacts would be limited to the duration of Project construction as disturbed areas would be restored following construction, and the new facilities would not substantially alter existing habitat conditions or result in long-term adverse effects on special-status wildlife.

Implementation of the following mitigation measures would reduce construction impacts on special-status wildlife to a less-than-significant level by avoiding and reducing habitat disturbance where feasible, excluding wildlife from entering Project areas during construction, conducting surveys for listed or sensitive species prior to construction, avoiding disturbance to nesting birds through seasonal work limits and/or buffers around active nests or roosts, and requiring monitoring of construction activities by a qualified biologist. **Mitigation Measure BIO-1, General Construction Measures** provides broad protection measures for sensitive resources within and adjacent to the Project site. The following species-specific subsections provide more detailed information on potential Project impacts on special-status wildlife and their associated habitats, and mitigation measures to reduce or eliminate those impacts.

3.1.1 Impacts on Western Pond Turtle

The primary construction activity that could significantly impact western pond turtle would be Project-related traffic and heavy equipment on levees, causing direct mortality or injury to this species; however, western pond turtle could also be indirectly impacted by noise, vibration, and increased activity levels associated with grubbing, earth moving, and heavy equipment operation,

causing individual turtles to avoid areas they normally use, and could be indirectly impacted by turbidity due to in-water work.

Implementation of **Mitigation Measures BIO-1** and **BIO-3: Western Pond Turtle Protection Measures** would reduce potential adverse impacts related to construction to western pond turtle by providing environmental training to construction personnel, providing general protection measures, conducting pre-construction surveys, and by monitoring for this species during construction and relocating individuals as authorized.

3.1.2 Impacts on Birds

Impacts could occur to resident and migratory species during Project construction and operation, and during breeding and non-breeding seasons. Equipment staging and Project construction would render the site temporarily unsuitable for breeding birds due to the noise, vibration, and increased activity levels associated with grubbing, earth moving, and heavy equipment operation, even when the nest is unaffected. These activities could subject birds to risk of death or injury, and they are likely to avoid using the area during Project construction. Avoidance, in turn, could cause hunger or stress among individual birds by displacing them into adjacent territories belonging to other individuals. Impacts during the non-breeding season are not considered significant, primarily due to birds' mobility and ability to access other high-quality foraging habitat in the region. The developed nature, and predominance of non-native vegetation and developed infrastructure in the study area renders the temporary habitat loss a minor one. While marsh and adjacent vegetation represent higher quality habitat, comparable alternative breeding and foraging habitat for special-status birds exists nearby; therefore, temporary indirect disturbance to this area also is considered minor.

Implementation of **Mitigation Measure BIO-4: Special-status Bird Species Protection Measures** would avoid potential adverse impacts to breeding or nesting birds occurring as a result of staging or construction by requiring avoidance of construction-related work during the nesting bird season. If avoidance of the nesting season is not possible, then pre-construction nesting bird surveys and establishment of no-construction buffer zones around active bird nests would avoid or minimize the potential for this impact to occur.

During reconnaissance surveys, ground squirrels and their burrows were observed along levee edges within the study area. While no signs of western burrowing owl were detected, ground squirrel burrows provide potentially suitable nesting and overwintering habitat within the study area. Project implementation, particularly trenching activities, may result in adverse impacts on foraging or breeding western burrowing owls by destroying burrows that are being used by owls. Construction-related traffic along levees could also significantly impact western burrowing owls directly, in the case of vehicle-caused mortality or injury, or indirectly, but causing nesting western burrowing owls to flush, leaving eggs or young vulnerable unprotected or abandoned. The study area is located just outside of Santa Clara Valley Habitat Plan (SCVHP or Habitat Plan) boundary; however, the following mitigation measure is consistent with the SCVHP conditions for western burrowing owl. Implementation of **Mitigation Measure BIO-5: Western Burrowing Owl Protection Measures** would ensure that potential impacts to western burrowing

owl are mitigated to a less-than-significant level by avoiding disturbance to western burrowing owl and any occupied burrows, stopping work and conducting a survey if western burrowing owls are encountered during construction, and providing a protective avoidance buffer if surveys determine presence of western burrowing owl within 250 feet of the project area.

3.1.3 Impacts on Mammals

Suitable habitat for salt marsh harvest mouse and salt marsh wandering shrew is present in the non-tidal and tidal marshes east and west of the outfall channel. Upland habitat adjacent to wetland features in the study area is of low quality, primarily comprising developed areas and ruderal landscape, limiting the value of high tide refugia. In addition, salt marsh harvest mouse has been documented in Triangle Marsh, a brackish marsh 1.3 miles north of the study area (H.T. Harvey, 2006). Salt marsh harvest mouse is also known to occur in New Chicago Marsh, a diked salt marsh immediately west of the study area, and salt marsh wandering shrew is known to have occurred historically in New Chicago Marsh (CNDDB 2019a).

Direct impacts that could occur to salt marsh harvest mouse and salt marsh wandering shrew include mortality due to crushing by vehicles, materials staging, heavy equipment or human activity in suitable salt marsh harvest mouse/ salt marsh wandering shrew habitat. Indirect impacts could occur if equipment staging, project construction or human activity render otherwise suitable habitat temporarily unsuitable due to the lack of accessibility, noise, vibration, and increased activity levels associated with grubbing, earth moving, and heavy equipment operation. Any of these would be considered a significant impact.

Implementation of **Mitigation Measures BIO-1** and **BIO-6: Salt Marsh Harvest Mouse and Salt Marsh Wandering Shrew Protection Measures** would reduce potential adverse impacts related to construction to salt marsh harvest mouse and salt marsh wandering shrew by providing environmental training to construction personnel to stop work and contact the qualified biologist if sensitive species is observed in the work area, providing general protection measures, conducting pre-construction surveys, identification and avoidance of suitable habitat for the species, and where avoidance is not possible, using hand tools to clear marsh vegetation under the supervision of a biologist. In addition, suitable marsh habitat will be protected during work activities by wildlife exclusion fencing, which will separate suitable habitat from adjacent work areas. A biomonitor will check the fence weekly to ensure it is in good condition.

3.2 Impacts on Sensitive Aquatic Species

Because all listed fish species considered in this document share the same aquatic habitat, potential impacts discussed below should be considered equally relevant for all fish species. Short-term impacts on special-status fish present in the Project site could occur from the placement of rip-rap, modifications to the existing weir, and other in-water work in support of the bridge replacement. Potentially significant impacts typically associated with these activities are likely limited to the resuspension of benthic sediments and a short-term loss and disruption of access to foraging habitat. In addition, the use of grout to protect and stabilize rip-rap could adversely impact special-status fish by making the water more alkaline, which can damage gills,

eyes and skin, or cause mortality. This would be a significant impact. It is anticipated that tides and outflows from the RWF would quickly dissipate the added turbidity plumes. Impacts to marine life would thus be highly localized and temporary. While the likelihood of occurrence for special-status fish species is low, implementation of **Mitigation Measure BIO-1** and **Mitigation Measure BIO-2: Seasonal Avoidance of Sensitive Aquatic Species**, will ensure that no special-status fish species are exposed to the water quality impacts of in-water work. Additionally, as the Project would include more than one acre of soil disturbing activities, a construction general permit and a stormwater pollution prevention plan (SWPPP) would be prepared for the Project. The SWPPP would include specific provisions for erosion control and equipment maintenance to limit the inadvertent delivery of pollutants, including silt and sediment, into the discharge channel. The SWPPP would also contain best management practices designed to control and reduce erosion. In addition, **Mitigation Measure HAZ-1b: Health and Safety Plan**, would prevent deleterious materials from entering the environment on the Project site by requiring a site health and safety supervisor present during ground disturbing activities to monitor for evidence of potential soil contamination, and implement procedures to be followed in the event of an unanticipated hazardous materials release that may impact health and safety. Lastly, **Mitigation Measure HYD-1: Water Quality Best Management Practices During In-water and Near Water Work Activities** and **Mitigation Measure HYD-2: Water Quality Monitoring** in Section 2.2.10, *Hydrology and Water Quality*, would require: in-water work with the potential to harm fish would be conducted at low tide to the extent feasible; use of underwater grout; prevention of deleterious construction-related materials from entering waters; use of a silt curtain with floating boom downstream of the construction footprint to contain turbidity and any accidental debris discharges, and to deter fish from the construction area; water quality sampling downstream of the construction footprint; and, guidelines for stopping work for specified exceedances of specific water quality parameters. Additionally, to minimize the movement of construction-related turbidity increases into Artesian Slough, temporary measures will be implemented to minimize the volume of direct flow from the outfall channel into the active construction site. Implementation of these measures will reduce potential Project-related impacts on special-status fish species to a less-than-significant level.

3.3 Impacts on Rare Plants

Congdon's tarplant, if present, could be impacted by construction-related vehicular and heavy equipment operation during hauling, stockpiling, equipment staging, or ground disturbance, such as trenching. Saline clover, if present, could be impacted by construction activities in or near wetlands, such as rip-rap placement and wildlife exclusion fencing installation adjacent to the non-tidal seasonal marsh east of the channel. Implementation of **Mitigation Measure BIO-7: Survey for Rare Plants** would reduce potential impacts to rare plants to a less-than-significant level by requiring a survey to identify any rare plants in the study area and, if any rare plants are located, establishing a no-disturbance buffer around the plant to protect it from construction-related activity.

3.4 Impacts on Sensitive Natural Communities

Sensitive plant communities identified by CDFW on their *California Sensitive Natural Community List* are summarized under Section 2.4. The *Schoenoplectus (acutus, californicus) Herbacious Alliance*, which is within the Project site, is not anticipated to be significantly impacted by Project activities, due to the small amount of turbidity, muted tidal action between Artesian Slough and the outfall channel due to the weir, and limited duration and spatial extent of rip-rap placement downstream of the weir. The *Sarcocornia pacifica* (*Salicornia depressa*) *Herbaceous Alliance* is outside the Project site. Therefore, none of these sensitive natural communities are expected to be impacted by Project activities. This impact is considered less than significant.

3.4.1 Essential Fish Habitat

As discussed above, Essential Fish Habitat (EFH) is present in the study area within Artesian Slough. EFH within the study area is covered under the Pacific Salmon Fisheries Management Plan (FMP) and is designed to protect habitat for commercially-important salmonid species. Sacramento Chinook salmon is the only species that may be seasonally present within the study area.

During in-water construction, effects to EFH may include the temporary impairment of water quality and increased turbidity, coinciding with the disturbance and alteration of slough habitat. These effects are not specific to EFH, rather they would be shared by all aquatic life in the study area. As such, the descriptions of these effects under ***Special Status Fish Species***, are directly applicable to EFH-managed fish species.

While the potential for a significant impact does exist from project construction, the development of an SWPPP in conjunction with **Mitigation Measures BIO-1** and **BIO-2** will ensure that any impacts to EFH are temporary and occur at less than significant levels. **Mitigation Measure BIO-2**, would limit in-water or in-channel work to June 1 to November 30, when Chinook salmon are least likely to occur within the study area. As such, impacts from project implementation on EFH are less than significant.

3.4.2 Critical Habitat

Designated critical habitat for steelhead (California Central Coast DPS) and North American green sturgeon (Southern DPS) is present in Artesian Slough, immediately downstream of the existing outfall weir. In-channel work could cause temporary impairment of water quality and increased turbidity, coinciding with the disturbance and alteration of critical habitat. These effects are not specific to critical habitat, rather they would be shared by all aquatic life in the study area. As such, the descriptions of these effects under Impact a, *Special-Status Fish Species*, are directly applicable to critical habitat. All of the impacts discussed above are expected to be temporary, as the majority of the modified outfall bridge and weir structure will fall within the current structural footprint. Thus, project implementation is not expected to result in an adverse modification in aquatic critical habitat.

While the potential for a significant impact does exist from project construction, the implementation of a SWPPP in conjunction with **Mitigation Measure BIO-2** would ensure that

any impacts on critical habitat are temporary and occur at less-than-significant levels. Mitigation Measure BIO-2 would limit in-water or in-channel work to June 1 through November 30 (the approved National Oceanic and Atmospheric Administration (NOAA) work window). In addition, **Mitigation Measure HAZ-1b, Health and Safety Plan**, in the Hazardous Materials section of this Initial Study would prevent deleterious materials from entering the environment on the Project site by requiring a site health and safety supervisor present during ground disturbing activities, and capable of implementing procedures to be followed in the event of an unanticipated hazardous materials release that may impact health and safety. As such, impacts from project implementation on critical habitat would be less than significant.

3.5 Impacts on Waters/Wetlands

Aquatic resources within the study area that could be impacted by the Project include tidal freshwater marsh and open water.

3.5.1 Direct Impacts

Direct permanent impacts to 59.98 square feet (0.001 acres) of open water would occur due to replacement of the existing bridge, which is wider than the existing bridge and would increase shading over open water (**Figure 2-1**). However, because the area of shading is minimal relative to the extent of surrounding open water, it is considered a less-than-significant impact.

There would be no direct permanent impacts to tidal freshwater marsh. Direct temporary impacts to 2,075.2 square feet (0.047 acres) of open water would result from installation of infrastructure that is replacing existing structures, or portions thereof, or are being installed on a temporary basis, including bridge, weir and rip-rap maintenance, and temporary placement of a floating dock and anchor poles. Because it is located directly under the bridge, replacement of the weir flashboards is a temporary impact captured under the temporary impact calculation associated with bridge replacement.

Direct temporary impacts to 52.3 square feet (0.001 acres) of tidal freshwater marsh would occur due to installation of the temporary dock access ramp. The majority of the freshwater marsh in the bridge foundation grading area is dominated by hardstem bulrush (*Schoenoplectus californicus*), narrow leaf cattail, and western goldenrod (ESA, 2019). *Typha* is capable of rapidly colonizing habitats due to its robust size, rapid growth rate, and rhizomatic expansion (i.e., allowing lateral, subterranean spread of the plant) (Bansal et al., 2019). Hardstem bulrush and western goldenrod are also rhizomatous, have moderate growth rates and are long-lived (USDA, 2019). The areas of tidal freshwater marsh that would be disturbed by temporary installation of the dock ramp are expected to naturally and rapidly re-vegetate over time due to the growth characteristics of the existing vegetation. Because of this, as well as the very small disturbance area, temporary impacts to tidal freshwater marsh would be less than significant.

Direct temporary and permanent impacts are presented in **Table 4**.

TABLE 4
TEMPORARY AND PERMANENT IMPACTS TO AQUATIC RESOURCES IN THE PROJECT AREA

Project Component	Temporary Impacts to Open Water (sq ft)	Temporary Impacts to Tidal Freshwater Marsh (sq ft)	Permanent Impacts to Open Water (sq ft)	Permanent Impacts to Tidal Freshwater Marsh (sq ft)
Replacement bridge	330.1	0	59.9[a]	0
Rip-rap replacement	1,669.5	0	0	
Dock and ramp	74.0	52.3	0	0
Anchor poles	1.6	0	0	0
Total impacts (sq ft)	2,075.2	52.3	59.9	0

[a] Temporary impact due to bridge replacement, excluding additional width of new bridge relative to existing bridge

[b] Permanent impact due to shading as a result of widening the bridge for the width of the channel underneath the bridge

3.5.2 Indirect Impacts

Installation and removal of the anchor poles by a long-arm excavator would disturb the channel mud, producing a small amount of turbidity relative to the baseline turbidity in the outfall channel, which is subject to tidal action. Installation of the outfall weir aluminum flashboards, replacement of rip-rap downstream of the channel, and removal of water quality monitoring equipment in the outfall pipes by divers could also result in a small amount of turbidity during these activities. This would represent a temporary and insignificant impact to federally protected wetlands and waters due to short duration and minimal potential impact relative to baseline conditions.

Project construction activities occurring outside of federally protected wetlands and waters, such as site grading, fill, and the use of heavy equipment, would generate loose, erodible soils which could result in erosion or siltation into the outfall channel, or result in an accidental release of deleterious materials during construction. Bridge deconstruction could result in demolition debris entering the outfall channel and Artesian Slough. These would be significant impacts. However, implementation of the project's required SWPPP and **Mitigation Measure HAZ-1b, Health and Safety Plan**, in Section 2.2.9, *Hazards and Hazardous Materials* of the Initial Study would avoid and minimize the potential for soil erosion and accidental release of deleterious materials during construction. In addition, **Mitigation Measure BIO-8: Contain Bridge Deconstruction Debris** would prevent or minimize deconstruction debris from entering the outfall channel and Artesian Slough. **Mitigation Measure HYD-1: Water Quality Best Management Practices During In-water and Near Water Work Activities** and **Mitigation Measure HYD-2: Water Quality Monitoring** in Section 2.2.10, *Hydrology and Water Quality*, would require: in-water work to be conducted during periods of low turbulence and during low tide; use of underwater grout; prevention of deleterious construction-related materials from entering waters; use of a silt curtain with floating boom downstream of the construction footprint to contain turbidity and any accidental debris discharges, and to exclude fish from the construction area; water quality sampling downstream of the construction footprint; and, guidelines for stopping work for specified exceedances of specific water quality parameters. Implementation of these measures would reduce potential Project-related impacts to protected wetlands and waters to a less-than-significant level.

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SECTION 4
Mitigation Measures

The below-outlined mitigation measures would be implemented by the City to avoid and minimize potential Project impacts on special-status wildlife and plants, aquatic resources, critical habitat and essential fish habitat. There is no additional mitigation required for wildlife movement corridors, local policies and ordinances protecting biological resources, or any approved habitat conservation plan.

Mitigation Measure BIO-1: General Construction Measures.

- Prior to construction, all construction workers shall take part in an environmental awareness program conducted by an agency-approved biologist. The biologist shall train work crews in standard procedures for identifying and avoiding impacts to all special-status species with the potential to occur in the work area (steelhead – Central California Coast DPS, Chinook salmon – Central Valley fall-run ESU, longfin smelt, western pond turtle, Ridgway's rail, black rail, western burrowing owl, birds protected by the Migratory Bird Treaty Act, salt marsh harvest mouse, salt marsh wandering shrew, Congdon's tarplant and saline clover). The awareness program shall be conducted at the start of construction and thereafter as required for new construction personnel.

- At the end of each work day, all excavations (i.e. holes, construction pits, and trenches) of a depth of 8 inches or greater shall be covered with plywood or other hard material, and gaps around the cover shall be filled with dirt, rocks, or other appropriate material to prevent entry by wildlife. If excavations cannot be covered, then they shall include escape ramps constructed of either dirt fill, wood planking, or other appropriate material installed at a 3:1 grade (i.e., an angle no greater than 30 degrees) to allow wildlife that fall in a means to escape.

Mitigation Measure BIO-2: Seasonal Avoidance of Sensitive Aquatic Species.

- In-water construction work with the potential to result in short-term impacts to sensitive aquatic species, including project activities that are expected to create turbidity or disturb the streambed, shall be conducted only from only from June 1 through November 30 (the approved National Oceanic and Atmospheric Administration (NOAA) work window).

Mitigation Measure BIO-3: Western Pond Turtle Protection Measures.

- Prior to the start of construction activities, the project proponent shall retain a qualified biologist to conduct preconstruction surveys for western pond turtles in all suitable habitats (aquatic and upland) in the vicinity of the work site. Surveys shall

take place no more than 72 hours prior to the onset of site preparation and construction activities with the potential to disturb turtles or their habitat.

- If no western pond turtles are observed during the preconstruction surveys, no further action is required.

- If preconstruction surveys identify active western pond turtle nests within the project site, the biologist shall establish no-disturbance buffer zones around each nest using temporary orange construction fencing. The demarcation shall be permeable to allow young turtles to move away from the nest following hatching. The radius of the buffer zone and the duration of exclusion shall be determined in coordination with the CDFW. The buffer zones and fencing shall remain in place until the young have left the nest, as determined by the qualified biologist.

- If western pond turtle is identified during preconstruction surveys, or during construction, a qualified biologist shall monitor construction activities in the Project site within 50 feet of suitable western pond turtle habitat, and remove and relocate western pond turtles in proposed construction areas to suitable habitat outside the project limits, consistent with CDFW protocols and handling permits. Relocation sites shall be subject to CDFW approval.

- If any turtles are found in the project site, construction activities shall halt within 50 feet and the qualified biologist shall be notified Construction activities can continue, or commence, more than 50 feet from the western pond turtle individual; however, the qualified biologist shall still be notified. If the biologist determines the turtle is a western pond turtle, the qualified biologist shall relocate the western pond turtle into nearby suitable habitat consistent with CDFW protocols and handling permits.

Mitigation Measure BIO-4: Special-status Bird Species Protection Measures.

- The project proponent and its contractors shall avoid conducting vegetation removal or ground disturbing activities during the nesting season (February 1–August 31), inclusive.

- If avoidance of the nesting season is not possible, the City's Environmental Team Project Lead (ET) or its contractor shall retain a qualified wildlife biologist to conduct a survey for nesting raptors and migratory bird nests within 7 days of the start of construction or after any construction breaks of 14 days or more, within 7 days prior to the resumption of construction. Surveys shall be performed for the Project areas and for suitable habitat within 300 feet. If an active nest is discovered, a no-disturbance buffer zone around the nest tree (or, for ground-nesting species, or nests identified on Facility buildings, the nest itself) shall be established. The no-disturbance zone shall be marked with flags or fencing that is easily identified by the construction crew and will not affect the nesting birds. In general, minimum buffer zone widths shall be as follows: 100 feet (radius) for non-raptor species and 300 feet (radius) for raptor species; however, the buffer zone widths may be adjusted if an obstruction, such as a building, is within line-of-sight between the nest and construction. Buffer zone widths and other avoidance measures may be modified based on consultation with CDFW and the USFWS. Buffer widths shall remain in

place as long as the nest is active or young remain in the area and are dependent on the nest.

- The project proponent and its contractors shall retain a qualified wildlife biologist and conduct surveys for California Ridgway's rail and California black rail prior to initiation of construction activities. These surveys are required for construction activities conducted at any time of the year.

- If either of these species is detected in the project site during surveys, the project proponent shall consult USFWS and CDFW staff to identify the appropriate avoidance measures. The project proponent shall be responsible to ensure that USFWS and/or CDFW requirements are implemented.

- If a special-status rail is detected within 700 feet of the project site during their nesting season (February 1 – August 31, inclusive), all construction activities within 700 feet of suitable nesting or forage habitat for this species will be delayed until after the nesting season is over.

- If a special-status rail is detected within 700 feet of the project site during the non-nesting season (September 1 – January 31), construction activities can commence, but all vegetation within suitable habitat for the species shall be cleared by hand or with hand tools and a biologist will be retained on site during vegetation clearing activities to ensure that no birds are injured. Once the construction site is devoid of vegetation providing suitable habitat for the species, regular construction can commence.

- If any birds initiate nests within the established buffer distances while construction is occurring, then it is assumed that they are habituated to the construction activities, and construction can continue as long as the birds or their nests are not physically harmed.

Mitigation Measure BIO-5: Western Burrowing Owl Protection Measures.

To avoid or minimize direct impacts of project activities on western burrowing owls, the City shall ensure the following Capital Improvements Project (CIP) specifications for western burrowing owl are implemented.

1. The contractor shall not disturb western burrowing owls and any occupied burrows or nests.

2. If western burrowing owls are encountered during construction, work must stop, and the Engineer should be notified immediately. A survey must be performed by the qualified biologist before construction work can proceed.
3. If surveys identify evidence of western burrowing owls within 250 feet of the project area, the contractor shall:
    a. Establish a 250-foot exclusion zone around the occupied burrow or nest, as directed by the qualified biologist
    b. Avoid the exclusion zone and all nests that could be disturbed by project construction activities during the remainder of the breeding season or while the burrow is occupied by adults or young

c. Not resume construction activities within the 250-foot zone until the Engineer provides written Notice to Proceed based on the recommendation of the qualified biologist

4. If avoidance of occupied burrows is not feasible during February 1 to August 31 breeding season, construction may occur within 250 feet of the occupied burrows if the burrows are not disturbed and the qualified biologist prepares and implements a Monitoring Plan approved by the California Department of Fish and Wildlife.

5. If avoidance of occupied burrows is not feasible during September 1 to January 31 non-breeding season, construction may occur within 250 feet of the overwintering burrows as long as the contractor's qualified biologist monitors the owls for at least 3 days prior to Project construction and during construction and finds no change in owl foraging behavior in response to construction activities. If there is any change in owl foraging behavior as a result of construction activities, activities shall cease within the 250-foot exclusion zone.

Mitigation Measure BIO-6: Salt Marsh Harvest Mouse and Salt Marsh Wandering Shrew Protection Measures.

- Prior to initiation of work in suitable habitat, an agency-approved[1] biologist shall be retained to conduct preconstruction surveys areas where disturbance is planned. Surveys shall take place no more than 24 hours before the onset of vegetation removal or ground-disturbing activities.
- Prior to construction on the east side of the outfall channel or Artesian Slough, silt exclusion fencing with wire-mesh backing shall be installed by hand between the eastern edge of the project area and the non-tidal seasonal marsh to prevent the mouse/shrew from entering the active work area, protect habitat within the marsh from earthmoving activities or accidental spills, and to exclude workers from the marsh. The fence should have a minimum above-ground height of 30 inches, and the bottom should be buried to a depth of at least 6 inches so that mice cannot crawl under the fence. Any supports for the exclusion fencing (e.g., t-posts) will be placed on the inside of the project area. The last 5 feet of the fence shall be angled away from the road to direct wildlife away from the road. Installation of the exclusion fence shall be overseen by an agency-approved biologist.
- An agency-approved biologist shall monitor the fence weekly to assure it remains functional to exclude the mouse/shrew from the work area and will recommend needed fence repairs to the project proponent.
- Ground disturbance in suitable mouse/shrew habitat (including, but not limited to pickleweed, and emergent salt marsh vegetation such as bulrush and cattails) will be avoided to the extent feasible. Where mouse/shrew habitat cannot be avoided, an agency-approved biologist shall supervise the hand removal of any vegetation to avoid impacts on the mouse/shrew. Such monitoring will occur for the duration of all clearing work within suitable habitat.
- If mouse/shrew individuals are observed in or near the Project work area, all construction activities shall cease until the USFWS and CDFW can be contacted and appropriate avoidance, protection, or relocation measures can be developed,

[1] The "agency"-approved biologist would be approved by USFWS and CDFW, the federal and state regulatory agencies responsible for implementing endangered species acts, and/or state regulations applicable to Fully-Protected Species.

approved, and implemented. Depending the specific location and agency guidance, these measures may include relocation or buffer distances.

Mitigation Measure BIO-7: Survey for Rare Plants.

- Prior to the start of construction, a rare plant survey shall be conducted by a qualified biologist in accordance with CDFW's 2009 *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities*.
- If a special status plant species is encountered on the project site, it shall be documented and submitted to the CNDDB. The project shall avoid impacts during construction by clearly marking and delineating the location in the field and encircling the species with protective silt exclusion fencing. Visible signage shall be attached to the silt fencing to instruct workers to stay out of the sensitive rare plant area. If direct impacts cannot be avoided, then the District shall consult with CDFW to devise a plan for minimizing the impacts by one or more of the following methods: 1) salvage and replanting of plants at the same location following construction; 2) salvage and relocation of the plants to a suitable off-site location with long-term assurance of site protection; 3) collection of seeds or other propagules for reintroduction at the site or elsewhere; 4) payment of fees in lieu of preservation of individual plants, to be used for conservation efforts elsewhere.

Mitigation Measure BIO-8: Contain Bridge Deconstruction Debris.

ET or its contractor shall install measures to prevent debris associated with the deconstruction from entering Artesian Slough.

- No bridge demolition debris shall be allowed to enter Artesian Slough or be placed where it would be subject to erosion by rain, wind, or waves and enter into jurisdictional waters. Staged construction materials with the potential to be eroded/entrained during a rainfall event will be covered every night and during any rainfall event.
- Floating booms shall be used to contain any accidental debris discharged into Artesian Slough, and any debris shall be removed as soon as possible, and no later than the end of each workday. If feasible, personnel in workboats within the work area will immediately retrieve such debris for proper handling and disposal. Non-buoyant debris discharged into waters shall be recovered as soon as possible after discharge.
- Accidental debris discharged into the outfall channel will be collected at the weir at the downstream terminus of the channel. No debris discharged into the outfall channel will be allowed to enter Artesian Slough.

HAZ-1b: Health and Safety Plan.

ET or its contractor shall retain a qualified environmental professional to prepare a site-specific Health and Safety Plan (HASP) in accordance with federal OSHA regulations (29 CFR 1910.120) and Cal/OSHA regulations (8 CCR Title 8, Section 5192). Because anticipated contaminants vary depending upon the location of proposed improvements in the Project area and may vary over time, the HASP shall address site-specific worker health and safety issues during construction. The HASP shall include the following information.

- Results of sampling conducted in accordance with Mitigation Measure HAZ-1a in the Hazards and Hazardous Materials section.
- All required measures to protect construction workers and the general public by including engineering controls, monitoring, and security measures to prevent unauthorized entry to the construction areas and to reduce hazards outside of the construction areas. If prescribed contaminant exposure levels are exceeded, personal protective equipment shall be required for workers in accordance with state and federal regulations.
- Required worker health and safety provisions for all workers potentially exposed to contaminated materials, in accordance with state and federal worker safety regulations, and designated qualified individual personnel responsible for implementation of the HASP.
- The contractor shall have a site health and safety supervisor fully trained pursuant to hazardous materials regulations be present during excavation, trenching, or cut and fill operations to monitor for evidence of potential soil contamination, including soil staining, noxious odors, debris or buried storage containers. The site health and safety supervisor must be capable of evaluating whether hazardous materials encountered constitute an incidental release of a hazardous substance or an emergency spill. The site health and safety supervisor shall implement procedures to be followed in the event of an unanticipated hazardous materials release that may impact health and safety. These procedures shall be in accordance with hazardous waste operations and regulations and specifically include, but are not limited to: 1) immediately stopping work in the vicinity of the unknown hazardous materials release; 2) notifying SCCDEH, RWQCB, or DTSC; and 3) retaining a qualified environmental firm to perform sampling, remediation, and/or disposal.
- Documentation that HASP measures have been implemented during construction.
- Provision that submittal of the HASP to ET, or any review of the contractor's HASP, shall not be construed as approval of the adequacy of the contractor as a health and safety professional, the contractor's HASP, or any safety measure taken in or near the construction site. The contractor shall be solely and fully responsible for compliance with all laws, rules, and regulations applicable to health and safety during the performance of the construction work.

Mitigation Measure HYD-1: Water Quality Best Management Practices during In-Water and Near-Water Work Activities

In order to avoid and/or minimize potential impacts to water quality (and jurisdictional waters) during Project activities that would be conducted in or over waters, the following construction BMPs would be implemented by the contractor, and overseen by a water quality specialist, to prevent releases of construction materials or hazardous materials and to avoid other potential environmental impacts:

- In-water work with the potential to harm fish and aquatic resources (e.g., grouting and rip-rap placement) will be conducted at low tide to the extent feasible.
- All project components will be designed using materials that follow local, California, and national environmental regulations; this includes the use of underwater grout (e.g., cementitious or epoxy specifically chosen for in-water applications.

- No debris, rubbish, soil, silt, sand, cement, concrete, or washings thereof, or other construction-related materials or wastes, oil, or petroleum products shall be allowed to enter into jurisdictional waters or placed where it would be subject to erosion by rain, wind, or waves and enter into jurisdictional waters. Staged construction materials with the potential to be eroded/entrained during a rainfall event will be covered every night and during any rainfall event (as applicable).
- All construction material, wastes, debris, sediment, rubbish, trash, fencing, etc., will be removed from the project site daily during construction, and thoroughly at completion of the project. Debris will be transported to an authorized upland disposal area.
- To isolate potential water quality impacts from rip-rap placement and grouting, a silt curtain with floating boom, or another effective technology, will be placed to constrain the construction footprint from Artesian Slough. The silt curtain will be placed within 500-feet of the in-water construction activity. The exact location will be determined, at the discretion of the contractor in consultation with the water quality specialist, with the goal to maximize functionality of the curtain. The contractor will ensure curtain placement is also upstream of the water quality monitoring location described below. The silt curtain will accomplish the following:
    - Isolate construction activities from Artesian Slough
    - Contain turbidity and sediment resulting from the construction activity
    - Deter fish, and other aquatic species, from accessing the active construction area
    - Allow water to pass between Artesian Slough and the outfall channel with the tides
- The silt curtain will be at least the height of the outfall weir (approximately 6 feet tall) to maintain a barrier at high tide. The curtain will consist of permeable filter fabric supported by a line of floats (boom) on the water surface and a line of weights/anchors on the bottom to secure the curtain to the channel bed to maintain coverage around the active in-water construction area. The curtain would be secured to land and to the weir with anchors at the channel banks to hold the curtain in place.
- At the request of BCDC, CDFW, the Water Board, or USACE, the contractor will prepare a plan that provides a description of methods to be used to direct flow away from the active construction work area in Artesian Slough prior to implementation. Temporary measures will be used to minimize the volume of direct flow from the outfall channel into the active construction site to minimize the movement of construction-related turbidity increases into Artesian Slough.
- Floating booms shall be used to contain any accidental debris discharged into waters, and any debris shall be removed as soon as possible, and no later than the end of each workday. If feasible, personnel in workboats within the work area will immediately retrieve such debris for proper handling and disposal. Non-buoyant debris discharged into waters shall be recovered (by divers) as soon as possible after discharge. Protective measures will be utilized to prevent accidental discharges of oils, gasoline, or other hazardous materials to jurisdictional waters during fueling, cleaning, and maintenance of equipment. Well-maintained equipment will be used to perform construction work, and, except in the case of failure or breakdown, equipment maintenance will be performed off-site. Crews will check heavy equipment daily for

leaks, and if leaks are discovered it will be immediately contained and use of the equipment will be suspended until repaired. The source of the leak will be identified, material will be cleaned up, and the cleaning materials will be collected and properly disposed.

- Vehicles and equipment used during the course of construction will be serviced offsite. On-site fueling of marine equipment (if any) will comply with U.S. Coast Guard requirements. Smaller equipment, such as generators and hand tools will be fueled using fuel tanks, hoses, and fuel cans. Fueling locations will be inspected after fueling to document that no spills have occurred. Any spills will be cleaned up immediately.

Mitigation Measure HYD-2: Water Quality Monitoring

Prior to and during in-water construction, water quality measurements will be collected and recorded within Artesian Slough. Data will be collected at the City's previously established monitoring location within Artesian Slough, approximately 1,500 feet downstream of the outfall weir.[2]

Measurement data will be collected prior to the start of construction each day to establish current ambient, baseline conditions. Subsequently, water quality data will be collected every two hours during construction to ensure compliance with the water quality metrics described below. All measurements will be collected at the top of the water column to control for the natural variability in water quality at different depths, and to ensure data are comparable.

Exceedance of any of the water quality metrics described below would trigger a stop to in-water work, and adjustment to the water quality BMPs (as described in MM HYD-1) until it can be demonstrated that water quality objectives can be maintained. The water quality monitoring parameters enumerated below represent a consolidation of applicable regulatory requirements as outlined within the Marine Water Quality Objectives (MWQO) for the San Francisco Bay Basin.

- Visual: No significant floating particulates, suspended materials, grease, or oil shall be visible. No aesthetically undesirable coloration of the water surface; oils, grease, or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water.
- Turbidity. Given the wide historic range, and high daily variability, in documented turbidity within Artesian Slough, strict adherence to Basin Plan objectives is infeasible. As a result, the following thresholds are proposed:
    - Isolate construction activities from Artesian Slough
    - No more than 50 nephelometric turbidity units (NTUs) above background when background between 0 and 100 NTUs.
- No more than 50 percent above background turbidity levels when background is greater than 100 NTUs. Dissolved oxygen (DO): DO levels will not drop below 5.0

[2] This station was established in 2005 under the RWQCB's Wastewater Discharge Requirement (WDR, Order No. R2-0003) for the operation of the City's Pond A18 continuous discharge monitoring. Fourteen years of water quality data have been collected at this monitoring location.

mg/l. If natural factors cause lesser concentrations, construction will cause no further reduction in the concentration of DO.

- pH: Construction will cause no more than a 0.5 increase or decrease in pH and pH levels will remain within 6.5 to 8.5.

- If required by natural resource agencies, pre-construction and post-construction sampling for total Polycyclic Aromatic Hydrocarbons (PAHs) may be conducted as follows: pre-construction sampling for total PAHs prior to construction activity to establish ambient PAH concentration in Artesian Slough and atthe conclusion of project construction, conduct additional PAH sampling for total PAHs. Post-construction total PAHs are not to exceed 15 µg/l, unless it can be shown that post-construction site concentrations are similar to the ambient levels measured during pre-construction sampling.

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SECTION 5
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APPENDIX B-1

Special-Status Plant and Wildlife Database Reports