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CITY OF SUNNYVALE
MASTER PLAN AND PRIMARY TREATMENT DESIGN
TECHNICAL MEMORANDUM
BIOLOGICAL RESOURCES CONSTRAINTS AND
OPPORTUNITIES REPORT: SITE PLAN

FINAL
June 2014



in association with



H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS



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**Sunnyvale Water Pollution Control Plant
Master Plan and Primary Treatment Facility Design
Biological Resources Constraints and Opportunities Report**

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Project No. 3509-01



Executive Summary

The City of Sunnyvale (City) plans to renovate its existing Water Pollution Control Plant (WPCP) to an updated facility that is capable of the treatment and disposal of municipal sewage during the next 30 years through development of a long-term Master Plan as well as construction of near-term facilities. The WPCP Master Plan Project (Project) will be designed to comply with all regulatory and permitting requirements and to be adaptable so that it meets future demands for the treatment and disposal of the City's wastewater. The Project Area is located in the northern portion of the City of Sunnyvale, and includes the 16.6-acre (ac) "Main Plant" and two oxidation ponds (Pond 1 and Pond 2) and associated channels totaling approximately 440 ac. Adjacent sites within the Project Area include Guadalupe Slough (a tidal slough lined with salt marsh and brackish marsh) to the north of Ponds 1 and 2; Moffett Channel to the east of Pond 2; Pond A4 (a pond owned by the Santa Clara Valley Water District) to the east of Moffett Channel; former landfill to the south, west, and east of the Main Plant; and a former water conveyance channel owned by Cargill (the Cargill Channel) to the northwest of the Main Plant.

Individual Project components (the locations of which are shown on Figure ES-1) include:

- Construction and expansion activities at the Main Plant
- Installation of a 60-inch primary effluent pipeline from the Main Plant to the pond recirculation channel between Ponds 1 and 2 and associated widening of a levee road
- Construction of a berm around a portion of Pond 2 to create a flow equalization/emergency storage basin, and future use of the remaining portion of Pond 2 and all of Pond 1
- Use of a portion of the closed landfill for trailers, parking, staging, and storage associated with construction of Master Plan components
- Relocation of the Administration/Lab Building to the household hazardous waste drop-off location
- Closure of Carl Road to the public and relocation of public trail parking to Caribbean Drive
- Possible use of portions of the Cargill Channel or Pond A4 for the flow equalization/emergency storage basin

Potential constraints related to biological resources, including regulated habitats, special-status species, and important concentrations of non-special-status species, as well as associated permitting requirements are summarized below for each Project component. In addition, habitat enhancement opportunities are summarized below for Ponds 1 and 2 and for the closed landfill.

Overview of Regulatory Agencies and Permitting Requirements

Permits from a variety of regulatory agencies would be required for impacts to regulated habitats and species listed under the Federal or State Endangered Species Acts. These regulatory agencies, and the permits that may be needed from them for certain activities, are briefly summarized below, and are described in greater detail in the main body of this report.



N:\Projects\3500\3509-01\Reports\June 2014\Figure ES-1 Project Area Map.mxd

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Figure ES-1: Project Area Map
Sunnyvale Water Pollution Control Plant: Biological Resources
Existing Conditions, Constraints, and Opportunities (3509-01)
June 2014

- U.S. Army Corps of Engineers (USACE) – A Clean Water Act Section 404 permit is required for placement of fill in waters of the U.S., which include most vegetated wetlands, canals, ditches, and sloughs except for waterbodies specifically used for water treatment purposes, and a Section 10 Rivers and Harbors Act is required for placement of fill in navigable waters, such as tidal waters (e.g., Moffett Channel).
- San Francisco Bay Regional Water Quality Control Board (RWQCB) - Clean Water Act Section 401 water quality certification is required for placement of fill in waters of the State, which are expected to overlap entirely with waters of the U.S. on this site.
- California Department of Fish and Wildlife (CDFW) – A Streambed Alteration Agreement (SAA) under California Fish and Game Code Section 1600 is required for impacts to creeks and streams, which on this site may include Moffett Channel. An Incidental Take Permit (ITP) from the CDFW is required prior to any take of species listed as threatened or endangered under the California Endangered Species Act (CESA), such as the longfin smelt (*Spirinchus thaleichthys*), that are not also considered “fully protected” species by the State.
- San Francisco Bay Conservation and Development Commission (BCDC) – A permit from the BCDC is required for impacts to the open water, marshes and mudflats of greater San Francisco Bay and the first 100 feet (ft) inland from the shoreline around San Francisco Bay.
- U.S. Fish and Wildlife Service (USFWS) – A Biological Opinion (BO) from the USFWS is needed to authorize incidental take of species that are listed as threatened or endangered under the Federal Endangered Species Act (FESA) and that are under the regulatory jurisdiction of the USFWS, such as the California clapper rail (*Rallus longirostris*) and salt marsh harvest mouse (*Reithrodontomys raviventris*).
- National Marine Fisheries Service (NMFS) – A BO from the USFWS is needed to authorize incidental take of species that are listed as threatened or endangered under the FESA and that are under the regulatory jurisdiction of the NMFS, such as the green sturgeon (*Acipenser medirostris*) and Central California Coast steelhead (*Oncorhynchus mykiss*). NMFS also provides guidance on avoiding and minimizing impacts to Essential Fish Habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management Act.

Table ES-1 provides a summary of potential constraints related to regulated habitats and special-status species on the activities described below.

Main Plant Construction – Summary of Constraints

Regulated Habitats

The primary constraints to proposed expansion of the Main Plant eastward and northward, resulting in filling of the southeastern channel and the northern wetland swale, pertain to permitting requirements. The following permits could potentially be necessary:

- Clean Water Act Section 404 permit from the USACE
- Clean Water Act Section 401 water quality certification from the RWQCB
- An administrative permit from the BCDC
- Possibly a SAA from the CDFW, if the CDFW claims California Fish and Game Code Section 1600 jurisdiction over the southeastern channel

Permitting of impacts to the southeastern channel is expected take 6-9 months if a Nationwide Permit (NWP) is needed from the USACE, or 9-18 months if an Individual Permit is needed; the type of permit needed will be determined following a delineation of jurisdictional boundaries along the southeastern channel and determination of the impact acreage. If impacts to the northern wetland swale are permitted separately, it is expected that impacts to that swale can be covered by a NWP.

Preparation of permit application materials and agency coordination during permit processing may cost approximately \$31,000-43,000 for permitting impacts to the southeastern channel and \$40,000 for permitting impacts to the northern swale, if these two areas are permitted separately. Cost savings could be realized if permitting of impacts to both areas is done simultaneously (i.e., under one permit), though in that case, the impact acreage may be great enough that a NWP cannot be used for either activity.

Impacts to waters of the U.S./State may require mitigation at a ratio up to 3:1 (mitigation:impact), depending on the quality of habitat impacted, the type of mitigation proposed, and the location of the proposed mitigation site. Credits for non-tidal wetlands (the type represented by the southeastern channel and northern swale) in a mitigation bank may cost \$300,000/acre or more.

Plants and Animals

Constraints from potential impacts to plants and animals from Main Plant activities are minor. For special-status birds and other protected bird species, avoidance of new construction during the nesting season (1 February to 31 August) or preconstruction surveys and maintenance of buffers around active nests will be necessary. Nesting deterrence can be implemented to minimize the potential for constraints due to nesting birds. If Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*) is found to be present in areas that will be impacted by Main Plant activities, compensatory mitigation in the form of establishment and/or management of populations may be necessary to reduce impacts to less-than-significant levels under CEQA. Such mitigation could likely be provided on the landfill.

New 60-Inch Primary Effluent Pipeline/Levee Road Widening – Summary of Constraints

Regulated Habitats

The following permits could potentially be necessary:

- Clean Water Act Section 404 permit from the USACE
- Rivers and Harbors Act Section 10 Letter of Permission from the USACE
- Clean Water Act Section 401 water quality certification from the RWQCB
- An administrative permit from the BCDC
- A SAA from the CDFW

(FESA consultation with the USFWS and NMFS will be necessary, and the schedule for such consultation is what will drive the 12-18-month schedule for permitting, since the BOs from the USFWS and NMFS will need to be issued before the USACE can issue its Section 404 permit. Preparation of permit application materials and agency coordination during permit processing, including FESA and CESA consultation, may cost up to \$90,000 - \$100,000.

Impacts to both tidal and nontidal wetlands and other waters may require mitigation at a ratio up to 3:1 (mitigation:impact). Credits for non-tidal wetlands (the type represented by the Cargill Channel) in a mitigation bank may cost \$300,000/acre or more, while credits for tidal wetlands (the type represented by Moffett Channel and its associated tidal wetlands) in a mitigation bank may cost \$500,000 or more.

Plants and Animals

The primary constraint to construction would be the potential for California clapper rails (*Rallus longirostris obsoletus*) to nest along Moffett Channel close enough to Project activities (i.e., within 700 ft) for construction to disturb nesting rails. If nesting rails are present, the USFWS will want a 700-ft buffer around nesting areas to be maintained free from construction between 1 February and 31 August. However, (a) it is possible that the USFWS will relax the buffer or reduce the period in which the buffer is required, and (b) it is our opinion that clapper rails are not expected to nest along Moffett Channel within 700 ft of activities associated with pipeline construction and levee road widening due to the marginal nature of habitat in that area.

Otherwise, constraints from potential impacts to plants and animals will consist of avoidance and minimization activities that can be accommodated by construction, and compensatory mitigation requirements that may overlap mitigation requirements for impacts to regulated habitats.

Ponds 1 and 2 – Summary of Constraints

Regulated Habitats

The following permits could potentially be necessary for berm construction in Pond 2:

- Rivers and Harbors Act Section 10 Letter of Permission from the USACE
- An administrative permit from the BCDC

In addition, RWQCB approval for closure of the ponds (i.e., cessation of use for water treatment) may be necessary. Preparation of permit application materials and agency coordination during permit processing for berm construction in Pond 2 may cost approximately \$40,000 and take 6-9 months.

Plants and Animals

The primary constraint to construction of the berm in Pond 2 may be the potential for California clapper rails to nest along Moffett Channel close enough to Project activities (i.e., within 700 ft) for construction to disturb nesting rails. If nesting rails are present, the USFWS will want a 700-ft buffer around nesting areas to be maintained free from construction between 1 February and 31 August. However, (a) it is possible that the USFWS will relax the buffer or reduce the period in which the buffer is required, and (b) it is our opinion that there is a low probability that clapper rails will nest along Moffett Channel within 700 ft of activities associated with construction of the berm for the flow equalization/emergency storage basin in Pond 2 due to the low quality of habitat in that area.

If conversion of Ponds 1 and 2 to other uses is determined during the California Environmental Quality Act (CEQA) process to contribute to significant cumulative impacts on waterfowl or phalarope populations in the South Bay, mitigation may be necessary in the form of management of habitat on-site for these species, which could be accomplished in Ponds 1 and 2, or in the form of a financial contribution to the SBSP Project for the management of ponds for these species.

Otherwise, constraints from potential impacts to plants and animals will consist of avoidance and minimization activities that can be accommodated by construction.

Flood Control/Contaminants of Emerging Concern Considerations

The outboard levees around Ponds 1 and 2 will need to be maintained, either by the City or the Santa Clara Valley Water District (SCVWD), unless and until flood-control levees are constructed landward of Ponds 1 and 2 to provide coastal flood protection to low-lying areas of Sunnyvale and Mountain View. Breaching of the outboard levees around Ponds 1 and 2, either naturally or intentionally for tidal marsh restoration, cannot occur until landward levees are constructed.

The City will need to comply with any future regulations regarding Contaminants of Emerging Concern (CECs) and, even if not regulated, the effects of long-term exposure of CECs, which that may be present in the pond sediments, on wildlife will need to be analyzed during CEQA review of the Project. If impacts are determined to be potentially significant, mitigation measures may include removal of sediments prior to breaching of levees or compliance with any agency standards or conditions regarding the release of CECs that are developed in the future.

Ponds 1 and 2 – Summary of Enhancement Opportunities

Opportunities for habitat enhancement in Ponds 1 and 2 after they are no longer needed for secondary treatment include:

- Tidal habitat restoration, either passively (through unplanned breaches) or actively (by intentionally breaching outboard levees) – tidal flood control levees would need to be constructed landward of the ponds before tidal habitat restoration could occur. Active tidal restoration would enable the possibility of establishing a mitigation bank, which would allow the City to sell mitigation credits to other entities that need tidal habitat/species mitigation.
- Managed non-tidal ponds for wintering/migrant waterbirds – these ponds would continue to provide habitat for waterbirds that currently use Ponds 1 and 2. However, constraints to the continued use of these ponds as managed, non-tidal ponds include maintenance of levees and other infrastructure; provision of water to the ponds; and maintenance of water depth and water quality in the ponds.
- Managed non-tidal ponds for wintering, migrant, and nesting waterbirds – the managed ponds described in the previous bullet could also be managed for nesting waterbirds if nesting islands were provided.
- Managed non-tidal freshwater/brackish wetlands – these ponds could be used to create vegetated wetlands; constraints would be similar to those described for managed non-tidal ponds above.
- Filling of ponds – the City could consider filling portions of Ponds 1 and 2 for expansion of WPCP activities.
- Integration with the South Bay Salt Ponds Project and South San Francisco Bay Shoreline Study – management of Ponds 1 and 2 either via tidal restoration or as managed ponds would complement the habitat restoration and management objectives of these two other projects, and it is possible that the California Coastal Conservancy, USFWS, or CDFW may wish to purchase Ponds 1 and 2 for integration into these other projects or fund restoration or management activities within Ponds 1 and 2 to further these projects’ objectives.

Landfill Use for Construction Trailers and Staging – Summary of Constraints

Although no regulated habitats are expected to be present on the landfill, the RWQCB regulates activities on closed landfills, and thus, approval from the RWQCB may be needed for relocation of the Administration/Lab Building to the current household hazardous waste drop-off site or use of the landfill for construction-related activities.

If burrowing owls are present on portions of the landfill used for construction-related activities, occupied burrows would need to be avoided, and a 250-ft buffer maintained around such burrows, during the breeding season (1 February to 31 August). Loss of burrowing owl habitat could be considered significant under CEQA, necessitating mitigation such as habitat enhancement on other portions of the landfill (as described under “Landfills – Summary of Enhancement Opportunities” below).

Otherwise, constraints from potential impacts to plants and animals from landfill use would be minor. For special-status birds other than burrowing owls, as well as other protected bird species, avoidance of new construction during the nesting season (1 February to 31 August) or preconstruction surveys and maintenance of buffers around active nests will be necessary. Nesting deterrence can be implemented to minimize the potential for constraints due to nesting birds. If Congdon's tarplant is found to be present in areas that will be impacted by landfill use, compensatory mitigation in the form of establishment and/or management of populations may be necessary to reduce impacts to less-than-significant levels under CEQA. Such mitigation may occur on the landfill itself.

Landfills – Summary of Enhancement Opportunities

Numerous habitat management and enhancement opportunities on the closed landfill have been identified by the City's burrowing owl contractor, Debra Chromczak. Examples of such opportunities, which could be implemented to increase the number of owls using the landfill, the number using the landfill for breeding, and breeding success, are as follows:

- Manage vegetation height \leq 6 inches at occupied owl locations, but leave islands of taller vegetation to support prey populations
- Improve prey base by planting native perennials and by using rock/brush piles
- Install artificial burrow complexes
- Focus management on areas with numerous ground squirrels, away from human/canine disturbance
- Deter off-path human access
- Close off portions of landfill around active burrows during nesting season

In addition, Congdon's tarplant could be introduced to portions of the landfill through seeding, and such areas could be managed to support this special-status plant. Enhancements for the burrowing owl and Congdon's tarplant should be coordinated between WPCP activities and the City's recreation planning for the landfill to ensure the success of any habitat enhancement measures.

Closure of Carl Road and Relocation of Trail Parking – Summary of Constraints

If burrowing owls are present on portions of the landfill near the location of the proposed spur trail connecting the Caribbean Drive parking area to the trail along the Sunnyvale West Channel, occupied burrows would need to be avoided, and a 250-ft buffer maintained around such burrows, during the breeding season (1 February to 31 August). Loss of high-quality burrowing owl habitat would not occur, and no habitat mitigation would be necessary. For protected bird species, avoidance of new construction during the nesting season (1 February to 31 August) or preconstruction surveys and maintenance of buffers around active nests may be necessary. Nesting deterrence can be implemented to minimize the potential for constraints due to nesting birds.

Alternatives for the Flow Equalization/Emergency Storage Basin – Summary of Constraints

Regulated Habitats

The following permits could potentially be necessary:

- Clean Water Act Section 404 permit from the USACE (Individual Permit)
- Rivers and Harbors Act Section 10 Letter of Permission from the USACE
- Clean Water Act Section 401 water quality certification from the RWQCB
- A permit from the BCDC

FESA consultation with the USFWS will also be necessary. Because an Individual Permit from the USACE will be needed for 404 permitting, an alternatives analysis will be necessary. The cost of permitting would likely be in the range of \$80,000 to \$100,000. Impacts to nontidal wetlands and other waters may require mitigation at a ratio up to 3:1 (mitigation:impact). Credits for non-tidal wetlands (the type represented by the Cargill Channel and Pond A4) in a mitigation bank may cost \$300,000/acre or more.

Plants and Animals

The primary constraint to construction would be the potential for California clapper rails to nest along Moffett Channel close enough to Project activities (i.e., within 700 ft) for construction to disturb nesting rails. If nesting rails are present, the USFWS will want a 700-ft buffer around nesting areas to be maintained free from construction between 1 February and 31 August. However, (a) it is possible that the USFWS will relax the buffer or reduce the period in which the buffer is required, and (b) it is our opinion that clapper rails are not expected to nest along Moffett Channel within 700 ft of activities associated with basin construction in the Cargill Channel or Pond A4 due to the marginal nature of habitat in that area.

Otherwise, constraints from potential impacts to plants and animals will consist of avoidance and minimization activities that can be accommodated by construction. Compensatory mitigation for impacts to salt marsh harvest mouse (*Reithrodontomys raviventris*) habitat may be required as well, likely at a ratio up to 3:1.

Table ES-1: Summary of Potential Constraints -- Sunnyvale WPCP Master Plan Potential Uses

Feature	Current Use	Potential Use	Regulatory Requirements/Constraints										Permit Processing Duration	Relative Constraint Level*, Issues	
			USACE			RWQCB (Section 401, Porter-Cologne)	CDFW (Section 1600)	BCDC	USFWS (FESA)	NMFS (FESA, Magnuson-Stevens)	CDFW (CESA)	Other Special-Status Species and CEQA Impacts			
			Nationwide Permit	Individual Permit	Regulatory EIS										
Main Plant Modifications	Main Plant	Expansion or modification of activities within the current Main Plant area (a)	Y	N	N	Y	N?	N?	N?	N	N	Y	6-9 mos	Wetlands permitting needed to culvert the southeastern channel and fill a wetland ditch to the north – Nationwide because less than .5 acre. Permit for filling channel to the north would qualify for Nationwide unless lumped with 60-inch pipeline. Need for CDFW Section 1600 permit depends on whether CDFW claims jurisdiction over the channel. Need for BCDC permit depends on proximity of activities to tidal outfall channel (package 1 – no BCDC permit; package 2: BCDC permit). Need for USFWS consultation depends on USFWS perception of potential species impacts. Permitting duration may be 12-18 months if an Individual Permit is necessary.	
Hazardous Waste Drop-off Facility	Hazardous Waste Drop-off	New Administration Building (b)	N	N	N	N	N	N	N	N	N	Y	n/a	Primary constraint would be potential impacts to burrowing owls if nesting on the landfill nearby (and mitigation); this is a CEQA issue.	
Primary Effluent Pipeline	Uses in alignment Vary	Replace Existing Pipeline with 60-inch Diameter Pipeline	Y	N	N	Y	Y	Y	Y	Y	Y	Y	12-18 mos	Although many permits would be needed, impacts will be relatively low and should be mostly temporary (assuming the pipeline is installed below ground and areas above the pipe are restored to pre-project conditions).	
Pond 1	Treatment	Abandonment (c)	N	N	N	N	N	N	N	N	N	N	n/a	Low regulatory constraint (no permits needed), but coastal flood protection would be needed for low-lying areas landward from ponds. Agencies may be concerned regarding release of pond materials into sloughs.	
		Active Tidal Restoration (d)	N	Y	N	Y	Y	Y	Y	Y	Y	Y	2+yrs	Numerous permits needed, and coastal flood protection would be needed for low-lying areas landward from ponds. However, overall effect environmentally beneficial; may be able to bank mitigation credits. Opportunity for integration with South Bay Salt Ponds Restoration Project and/or South San Francisco Bay Shoreline Study.	
		Non-tidal Managed Pond/Wetland Enhancement (e)	N	N	N	N	N	Y?	N	N	N	Y	<1 yr	Low constraint because pond is not USACE/RWQCB-jurisdictional, pond would continue to provide waterbird habitat, and outboard marsh would not be directly impacted. BCDC permitting may be needed if activities occur in shoreline band. USACE/RWQCB permitting may be needed for long-term maintenance of levees. Opportunity for integration with South Bay Salt Ponds Restoration Project and/or South San Francisco Bay Shoreline Study.	
		Main Plant Expansion (f)	N	N	N	N	N	Y	Y?	N	N	Y	12-18 mos	Low regulatory constraint because pond is not USACE/RWQCB-jurisdictional. BCDC permitting may be needed if activities occur in shoreline band. USFWS consultation (at least informal) may be needed for potential disturbance of listed species in adjacent marshes.	
Pond 2	Treatment	Treatment – Flow Equalization (g) plus Emergency Storage	N	N	N	N	N	Y	N	N	N	N	6-9 mos	Low constraint because pond is not USACE/RWQCB-jurisdictional. BCDC permitting may be needed if activities occur in shoreline band. USACE/RWQCB permitting may be needed for long-term maintenance of levees.	
		Abandonment (c)	N	N	N	N	N	N	N	N	N	N	n/a	Low regulatory constraint (no permits needed), but coastal flood protection would be needed for low-lying areas landward from ponds. Agencies may be concerned regarding release of pond materials into sloughs.	
		Active Tidal Restoration (d)	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	2+yrs	Numerous permits needed, though overall effect environmentally beneficial; coastal flood protection would be needed for low-lying areas landward from ponds. Opportunity for integration with South Bay Salt Ponds Restoration Project and/or South San Francisco Bay Shoreline Study.
		Non-tidal Managed Pond/Wetland Enhancement (e)	N	N	N	N	N	Y?	N	N	N	Y	<1 yr	Low constraint because pond is not USACE/RWQCB-jurisdictional, pond would continue to provide waterbird habitat, and outboard marsh would not be directly impacted. BCDC permitting may be needed if activities occur in shoreline band. USACE/RWQCB permitting may be needed for long-term maintenance of levees. Opportunity for integration with South Bay Salt Ponds Restoration Project and/or South San Francisco Bay Shoreline Study.	
		Main Plant Expansion (f)	N	N	N	N	N	Y	Y?	N	N	Y	12-18 mos	Low regulatory constraint because pond is not USACE/RWQCB-jurisdictional. BCDC permitting may be needed if activities occur in shoreline band. USFWS consultation (at least informal) may be needed for potential disturbance of listed species in adjacent marshes.	
Road to Ponds 1 and 2	Road	Widen/Improve Road	N	Y	N	Y	Y	Y	Y	Y	Y	Y	2+yrs	As currently proposed, road would be widened considerably into Cargill Channel and marsh along Moffett Slough; this extent of widening may not be permissible. An Individual Permit would likely be required, and the associated alternatives analysis would require reduction in the road width, avoiding an EIS. If proposed widening is reduced, permitting time may be 12-18 months.	
Landfills	Landfill/None	Use for Permanent or Temporary Facilities	N	N	N	N	N	N	N	N	N	Y	n/a	Primary constraint would be potential impacts to burrowing owls nesting, wintering, or foraging on the landfill (and mitigation); this is a CEQA issue. Permits needed and from whom for excavation and removal of landfill not determined but could involve the Local Enforcement Agency – County Environmental Health, Regional Board.	
Carl Road	Access, Parking	Close Carl Road to Public Use	N	N	N	N	N	N	N	N	N	N	n/a	No environmental constraints to closing road.	
Trail Parking	Parking	Relocate Trail Parking to Caribbean Drive	N	N	N	N	N	N	N	N	N	Y	n/a	Primary constraint would be potential impacts to burrowing owls nesting, wintering, or foraging on the landfill (and mitigation) if portions of the landfill needed to be removed to make space for parking; this is a CEQA issue.	

Pond A4	None	Treatment – Flow Equalization (g) plus Emergency Storage	N	Y	N?	Y	N	Y?	Y	N	Y	Y	1-2+ yrs	Level of permit difficulty/duration would depend on the ease of demonstrating the need for using this pond (vs. Ponds 1 and 2) and the level of excavation, outfall construction, and infrastructure construction. EIS may be needed if impacts of berm construction for flow equalization cell are great enough. Assume that permitting would be needed for infrastructure to move water to A4. BCDC permitting depends on location of impacts. Geographically closer to Main Plant, and easier to maintain berm around basin, than at Pond 2 or Cargill Channel.
		Main Plant Expansion (f)	N?	Y?	N?	Y	N	Y?	Y	N	Y	Y	1-2+ yrs	Level of permit difficulty/duration depends on extent of impact. May need to demonstrate that alternatives for plant expansion resulting in less impact to aquatic habitat and listed species are not practicable. Permitting duration possibly 2 years or more, depending on extent of impact. EIS may be needed if impacts are great enough. BCDC permitting depends on location of impacts.
Cargill Channel	None	Treatment – Flow Equalization (g) plus Emergency Storage	N	Y	N?	Y	Y	Y	Y	Y	Y	Y	1-2+ yrs	Would need to demonstrate that alternatives for these activities resulting in less impact to aquatic habitat and listed species are not practicable. Permitting duration possibly 2 years or more, depending on extent of impact. EIS may be needed if impacts are great enough.

*Constraint rating is color-coded to indicate the degree to which the potential use at that location is constrained. **Green** indicates that permitting is expected to pose little to moderate constraint to implementation; **yellow** indicates that permitting poses a greater challenge (e.g., longer permit processing duration and/or greater mitigation requirements); **orange** indicates that permitting poses a substantial challenge, **OR** that coastal flood protection is required landward of the oxidation ponds.

A question mark (“?”) indicates that whether or not the relevant permit will be required will depend on the precise location (e.g., within a pond, or relative to a slough) and/or acreage of impacts.

Abbreviations: BCDC (Bay Conservation and Development Commission), CEQA (California Environmental Quality Act), CESA (California Endangered Species Act), CDFW (California Department of Fish and Wildlife), FESA (Federal Endangered Species Act), NMFS (National Marine Fisheries Service), RWQCB (Regional Water Quality Control Board), USACE (U.S. Army Corps of Engineers), USFWS (U.S. Fish and Wildlife Service).

Potential Uses:

- (a) **Main Plant Modifications** include moving, reconfiguring, or adding new facilities within main plant. These activities include filling the channel in the southeastern portion of the main plant area.
- (b) **Administration Building Relocation** involves moving the administration building to the area currently occupied by the hazardous waste drop-off facility and relocating the hazardous waste drop-off facility elsewhere.
- (c) **Abandonment** involves allowing the pond to passively retire. The City would leave water in the pond and not dredge or conduct levee maintenance. The pond would be expected to gradually return to a tidal marsh when exterior levees are breached through normal erosional processes. This alternative would necessitate flood protection for low-lying areas landward of the oxidation ponds.
- (d) **Active Tidal Restoration** involves planned breaches of exterior levees to restore tidal action, connection of historic tidal channels, and modification of bathymetry to facilitate establishment of tidal marsh. This alternative would necessitate flood protection for low-lying areas landward of the oxidation ponds.
- (e) **Non-tidal Pond/Wetland Enhancement** could include management of ponds for migrant/wintering waterbirds simply by managing water levels similar to current conditions; management for both migrant/wintering and nesting waterbirds by incorporating nesting islands in the current pond management regime; or management for freshwater or brackish wetlands by managing water at shallower depths to allow more vegetation establishment.
- (f) **Main Plant Expansion** involves filling portions of Ponds 1, 2, or A4 for new plant facilities.
- (g) **Flow Equalization** involves constructing a berm to create an approximately 10-acre concrete-lined cell to be used for primary effluent equalization.

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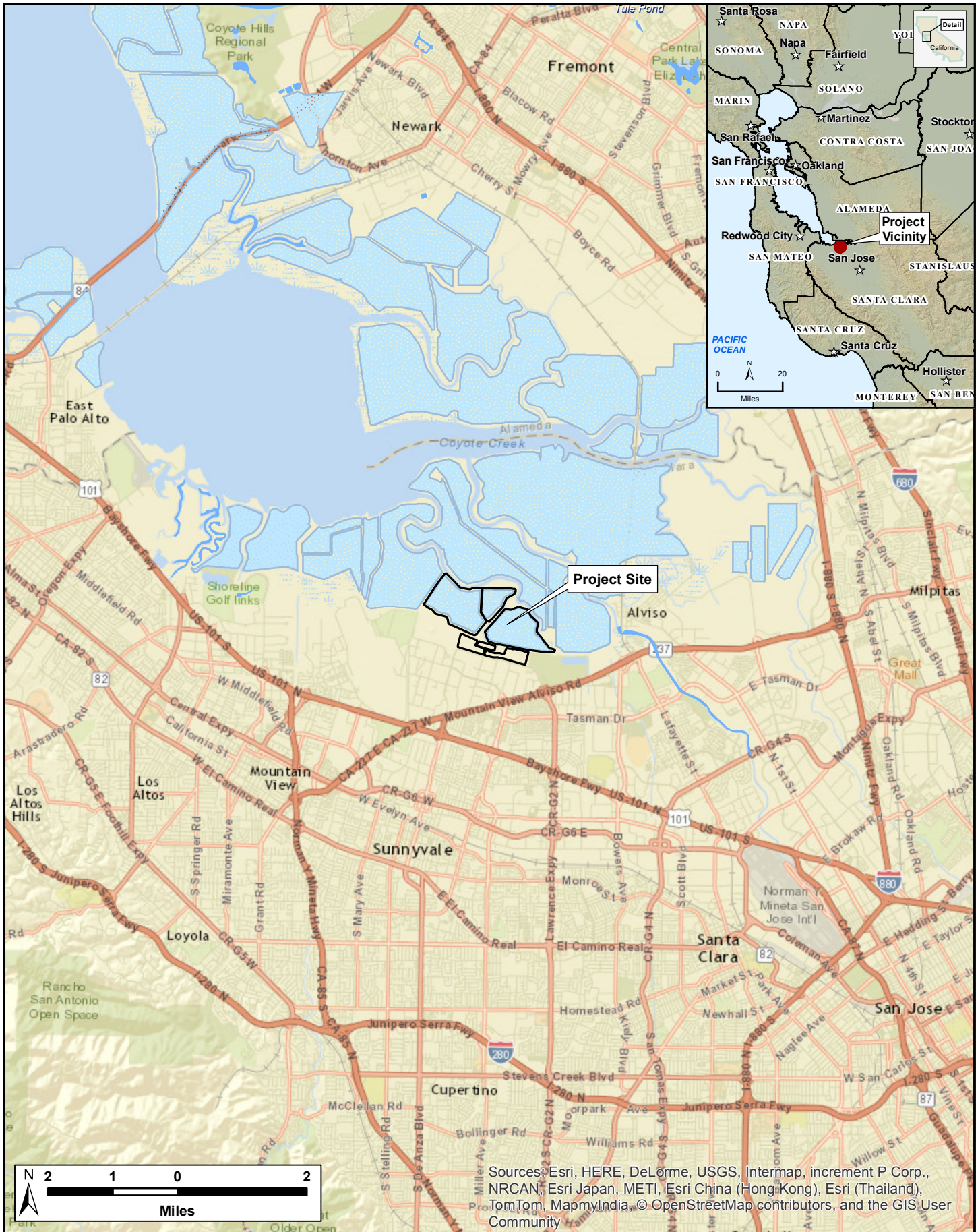
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Section 1.0 Introduction

1.1 Project Overview

The City of Sunnyvale (City) plans to renovate its existing Water Pollution Control Plant (WPCP) to an updated facility that is capable of the treatment and disposal of municipal sewage during the next 30 years through development of a long-term master plan (Master Plan) as well as construction of near-term facilities (new headworks and primaries). The renovated WPCP will be designed to comply with all regulatory and permitting requirements and to be adaptable so that it meets future demands for the treatment and disposal of the City's wastewater. The WPCP is located in the northern portion of the City of Sunnyvale, at 1444 Borregas Avenue, along the southern portion of San Francisco Bay (South Bay) (Figure 1). The WPCP was built in the 1950s and is located on a 16.6-acre (ac) site hereby referred to as the "Main Plant" (Figure 2). The WPCP also includes two oxidation ponds (Pond 1 and Pond 2) and associated channels, totaling approximately 440 ac, which are used for secondary treatment (Figure 2). To the north of Ponds 1 and 2 is Guadalupe Slough, a tidal slough lined with salt marsh (towards its mouth) and brackish marsh (upstream Pond 2). Moffett Channel is located to the east of Pond 2; this channel receives freshwater input from the plant and Sunnyvale West Channel to the south. The Cargill Channel, owned by Cargill, is located on the south sides of Ponds 1 and 2. Pond A4 is located to the east of Moffett Channel. This pond is owned by the Santa Clara Valley Water District (SCVWD), but is currently not in use for water treatment or storage. To the south, west, and east of the Main Plant are former landfill areas that are now capped and are vegetated with annual grasses (Figure 2). A household hazardous waste receiving center, located just south of the Main Plant, is also under consideration for use during the WPCP modifications. The WPCP Master Plan will hereafter be referred to as the "Project".

This report describes the potential constraints to implementation of various Project components related to biological resources and associated regulatory permitting requirements. The report also provides initial suggestions for potential opportunities related to habitat and species preservation/protection and habitat enhancement in the Project Area; note that opportunities are only discussed in the context of Project components that actually provide potential enhancement opportunities. Sections 2.0 through 7.0 describe the Project components and their associated constraints and opportunities.



N:\Projects\3500\3509-01\Reports\Volume 2014\Figure 1 Vicinity Map.mxd



N:\Projects\3509-01\Reports\Volume 2014\Figure 2 Project Area Map.mxd

Figure 2: Project Area Map

Sunnyvale Water Pollution Control Plant: Biological Resources
Existing Conditions, Constraints, and Opportunities (3509-01)

June 2014



H.T. HARVEY & ASSOCIATES

Ecological Consultants

Section 2.0 Main Plant

2.1 Overview of Proposed Activities

Proposed activities at the Main Plant include the following:

- Construction of process upgrades including headworks, primary sedimentation tanks, activated sludge, cogeneration, sludge thickening and dewatering
- Reconfiguration of the eastern half of the Main Plant site for primary/secondary treatment
- Filling and re-work of the existing drainage ditch along the southern/eastern perimeter to provide additional space for process needs
- Construction of a new utility corridor along the northern perimeter
- Relocation of the Administration/Lab Building to the current household hazardous waste drop-off site (see Section 5.1 below)

These activities will involve fill of depressions, basins, and a ditch in the eastern portion of the Main Plant area and construction of new facilities on top of the fill.

2.2 Potential Biological Constraints

2.2.1 Regulated Habitats

There are a number of State and federal laws protecting wetland, aquatic, and riparian habitats. Because most of the Main Plant area is developed, such habitats are absent from most of the Main Plant. However, features having the characteristics of such regulated habitats are present in several areas (see Figure 3). A channel in the eastern part of the Main Plant emanates from a culvert on the south side of the Plant and flows east, then north, to a pumping station. This channel receives runoff from surrounding areas. It is deeply incised and, based on the amount and depth of water it contains, is likely perennially wet, and probably intercepts groundwater. Immediately north of the eastern portion of the Main Plant there is a narrow swale containing a potential wetland. In addition, a sludge lagoon used for digester cleaning is present in the northeastern part of the Main Plant. Each of these three areas is discussed below in light of the various State and federal laws protecting regulated habitats.

Waters of the U.S. (Clean Water Act)

Areas meeting the regulatory definition of “waters of the U.S.” (jurisdictional waters) are subject to the jurisdiction of the U. S. Army Corps of Engineers (USACE) under provisions of Section 404 of the 1972 Clean Water Act (Federal Water Pollution Control Act) and Section 10 of the 1899 Rivers and Harbors Act (described below). These waters may include all waters used, or potentially used, for interstate commerce, including all waters subject to the ebb and flow of the tide, all interstate waters, all other waters (intrastate

lakes, rivers, streams, mudflats, sandflats, playa lakes, natural ponds, etc.), all impoundments of waters otherwise defined as waters of the U.S., tributaries of waters otherwise defined as waters of the U.S., the territorial seas, and wetlands (termed Special Aquatic Sites) adjacent to waters of the U.S. (33 CFR, Part 328, Section 328.3). Wetlands on non-agricultural lands are identified using the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987). Areas typically not considered to be jurisdictional waters include non-tidal drainage and irrigation ditches excavated on dry land, artificially irrigated areas, artificial lakes or ponds used for irrigation or stock watering, small artificial water bodies such as swimming pools, and water-filled depressions (33 CFR, Part 328).

Project Applicability. On the Main Plant site, the southeastern channel and the narrow wetland swale north of the Plant would likely be considered waters of the U.S. by the USACE (Figure 3). However, the sludge lagoon in the northeast corner of the Main Plant is likely not considered waters of the U.S. because waste treatment ponds, and other components of waste treatment systems, are not considered waters of the U.S. under the Clean Water Act (33 CFR Section 328.3). The USACE should be consulted (during the process of reviewing the delineation of wetlands and other waters for other parts of the Project area) to determine definitively whether it will claim jurisdiction of this basin.

Permitting and Mitigation Requirements. The placement of fill into jurisdictional waters of the U.S., which is proposed for expansion of the Main Plant into the southeastern channel and northward into the wetland swale, must comply with permit requirements of the USACE (and the Regional Water Quality Control Board [RWQCB], as discussed below). First, a delineation of jurisdictional wetlands and other waters of the U.S. must be performed to determine the precise locations and boundaries of USACE jurisdiction. A report summarizing the delineation results must then be submitted to the USACE, which will then visit the site to verify the jurisdictional boundaries before issuing a jurisdictional determination containing the USACE's verification. Subsequently, a Section 404 permit application would be completed.

The type of Section 404 permit that would be required for Project activities would depend largely on the amount of fill to be placed within jurisdictional areas. In general, activities that would result in less than 0.5 ac of fill would qualify for a Nationwide Permit (NWP), a type of general permit that presents the most streamlined Section 404 permitting scenario. Fill amounts between 0.5 ac and 1 ac can generally qualify for a Letter of Permission (LOP), a streamlined version of an Individual Permit. Fill amounts greater than 1 ac require an Individual Permit, which is the most time-consuming Section 404 permitting process, requiring a robust alternatives analysis adhering to the guidelines set forth under Section 404(b)(1) of the Clean Water Act. This analysis would need to be conducted to demonstrate to the USACE that the chosen Project alternative represents the least environmentally damaging practicable alternative. In all cases, the Section 404 permitting process also requires compliance with Section 7 of the Federal Endangered Species Act (FESA) and Section 106 of the National Historic Preservation Act, thereby requiring consultations with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) as described below in Section 3.2.2, and the State Historic Preservation Office. These consultation processes can extend permitting schedules to one year or more. However, it is our opinion that FESA consultation is unlikely to be necessary

for fill of the southeastern channel or the wetland swale north of the Main Plant, and Section 106 historic resources consultation is also unlikely to be necessary on these disturbed sites.

The type of permit that would be necessary for Main Plant activities will be determined based on the acreage of anticipated impacts, following the USACE's verification of the wetland delineation. USACE permitting using a NWP typically takes approximately 6-9 months in the absence of FESA or Section 106 consultation issues, whereas an LOP or Individual Permit may take 9-18 months for processing.

Impacts to jurisdictional wetlands and other waters would likely be considered significant under CEQA, necessitating mitigation measures to reduce these impacts to less-than-significant levels. Fill of wetlands and other waters would thus necessitate mitigation in the form of restoration or creation of wetland habitat on or off site, or the purchase of mitigation credits at a USACE/RWQCB-approved mitigation bank. Impacts to waters of the U.S./State may require mitigation at a ratio up to 3:1 (mitigation:impact) for permanent impacts and 1.5:1 to 2:1 for temporary impacts, depending on the quality of habitat impacted, the type of mitigation proposed, and the location of the proposed mitigation site. For impacts to habitats regulated by multiple laws/agencies, mitigation provided for one agency typically serves as mitigation for the other agencies (assuming similar mitigation ratios/requirements). Credits for non-tidal wetlands (the type represented by the southeastern channel and northern swale) in a mitigation bank may cost \$300,000/acre or more.

Waters of the State (Porter-Cologne Water Quality Control Act)

The RWQCB is responsible for protecting surface, ground, and coastal waters within its boundaries, pursuant to the Porter-Cologne Water Quality Control Act of the California Water Code. The RWQCB has jurisdiction under Section 401 of the Clean Water Act for activities that could result in a discharge of dredged or fill material to a water body. Federal authority (i.e., using a 401 certification) is exercised whenever a proposed project requires a Clean Water Act Section 404 permit from the USACE in the form of a Section 401 Water Quality Certification. State authority (i.e., using Waste Discharge Requirements under the Porter-Cologne Act) is exercised when a proposed project is not subject to federal authority, in the form of a Notice of Coverage, Waiver of Waste Discharge Requirements. Many wetlands fall into RWQCB jurisdiction, including some wetlands and waters that are not subject to USACE jurisdiction. RWQCB jurisdiction of other waters, such as streams and lakes, extends to all areas below the ordinary high water mark.

The State Water Resources Control Board (SWRCB) has recently developed a preliminary draft Water Quality Control Policy that addresses numerous policy elements including development of a wetland definition and description of methodology to be used in defining wetlands as part of waters of the State (SWRCB 2013). Under the Porter-Cologne Water Quality Control Act, the SWRCB and the nine regional boards also have the responsibility of granting Clean Water Act National Pollutant Discharge Elimination System (NPDES) permits and waste discharge requirements for certain point-source and non-point discharges to waters. These regulations limit impacts on aquatic and riparian habitats from a variety of urban sources.

Project Applicability. On the Main Plant site, the boundaries of waters of the State are expected to be the same as the boundaries of waters of the U.S. Therefore, the RWQCB is expected to take jurisdiction over the southeastern channel and the narrow wetland swale north of the Plant, but the small basin in the northeast corner of the Main Plant may not be considered waters of the State because it is actively used for waste treatment.

Permitting and Mitigation Requirements. RWQCB permitting would be required for the placement of fill into the southeastern channel and the northern wetland swale, as described for the USACE above. An application for 401 certification of the USACE's permit would be prepared and submitted to the RWQCB simultaneously with the application to the USACE. Permit processing time and mitigation requirements are expected to be similar to those described above for the USACE. The USACE cannot issue its 404 permit until the RWQCB issues its 401 certification.

Section 1600 of the California Fish and Game Code

The California Fish and Game Code includes regulations governing the use of, or impacts on, many of the State's fish, wildlife, and sensitive habitats. The CDFW exerts jurisdiction over the bed and banks of rivers, lakes, and streams according to provisions of §§1601–1603 of the Fish and Game Code. The CDFW has recently indicated that it claims 1600 jurisdiction within bed and banks of tidal sloughs.

Project Applicability. It is our opinion that the southeastern channel and northern wetland swale should not be regulated by the CDFW under Section 1600 because these features are not streams. Therefore, we do not think that Section 1600 Streambed Alteration Agreements (SAAs) from the CDFW should be required for fill of these features. However, the CDFW does occasionally take jurisdiction over ditches and canals, and it would be up to the discretion of the CDFW as to whether it takes jurisdiction over, for example, the southeastern channel.

Permitting and Mitigation Requirements. If the CDFW were to decide to take jurisdiction over the southeastern channel, a Section 1600 SAA would be required to fill the channel. A SAA application would be completed and submitted to the CDFW simultaneously with the applications to the USACE and RWQCB. Permit processing time and mitigation requirements are expected to be similar to those described above for the USACE.

McAteer-Petris Act

The San Francisco Bay Conservation and Development Commission (BCDC) is a California State agency responsible for enforcing the McAteer-Petris Act. BCDC is the California State agency that has jurisdiction over: the open water, marshes and mudflats of greater San Francisco Bay, the first 100 feet (ft) inland from the shoreline around San Francisco Bay, the portion of the Suisun Marsh below the ten-foot contour line, portions of most creeks, rivers, sloughs, and other tributaries that flow into San Francisco Bay, and salt ponds, duck hunting preserves, game refuges, and other managed wetlands that have been diked off from San Francisco Bay. BCDC's approval must be obtained before conducting any of the following activities within

BCDC's jurisdiction: placement of solid material, building or repairing docks, pile-supported or cantilevered structures, disposal of material, mooring a vessel for a long period in San Francisco Bay or in certain tributaries that flow into the Bay, dredging or extracting material from the Bay bottom, substantially changing the use of any structure or area, construction, remodeling, or repairing a structure, and subdivision of property or grading of land.

Project Applicability. No features on the Main Plant itself are tidal, but the outfall channel into which the waters from the southeastern channel are pumped, located north of the Main Plant, is tidal. As a result, the BCDC may claim jurisdiction over that channel. Expansion of the Main Plant northward could involve work within 100 ft of that tidal channel, thus impacting areas under BCDC's shoreline jurisdiction. Figure 4 depicts areas of anticipated BCDC jurisdiction on the Project site, including areas around the Main Plant. Filling of the southeastern channel is not expected to require BCDC approval as long as activities remain more than 100 ft from the tidal channel to the north.

Permitting and Mitigation Requirements. Any new Project activities (i.e., activities that are not currently ongoing as part of the existing treatment process) within BCDC jurisdiction would require a permit from BCDC. Therefore, expansion of the Main Plant into the 100-ft shoreline band would require an "administrative permit". A BCDC permit application would be completed and submitted simultaneously with the applications to the USACE, RWQCB, and CDFW. Permit processing time is expected to be similar to that described above for the USACE.

Conditions of BCDC permits vary considerably among activities, and would thus be negotiated with BCDC during the permitting process. Permit conditions often include measures to ensure project consistency with the San Francisco Bay Plan, including shoreline protection, sea level rise (SLR) considerations, and the establishment and maintenance of long-term public access and recreation for the Bay shoreline. In general, any construction within BCDC jurisdiction may need to accommodate SLR to obtain BCDC approval. Habitat mitigation for impacts to sensitive habitats, as described in the previous sections, would likely be required by BCDC, though the mitigation necessary to satisfy conditions of the USACE, RWQCB, and CDFW permits described above would likely satisfy BCDC conditions as well.

2.2.2 Special-Status Species

A number of plants and animals are considered "special-status species" because they are protected by State or federal laws such as the FESA or the California Endangered Species Act (CESA), or because they have been listed as rare species by the CDFW or the California Native Plant Society (CNPS). Such species may constrain Project activities due to regulation (e.g., by the USFWS or NMFS under FESA or the CDFW under CESA) or because impacts to these species may be considered significant under CEQA, thereby requiring mitigation.

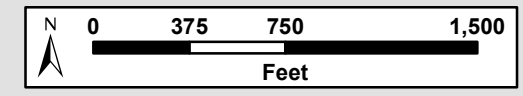
A list of 77 plants listed as special-status and potentially occurring in the Project Area was compiled using CNPS lists and CNDDDB (2014) records, and reviewed for their potential to occur within the Project Area.

Sunnyvale Water Pollution Control Plant

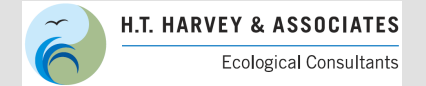
Figure 4: Expected BCDC Jurisdiction

LEGEND

-  BCDC Jurisdiction (Tidal Areas)
-  Possible BCDC Jurisdiction (Former Salt Ponds)
-  BCDC Jurisdiction (100-ft Shoreline Band)



Background: USDA 2009 NAIP Aerial



Map Date: 3/20/2010, 10:41:00 AM. File Name: 4. Expected BCDC Jurisdiction.mxd

Analysis of the documented habitat requirements and occurrence records associated with all of the species considered allowed us to reject 76 of these species as not occurring within the Project Area. A list of all species considered but rejected, and the reason for rejection, is available in Appendix A. Figure 5 depicts CNDDDB-mapped locations of special-status plants in the Project vicinity. Similarly, all special-status animals potentially occurring in the Project Area were reviewed. The legal status and potential for occurrence of special-status wildlife species known to occur or potentially occurring in the general vicinity of the Project Area are given in Appendix B, and Figure 6 depicts CNDDDB-mapped locations of special-status animals in the Project vicinity.

Project Applicability. No species that are listed under the FESA or CESA are known or expected to occur in the Main Plant area, or to be affected indirectly (i.e., in nearby areas) by Main Plant construction activities. Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), which is included on CNPS List 1B.2, meaning that it is considered "fairly threatened in California", is the only special-status plant that could potentially occur in the Project Area. This plant occurs in weedy, periodically disturbed grassland areas nearby at Sunnyvale Baylands Park, and it is possible that the plant is present in the weedy edges of the eastern portion of the Main Plant.

Four bird species that are considered California Species of Special Concern, the burrowing owl (*Athene cunicularia*), Alameda song sparrow (*Melospiza melodia pusillula*), San Francisco common yellowthroat (*Geothlypis trichas sinuosa*), and loggerhead shrike (*Lanius ludovicianus*), could potentially nest around the eastern edge of the Main Plant. Burrowing owls were formerly known to occur on berms around this area (Chromczak 2014), but they have not been recorded on the Main Plant in recent years. A few pairs each of the Alameda song sparrow and San Francisco common yellowthroat may nest in weedy vegetation around the eastern portion of the Main Plant, and up to one pair of loggerhead shrikes could nest in the vicinity as well.

Permitting and Mitigation Requirements. Because none of the special-status species that could occur in areas that to be impacted by Main Plant activities are formally listed under the FESA or CESA, no agency approval is needed for impacts to these species or their habitats. However, these species' populations are relatively limited locally and regionally, and thus if a large number of individuals were to be lost as a result of Project activities, it would be considered a significant impact under CEQA.

Mitigation measures for impacts to the Congdon's tarplant would include preconstruction surveys during the blooming period to determine whether the species is present and avoidance of Congdon's tarplant to the extent feasible. If a large population were to be impacted, compensatory mitigation in the form of establishment and/or management of populations may be necessary to reduce impacts to less-than-significant levels under CEQA. Such mitigation could be performed via seeding of Congdon's tarplant on portions of the closed landfill and management of the landfill to support this special-status plant.



Figure 5: CNDDB-Mapped Records of Special-Status Plants
 Sunnyvale Water Pollution Control Plant: Biological Resources
 Existing Conditions, Constraints, and Opportunities (3509-01)
 June 2014



Figure 6: CNDDB-Mapped Records of Special-Status Animals
 Sunnyvale Water Pollution Control Plant: Biological Resources
 Existing Conditions, Constraints, and Opportunities (3509-01)
 June 2014

For the special-status birds, CEQA mitigation measures would include avoidance of new construction during the breeding season (1 February to 31 August) in areas near potential nesting habitat, or implementation of preconstruction surveys and disturbance-free buffers (likely 250 ft for burrowing owls and 100 ft for the Alameda song sparrow, San Francisco common yellowthroat, and loggerhead shrike) around active nests. To minimize constraints, nest deterrence can be conducted to minimize the potential for protected birds to nest in or immediately adjacent to a construction area; for example, nest-starts (nests that have not yet been completed and do not yet contain eggs) can be legally removed by a qualified biologist, and nesting substrate can be removed (e.g., cutting of vegetation) to discourage birds from establishing nests prior to construction. Because the Main Plant area does not provide high-quality nesting habitat for these species, mitigation for loss of these species' habitat would not be necessary, in our opinion.

2.2.3 Important Concentrations of Non-Special-Status Birds

Nesting Birds

The federal Migratory Bird Treaty Act (MBTA; 16 U.S.C., §703, Supp. I, 1989) prohibits killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. The trustee agency that addresses issues related to the MBTA is the USFWS. Migratory birds protected under this law include all native birds and certain game birds (e.g., turkeys and pheasants; USFWS 2005). This act encompasses whole birds, parts of birds, and bird nests and eggs. The MBTA protects active nests from destruction and all nests of species protected by the MBTA, whether active or not, cannot be possessed. An active nest under the MBTA, as described by the Department of the Interior in its 16 April 2003 Migratory Bird Permit Memorandum, is one having eggs or young. Nest starts, prior to egg laying, are not protected from destruction.

In addition, all native bird species that occur in the Project Area are protected by the State Fish and Game Code. Certain sections of the Fish and Game Code describe regulations pertaining to certain wildlife species. For example, Fish and Game Code §§3503, 2513, and 3800 (and other sections and subsections) protect native birds, including their nests and eggs, from all forms of take. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "take" by the CDFW. Raptors (i.e., eagles, falcons, hawks, and owls) and their nests are specifically protected in California under Fish and Game Code §3503.5. Section 3503.5 states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Non-game mammals, such as bats, are protected by Fish and Game Code §4150, and other sections of the Code protect other taxa. In each case, the CDFW may issue permits authorizing limited take of otherwise protected species.

Project Applicability. In addition to the special-status birds described in Section 2.2.2, a number of other bird species nest in the vicinity of the Main Plant, and thus, Project activities during the breeding season may result in the direct destruction of nests or in disturbance that results in the abandonment of active nests. For non-special-status species, the proportion of the regional population that could potentially be impacted would

be so low that impacts would be considered less than significant under CEQA, in our opinion. However, we recommend that the Project take measures to avoid impacts on nesting birds to comply with the MBTA and California Fish and Game Code, especially given public scrutiny (e.g., by birders) of activities that could result in impacts to nesting birds at this very public location. Such measures would include avoidance of construction during the breeding season (1 February to 31 August), or implementation of preconstruction surveys and disturbance-free buffers (likely 300 ft for raptor nests and 100 ft for non-raptor nests) around active nests. Nesting deterrence can be implemented to minimize the potential for constraints due to nesting birds.

Permitting and Mitigation Requirements. Because none of the bird species that could occur in areas that could be impacted by Main Plant activities are formally listed under the FESA or CESA, no agency approval is needed for impacts to these species or their habitats. In addition, because Main Plant activities would not affect a substantial proportion of these species' regionally available habitats, no mitigation for such impacts should be necessary under CEQA, in our opinion.

Section 3.0 New 60-Inch Primary Effluent Pipeline/Levee Road Widening

3.1 Overview of Proposed Activities

Proposed activities include the following:

- Construction of a new 60-inch primary effluent pipeline from the Main Plant to the pond recirculation channel between Ponds 1 and 2
- Possible widening of the access road leading to Pond 2

Construction of the pipeline will require crossing Moffett Channel. Installing the pipeline using trenchless methods (e.g., jack and bore or directional drilling using pits on either side of Moffett Channel) would avoid the need for dewatering of the trench and construction of a bypass for water in the channel.

3.2 Potential Biological Constraints

3.2.1 Regulated Habitats

Waters of the U.S. (Clean Water Act), Waters of the State (Porter-Cologne Water Quality Control Act), California Fish and Game Code Section 1600, and McAtteer-Petris Act

These regulated habitats and regulations were described in Section 2.2.1 above.

Project Applicability. Moffett Channel, the wetlands adjacent to the channel, and the Cargill Channel are present along the alignment of the new pipeline and road widening area. These aquatic/wetland features are regulated by the same laws and regulations described in Section 2.2.1 above. These features are regulated by the USACE as waters of the U.S. under the Clean Water Act and by the RWQCB as waters of the State. Moffett Channel itself is regulated by the CDFW under Section 1600 of the California Fish and Game Code. Because Moffett Channel is tidal, it and the associated tidal wetlands, as well as a 100-ft band extending landward from these tidal features, are regulated by the BCDC under the McAtteer-Petris Act.

Permitting and Mitigation Requirements. Fill may be placed into Moffett Channel, the Cargill Channel, and wetlands along these channels during construction of the pipeline and widening of the road. Such fill may be placed in these areas temporarily, such as sidecast material from trenches or pits during pipeline installation, or it may be permanent, such as fill necessary to widen the levee road.

As described in Section 2.2.1 above, the placement of fill into Moffett Channel, the Cargill Channel, and associated jurisdictional wetlands will necessitate a Section 404 permit from the USACE and associated 401 certification from the RWQCB. The type of 404 permit (i.e., a NWP, LOP, or Individual Permit) will depend

on the acreage of impacts. If the pipeline is installed using trenchless methods, with bore pits placed in non-jurisdictional areas on both sides of Moffett Channel, and no fill is placed within USACE/RWQCB-jurisdictional waters, then it is possible that no 404 permit or 401 certification would be needed for pipeline installation. However, it is expected that any widening of the levee road would necessitate fill of wetlands on one or both sides of the road; this may be especially true if the road's elevation needs to be increased to account for SLR. As a result, it is expected that the combination of pipeline installation and road widening will necessitate 404/401 permits. The type of permit needed will be determined after a delineation of jurisdictional wetlands and other waters of the U.S. is performed to determine the precise locations and boundaries of USACE jurisdiction, the plans for the pipeline and road are prepared, and the method of installation of the pipeline is determined. USACE permitting using a NWP typically takes approximately 6-9 months in the absence of FESA/CESA or Section 106 consultation issues, whereas an LOP or Individual Permit may take 9-18 months for processing. However, as described in Section 3.2.2 below, endangered species consultation is expected to be necessary for the pipeline installation and levee road widening, and such consultation would drive the permitting schedule.

Under Section 7 of the FESA, federal agencies must ensure that their actions will not jeopardize the continued existence of a listed species or result in adverse modification of critical habitat for a listed species. As a result, the USACE will need to consult with the USFWS and NMFS regarding potential impacts to federally listed species during the 404 permitting process. This is described in greater detail in Section 3.2.2.

A SAA from the CDFW would be necessary regardless of whether the pipeline crosses Moffett Channel using trenchless methods or via dewatering and bypass methods. Similarly, because virtually all of the pipeline/levee road widening area is within BCDC jurisdiction, a BCDC permit would be necessary for these activities. The timeline for such permitting would be encompassed within the 404 permitting and FESA consultation timelines.

Impacts to jurisdictional wetlands and other waters would be considered significant under CEQA, and CEQA mitigation measures and agency permit conditions would require compensatory mitigation for both temporary and permanent impacts to jurisdictional habitats. Impacts to waters of the U.S./State may require mitigation at a ratio up to 3:1 (mitigation:impact) for permanent impacts and 1.5:1 to 2:1 for temporary impacts, depending on the quality of habitat impacted, the type of mitigation proposed, and the location of the proposed mitigation site. For impacts to habitats regulated by multiple laws/agencies, mitigation provided for one agency typically serves as mitigation for the other agencies (assuming similar mitigation ratios/requirements). Credits for non-tidal wetlands (the type represented by the Cargill Channel) in a mitigation bank may cost \$300,000/acre or more, while credits for tidal wetlands (the type represented by Moffett Channel and its associated tidal wetlands) in a mitigation bank may cost \$500,000 or more.

Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act (1899) 33 U.S.C. 403 regulates the construction of structures, placement of fill, and introduction of other potential obstructions to navigation in navigable waters. Under

Section 10 of the Act, the building of any wharfs, piers, jetties, and other structures is prohibited without Congressional approval, and excavation or fill within navigable or tidal waters requires the approval of the Chief of Engineers. Current Section 10 waters can occur in both tidal and freshwater systems. In tidal waters, Section 10 waters include open water, mud flats, and adjacent special aquatic sites up to the limit of the mean high water (MHW) line in areas currently exposed to fully tidal or muted-tidal action. In freshwater sites, Section 10 includes the lateral extent of the ordinary high water mark on opposing channel banks. Historical Section 10 waters occur behind levees, are currently not exposed to tidal or muted-tidal influence, and meet certain criteria. These criteria include: 1) the area is presently at or below MHW; 2) the area was historically at or below MHW in its “unobstructed, natural state”, and; 3) there is no evidence that the area was ever above MHW (Calvin Fong Memo, USACE, 1983).

Project Applicability. Current Section 10 waters occur in Moffett Channel, extending upstream into the portion of the Sunnyvale West Channel that is tidally influenced. Historical Section 10 waters include areas associated with the Guadalupe Slough, Moffett Channel, Pond 1, Pond 2, and Pond A4 where evidence of historical tidal sloughs once occupied areas at or below the MHW line in their unobstructed, natural state (Figure 7).

Permitting and Mitigation Requirements. A Letter of Permission from the USACE will be required for impacts to Moffett Channel, whether or not trenchless methods are used to install the pipeline across the channel. An application for this Letter of Permission would be prepared and submitted to the USACE simultaneously with other permitting, and the timeline for, and mitigation requirements resulting from, issuance of the Letter of Permission would overlap with those for 404/401, Section 1600, and BCDC permitting.

3.2.2 Special-Status Species

Species Listed under the Federal Endangered Species Act

Provisions of the FESA include requirements that the USFWS and NMFS maintain lists of threatened and endangered species and afford substantial protection to listed species. The USFWS has jurisdiction over federally listed threatened and endangered wildlife species under the FESA, while the NMFS has jurisdiction over federally listed, threatened and endangered, marine species and anadromous fish. The FESA protects listed wildlife species from harm or “take”. Section 9 of FESA prohibits the take of any fish or wildlife species listed as endangered and most species listed as threatened, and defines take to mean “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct,” with “harm” further defined to mean “any act that kills or injures the species, including significant habitat modification.” An activity can be defined as “take” even if it is unintentional or accidental. FESA also includes mechanisms for allowing exceptions to the Section 9 take prohibitions. For non-federalized projects, Section 10 allows for issuance of permits authorizing limited take of covered species incidental to carrying out otherwise lawful activities with approval of a habitat conservation plan. Otherwise, consultations under



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Section 7 are required for federalized projects that may affect listed species, which similarly provides for permits to allow for limited, incidental take of listed species.

Project Applicability. Four species that are listed as endangered or threatened under the FESA could potentially occur in or adjacent to the areas to be disturbed by installation of the pipeline and widening of the levee road:

- California clapper rails (*Rallus longirostris obsoletus*) may use tidal salt and brackish marsh habitat along Moffett Channel for foraging and (less likely) breeding. Habitat impacts could occur if tidal marsh along Moffett Channel is impacted during construction of the pipeline or widening of the levee road. Project activities may result in a temporary impact through the loss of foraging habitat (and perhaps breeding habitat) during construction activities and the alteration of foraging or breeding patterns (e.g., avoidance of work sites because of increased noise and activity levels during Project activities). Human-related disturbance may also increase the rails' vulnerability to predators. During high tides, rails hide within any available cover in the transition zone and high marsh. As people approach, the birds may flush and attract predators. In addition, removal of vegetation from the sides of levees adjacent to rail habitat, and particularly from lower portions of banks and benches, would reduce the amount of vegetative cover that may be used to conceal individuals from predators during high tides, especially during the winter. In the absence of mitigation measures, this could result in injury or mortality of individuals as a result of predation or trampling by construction personnel or equipment.
- Salt marsh harvest mice (*Reithrodontomys raviventris*) have been captured in Guadalupe Slough and they could occur in marshes along Moffett Channel. Habitat impacts could occur if tidal marsh along Moffett Channel is impacted during construction of the pipeline or widening of the levee road. Project activities may result in the injury or mortality of salt marsh harvest mice as a result of crushing by equipment, vehicle traffic, and worker foot traffic. Individuals that vacate the area because of increased levels of noise and disturbance may be exposed to increased competition from conspecifics already occupying the area to which they were displaced and increased levels of predation because of unfamiliarity with the new area or lack of sufficient cover. Removal of vegetation may expose individual mice to predation.
- The Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*) and the southern green sturgeon (*Acipenser medirostris*) could potentially occur in Moffett Channel. Because there is no spawning habitat in Guadalupe Slough or Moffett Channel, CCC steelhead are not expected to occur in the Project Area regularly, although small numbers of stray, individual steelhead associated with spawning streams elsewhere in the South Bay could occasionally wander in to forage within the tidal reaches of these channels. Although little is known about the distribution and abundance of green sturgeon in South San Francisco Bay, the species appears to be relatively rare in the South Bay. Green sturgeon are extremely unlikely to occur in the Project Area due to their rarity and the paucity

of recorded occurrences in the South Bay. However, a radio-tagged individual was tracked to a telemetry receiver on the Dumbarton Railroad Bridge in 2011 and another was detected there in 2012 (ECORP 2013), indicating presence in the far South Bay. Given that green sturgeon are known to wander in estuaries away from spawning streams, they could forage infrequently, and in low numbers, within Moffett Channel. Additionally, critical habitat for both of these species includes all tidally-influenced waters of the San Francisco Bay, and thus Moffett Channel is considered critical habitat for these species.

Although neither of these species is expected to occur in these areas frequently and/or in large numbers, there is some potential for Project activities that involve in-channel construction (such as pipeline construction) to result in injury or mortality of individuals as a result of stranding during dewatering activities. In addition, temporary increases in turbidity may occur during construction as the bed and banks of the channels are disturbed. Increases in turbidity and sediment input may cause stress on fish because of feeding difficulties or displacement. Minor spills of petrochemicals, hydraulic fluids, and solvents may occur during vehicle and equipment refueling or as a result of leaks, adversely affecting water quality and potentially killing or injuring fish. Therefore, Project activities involving work within Moffett Channel could result in impacts on FESA-listed fish species as a result of direct mortality or injury of individuals, impacts on water quality, and impairment of health of individuals.

Additional information on these species can be found in Appendix B.

Permitting and Mitigation Requirements. Due to the rarity of these species, impacts to all four of these federally listed species are potentially significant under CEQA, and take authorization would be required from the USFWS for the clapper rail and salt marsh harvest mouse and from the NMFS for the steelhead and green sturgeon if take were to occur. Under Section 7 of the FESA, federal agencies must ensure that their actions will not jeopardize the continued existence of a listed species or result in adverse modification of critical habitat for a listed species. As a result, the USACE will need to consult with the USFWS and NMFS regarding potential impacts to federally listed species during the 404 permitting process. The City's consultant would prepare a Biological Assessment (BA) describing potential effects of Project activities on federally listed species; this BA would be submitted to the USACE along with the 404/Rivers and Harbors Act permit applications. The USACE would then forward the BA to the USFWS and NMFS. Over a period of 9-12 months or more, the USFWS and NMFS would coordinate with the City and the USACE regarding potential impacts, avoidance/minimization measures, and compensatory mitigation before issuing Biological Opinions (BOs) describing the effects from the agencies' perspective and providing approval for the Project to "take" these listed species.

For the California clapper rail, mitigation measures would include requirements that construction activities generating loud noise and vibration (beyond that of existing conditions) occurring within 700 ft of breeding habitat along Moffett Channel be scheduled to occur outside the breeding season for clapper rails (1 February

to 31 August). Otherwise, protocol-level surveys would be conducted prior to construction to determine whether breeding rails are present. Specific survey methodology would be determined in consultation with the USFWS and CDFW, but would likely include at least four passive 2-hour surveys adjacent to potential clapper rail breeding habitat. Surveys would require that multiple survey stations be established approximately 200 meters (m) apart. Surveys would be initiated between 15 January and 31 January and would be completed by mid-April. If rails are detected, a buffer of 700 ft would be maintained around activities generating loud noise or vibration. If rails are present, resource agencies may allow work to commence after mid-July since this species is unlikely to still be nesting by then, and if breeding adults are in the vicinity, they would likely have mobile young at that time. Regardless of the season in which construction would occur, silt fencing should be installed along the limits of fill within any tidal marsh adjacent to earth-moving to avoid injury or mortality of individual rails and minimize impacts to potential clapper rail habitat. This fencing would prevent fill from sliding into marsh that is not intended to be impacted. To offset any permanent or temporary habitat impacts to clapper rail and salt marsh harvest mouse habitat, CEQA mitigation measures and the USFWS may require restoration or creation of wetland habitat (typically at a 3:1 ratio) on or off site, or the purchase of mitigation credits at a USFWS-approved mitigation bank. It is possible (subject to agency approval) that mitigation of impacts to tidal wetlands and waters described in Section 3.2.1 above may also serve as mitigation for impacts to the clapper rail and salt marsh harvest mouse, if the mitigation provides suitable habitat for these species. For the salt marsh harvest mouse, mitigation measures would also include the hand removal of any vegetation within harvest mouse habitat that will be disturbed by Project activities, under the supervision of a qualified biologist.

For the steelhead and green sturgeon, avoidance and minimization measures would include implementation of measures to prevent chemicals and sediment from entering the channels. Measures typically include the development of a hazardous materials/fuel spill containment plan; restrictions on refueling or maintaining equipment near aquatic or marsh habitats; timing restrictions on vegetation removal or other in-channel activities (e.g., during low tides only); the installation of erosion control and/or silt curtains to reduce the amount of suspended sediment in the channels; and the presence of a NMFS-approved biological monitor during work in or adjacent to marsh or aquatic habitats. The NMFS may require seasonal restrictions on any in-water work to avoid periods when steelhead are most likely to be present, although because Moffett Channel is not a spawning stream, seasonal work windows may not be necessary. To offset any permanent habitat impacts, CEQA mitigation measures and the NMFS may require restoration or creation of wetland habitat on or off site, or the purchase of mitigation credits at a NMFS-approved mitigation bank. The mitigation ratio may vary depending on the type and extent of impacts, though it could be as high as 3:1. It is possible (subject to agency approval) that mitigation of impacts to tidal wetlands and waters described in Section 3.2.1 above may also serve as mitigation for impacts to these fish, if the mitigation provides suitable habitat for these species.

Fish Species Protected by the Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act governs all fishery management activities that occur in federal waters within the United States' 200-nautical-mile limit. The Act establishes eight

Regional Fishery Management Councils responsible for the preparation of fishery management plans (FMPs) to achieve the optimum yield from U.S. fisheries in their regions. These councils, with assistance from the NMFS, establish Essential Fish Habitat (EFH) in FMPs for all managed species. Federal agencies that fund, permit, or implement activities that may adversely affect EFH are required to consult with the NMFS regarding potential adverse effects of their actions on EFH, and respond in writing to recommendations by NMFS.

Project Applicability. All subtidal and intertidal habitats associated with the San Francisco Bay estuary are designated as EFH for a number of species federally-managed under the FMPs. The San Francisco Bay is officially listed as EFH related to the Pacific Coast Salmon FMP, and in the South Bay, the Central Valley fall-run Chinook salmon represents this FMP. Chinook are known to occur in two South Bay watersheds (e.g., Coyote Creek and Guadalupe River) but do not spawn in Guadalupe Slough or Moffett Channel. Like CCC steelhead and green sturgeon, they may occasionally enter the channels in small numbers as occasionally foragers. A number of fish species regulated by the Coastal Pelagics and Pacific Groundfish FMPs, such as the leopard shark (*Triakis semifasciata*), English sole (*Parophrys vetulus*), starry flounder (*Platichthys stellatus*), and big skate (*Raja binoculata*), occur in the tidal habitats of South Bay, and individuals of these species could also occur in Moffett Channel as foragers. As a result, Moffett Channel represents EFH.

Permitting and Mitigation Requirements. Within the Project Area, EFH and associated species are expected to occur in the same areas (tidal waters of Moffett Channel) as described above for the green sturgeon and CCC steelhead, and impacts to EFH and associated fish species would be similar to those described for FESA-listed fish above. The BA prepared for FESA consultation with NMFS will also address impacts to EFH and avoidance, minimization, and compensatory mitigation measures. NMFS will then provide recommendations for minimizing impacts to EFH; these recommendations will overlap those provided for the FESA-listed species, and thus we do not expect Magnuson-Stevens Fishery Conservation and Management Act compliance to necessitate any additional constraints to the Project.

Species Listed under the California Endangered Species Act

The CESA (Fish and Game Code of California, Chapter 1.5, Sections 2050-2116) prohibits the take of any plant or animal State-listed or proposed for listing as rare (plants only), threatened, or endangered. In accordance with the CESA, the CDFW has jurisdiction over State-listed species. The CDFW regulates activities that may result in “take” of individuals listed under the Act (i.e., “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill”). Habitat degradation or modification is not expressly included in the definition of “take” under the Fish and Game Code. The CDFW, however, has interpreted “take” to include the “killing of a member of a species which is the proximate result of habitat modification.” CESA also allows exceptions for take that occur incidental to otherwise lawful activities; the requirements for obtaining incidental take permits (ITPs) are outlined in Section 2081 of the Fish and Game Code. Approval requires minimization and full mitigation of projected impacts. The CESA dictates the procedures followed to evaluate potential impacts to species listed under CESA, identify necessary mitigation measures, and form the basis for approving incidental take permits, if required.

Project Applicability. Four species that are listed as endangered or threatened under the CESA could potentially occur in or adjacent to the area to be disturbed by installation of the pipeline and widening of the levee road:

- The California clapper rail and salt marsh harvest mouse, discussed above under FESA-listed species, are listed as endangered under both FESA and CESA. Both of these species may be present in the tidal marshes along Moffett Channel.
- The California black rail (*Laterallus jamaicensis coturniculus*) is a small rail that inhabits a variety of marsh types. This species reportedly bred in the Alviso area in the early 1900s (Wheelock 1916), but observations over recent decades were presumably dispersants detected during the winter. The absence (or scarcity) of recent breeding black rails in the South Bay is presumably a result of habitat loss, particularly of higher marsh habitat. There are numerous non-breeding records of California black rail observations from Palo Alto Baylands, but few from other areas in the South Bay. The known distribution of black rails has recently increased, including their apparent distribution in the South Bay, and observations of this species during the summer suggest black rails may be colonizing new areas. They have recently been recorded in tidal marshes in Alviso Slough near Ponds A10 and A11 (approximately 0.8 miles to the northeast of the Project Area), in Artesian Slough (approximately 2.7 miles to the east), and in Triangle Marsh (approximately 2.3 miles to the northeast) during the breeding season (L. Hall pers. comm.; SBB list-serve 2013). As a result, it is possible that black rails could colonize the marshes along Moffett Channel, breeding and/or foraging in the same habitat types potentially used by California clapper rails and salt marsh harvest mice.
- The State-threatened longfin smelt (*Spirinchnus thaleichthys*) may be present in Moffett Channel. Adults are most widespread in the winter and spring, when their distribution extends from the South Bay through the Delta, with the greatest concentrations in San Pablo Bay, Suisun Bay, and the West Delta (Rosenfield 2009). In the summer, the majority of adults are found in the Central Bay, San Pablo Bay, and Suisun Bay, but move upstream in early fall. Spawning in the Bay is thought to occur mainly below Medford Island in the San Joaquin River and below Rio Vista on the Sacramento River, while the lower end of spawning habitat seems to be upper Suisun Bay around Pittsburg and Montezuma Slough, in Suisun Marsh (Larson et al. 1983 as cited in Moyle 2002, Wang 1986). The movement patterns of longfin smelt in the South Bay are not well understood. In the South Bay, fish sampling in Coyote Slough and the Island Ponds has detected the species only in winter and spring, but the species may be absent from the South Bay during the summer (Hobbs et al. 2012). This species is likely absent from the South Bay in the summer because of reduced water quality conditions and lack of food resources, including mysid shrimp which is likely their main food source (J. Hobbs pers. comm.). There is potential for longfin smelt to occur as foragers during the winter and spring in Moffett Channel. Their presence would be limited to reaches of tidal influence, where refugia with

cooler temperatures occur, with a very low probability of occurrence upstream as far as the Sunnyvale West Channel.

Additional information on these species can be found in Appendix B.

Permitting and Mitigation Requirements. Due to the rarity of these species, impacts to all four of these State-listed species are potentially significant under CEQA. The CDFW issues ITPs for CESA approval when take a listed species could occur and impacts can be fully mitigated. However, the California clapper rail, California black rail, and salt marsh harvest mouse are considered fully protected in California. Section 3511 of Fish and Game Code states that such species may not be taken or possessed at any time, and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock. Therefore, the CDFW cannot issue an ITP for these species, even if impacts are expected to be fully mitigated. As a result, the CDFW will require that avoidance measures be implemented to avoid take of individuals. Avoidance measures required to avoid take of the black rail would be similar to those described above for the clapper rail, and may thus include protocol-level spring surveys to determine whether the species is breeding in areas near proposed activities. Surveys (according to the latest protocol dated 3 January 2013) require that survey stations are located no more than 100 m apart. Stations are typically surveyed a total of three times between 15 March and 31 May, with at least 10 days between each survey. If rails are present, the CDFW would allow work to continue after it is determined rails are no longer breeding. Compensatory mitigation described above in the FESA/USFWS section for the clapper rail and harvest mouse would satisfy mitigation requirements for the black rail as well.

Because the longfin smelt may be present, impacts similar to those described above for FESA-listed fish could occur, and due to the rarity of this species, impacts would be significant under CEQA without mitigation. The CDFW may require that an ITP be obtained if in-channel work were to occur, especially if dewatering of any tidal channel will occur. The ITP would include measures to fully mitigate impacts to the species, likely including avoidance measures described above for FESA-listed fish that are designed to avoid impacts to marsh or aquatic habitats. If permanent habitat impacts are expected to occur, the CDFW may require compensatory habitat mitigation in the form of restoration or creation of habitat on or off site, or the purchase of mitigation credits at a CDFW-approved mitigation bank. However, CDFW requirements to fully mitigate include the acquisition and protection of habitats known to support the species, and thus appropriate habitat mitigation (i.e., in areas where the species is known to occur) may be difficult to obtain. If dewatering will not occur, the CDFW may allow for work within marsh or aquatic habitat to occur when the species is not expected to occur in the South Bay, thus avoiding the need for take approval; previously approved work windows include the period between 15 June and 15 October.

In the event that an ITP were needed for impacts to longfin smelt, the City's consultant would prepare an ITP application and submit it to the CDFW. Consultation is expected to take 9-12 months or more before the CDFW issues an ITP. To offset any permanent habitat impacts, CEQA mitigation measures and the CDFW may require restoration or creation of wetland habitat on or off site, or the purchase of mitigation

credits at a CDFW-approved mitigation bank. The mitigation ratio may vary depending on the type and extent of impacts, though it could be as high as 3:1. It is possible (subject to agency approval) that mitigation of impacts to tidal wetlands and waters described in Section 3.2.1 above may also serve as mitigation for impacts to longfin smelt, if the mitigation provides suitable habitat for these species.

Other Special-status Animals and Concentrations of Non-Special-Status Birds

Other special-status species that occur in the vicinity of the pipeline installation and levee road widening activities include California Species of Special Concern. Nesting birds protected by the MBTA and California Fish and Game Code are also present.

Project Applicability. The Alameda song sparrow and San Francisco common yellowthroat, discussed in Section 2.2.2 above, also nest in tidal marsh vegetation along Moffett Channel. Another Species of Special Concern, the western pond turtle (*Actinemys marmorata*), may also occur in low numbers in the upper reaches of Moffett Channel. As discussed in Section 2.2.3 above, a number of other, non-special-status bird species also nest in vegetation in and adjacent to the pipeline/road widening activity areas.

Permitting and Mitigation Requirements. No permits are needed for potential impacts to Species of Special Concern or non-special-status birds. However, due to the abundance of the Alameda song sparrow and San Francisco common yellowthroat along Moffett Channel, impacts could be potentially significant due to the number of active nests that could be affected. Avoidance of impacts to all protected birds by avoidance of construction during the breeding season, preconstruction surveys and buffers around active nests, and/or nesting deterrence would be necessary as discussed in Sections 2.2.2 and 2.2.3 above.

Due to the isolated nature of the small western pond turtle population in the site vicinity, the loss of individuals could reduce the viability of this local population to the extent that it would be extirpated. This impact would be considered significant under CEQA owing to the small regional populations of western pond turtles. Mitigation measures for impacts to western pond turtles would include preconstruction surveys and biological monitoring for activities in the vicinity of the lower Sunnyvale West Channel and upper Moffett Channel, as well as capture and release (with CDFW approval) of any western pond turtles that may be present in Project work areas.

Section 4.0 Ponds 1 and 2

4.1 Overview of Proposed Activities

Ponds 1 and 2 are currently used as secondary treatment ponds. The WPCP Master Plan will incorporate renovations that will make the use of these ponds for secondary treatment obsolete. The City is considering allowing Pond 1 to “passively retire” by abandoning its use. Under this scenario, the City would leave water in the pond, likely consisting of the final effluent that is treated (and rainwater) or a flush of fresh water, and would not dredge the sludge. The levees would no longer be maintained, and the pond is expected to gradually return to a tidal marsh when exterior (i.e., bayward) levees are breached through erosional processes (i.e., through wave and tidal action). The City is considering using an approximately 20-acre portion of the existing Pond 2 area for flow equalization. This would involve the creation of a berm at the southern portion of the pond to create an approximately 10-ac cell that would be used for primary effluent equalization or emergency storage. The remaining portion of Pond 2 would then likely be treated as Pond 1 in the long term.

4.2 Potential Biological Constraints

4.2.1 Regulated Habitats

As discussed in Section 2.2.1 above, waste treatment ponds are not considered waters of the U.S. under the Clean Water Act (33 CFR Section 328.3). As a result, Ponds 1 and 2 would likely not be considered jurisdictional by the USACE given their current uses (Figure 3). The USACE should be consulted (during the process of reviewing the delineation of wetlands and other waters for other parts of the Project area) to determine definitively whether it will claim jurisdiction over these ponds. It should be noted that the lack of USACE jurisdiction only applies as long as these ponds are in active use for water treatment, and the USACE may claim jurisdiction over the ponds if their use for water treatment ceases. Similarly, the RWQCB is unlikely to require any permitting (e.g., under the Porter-Cologne Act) for activities within these ponds related to water treatment, such as the placement of fill in Pond 2 to create a basin for flow equalization and emergency storage. However, as with the USACE, the RWQCB may take jurisdiction over these ponds as waters of the State if their use were to change. It is also possible that approval from the RWQCB may be needed for cessation of the use of Ponds 1 and 2 as treatment ponds. Because the USACE and RWQCB are not expected to regulate water treatment-related activities in these ponds, and Section 1600 of the California Fish and Game Code does not apply to such ponds, Clean Water Act, Porter-Cologne Act, and Section 1600 regulations are not discussed for Ponds 1 and 2 activities below except in Section 4.3.7 below.

McAteer-Petris Act

Areas under the jurisdiction of BCDC were described in Section 2.2.1 above.

Project Applicability. Although the waters of Ponds 1 and 2 are not subject to BCDC's Bay jurisdiction the way tidal waters are, any activities within 100 ft of Guadalupe Slough, Moffett Channel, and the tidal wetlands along the slough and channel are subject to BCDC's shoreline band jurisdiction (Figure 4).

Permitting and Mitigation Requirements. A BCDC permit would be needed for construction of the berm to create the flow equalization/emergency storage basin in Pond 2, because portions of the berm would be located within the 100-ft shoreline band. The BCDC permit process is described in Section 2.2.1 above, and may take 6-9 months. No compensatory mitigation is expected to be required by BCDC for Pond 2 activities.

Rivers and Harbors Act

Areas under the jurisdiction of the USACE pursuant to the Rivers and Harbors Act were described in Section 3.2.1 above.

Project Applicability. No current navigable waters are present within Ponds 1 and 2. However, as described in Section 3.2.1 above, the USACE also regulates activities in historical navigable waters under Section 10 of the Rivers and Harbors Act. Historical Section 10 waters include areas where evidence of historical tidal sloughs once occupied areas at or below the Mean High Water line in their unobstructed, natural state. These areas are shown as double-line sloughs on Figure 7.

Permitting and Mitigation Requirements. Typically, Section 10 permitting is performed along with Clean Water Act permitting. However, historical Section 10 waters in Ponds 1 and 2 are in areas that are not expected to be considered jurisdictional under the Clean Water Act due to exemptions for water bodies used for water treatment. Consultation with the USACE will be necessary to determine whether it would regulate activities in Ponds 1 and 2 under Section 10 of the Rivers and Harbors Act, even if they are not regulated under the Clean Water Act. If the USACE determines that Section 10 permitting is needed for activities within these ponds, despite the lack of Clean Water Act jurisdiction, there is some potential that the USACE may require compensatory habitat mitigation (e.g., creation or restoration of jurisdictional waters) to offset permanent impacts. This would need to be discussed with USACE staff with specific facilities and proposed activities in mind before it is known with certainty whether a Section 10 Letter of Permission would be required and whether the Letter of Permission would include a condition for compensatory mitigation. If mitigation is required, it would likely take the form of non-tidal wetland creation or restoration as discussed in Section 2.2.1 above. Such mitigation would likely be necessary at a lower ratio (i.e., 1:1 or 2:1) than for waters subject to Clean Water Act jurisdiction. Permitting is expected to take 6-9 months, if the USACE deems it necessary at all.

4.2.2 Special-Status Species

Species Listed under the Federal Endangered Species Act and California Endangered Species Act

Species listed under the FESA and CESA were described in Section 3.2.2 above.

Project Applicability. Construction of the berm around the flow equalization/emergency storage basin in Pond 2 would require heavy equipment hauling dirt along the levee road leading to Pond 2 and the use of heavy equipment to construct the berm. These activities could indirectly affect California clapper rails, California black rails, and salt marsh harvest mice in adjacent marshes via disturbance of individuals as described in Section 3.2.2 above. No impacts to listed fish are expected to occur due to Pond 2 berm construction activities.

Permitting and Mitigation Requirements. Due to the rarity of these species, impacts to the California clapper rail, California black rail, and salt marsh harvest mouse from activities associated with Pond 2 basin construction are potentially significant under CEQA. All of these species are “fully protected” by the State, and thus measures to avoid take of these species would be necessary. Such measures would include the use of silt fencing to ensure that no dirt or other materials enter marshes along Moffett Channel and measures to ensure that no activities occur within 700 ft of occupied California clapper rail habitat during the breeding season (as described in Section 3.2.2 above). The tidal marsh along Moffett Channel adjacent to Pond 2 is of somewhat higher quality for nesting rails than that farther upstream where the primary effluent pipeline would be constructed. However, there is a low probability of nesting clapper rails adjacent to the southern portion of Pond 2, where the marsh is narrow; habitat becomes more suitable where the marsh broadens near the confluence of Moffett Channel and Guadalupe Slough.

Because impacts to these species would be indirect, disturbance-related impacts, no take of individuals would occur, and no loss of habitat for these species would occur, we do not anticipate that habitat mitigation would be required.

Other Special-status Animals and Concentrations of Non-Special-Status Birds

Other special-status species that occur in the vicinity of the pipeline installation and levee road widening activities include California Species of Special Concern. Nesting birds protected by the MBTA and California Fish and Game Code are also present.

In addition, large concentrations of waterfowl, Wilson’s phalaropes (*Phalaropus tricolor*), and red-necked phalaropes (*Phalaropus lobatus*) use Ponds 1 and 2 for foraging during migration and, in the case of waterfowl, during winter. Large numbers of waterfowl, particularly ducks but also including geese and American coots (*Fulica americana*), forage in Ponds 1 and 2. The majority of these birds are “dabblers” that forage on plants (e.g., algae) growing within the pond and on very small plants and animals floating within the water column. They roost both on the water and on the levees around Ponds 1 and 2, particularly on the “internal” levees that line all but the northern portions of these two ponds. Occasionally, large numbers of diving ducks, which feed on invertebrates in the substrate, are also recorded here.

Although several waterfowl species breed in and around these ponds, the ponds are particularly important during migration and in winter (roughly August through April). Thousands of American coots and dabbling

ducks, primarily northern shovelers (*Anas chyeata*), mallards (*Anas platyrhynchos*), gadwalls (*Anas strepera*), American wigeon (*Anas americana*), and northern pintails (*Anas acuta*), use these ponds. These ponds are surveyed on the Palo Alto Christmas Bird Count and incidentally by birders, resulting in totals of up to 5500 northern shoverles (20 December 1996), 1950 canvasbacks (*Aythya valisineria*; 19 December 2000), and 2950 Ruddy Ducks (*Oxyura jamaicensis*; 20 December 1996) (Santa Clara County Bird Data Unpublished; Steve Rottenborn, pers. obs.).

Large numbers of phalaropes, exemplified by 4000 red-necked phalaropes on 14 September 1997 and 470 Wilson's phalaropes on 6 August 2011, have been recorded in the oxidation ponds and the surrounding channels during fall migration (Santa Clara County Bird Data Unpublished). Such maximum counts likely represent a reasonable proportion (10 percent or more) of the fall migrant populations of these species in the South Bay.

Project Applicability. The Alameda song sparrow and San Francisco common yellowthroat, discussed in Section 2.2.2 above, nest in tidal marsh vegetation along Moffett Channel. Another Species of Special Concern, the northern harrier (*Circus cyaneus*), may also nest along Moffett Channel in the lower, somewhat broader sections of marsh adjacent to Pond 2. As discussed in Section 2.2.3 above, a number of other, non-special-status bird species also nest in vegetation in and adjacent to the pipeline/road widening activity areas.

Conversion of Ponds 1 and 2 to other uses could result in the loss of habitat for wintering and migratory waterfowl and phalaropes. Displaced birds may readily use other managed ponds in the South Bay or may use tidal portions of the Bay (or deeper tidal pond habitats). The reduction in available foraging associated with conversion of Ponds 1 and 2 to other habitats and/or uses would not likely result in a significant decline in the regional populations of these species, when viewed solely on a Project-specific basis, as there are numerous other non-tidal pond habitats currently available.

However, the loss of such pond habitat coupled with habitat conversion associated with the South Bay Salt Ponds (SBSP) Restoration Project could, cumulatively, result in the loss of enough pond habitat to significantly affect these populations. The amount of potential diving duck foraging habitat in the South Bay is expected to decline by somewhere between 20 percent (under the 50 percent pond:tidal marsh scenario) and 86 percent (under the 10 percent pond:tidal marsh scenario) as a result of the habitat conversion as part of the SBSP Restoration Project (EDAW et al. 2007). The amount of high-salinity ponds (greater than 40 parts per thousand) available for phalaropes is expected to decrease from 590 ac to 500 ac (under the managed pond emphasis scenario) or down to 160 ac (under the tidal habitat emphasis scenario) (EDAW et al. 2007). Under both scenarios, ponds that receive high waterfowl use, such as Pond A2W, will be converted to tidal marsh. Under the managed pond scenario, Pond A2E and other important ponds for waterfowl, such as Pond A9, would remain as managed ponds. Under the tidal habitat scenario, the only pond in the Project vicinity that would remain as pond habitat would be Pond A3W. Phase 1 actions have resulted in Ponds A5, A7, and A8 being converted to deeper water habitat, and those will likely support wintering waterfowl for

many years; however, those ponds are expected to be restored to full tidal action and gradually return to tidal marsh.

Therefore, the tidal habitat scenario has potential to significantly reduce available habitat and populations of waterfowl and (to a lesser extent) phalaropes, and thus the loss of Ponds 1 and 2 would contribute cumulatively to that loss. As described in the SBSP Restoration Project EIS/EIR, impacts to wintering waterfowl will be considered significant if the habitat conversion from that project results in a substantial reduction in numbers in the South Bay (i.e., 20 percent below baseline levels) (EDAW et al. 2007). The significance threshold for salt-pond-associated birds (including Wilson's phalaropes and red-necked phalaropes) is a decline of 50 percent below baseline levels (EDAW et al. 2007). The management of ponds for waterbird use may offset some of these impacts. For instance, the management of Pond A16 in the Alviso Complex will likely allow for diving duck foraging. The conversion of Ponds E12 and E13 in the Eden Landing Complex to a series of shallow basins with a range of salinities that will likely provide for year-round foraging habitat for waterfowl and phalaropes (i.e., the more saline basins), including the late summer and fall when wintering birds begin to arrive in the South Bay. These management actions will offset the loss of non-tidal ponds for these species to some extent. To determine whether impacts to wintering or migrating waterfowl and phalaropes are significant, or will contribute cumulatively to the significant reduction in their populations due to regional habitat loss, the Project EIR will further evaluate this impact based on an analysis of existing population levels (both in the Project Area in regionally), expected suitable habitat loss regionally (in terms of acreage and seasonal availability), and consideration of the focused management of ponds for these species in the SBSP Restoration Project.

Permitting and Mitigation Requirements. No permits are needed for potential impacts to Species of Special Concern or non-special-status birds. However, due to the abundance of the Alameda song sparrow and San Francisco common yellowthroat along Moffett Channel, impacts resulting from Pond 2 construction activities could be potentially significant due to the number of nests that could be affected. Avoidance of impacts to all protected birds by avoidance of construction during the breeding season, preconstruction surveys and buffers around active nests, and/or nesting deterrence would be necessary as discussed in Sections 2.2.2 and 2.2.3 above.

If conversion of Ponds 1 and 2 to uses that would no longer support large numbers of waterfowl or phalaropes is determined to contribute to a significant cumulative impact during the CEQA process, mitigation may be necessary in the form of management of habitat on-site for these species, which could be accomplished in Ponds 1 and 2 (see Section 4.3.2 below), or in the form of a financial contribution to the SBSP Project for the management of ponds for these species.

4.2.3 Special Considerations

Flood Control

Both passive retirement and active restoration of Ponds 1 and 2 would require flood protection considerations. The existing outboard levees around Ponds 1 and 2 along Guadalupe Slough and Moffett Channel provide some protection from tidal flooding for low-lying landward areas (e.g., Moffett Field and possibly developed portions of the City close to the baylands). We expect that maintenance of outboard levees, either by the City or the SCVWD, would be necessary unless and until flood-control levees are constructed landward of Ponds 1 and 2 to provide flood protection to low-lying areas of Sunnyvale and Mountain View. In addition to maintaining flood protection, these levees (either the outboard levees around Ponds 1 and 2 or the new, landward levees) will need to be bolstered to adequately account for SLR projections and to meet Federal Emergency Management Agency (FEMA) flood-protection requirements. Flood protection projects in the South Bay will be integrated with the South San Francisco Bay Shoreline Study (Shoreline Study), as described in Section 4.3.6 below. Significant habitat restoration opportunities can be coupled with flood protection projects, including levees as part of the Shoreline Study.

Sediment Quality

The breaching of Ponds 1 and/or 2 will expose any materials that have accumulated in the ponds (and are not dredged prior to breaching) to tidal action. Although much of the material in the ponds will remain in place and be buried by sedimentation that will occur after breaching, some erosion will occur and thus some of those materials will be mixed with Bay waters and enter the estuary. We are not aware of any toxic compounds or other contaminants present in the sediments in Ponds 1 and 2 that could adversely affect water quality and aquatic species were such breaching to occur. Recently, however, attention has been paid to the chemicals that are present in wastewater and that could potentially result in long-term adverse environmental effects. For instance, 44 different pharmaceutical compounds or metabolites have been identified in San Francisco Bay sediment or mussel samples, including those that are endocrine disruptors (Vietor 2013). However, concentrations of these chemicals, generally known as Contaminants of Emerging Concern (CEC), such as pharmaceutical and personal care products and endocrine disrupting compounds (EDCs), are typically not monitored in wastewater, and regulatory agencies have not set guidelines for monitoring and regulating many of these CECs. These CECs may have long-term effects on wildlife once discharged; for instance, EDCs have the potential to disrupt endocrine, reproductive, and immune systems, and can cause reproductive failure (Colborn et al. 1993, Nash et al. 2004). However, this field of ecotoxicology is relatively new, and CECs are so numerous that safe levels of these contaminants have not been established. Nonetheless, it is anticipated that the RWQCB and other agencies will begin monitoring and regulated CECs in San Francisco Bay in the future. For instance, the San Francisco Bay RWQCB has a Regional Monitoring Program that includes monitoring and assessment of CECs in the Bay, which as a result, will facilitate a framework to guide management of CECs (Mumley et al. 2013). Therefore, in addition to current RWQCB standards, additional standards for numerous CECs may be developed in the future, thus potentially affecting actions related to the WPCP and environmental exposure of sediments, including passive or active restoration of Ponds 1 and 2. Although CECs are largely unregulated currently, it is expected that

the WPCP will need to comply with any future regulations regarding CECs and, even if not regulated, the effects of long-term exposure of CECs (that may be present in the pond sediments) on wildlife will need to be analyzed in the EIR. If impacts are determined to be potentially significant, mitigation measures may include removal of sediments prior to breaching of levees or compliance with any agency standards or conditions regarding the release of CECs that are developed in the future.

4.3 Potential Habitat Enhancement Opportunities

4.3.1 Tidal Restoration

The City is considering several design options for the WPCP, in part because the entirety of Ponds 1 and 2 will no longer be needed for secondary treatment in its current configuration. The WPCP renovations will incorporate treatment techniques that do not require the use of the current area of Pond 1 (approximately 300 ac) or Pond 2 (approximately 100 ac). One of the non-treatment options for the ponds is to convert them into tidal marsh, either by allowing them to passively retire (i.e., allow them to breach through erosion) or through active restoration. The following is a brief discussion of the potential opportunities and constraints associated with tidal restoration of Ponds 1 and 2.

Passive Restoration

The City is considering allowing Ponds 1 and 2 to “passively retire” by abandoning their use. The ponds would not be dredged or maintained any further and the final effluent water (and rainwater) would be left in the ponds. Because the Bayward levees would no longer be maintained, the ponds would eventually be reintroduced to tidal action by a breach or breaches that would eventually occur along Guadalupe Slough to the north of the ponds. In addition to a breach along Guadalupe Slough, Pond 2 could also breach along the northern extent of Moffett Channel. Breaching would occur where tidal or wave action scours the exterior of the levees. Regardless of where the breach occurs, saline to brackish water would enter through a breach or breaches and begin mixing with the existing pond water. Gradually, the turbid waters entering the ponds would deposit sediment, raising the elevation of the pond bottom, and the breached ponds would evolve into a tidal marsh system. The establishment of vegetation would depend of the salinity and elevation of the substrate, with higher-marsh vegetation such as pickleweed (*Salicornia pacifica*), and marsh gumplant (*Grindelia stricta*) establishing in areas of shallow or infrequent tidal inundation, and Pacific cordgrass (*Spartina foliosa*) occurring in deeper areas, such as along channels.

Because breaches resulting in the introduction of tidal action would be unplanned under the passive restoration scenario, there would be no opportunity to construct new tidal channels or to locate breaches where historic tidal channels occur. Without the presence of tidal channels, the ponds would likely experience limited flushing throughout all portions of the ponds, particularly in areas opposite the breaches. Also, with no restoration features incorporated into the project, there would be no control over the composition of the marsh habitat or location of marsh features that would develop. For instance, the pond would lack a transitional ecotone between the marsh plain and the steep levee slope. The result would likely be a muted tidal marsh with homogenous topography and vegetation structure that would be of limited habitat value to

many special-status marsh species that utilize a variety of marsh features. For instance, California clapper rails forage in small tidal channels lined with cordgrass, nest in denser vegetation, often in marsh gumplant along naturally-forming berms of tidal channels, and seek refuge in higher marsh or upland transition zones during high-water events. Therefore, passive retirement of the ponds would likely result in relatively homogenous, low-quality marsh habitat. Also, passive restoration is unlikely to allow the City to garner any mitigation “credit” for the creation of tidal habitat, as regulatory agencies that would provide such credit would prefer active tidal restoration. Finally, as discussed in Section 4.2.3 above, flood control levees landward of these ponds would be necessary to prevent coastal flooding of low-lying portions of Sunnyvale and Mountain View before breaching of the outboard levees around Ponds 1 and 2 would be permitted (e.g., by the SCVWD). As a result, passive tidal restoration of these ponds is unlikely to be a feasible alternative.

Active Restoration

Active, or planned, restoration of the ponds would significantly increase the potential for Ponds 1 and 2 to develop into high-quality tidal marsh habitats than would result from passive retirement. Because tidal marsh restoration has been occurring throughout the San Francisco Bay estuary for a number of years, restoration techniques have been developed to facilitate the development of higher quality marshes than occur when former baylands are breached haphazardly through erosion. Active restoration would include planned breaches in strategic locations to restore tidal action to the pond interior. These breaches generally would occur along historic tidal channels to facilitate tidal exchange, resulting in increased tidal flushing and a higher tidal prism. Starter channels, ditch blocks, and other topographic features (such as channels or berms) can be incorporated into the restoration design to capture tidal flow and re-establish relict dendritic channels networks within restored marshes. This would result in a combination of deeper and shallower areas with a diversity of topography and associated vegetation communities.

Other techniques that may be included in restoration design of Ponds 1 and 2 that would increase the quality of restored tidal marshes may include the creation of high marsh and upland transition habitats. This would include a modification of existing topography so there is a gradual transition from high marsh to upland areas along the levee. These upland transition zones provide high-water refugia for special-status species, including salt marsh harvest mice and California clapper rails, and allow for marsh adaptation to SLR. Revegetation in these areas would facilitate the establishment of native vegetation that provides important cover for these species, especially in areas along levees where pedestrian access may otherwise flush rails and other wildlife, thus potentially exposing them to increased predation. Revegetation would also reduce the potential for invasive plant species and other ruderal vegetation from establishing after ground disturbance.

Tidal Habitat Mitigation Banking

An important advantage to actively restoring Ponds 1 and 2 to tidal action is the potential to use the ponds for wetland mitigation banking. The City could obtain approval from agencies that regulate tidal habitats and species (including the USACE, RWQCB, USFWS, CDFW, and NMFS) of a wetland restoration plan and a mitigation bank. The City could then use portions of the bank to mitigate impacts from its own projects and sell credits in the bank to others that need such mitigation. The USACE has expressed its preference for

project proponents to purchase credits at approved sites to mitigate impacts to wetlands habitats. The intent of mitigation banking is to provide high-quality wetland habitat that is managed for compliance with performance standards in accordance with requirements of these agencies. Currently there are limited mitigation credits available for impacts to tidal marshes and species in the South Bay. The nearest site to the Project Area is the San Francisco Bay Wetland Mitigation Bank, located on the edge of San Francisco Bay in Redwood City. That 83-ac property consists of former diked Baylands, similar to Ponds 1 and 2, and has undergone tidal restoration since 2009. The demand for such mitigation credits is higher than credit availability. Ponds 1 and 2 are suitable sites for wetland mitigation due to their regional location in the South Bay (where mitigation credits are needed), potential to be connected to full tidal action to the Bay through Guadeloupe Slough, and potential to be colonized by special-status species (including FESA listed species). Therefore, although active restoration and certification would require investment, the ponds could be a significant financial resource for the City.

It is important to note that the maximum “credit” for tidal wetland restoration may come from the restoration of tidal action immediately after Ponds 1 and 2 are no longer needed for water treatment. As discussed in Section 4.2.1 above, these ponds are not expected to be subject to USACE jurisdiction as long as they are in active use for water treatment, but the USACE may claim jurisdiction over the ponds if their use for water treatment ceases. As a result, planning tidal restoration when the ponds are still actively used for water treatment will allow the agencies to see not only that they are being converted to tidal wetlands but that they are being converted from non-jurisdictional to jurisdictional habitats.

4.3.2 Managed Non-tidal Ponds for Wintering/Migrant Waterbirds

In addition to tidal restoration, there are other opportunities for the management of Ponds 1 and/or 2 that would benefit biological resources locally and regionally. Ponds 1 and 2 are used by high densities of wintering and migrating waterfowl, as well as migrating phalaropes. These concentrations are locally and regionally significant, and an assessment of the potential loss of these concentrations of birds both locally and regionally will be included in the Project’s EIR. Given the importance of the resources using the ponds currently, the continuing management of these ponds under current conditions is an alternative to consider.

However, there are several constraints to the continued use of these ponds as managed, non-tidal ponds. To maintain existing conditions of the ponds, the levees and other infrastructure of the ponds would need to be maintained, and a water source for these ponds would need to be provided; fresh water may not be available after Ponds 1 and 2 are no longer part of the secondary treatment process. The bayward levees would need to be maintained and would require augmentation to prevent unplanned levee breaches through erosion as SLR progresses. Also, water depth and water quality conditions in the ponds would need to be maintained in a similar manner as under current conditions in order for the existing food web to be maintained and for waterbirds to continue foraging on the ponds. Rotation of water through the ponds is currently necessary to maintain water quality and avoid anaerobic conditions, so after primary effluent is no longer piped to these ponds for secondary treatment, it may not be feasible to maintain Ponds 1 and 2 as managed ponds without substantial degradation in water quality and, consequently, use by waterbirds.

4.3.3 Managed Non-tidal Ponds for Wintering, Migrant, and Nesting Waterbirds

Ponds 1 and 2 could be managed for use by a variety of nesting waterbirds. Shorebirds, including American avocets (*Recurvirostra americana*) and black-necked stilts (*Himantopus mexicanus*), as well as terns such as Caspian terns (*Sterna caspia*) and Forster's terns (*Sterna forsteri*), have successfully nested in large numbers on islands and berms within former salt ponds. As part of the SBSP Restoration Project, managed ponds are being reconfigured to provide nesting habitat for these species. Ponds A16 (Alviso complex), SF2 (Ravenswood complex), and E12/13 (Eden Landing Ecological Reserve) have been reconfigured and are being managed to support these nesting waterbirds as part of the project's efforts to maintain their existing populations, while restoring at least half of the ponds to tidal action. This will require managing ponds in a focused manner so that the high densities of waterbirds will nest in fewer ponds than are currently available. To support high densities of nesting waterbirds, islands of different size and configurations are being constructed to provide nesting habitat, while the remainder of the ponds are flooded to various depths to provide foraging habitat and protection from mammalian predators.

In addition to Forster's terns and Caspian terns, there is potential for managed ponds to be colonized by California least terns (*Sterna antillarum browni*). Recovery efforts for that species include the management of a nesting island at the Hayward Regional Shoreline (approximately 16 miles to the north of the Project Area), where habitat enhancement on the island and social attraction (decoys, call-playback) was successfully used to attract breeding terns to the site (Riensch et al. 2012). Because least terns use the South Bay as a pre-migration staging area in late summer and early fall, it is feasible that terns could colonize a nesting island in either Pond 1 or Pond 2. Successful least tern breeding habitat could be a valuable asset in terms of mitigation banking, as mitigation for impacts to least terns may be needed by those undertaking dredging projects in the region.

The ponds could also be managed for western snowy plover habitat, which typically utilizes dry salt ponds and salt panes for breeding in the South Bay. Plovers also use islands within shallowly-flooded ponds for breeding, and because they have nested in the Alviso vicinity, they may attempt to colonize nesting islands in Ponds 1 or 2. The ponds, or portions of the ponds (i.e., managed cells), could also be managed as salt panne habitat, with some shallowly flooded areas, to increase the potential for western snowy plovers to use for nesting and foraging.

Constraints to using Ponds 1 and 2 for nesting waterbirds are the same as those described in Section 4.3.2 above. Water-level and water quality management is a major consideration for ponds being managed for waterbird nesting, as water levels need to be maintained at appropriate levels for nesting and foraging and discharge from the ponds needs to meet water quality standards. Also, vegetation may need to be controlled on the islands to maintain open areas for nesting. Augmentation of substrate may be necessary to maintain appropriate elevations and prevent cracking from occurring (which will entrap newly hatched chicks), and the addition of certain materials, such as sand or oyster shells, may facilitate the vegetation maintenance on the islands and provide camouflage from predators. It may be possible to use dredged or other excavated material

to create and maintain the nesting islands. Finally, predator control may be necessary to prevent species such as the California gull (*Larus californicus*) from colonizing the site and/or depredating eggs and chicks.

4.3.4 Managed Non-Tidal Freshwater/Brackish Wetlands

The potential exists to utilize freshwater outflow from either wastewater treatment, or from other sources such as urban runoff, to create freshwater or brackish marsh habitats within Pond 1 and/or Pond 2. Freshwater outflow/runoff could be used to create freshwater emergent wetlands. In the vicinity of outflow areas, wetlands could be designed such that freshwater marsh transitions into a brackish marsh. Managed freshwater or brackish marshes may support the California black rail and facilitate its potential colonization in the South Bay, as black rails have been observed in wetlands dominated by emergent freshwater marsh vegetation, such as California bulrush, common tule, and cattail in Suisun Bay (H. T. Harvey & Associates 2011). Therefore, restoration of these habitats may benefit black rails and numerous other species that use freshwater and brackish wetlands. Constraints to using Ponds 1 and 2 as managed freshwater/brackish wetlands are the same as those described in Section 4.3.2 above.

4.3.5 Filling of Ponds

The City could consider using Ponds 1 or 2 to expand the WPCP operations by extending the footprint of the Main Plant into portions of the ponds. This would involve the construction of improved access to these ponds, new conveyance structures, electrical distribution, treatment infrastructure, and other infrastructure associated with WPCP operations. In addition to expanding plant operations, the ponds could be filled for other opportunities that would benefit the City, including expanding the existing trail network, possibly including portions of the Bay Trail. It may be feasible to collaborate with SCVWD to link existing trails on their property (i.e., surrounding Pond A4) with existing or newly created trails around Pond 1 or 2.

Expanding operations or other design options involving fill of Ponds 1 or 2 would result in less impact to waters of the U.S./State than expansion into, for example, Pond A4 or the Cargill channel if the USACE confirms that Ponds 1 and 2 are not considered waters of the U.S. (due to the fact they are used as water treatment ponds). Pond A4 and the Cargill Channel are expected to be considered jurisdictional by the USACE because they are not used for water treatment, and other former salt evaporation ponds, such as those included in the SBSP Restoration Project, have been considered jurisdictional in the recent past.

However, any facilities constructed on fill in Ponds 1 and 2 would need to be protected from coastal flooding and SLR by the maintenance and augmentation of levees. Expansion of the Main Plant into Ponds 1 and 2 would also involve considerable disturbance of wildlife along Moffett Channel and would reduce opportunities for habitat enhancement in Ponds 1 and 2. As a result, filling of these ponds for Plant uses may not be viewed as favorably by the agencies as filling of portions of the Cargill Channel or Pond A4 (see Section 7.0 below).

4.3.6 Potential for Integration with Other Projects

SBSP Restoration Project

The SBSP Restoration Project is currently in the process of restoring 15,100 ac of former commercial salt ponds in South Bay to a mix of tidal marsh, mudflat, managed pond, and other habitats. The goals of the SBSP Restoration Project also include flood management and wildlife-oriented public access. This includes restoring former Cargill salt evaporation ponds in the Project vicinity to tidal marsh, including the former salt ponds across Guadalupe Slough to the north and east, as well as ponds to the west. To the north and east, Ponds A5, A7, and A8 are currently being managed with muted tidal action via the Pond A8 notch along Alviso Slough, but those ponds are expected to be restored to full tidal action and eventual evolve into tidal marsh. To the west, Ponds A1, A2W, AB1, A2B, and possibly A2E are expected to be restored to tidal marsh. Ultimately, much of the Project vicinity will be an area of extensive salt marsh habitats that represents an important area for populations of special-status species, particularly California clapper rails and salt marsh harvest mice. These large restored marshes are expected to contribute to the recovery of these federally endangered species, and will support a robust and resilient estuarine ecosystem. If Ponds 1 and 2 were to be restored to tidal action, they could be integrated into the overall SBSP Restoration Project and help in meeting the project's habitat and flood protection goals. Also, because managed ponds are an important component of the SBSP Restoration Project, Ponds 1 and 2 would be of value as managed ponds, especially given large concentrations of wintering and migrating birds that currently use the ponds, as described in Section 3 above. Additionally, the walking trails around the ponds could be integrating to the SBSP Restoration Project's public access goals. Therefore, in addition to the potential for mitigation banking, the ponds may be of value to the SBSP Restoration Project, and it is possible that the Coastal Conservancy, USFWS, or CDFW would be willing to purchase these ponds for integration into the SBSP Project or to fund management of these ponds for waterbirds.

South San Francisco Bay Shoreline Study

The South San Francisco Bay Shoreline Study is a study being conducted by the USACE, along with the SCVWD and State Coastal Conservancy, to identify flood management needs and to recommend flood management projects for federal funding. The goal of the Shoreline Study is to protect shoreline in Santa Clara County from flooding via a combination of flood protection infrastructure and marsh restoration. The Shoreline Study is closely coordinating with the SBSP Restoration Project in its efforts to restore former salt ponds to marsh habitats. Currently, the Shoreline Study assumes that the WPCP will need to continue using Ponds 1 and 2 in their existing configuration. Given current SLR projections and flood protection requirements, an engineered flood-control levee would need to be built around the entire perimeter of the ponds. If the ponds are used for restoration or other non-treatment purposes, flood-control levees would no longer be necessary to protect the ponds. Rather, a flood-control levee would be needed along the southern extent of the Project Area to protect the Main Plant and commercial and residential properties behind the existing levee system. This would represent a large cost savings and would also allow for the integration of habitat restoration into the Shoreline Study. For instance, Pond 1 could be used to create a large upland transitional zone, consisting of moist grasslands and marshes that gradually slope towards tidal marsh

habitats, similar to the “horizontal levee” concept described by ESA PWA (ESA PWA 2013). Wastewater or runoff could be used to create freshwater marsh habitat, potentially with willow groves, that transition to brackish and salt marsh habitats. The resulting marsh would be resilient to SLR and provide high-quality habitat for numerous special-status species, thus allowing for mitigation banking and land exchange opportunities described above.

4.3.7 Permitting Considerations for Enhancement Activities

Regulatory agency permits may be needed for some of the habitat enhancement activities discussed above for Ponds 1 and 2. Although no permits would be needed for passive retirement of the ponds (aside from possible RWQCB approval for treatment pond closure), permits would be needed for active tidal restoration due to impacts to jurisdictional wetlands and other waters, and the potential for impacts to listed species, on the outboard sides of levees during the breaching process. Such approvals could include

- Clean Water Act Section 404 permit from the USACE
- Rivers and Harbors Act Section 10 Letter of Permission
- Clean Water Act Section 401 water quality certification from the RWQCB
- An administrative permit from the BCDC
- A SAA from the CDFW

FESA consultation with the USFWS and NMFS may also be necessary, depending on the locations of breaches and potential effects on listed species. The schedule for such consultation is what would drive the 12-18-month schedule for permitting, since the BOs from the USFWS and NMFS will need to be issued before the USACE can issue its Section 404 permit. However, no mitigation is expected to be needed for such impacts due to the beneficial nature of the restoration activities. Preparation of permit application materials and agency coordination during permit processing, including FESA/CESA consultation, may cost up to \$90,000 - \$100,000, but such costs would be more than offset by the potential for selling mitigation credits or the potential sale of the ponds to agencies involved in the SBSP Project.

Permits from the USACE and RWQCB may be needed for levee maintenance, construction of nesting islands, and other activities that involve the placement of fill in Ponds 1 and 2 after they are no longer used for water treatment and have become USACE and RWQCB-jurisdictional. In addition, BCDC permits may be needed for activities within these ponds that are located within BCDC’s shoreline band jurisdiction.

Section 5.0 Landfill Area

5.1 Overview of Proposed Activities

The City is considering using portions of the closed landfill south and southeast of the Main Plant for construction trailers and parking, staging, lay-down, and storage related to construction of WPCP Master Plan elements. The precise location of these areas has not yet been determined, as biological constraints and topography (the areas will need to be fairly level) will play roles in determining appropriate locations for these activities. Although these uses will occur only during construction, Master Plan build-out may be a process that takes 15 years or more, so these will be long-term activities.

As mentioned in Section 2.1 above, relocation of the Administration/Lab Building to the current household hazardous waste drop-off site is proposed. This waste drop-off site is located on a portion of the landfill.

5.2 Potential Biological Constraints

5.2.1 Regulated Habitats

No regulated habitats are expected to be present on portions of the landfill to be used for construction-related activities. The absence of regulated habitats would be confirmed during a delineation of wetlands and other waters of the U.S./State on the entire Master Plan site.

However, the RWQCB regulates activities on closed landfills, and thus, approval from the RWQCB may be needed for relocation of the Administration/Lab Building to the current household hazardous waste drop-off site or use of the landfill for construction-related activities.

5.2.2 Special-status Species and Non-Special-Status Birds

Special-status species and concentrations of non-special-status birds are discussed in detail in Sections 2.2.2 and 2.2.3 above.

Project Applicability. Congdon's tarplant, discussed in Section 2.2.2 above, could potentially occur in landfill areas. As summarized by Chromczak (2014), burrowing owls are known to occur during the non-breeding season on closed landfill areas southwest of the current household hazardous waste drop-off site, west of the Sunnyvale West Channel, and just west of the Sunnyvale East Channel. No burrowing owls have been recorded since 1998 on the portion of the landfill immediately south/southeast of the household hazardous waste drop-off site or in a large area immediately east of Borregas Avenue. Two other special-status birds, the loggerhead shrike (a Species of Special Concern) and white-tailed kite (*Elanus leucurus*, a State fully protected species) could potentially nest in trees or shrubs adjacent to portions of the closed landfill that may be used for construction-related activities. In addition, small numbers of non-special-status birds

protected by the MBTA and California Fish and Game Code are expected to nest in grassland on the closed landfill.

Permitting and Mitigation Requirements. Because none of the special-status species that could occur in areas of the landfill that could be impacted by construction staging and storage activities are formally listed under the FESA or CESA, no agency approval is needed for impacts to these species or their habitats. Furthermore, the loss of one pair of loggerhead shrikes or white-tailed kites would be considered less-than-significant under CEQA given the low proportion of these species' regional populations that would be affected. However, populations of the Congdon's tarplant and burrowing owl are relatively limited locally and regionally, and thus if individuals were to be lost or active nests disturbed as a result of Project activities on the closed landfill, or if substantial impacts to burrowing owl habitat were to occur, such impacts would be considered significant under CEQA.

Mitigation measures for impacts to the Congdon's tarplant would be as described in Section 2.2.2 above. If work were to occur in occupied burrowing owl habitat, individual burrowing owls (especially young or adults in burrows) may be killed or injured during construction activities from destruction of burrows by equipment. More likely, Project activities occurring in close proximity to active burrows may disturb owls to the point of abandoning their burrows, including active nests, eggs, and young. To avoid impacting nesting owls, measures such as preconstruction surveys, avoidance of breeding-season (1 February through 31 August) activities within buffers (up to 250 ft for burrowing owls), and eviction of individuals during the nonbreeding season would likely be required to avoid such impacts. If impacts to nesting habitat or extensive impacts to foraging habitat on the landfill were to occur, habitat mitigation in the form of habitat management and preservation focused on this species may be necessary to reduce impacts to less-than-significant levels under CEQA. Such mitigation can be performed on the landfill (see Section 5.3.1 below). Because the household hazardous waste drop-off site is already developed, relocation of the Administration/Lab Building to this location would not result in burrowing owl habitat impacts.

Given the low numbers of non-special-status birds that could be impacted by activities on the landfill, impacts to these species would be considered less than significant under CEQA, in our opinion. However, we recommend that the Project take measures to avoid impacts on nesting birds to comply with the MBTA and California Fish and Game Code, as described in Section 2.2.3 above.

5.3 Potential Habitat Enhancement Opportunities

5.3.1 Burrowing Owl

The closed landfill near the Main Plant and Sunnyvale Baylands Park to the east represent the last burrowing owl habitat in the City of Sunnyvale, yet numbers of owls appear to have declined here (as in the rest of the South Bay) in recent years, and burrowing owls do not breed regularly on the landfill. The City's burrowing owl contractor, Debra Chromczak, has identified a number of habitat management and enhancement measures that could be implemented on the closed landfill to try to increase the number of owls using the

landfill, the number using the landfill for breeding, and breeding success (Chromczak 2014). Examples of such measures are as follows:

- Manage vegetation height ≤ 6 inches at occupied owl locations, but leave islands of taller vegetation to support prey populations
- Improve prey base by planting native perennials and by using rock/brush piles
- Install artificial burrow complexes
- Focus management on areas with numerous ground squirrels, away from human/canine disturbance
- Deter off-path human access
- Close off portions of landfill around active burrows during nesting season

5.3.2 Congdon's Tarplant

The ruderal grassland dominating these landfill provides potentially suitable habitat for the Congdon's tarplant. This plant could be introduced to portions of the landfill through seeding, and such areas could be managed (e.g., by occasional suppression of weedy competitors) to support this special-status plant.

5.3.3 Constraints and Opportunities Associated with Sunnyvale Landfill Recreation Planning

The City of Sunnyvale Departments of Community Services and Public Works are developing a long-term plan for the recreational use of the landfill adjacent to the Main Plant. Currently the landfill is open to pedestrian activities such as hiking, bicycling, and birding. The City is considering using the site for other open-space purposes, including athletic fields and a dog park. A change in the current recreational use of the landfill site could potentially constrain the use of the landfill for WPCP Master Plan construction trailers and staging. Conversely, enhancements for the burrowing owl and Congdon's tarplant should be coordinated between WPCP activities and recreation planning for the landfill to ensure the success of any habitat enhancement measures.

Section 6.0 Closure of Carl Road to Public and Relocation of Trail Parking

6.1 Overview of Proposed Activities

The City is considering closing Carl Road to the public, so that public parking for the trails around Ponds 1, 2, and A4 and around the landfill would no longer be available on Carl Road. To provide alternative parking, the City would create parking spaces along Caribbean Drive west of Borregas Avenue by closing one lane along Caribbean Drive. A short spur trail would then be constructed between the parking area and the trail along the Sunnyvale West Channel.

6.2 Potential Biological Constraints

6.2.1 Regulated Habitats

No regulated habitats are expected to be present in the area where a spur trail would be constructed to connect the Caribbean Drive parking area to the existing trail network. The absence of regulated habitats would be confirmed during a delineation of wetlands and other waters of the U.S./State on the entire Master Plan site.

6.2.2 Special-status Species and Non-Special-Status Birds

Special-status species and non-special-status birds are discussed in detail in Sections 2.2.2 and 2.2.3 above.

Project Applicability. Although burrowing owls are often present on the landfill adjacent to where the small spur trail would be constructed, they tend to occur farther from the eucalyptus trees along Caribbean Drive than the location of that trail segment. As a result, there is only a low probability that burrowing owls would constrain the construction of this trail segment. Parking along Caribbean Drive instead of Carl Road would not be expected to increase disturbance of burrowing owls on the landfill. Small numbers of non-special-status birds protected by the MBTA and California Fish and Game Code are expected to nest in grassland on the closed landfill and in the eucalyptus trees adjacent to the spur trail.

Permitting and Mitigation Requirements. In the unlikely event that burrowing owls are present near the spur trail location when trail construction is scheduled to occur, measures described in Section 2.2.2 to avoid impacts to nesting owls would be necessary to avoid a significant impact under CEQA. However, no high-quality burrowing owl habitat would be lost as a result of this activity, and thus no habitat mitigation would be warranted. Given the low numbers of non-special-status birds that could be impacted by construction of the spur trail, impacts to these species would be considered less than significant under CEQA, in our opinion. However, we recommend that the Project take measures to avoid impacts on nesting birds to comply with the MBTA and California Fish and Game Code, as described in Section 2.2.3 above.

Section 7.0 Alternatives for the Flow Equalization/Emergency Storage Basin

7.1 Overview of Potential Activities

Pond A4 is currently owned by the SCVWD but is currently not being used for water treatment or storage; however, it has been considered for use as a flood-detention basin by the SCVWD. The Cargill Channel is located to the south of Ponds 1 and 2, extending westward toward Moffett Field (Figure 2). This channel is owned by Cargill and was formerly used to transfer water between salt evaporation ponds. Either the Cargill Channel or Pond A4 could be used for the approximately 20-acre flow equalization/emergency storage function that was described above for Pond 2, in lieu of having that basin constructed in Pond 2.

7.2 Potential Biological Constraints

7.2.1 Regulated Habitats

Waters of the U.S. (Clean Water Act and Rivers and Harbors Act), Waters of the State (Porter-Cologne Water Quality Control Act), and McAteer-Petris Act

These regulated habitats and regulations were described in Sections 2.2.1 and 3.2.1 above.

Project Applicability. Both the Cargill Channel and Pond A4, as well as the narrow fringes of vegetated wetlands around these features, are expected to be considered jurisdictional waters of the U.S. (USACE) and waters of the State (RWQCB). Areas within 100 ft of tidal waters and wetlands along Moffett Channel and Guadalupe Slough are within BCDC jurisdiction, and areas where historical sloughs were located would be regulated by the USACE under the Rivers and Harbors Act.

Permitting and Mitigation Requirements. Extensive fill would be required to construct the berm enclosing the flow equalization/emergency storage basin. As a result, an Individual Permit from the USACE would be necessary. However, fill of waters of the U.S. is expected to be well below the 10-ac threshold typically used by the USACE to necessitate preparation of an Environmental Impact Statement (EIS) to comply with the National Environmental Policy Act. Because proposed impacts to jurisdictional features would be less than 10 ac, the USACE would instead prepare a type of Environmental Assessment (EA), referred to as a Decision Document, instead of an EIS to comply with NEPA. In this situation, the overall permitting process would be reduced to approximately 12-18 months.

As discussed in Section 2.2.1, a robust alternatives analysis would need to be conducted to demonstrate to the USACE that the chosen Project alternative represents the least environmentally damaging practicable alternative. Because Pond A4 and the Cargill Channel are jurisdictional waters of the U.S., but Pond 2 is not, it would be difficult to support the contention that constructing the flow equalization/emergency storage

basin in Pond A4 or the Cargill Channel would result in less fill of waters of the U.S./State. However, it is possible that the USACE would understand the benefits of using Pond A4 or the Cargill Channel, rather than Pond A2, in terms of long-term ecological protection and enhancement opportunities. Using Pond A4 or the Cargill Channel for this basin would allow Pond 2 to be enhanced as discussed in Section 4.3, and would concentrate WPCP activities closer to the Main Plant rather than spreading them out all the way to Pond 2, which would subject sensitive habitats and species to indirect disturbance associated with the operation and maintenance of the basin. In addition, if Pond A4 were used for the flow equalization/emergency storage basin, the 60-inch primary effluent pipeline described in Section 3.0 would likely not need to be constructed across Moffett Channel, thus avoiding those impacts.

Permits from the RWQCB and BCDC would similarly necessitate justification for the level of impact proposed. The USACE will need to consult with the USFWS (though likely not NMFS since the Cargill Channel and Pond A4 do not support special-status fish) regarding potential impacts to federally listed species during the 404 permitting process. This is described in greater detail in Section 7.2.2.

Mitigation to reduce impacts on non-tidal jurisdictional wetlands and other waters would be required as discussed in Section 2.2.1 above.

7.2.2 Special-Status Species

Species Listed under the Federal Endangered Species Act and California Endangered Species Act

Species listed under the FESA and CESA were described in Section 3.2.2 above.

Project Applicability. Construction of the berm around the flow equalization/emergency storage basin in Pond A4 or the Cargill Channel would have little direct impact on federally listed species. However, the narrow strips of wetland vegetation around these two waterbodies could potentially provide salt marsh harvest mouse habitat, and thus the harvest mouse could be present in a very small portion of the impact areas. In addition, berm construction would require heavy equipment hauling dirt along the levee roads along Moffett Channel and the use of heavy equipment to construct the berm. These activities could indirectly affect California clapper rails, California black rails, and salt marsh harvest mice in adjacent marshes via disturbance of individuals as described in Section 3.2.2 above. No impacts to listed fish are expected to occur due to Pond A4 or Cargill Channel berm construction activities.

Permitting and Mitigation Requirements. Due to the rarity of these species, impacts to the California clapper rail, California black rail, and salt marsh harvest mouse from activities associated with basin construction are potentially significant under CEQA. All of these species are “fully protected” by the State, and thus measures to avoid take of these species would be necessary. Such measures would include the use of silt fencing to ensure that no dirt or other materials enter marshes along Moffett Channel; hand-removal of vegetation within impact areas that could potentially support salt marsh harvest mice; and measures to ensure

that no activities occur within 700 ft of occupied California clapper rail habitat during the breeding season (as described in Section 3.2.2 above). However, as discussed in Section 3.2.2, there is a very low probability of rails nesting along upper Moffett Channel within 700 ft of the Cargill Channel or the portion of Pond A4 where the basin might be constructed.

Consultation with the USFWS will be required during Section 404 permitting, and mitigation for permanent impacts to potential salt marsh harvest mouse habitat will be necessary as described in Section 3.2.2. Because the California clapper rail, California black rail, and salt marsh harvest mouse are fully protected by the State, no ITP from the CDFW would be necessary.

Other Special-status Animals and Concentrations of Non-Special-Status Birds

Other special-status species that occur in the vicinity of the berm construction area in Pond A4 or the Cargill Channel include California Species of Special Concern, such as the San Francisco common yellowthroat, Alameda song sparrow, and western pond turtle, as well as Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*), which could potentially nest in ruderal vegetation and wetlands around Pond A4. The project applicability and permitting/mitigation requirements associated with these species, and with non-special-status nesting birds, would be the same for construction in the Cargill Channel and Pond A4 as described in Section 3.2.2 for the primary effluent pipeline.

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**APPENDIX A.
SPECIAL-STATUS AND LOCALLY SIGNIFICANT PLANT SPECIES
CONSIDERED BUT REJECTED FOR OCCURRENCE IN THE PROJECT AREA**

Scientific Name	Common Name	No suitable habitat	Outside of the elevation range	Believed to be extirpated from Santa Clara County	Lack of associated species	Widely distributed CNPS List 3 and 4 species
<i>Acanthomintha lanceolata</i>	Santa Clara thornmint					X
<i>Androsace elongate</i> ssp. <i>acuta</i>	California androsace					X
<i>Acanthomintha duttonii</i>	San Mateo thorn-mint		X			
<i>Allium peninsulare</i> var. <i>franciscanum</i>	Franciscan onion		X			
<i>Arctostaphylos andersonii</i>	Anderson's manzanita		X			
<i>Arctostaphylos regismontana</i>	Kings Mountain manzanita				X	
<i>Astragalus tener</i> var. <i>tener</i>	Alkali milk-vetch			X		
<i>Atriplex depressa</i>	Brittlescale	X				
<i>Atriplex joaquiniana</i>	San Joaquin spearscale			X		
<i>Atriplex minuscula</i>	Lesser saltscale	X				
<i>Azolla microphylla</i>	Mexican mosquito fern					X
<i>Balsamorhiza macrolepis</i>	Big-scale balsamroot		X			
<i>Calandrinia breweri</i>	Brewer's calandrinia					X
<i>California macrophylla</i>	Round-leaved filaree	X			X	
<i>Calochortus umbellatus</i>	Oakland star tulip					X
<i>Cahystegia collina</i> ssp. <i>venusta</i>	South Coast Range morning-glory		X			
<i>Campanula exigua</i>	Chaparral harebell	X	X			
<i>Chloropyron maritimum</i> ssp. <i>palustris</i>	Point Reyes bird's beak			X		
<i>Chorizanthe robusta</i> var. <i>robusta</i>	Robust spineflower			X		
<i>Cirsium fontinale</i> var. <i>campylon</i>	Mt. Hamilton fountain thistle		X			
<i>Cirsium fontinale</i> var. <i>fontinale</i>	Crystal Springs fountain thistle	X			X	
<i>Cirsium praeteriens</i>	Lost thistle			X		
<i>Clarkia breweri</i>	Brewer's clarkia					X
<i>Clarkia concinna</i> ssp. <i>automixa</i>	Santa Clara red ribbons		X			
<i>Collinsia multicolor</i>	San Francisco collinsia	X				
<i>Cypripedium fasciculatum</i>	Clustered lady's-slipper					X
<i>Dirca occidentalis</i>	Western leatherwood	X				
<i>Dudleya abramsii</i> ssp. <i>setchellii</i>	Santa Clara Valley dudleya		X			
<i>Eriogonum argillosum</i>	Clay buckwheat					X
<i>Eriogonum nudum</i> var. <i>decurrens</i>	Ben Lomond buckwheat					X
<i>Eriogonum umbellatum</i> var. <i>bahiiforme</i>	Bay buckwheat					X
<i>Eriophyllum jepsonii</i>	Jepson's wooly sunflower					X
<i>Eriophyllum latilobum</i>	San Mateo wooly sunflower	X			X	
<i>Eryngium aristulatum</i> var. <i>hooveri</i>	Hoover's button-celery	X				
<i>Erysimum franciscanum</i>	San Francisco wallflower					X
<i>Fritillaria agrestis</i>	Stinkbells					X
<i>Fritillaria liliacea</i>	Fragrant fritillary	X			X	

Scientific Name	Common Name	No suitable habitat	Outside of the elevation range	Believed to be extirpated from Santa Clara County	Lack of associated species	Widely distributed CNPS List 3 and 4 species
<i>Galium andrewsii</i> ssp. <i>gatense</i>	Phlox-leaf serpentine bedstraw					X
<i>Helianthella castanea</i>	Diablo helianthella	X				
<i>Helianthus exilis</i>	Serpentine sunflower					X
<i>Hesperolinon congestum</i>	Marin western flax	X			X	
<i>Hoita strobilina</i>	Loma Prieta hoita	X			X	
<i>Iris longipetala</i>	Coast iris					X
<i>Isocoma menziesii</i> var. <i>diabolica</i>	Satan's goldenbush	X				
<i>Lasthenia conjugens</i>	Contra Costa goldfields			X		
<i>Legenere limosa</i>	Legenere	X				
<i>Leptosiphon acicularis</i>	Bristly leptosiphon					X
<i>Leptosiphon ambiguus</i>	Serpentine leptosiphon					X
<i>Leptosiphon grandiflorus</i>	Large-flowered leptosiphon					X
<i>Lessingia hololeuca</i>	Woolly-headed lessingia	X			X	
<i>Lessingia tenuis</i>	Spring lessingia					X
<i>Malacothrix phaeocarpa</i>	Dusky-fruited malacothrix					X
<i>Malacothamnus aboriginum</i>	Indian Valley bush-mallow	X				
<i>Malacothamnus hallii</i>	Hall's bush-mallow	X				
<i>Micropus amphibolus</i>	Mt. Diablo cottonweed					X
<i>Microseris sylvatica</i>	Sylvan microseris					X
<i>Monardella antonina</i> ssp. <i>antonina</i>	San Antonio Hills monardella	X	X			
<i>Navarretia cotulifolia</i>	Cotula navarretia					X
<i>Navarretia prostrata</i>	Prostrate vernal pool navarretia					
<i>Perideridia gairdneri</i> ssp. <i>gairdneri</i>	Gairdner's yampah					X
<i>Piperia leptopetala</i>	Narrow-petaled rein orchid		X			
<i>Piperia michaelii</i>	Michael's rein orchid					X
<i>Plagiobothrys chorisianus</i> var. <i>hickmanii</i>	Hickman's popcorn flower					X
<i>Plagiobothrys glaber</i>	Hairless popcorn-flower			X		
<i>Plagiobothrys myosotoides</i>	Forget-me-not popcorn-flower	X	X			
<i>Psilocarphus brevissimus</i> var. <i>multiflorus</i>	Delta woolly-marbles					X
<i>Senecio aphanactis</i>	Rayless ragwort	X				
<i>Sidalcea malachroides</i>	Maple-leaved checkerbloom					X
<i>Streptanthus albidus</i> ssp. <i>albidus</i>	Metcalf Canyon jewel-flower	X			X	
<i>Streptanthus albidus</i> ssp. <i>peramoenus</i>	Most-beautiful jewel-flower		X			
<i>Stuckenia filiformis</i>	Slender-leaved pondweed		X			
<i>Suaeda californica</i>	California seablite			X		
<i>Trifolium depauperatum</i> var. <i>hydrophilum</i>	Saline clover	X				
<i>Tropidocarpum capparideum</i>	Caper-fruited tropidocarpum	X		X		

APPENDIX B.
SPECIAL-STATUS ANIMAL SPECIES WITHIN THE PROJECT AREA

Special-Status Animal Species, Their Status, Habitat Description, and Potential for Occurrence within the Sunnyvale Water Pollution Control Plant Area

Name	*Status	Habitat	Potential for Occurrence on the Project Area
Federal or State Endangered, Threatened, or Candidate Species			
Green sturgeon (<i>Acipenser medirostris</i>)	FT, CSSC	Spawns in large river systems such as the Sacramento River; forages in nearshore oceanic waters, bays, and estuaries.	May be Present. Known to occur in the San Francisco Bay, though it apparently occurs only as a rare, nonbreeding visitor to the South Bay. There is no evidence that green sturgeon have ever spawned in any creeks within in the South Bay. Based on this species' preferences for streams having strong flow over large cobbles in deep pools, it is unlikely that South Bay tributaries historically provided suitable spawning habitat, and such habitat is absent now. Within the Project Area, this species could forage in Guadalupe Slough and Moffett Channel, albeit infrequently and in low numbers. This species would not occur in Ponds 1, 2 or A4 due to a lack of connectivity to the channels. All tidally influenced areas of the San Francisco Bay, up to the elevation of mean higher high water, including all portions of Guadalupe Slough and Moffett Channel to the upper limits of tidal action, have been designated as critical habitat for this species.
Longfin smelt (<i>Spirinchus thaleichthys</i>)	ST, CSSC	Spawns in fresh water in the upper end of the San Francisco Bay; occurs year-round in the South Bay.	May be Present. Has been reported in the South Bay year-round (Wernette 2000), and individuals have been collected in Alviso Slough (EDAW Inc. 2007). However, fish sampling in Coyote Creek and the Island Ponds north of Coyote Creek has detected the species only in January and March, suggesting that the species may be absent from the South Bay during the summer (Hobbs et al. 2012), likely due to reduced water quality conditions and a lack of mysid shrimp, which is likely their main food source (J. Hobbs pers. comm.). May be present in the tidal reaches of sloughs in the South Bay, including Guadalupe Slough and Moffett Channel, in the winter and spring when food resources are abundant and water quality conditions are suitable. This species would not occur in Ponds 1, 2 or A4 due to a lack of connectivity to Guadalupe Slough and Moffett Channel.

Name	*Status	Habitat	Potential for Occurrence on the Project Area
Central California Coast steelhead (<i>Oncorhynchus mykiss</i>)	FT	Cool streams with suitable spawning habitat and conditions allowing migration between spawning and marine habitats.	May be Present. Unlikely to occur in the Project Area (i.e., Guadalupe Slough and Moffett Channel) due to the lack of suitable spawning conditions within the channels. Steelhead are known to occur in, and suitable spawning habitat is present in, San Francisquito Creek, Los Trancos Creek, Stevens Creek, Guadalupe River, Los Gatos Creek, Guadalupe Creek, Alamos Creek, Calero Creek, Coyote Creek, Upper Penitencia Creek, and Arroyo Aguague (Leidy et al. 2005, NMFS 2005). Although unlikely, small numbers of stray, individual steelhead associated with spawning streams elsewhere in the South Bay could occasionally wander in to forage within the tidal reaches of Guadalupe Slough and Moffett Channel. This species would not occur in Ponds 1, 2 or A4 due to a lack of connectivity to Guadalupe Slough and Moffett Channel. Critical habitat for this species has been designated over the tidally influenced portions of San Francisco Bay (NMFS 2005), and thus Guadalupe Slough and Moffett Channel are considered critical habitat for this species.
California tiger salamander (<i>Ambystoma californiense</i>)	FT, ST	Vernal or temporary pools in annual grasslands or open woodlands.	Absent. Populations located on the Santa Clara Valley floor have been extirpated due to habitat loss, and the species is now considered absent from the majority of the valley floor, including the Project Area (H. T. Harvey & Associates 1999a, 2012; SCVWD 2011). No records of California tiger salamanders are located within their dispersal distance (i.e., 1.3 miles) from the Project Area (CNDDDB 2014) and the species is determined to be absent from the Project Area and the surrounding vicinity.

Name	*Status	Habitat	Potential for Occurrence on the Project Area
California red-legged frog (<i>Rana draytonii</i>)	FT, CSSC	Streams, freshwater pools, and ponds with emergent or overhanging vegetation.	Absent. This species has been extirpated from the urbanized Santa Clara Valley floor, due to development, the alteration of hydrology of its aquatic habitats, and the introduction of non-native predators such as non-native fishes and bullfrogs (H. T. Harvey & Associates 1997; SCVWD 2011). Thus, California red-legged frogs are determined to be absent from the Project Area.
San Francisco garter snake (<i>Thamnophis sirtalis tetrataenia</i>)	FE, SE	Freshwater marshes, ponds, and slow-moving streams along the coast.	Absent. Common garter snakes in the Project Area belong to the infernalis subspecies (i.e., the red-sided garter snake [<i>Thamnophis sirtalis infernalis</i>]) (Barry 1994). Thus, true San Francisco garter snakes do not occur in the Project Area.
Bank swallow (<i>Riparia riparia</i>)	ST	Colonial nester on vertical banks or cliffs with fine-textured soils near water.	Absent as Breeder. No recent nesting records from Santa Clara County, and no suitable nesting habitat occurs in or near the Project Area. Occurs only as a rare migrant.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	SE, SP	Occurs mainly along seacoasts, rivers, and lakes; nests in tall trees or in cliffs, occasionally on electrical towers. Feeds mostly on fish.	Absent. Has been recorded nesting in the San Francisco Bay region only at inland reservoirs; very rare along the San Francisco Bay edge. No suitable nesting or foraging habitat in the Project Area.
Swainson's hawk (<i>Buteo swainsoni</i>)	ST	Nests in trees surrounded by extensive marshland or agricultural foraging habitat.	Absent. Suitable foraging habitat absent and does not breed in the vicinity of the Project Area. Thus, the species is determined to be absent.

Name	*Status	Habitat	Potential for Occurrence on the Project Area
California clapper rail (<i>Rallus longirostris obsoletus</i>)	FE, SE, SP	Salt marsh habitat dominated by pickleweed and cordgrass.	Present. The brackish marshes of Moffett Channel and Guadalupe Slough are expected to be used by clapper rails for foraging, at least occasionally, and they may use the freshwater marsh at the southern extent of Moffett Channel for foraging on rare occasions. Clapper rails have been detected in nearly pure stands of alkali bulrush along Guadalupe Slough in 1990 and 1991 in the marshes north of Pond 2 and Pond A4 (H. T. Harvey & Associates 1990a, 1990b, 1991). These birds were most likely unmated males based on their behavior and vocalizations, and thus they may not have bred in those marshes. Because California clapper rails typically nest in broader marshes with well-developed tidal channels (conditions that are absent from Guadalupe Slough and Moffett Channel), they may not breed in the marshes. Individuals have occasionally been reported in the vicinity by birders as well (Santa Clara County Bird Data, Unpublished; S. Rottenborn, pers. obs.); all reliable observations by birders have been along Guadalupe Slough, usually north of Ponds 1 and 2 (rarely along the northeastern edge of Pond 4). They are not expected to occur within Ponds 1 or 2 due to a lack of tidal connectivity and suitable marsh habitat.
California black rail (<i>Laterallus jamaicensis coturniculus</i>)	ST, SP	Breeds in fresh, brackish, and tidal salt marsh.	May be Present. Until 2011, this species was known in the South Bay only as a rare winter visitor. However, the species has recently been recorded in tidal marshes in Alviso Slough near Ponds A10 and A11 (approximately 0.8 miles to the northeast), in Artesian Slough (approximately 2.7 miles to the east), and in Triangle Marsh (approximately 2.3 miles to the northeast) during the breeding season (L. Hall pers. comm.; SBB list-serve 2013). Although there are no records of this species in the Project Area (in any season), black rails may occasionally forage in the brackish or freshwater marshes of Moffett Channel or Guadalupe Slough. If black rails are breeding in South Bay marshes, there is potential for this species to breed in these channels as well. They are not expected to occur within Ponds 1 or 2 due to a lack of suitable marsh habitat.

Name	*Status	Habitat	Potential for Occurrence on the Project Area
Western snowy plover (<i>Charadrius alexandrinus nivosus</i>)	FT, CSSC	Sandy beaches on marine and estuarine shores and salt pannes in San Francisco Bay saline managed ponds.	Likely Absent. Not expected to occur within Project Area owing to a lack of suitable habitat (i.e., lack of sandy beaches/salt pannes/dry salt ponds). Snowy plovers formerly nested in Pond A8 (approximately 0.6 miles to the east) prior to the introduction of tidal action later than year (Robinson-Nilsen 2009). More recently snowy plovers have nested in Pond A6 (prior to tidal restoration), Pond A12, Pond A13, and salt pannes within New Chicago Marsh and other nearby impoundments (Robinson-Nilsen et al. 2008, 2009, 2011; Donehower et al. 2013). Snowy plovers also nested in Ponds A16 and A17 when the ponds were dewatered for restoration construction (Donehower et al. 2013). Snowy plovers could occasionally forage in the shallow edges of Ponds 1, 2, and A4, but given the availability of more suitable habitats in the South Bay, including dryer, more open salt ponds and pannes, it is extremely unlikely that plovers would occur in the Project Area in its current condition.
California least tern (<i>Sterna antillarum browni</i>)	FE, SE, SP	Nests along the coast on bare or sparsely vegetated, flat substrates. In the South Bay, nests in a managed pond and occasionally on dry salt pond bottoms. Forages for fish in open waters.	Absent as Breeder. This species does not nest in Santa Clara County, and due to its endangered status, breeding locations are closely monitored and well known. The largest colony in the San Francisco Bay is on Alameda Point and a smaller colony occurs at the Hayward Regional Shoreline (Marschalek 2011). Small numbers of least terns formerly attempted to nest in Eden Landing Ecological Reserve but no nesting attempts have been documented in recent years. The South Bay is an important post-breeding staging area for least terns, and this species forages in late summer and early fall in saline managed ponds and on the bay from Mountain View through Sunnyvale into the Alviso area. The primary post-breeding staging area seems to be on the managed ponds between Pond 1 and Stevens Creek. Both adult and juvenile least terns roost on managed pond levees (both outboard levees and interior levees between ponds) and boardwalks, and forage both in the saline managed ponds and over the open waters of the Bay. Therefore, least terns may occasionally forage in Ponds 1 and 2, Moffett Channel, and Guadalupe Slough during post-breeding staging in late summer and early fall. However, there are very few records of this species (e.g., by birders) from the immediate Project Area itself, and thus occurrence is irregular and by only low numbers of birds.

Name	*Status	Habitat	Potential for Occurrence on the Project Area
Least Bell's vireo (<i>Vireo bellii pusillus</i>)	FE, SE	Nests in heterogeneous riparian habitat, often dominated by cottonwoods (<i>Populus</i> sp.) and willows (<i>Salix</i> sp.).	Absent. The only breeding records in Santa Clara County are from Llagas Creek southeast of Gilroy in 1997 and the Pajaro River south of Gilroy in 1932. Otherwise, records in the County include 1–2 singing males along lower Llagas Creek in May 2001, and a singing male in June 2006 along Coyote Creek near the Coyote Creek Golf Club. This species is not known to breed in or near the Project Area, and no suitable breeding habitat is present.
Salt marsh harvest mouse (<i>Reithrodontomys raviventris</i>)	FE, SE, SP	Salt marsh habitat dominated by common pickleweed.	May be Present. This species has been captured near the mouth of Guadalupe Slough in pickleweed-dominated salt marsh habitat (H. T. Harvey & Associates 1991). The potential for harvest mice to occur in the brackish tidal marshes of Guadalupe Slough and Moffett Channel adjacent to Ponds 1 and 2 is low; these marshes have sparse vegetative structure and do not contain dense thatch that harvest mice have been documented using in brackish marshes. Also, patches of ostensibly suitable habitat are fragmented by freshwater marsh and other unsuitable vegetation, such as perennial peppergrass, thereby reducing habitat quality of the brackish marshes. Nevertheless, some patches of pickleweed exist in these ponds, and salt marsh harvest mice have been recorded in brackish marshes in the South Bay (H. T. Harvey & Associates 2007). Therefore, the marshes along Guadalupe Slough and mid/lower Moffett Channel may support the species. Salt marsh harvest mice are likely absent from the interior of Pond A4, although without trapping surveys, the potential occurrence of this species in pickleweed-dominated areas along the edges of the pond cannot be ruled out. The uppermost portion of Moffett Channel near the Main Plant, with pure stands of cattail and California bulrush, is unsuitable for the species, and the species is considered absent from Ponds 1 and 2 due to a lack of tidal connectivity and suitable marsh habitat.

Name	*Status	Habitat	Potential for Occurrence on the Project Area
California Species of Special Concern			
Central Valley fall-run Chinook salmon (<i>Oncorhynchus tshawytscha</i>)	CSSC	Cool rivers and large streams that reach the ocean and that have shallow, partly shaded pools, riffles, and runs.	May be Present. Unlikely to occur in the Project Area (i.e., Guadalupe Slough and Moffett Channel) due to the lack of suitable spawning conditions within the channels. Chinook are known to occur in South Bay watersheds (e.g., Coyote Creek and Guadalupe River) although it is unknown whether there is a sustainable population of these fish, which are likely hatchery fish descendants. Although unlikely, small numbers of stray, individual salmon associated with spawning streams elsewhere in the South Bay could occasionally wander in to forage within the tidal reaches of Guadalupe Slough and Moffett Channel. This species would not occur in Ponds 1, 2 or A4 due to a lack of connectivity to Guadalupe Slough and Moffett Channel.
Foothill yellow-legged frog (<i>Rana boylei</i>)	CSSC	Partially shaded shallow streams and riffles with a rocky substrate. Occurs in a variety of habitats in coast ranges.	Absent. Suitable habitat for foothill yellow-legged frogs is absent from the Project Area. This species occurs in less urbanized areas of Santa Clara County and it has disappeared from farmed and urbanized areas of the county as well as many of the perennial streams below major reservoirs (H. T. Harvey & Associates 1999b).
Western pond turtle (<i>Actinemys marmorata</i>)	CSSC	Permanent or nearly permanent water in a variety of habitats.	Present. Although breeding populations have been extirpated from most agricultural and urbanized areas in the Santa Clara Valley, individuals of this long-lived species still occur in urban streams and ponds. A small population is known to be present in channels and ditches associated with Moffett Field to the immediate west of the Project Area, including the "Lockheed Channel" and the "Northern Channel". The Northern Channel extends east into the Project Area and occurs between the small ditch immediately north of the landfill and the former Cargill channel that moved water between ponds A4 and A3W for salt production. Therefore, small numbers of western pond turtles may occur in the Project Area, most likely within these channels just west of the Main Plant.
Redhead (<i>Aythya americana</i>)	CSSC	Nests in marshes and at pond margins.	Absent as Breeder. Recorded nesting in the Project region only on a few occasions, in the 1970s and 1980s, at the Palo Alto Flood Control Basin. Not expected to breed in the Project Area.

Name	*Status	Habitat	Potential for Occurrence on the Project Area
Western least bittern (<i>Ixobrychus exilis hesperis</i>)	CSSC (nesting)	Nests and forages in freshwater marshes.	Absent as Breeder. Although the species has been recorded occasionally in the Project region, there are no records from the Project Area, and no breeding records from Santa Clara County. This species likely occurs only as an occasional migrant (e.g., along Moffett Channel), if it occurs in the Project Area at all.
Black skimmer (<i>Rynchops niger</i>)	CSSC (nesting)	Nests on abandoned levees and islands in saline managed ponds and marshes.	Absent as Breeder. Black skimmers have nested in the South Bay since 1994, including areas near the Project Area such as the island in Shoreline Lake, approximately 3 miles west of the Project Area (Bousman 2007a; Cornell Lab of Ornithology 2013; Santa Clara County bird data, unpublished; SBB list-serve 2013). No suitable nesting habitat is present in the Project Area although the species may occasionally forage in the Project Area.
Northern harrier (<i>Circus cyaneus</i>)	CSSC (nesting)	Nests in marshes and moist fields, forages over open areas.	Present. Occasional forager in the Project Area over grasslands associated with the landfill and tidal marshes in Guadalupe Slough and Moffett Channel. One or two pairs of harriers could potentially nest in the broader tidal marsh at the mouth of Moffett Channel and north of Pond 1. Not expected to occur regularly within Ponds 1, 2 or A4 due to a lack of suitable habitat, although this species forages over the edges of these ponds.
Long-eared owl (<i>Asio otus</i>)	CSSC (nesting)	Riparian bottomlands with tall, dense willows and cottonwood stands (also dense live oak and California Bay along upland streams); forages primarily in adjacent open areas.	Absent. Rare resident and occasional winter visitor in Santa Clara County. Suitable nesting and foraging habitat for long-eared owls is not present in the Project Area.
Short-eared owl (<i>Asio flammeus</i>)	CSSC (nesting)	Nests in marshes and moist fields, forages over open areas.	Absent. Possibly a rare forager during the non-breeding season, but not expected to breed on or near the Project Area, as this species has not been recorded nesting in the South Bay since the 1970s.

Name	*Status	Habitat	Potential for Occurrence on the Project Area
Burrowing owl (<i>Athene cunicularia</i>)	CSSC	Nests and roosts in open grasslands and ruderal habitats with suitable burrows, usually those made by California ground squirrels.	Present. This species is known to occur in upland areas in the vicinity, such as Moffett Field (approximately 1 mile to the west) and Shoreline Park (approximately 2.5 miles to the northwest). The species has also been documented along the Sunnyvale East and West Channels. The CNDDDB (2014) includes two records of burrowing owls along the northern-most portion of the Sunnyvale West Channel (immediately west of the Main Plant) and one record adjacent to the northern-most portion to the Sunnyvale East Channel (approximately 0.5 miles to the east of the Main Plant). Also, a burrowing owl was detected along the Sunnyvale East Channel opposite the Twin Creek Sport Complex and a burrow with owl sign was documented along the Sunnyvale West Channel during surveys conducted in the winter of 2007-2008 (EDAW 2008). Thus, ruderal habitats in the Project Area, particularly those associated with the former landfill, provide suitable breeding, roosting, and foraging habitat for one or two pairs, but the species is not expected to occur elsewhere in the Project Area.
Vaux's swift (<i>Chaetura vauxi</i>)	CSSC (nesting)	Nests in snags in coastal coniferous forests or, occasionally, in chimneys; forages aerially.	Absent as Breeder. In the South Bay, breeds primarily in snags within Santa Cruz Mountain forests and in residential chimneys in the foothills of the Santa Cruz Mountains. Suitable breeding habitat is not present in the Project Area; However, swifts occur within the Project Area as an occasional forager during migration.
Olive-sided flycatcher (<i>Contopus cooperi</i>)	CSSC (nesting)	Breeds in mature forests with open canopies, along forest edges in more densely vegetated areas, in recently burned forest habitats, and in selectively harvested landscapes.	Absent as Breeder. Common summer resident in higher-elevation areas of western Santa Clara County (Bousman 2007b). This species breeds widely in the Santa Cruz Mountains, and more sparingly in the Diablo Range, but it does not breed on the Santa Clara Valley floor. The species may occur in the Project Area only as an occasional forager during migration.
Loggerhead shrike (<i>Lanius ludovicianus</i>)	CSSC (nesting)	Nests in tall shrubs and dense trees; forages in grasslands, marshes, and ruderal habitats.	May be Present. Breeds in a number of locations in the Project region where open grassland, ruderal, or agricultural habitat with scattered brush, chaparral, or trees provides perches and nesting sites (Bousman 2007c), though populations have declined in recent years as suitable habitat has been increasingly developed. Ruderal habitats in the Project Area, particularly those on the landfill areas, provide suitable breeding and foraging habitat for one or two pairs.

Name	*Status	Habitat	Potential for Occurrence on the Project Area
Yellow warbler (<i>Setophaga petechia</i>)	CSSC (nesting)	Nests in riparian woodlands.	Absent as Breeder. Uncommon breeding bird in Santa Clara County, although it is a common fall migrant (Bousman 2007d). For nesting, prefers riparian corridors with adjacent open space (rather than in heavily developed areas) and an overstory of mature cottonwoods and sycamores, a midstory of box elders and willows, and a substantial shrub understory (Bousman 2007d). There is very low potential for yellow warblers to breed in trees along the periphery of the Main Plant but they are rare breeders close to the edge of the Bay in Santa Clara County. This species occurs throughout the South Bay as a migrant, and is particularly numerous in fall.
San Francisco common yellowthroat (<i>Geothlypis trichas sinuosa</i>)	CSSC	Nests in herbaceous vegetation, usually in wetlands or moist floodplains.	Present. Common yellowthroats nesting in the Project Area are of the special-status subspecies <i>sinuosa</i> (San Francisco Bay Bird Observatory [SFBBO] 2012). The greatest proportion of nesting records in the South Bay occur within brackish and freshwater marshes near the edge of the Bay, and in early-successional riparian habitat in broader floodplains (Bousman 2007e). Nests are typically located in extensive stands of bulrushes in brackish marshes and dense cattail beds in freshwater marshes, but the species also nests in forbs in riparian habitats. Within the Project Area, this species is abundant and nests in the brackish and freshwater marshes of Guadalupe Slough and Moffett Channel. They may also occur in the scattered cattail patches on the periphery of the interior of Ponds 1 and 2, and adjacent channels in the Project Area.
Yellow-breasted chat (<i>Icteria virens</i>)	CSSC (nesting)	Nests in dense stands of willow and other riparian habitat.	Absent as Breeder. This species is a rare breeder, and only slightly more regular transient, in willow-dominated riparian habitats in the South Bay. There are no records of this species in the Project Area and this species does not nest this close to the Bay (Bousman 2007f). May occur in the Project Area only as a rare nonbreeding transient.
Alameda song sparrow (<i>Melospiza melodia pusillula</i>)	CSSC	Nests in salt marsh, primarily in marsh gumplant and cordgrass along channels.	Present. The <i>pusillula</i> subspecies of song sparrow is endemic to Central and South Bay. This subspecies forages and breeds in salt and brackish marshes associated with Guadalupe Slough and Moffett Channel. Song sparrows breeding in freshwater habitats in the Project Area may be the widespread, freshwater subspecies <i>gouldii</i> or intergrades between the two races.

Name	*Status	Habitat	Potential for Occurrence on the Project Area
Grasshopper sparrow (<i>Ammodramus savannarum</i>)	CSSC (nesting)	Nests and forages in grasslands, meadows, fallow fields, and pastures.	Absent. Known to occur in the San Francisco Bay region primarily in grasslands and less frequently disturbed agricultural habitats, mostly in the foothills. Suitably extensive grasslands are not present in the Project Area.
Bryant's savannah sparrow (<i>Passerculus sandwichensis alaudinus</i>)	CSSC	Nests in pickleweed dominant salt marsh and adjacent ruderal habitat.	Present. In the South Bay, nests primarily in short pickleweed-dominated portions of diked/muted tidal salt marsh habitat and in adjacent ruderal habitats (Rottenborn 2007a). This species is a rare breeder that may occur in the scattered pickleweed patches in the more expansive marshes at the confluence of Moffett Channel and Guadalupe Slough, on the north side of Pond A4, and possibly in the short, ruderal habitat along the interior of Pond A4. During the nonbreeding season, <i>alaudinus</i> and other savannah sparrow subspecies dispersants might occur in the Project Area, particularly in the grasslands associated with the landfill.
Tricolored blackbird (<i>Agelaius tricolor</i>)	CSSC (nesting colony)	Nests near fresh water in dense emergent vegetation.	Absent as Breeder. In Santa Clara County, this species has bred in only a few scattered locations, and is absent, or occurs only as a nonbreeder, in most of the county (Rottenborn 2007b). It typically nests in extensive stands of tall emergent herbaceous vegetation in non-tidal freshwater marshes and ponds. In the Project Area, such habitat is present only in the southern portion of Moffett Channel and a few scattered areas in the interior of Ponds 1 and 2, although this species (whose colonies are loud and conspicuous) has never been recorded breeding there. Tricolored blackbirds occur around the Main Plant and in marshes on the Project site regularly as nonbreeding foragers (Santa Clara County Bird Data, Unpublished).
Salt marsh wandering shrew (<i>Sorex vagrans halicoetes</i>)	CSSC	Medium to high marsh 6 to 8 feet above sea level with abundant driftwood and common pickleweed.	May be Present. Suitable pickleweed-dominated salt marsh habitat providing breeding or foraging habitat for this species is largely absent from the Project Area. There are small patches of pickleweed habitat north of Pond A4 and there is salt marsh habitat near the mouth of Guadalupe Slough, but these marshes generally lack suitable high marsh habitat for this species. However, this species may occur in the same areas where the salt marsh harvest mouse may occur in the Project Area.

Name	*Status	Habitat	Potential for Occurrence on the Project Area
Pallid bat (<i>Antrozous pallidus</i>)	CSSC	Forages over many habitats; roosts in caves, rock outcrops, buildings, and hollow trees.	Absent as Breeder. Historically, pallid bats were likely present in a number of locations throughout the South Bay, but their populations have declined in recent decades. Pallid bats have been extirpated from highly urbanized areas close to the Bay in the region, and thus this species is not expected to roost in the Project vicinity. There is a low probability that individuals could forage in the Project Area, although due to the urbanized nature of the surrounding areas, it is unlikely that pallid bats are present in the vicinity of the Project Area.
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	CSSC, SC	Roosts in caves and mine tunnels, and occasionally in deep crevices in trees such as redwoods or in abandoned buildings, in a variety of habitats.	Absent. No known extant populations occur on the Santa Clara Valley floor, and no breeding sites are known from the Project Area. Suitable breeding habitat is not present on the Project Area.
Western red bat (<i>Lasiurus blossevillii</i>)	CSSC	Roosts in foliage in forest or woodlands, especially in or near riparian habitat.	Absent as Breeder. May occur in low numbers as a migrant, but does not breed in the Project Area. They are expected to roost primarily in wooded riparian areas and are unlikely to roost in the Project Area due to a lack of suitable roosting habitat.
San Francisco dusky-footed woodrat (<i>Neotoma fuscipes annectens</i>)	CSSC	Nests in a variety of habitats including riparian areas, oak woodlands, and scrub.	Absent. No suitable habitat occurs on the Project site. With the exception of records along Coyote Creek and along the edges of the Santa Clara Valley, San Francisco dusky-footed woodrats are not known to occur in the more urbanized portions of Santa Clara County (H. T. Harvey & Associates 2010).
American badger (<i>Taxidea taxus</i>)	CSSC	Burrows in grasslands and occasionally in infrequently disked agricultural areas.	Absent. Suitably extensive grasslands or agricultural habitats are not present on the Project Area.

Name	*Status	Habitat	Potential for Occurrence on the Project Area
State Fully Protected Species			
California brown pelican (<i>Pelecanus occidentalis californicus</i>)	SP (nesting colony and communal roosts)	Undisturbed islands near estuarine, marine, subtidal, and marine pelagic waters.	Absent as Breeder. Brown pelicans are uncommon nonbreeding visitors in Santa Clara County. The species has been observed occasionally foraging in Ponds 1, 2, and A4, as well as other former salt ponds and open water habitats in the South Bay (Santa Clara County Bird Data, Unpublished; Cornell Lab of Ornithology 2013). They are expected to occur regularly but in low numbers in these ponds.
American peregrine falcon (<i>Falco peregrinus anatum</i>)	SP	Forages in many habitats; nests on cliffs and tall bridges and buildings.	Absent as Breeder. Peregrine falcons are known to nest on electrical transmission over managed ponds north of Moffett Field (using the old nests of other species), but they are not currently nesting in the Project Area. Peregrine falcons forage for birds over much of the Project Area.
Golden eagle (<i>Aquila chrysaetos</i>)	SP	Breeds on cliffs or in large trees (rarely on electrical towers), forages in open areas.	Absent as Breeder. Suitable breeding habitat is not present in the Project Area, and this species forages in open grassland habitats in the Project Area, including the landfill areas, very infrequently.
White-tailed kite (<i>Elanus leucurus</i>)	SP	Nests in tall shrubs and trees, forages in grasslands, marshes, and ruderal habitats.	May be Present. In the vicinity of the Project Area, the species is known to nest along the northern edge of Santa Clara County throughout the open areas edging the San Francisco Bay (Bousman 2007g). There are a number of records from Moffett Field to the west, Sunnyvale Baylands Park to the east, and from the landfill area (Cornell Santa Clara County Bird Data, unpublished; Santa Clara County Bird Data, unpublished). Open grassland areas at the landfill and open marsh areas within Guadalupe Slough and Moffett Channel, particularly the more extensive marsh north of Pond A4, provide suitable foraging habitat. Trees and shrubs along the edge of the landfill provide suitable nesting habitat for up to two pairs.

Name	*Status	Habitat	Potential for Occurrence on the Project Area
Ringtail (<i>Bassariscus astutus</i>)	SP	Cavities in rock outcrops and talus slopes, as well as hollows in trees, logs, and snags that occur in riparian habitats and dense woodlands, usually in close proximity to water.	Absent. Species is present in less urbanized settings in the South Bay; however, there are no records from the Project Area and suitable riparian and dense woodland habitat is not present.
Other Special-status Species			
Pacific harbor seal (<i>Phoca vitulina richardsi</i>)	MMPA	Throughout the northern Atlantic and Pacific Oceans along coastal waters, river mouths, and bays	May be Present. Permanent resident of San Francisco Bay. Primary haul-out sites in San Francisco Bay include Mowry Slough (243 seals in 1999), 5 miles northwest of the Project Area. Suitable haul-out sites for harbor seals are present in the Project region in the tidal reaches of sloughs in the South Bay area. No pupping sites or major haul-out sites are present within the Project Area or its vicinity, though the species is an occasional visitor to Moffett Channel and Guadalupe Slough.

Key to Abbreviations:

Status: Federally Endangered (FE); Federally Threatened (FT); State Endangered (SE); State Threatened (ST); State Candidate for Listing (SC); State Fully Protected (SP); California Species of Special Concern (CSSC); Species Protected by the Marine Mammal Protection Act (MMPA)