4. CUMULATIVE IMPACTS

4.1 Introduction

National Environmental Policy Act (NEPA) regulations (40 Code of Federal Regulations [CFR] 1508.7) define a cumulative impact as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor collectively significant actions taking place over a period of time." The California Environmental Quality Act (CEQA) provides a similar definition of cumulative impacts. For the purposes of this Final Environmental Impact Statement/Report (Final EIS/R), cumulative effects would be significant if the incremental effect of Phase 2 of the South Bay Salt Pond (SBSP) Restoration Project, though individually limited, is cumulatively considerable when viewed in connection with the effects of past, current, and probable future projects (CEQA Guidelines 15064[h][1]).

This Final EIS/R provides a project-level evaluation and analysis of the SBSP Restoration Project, Phase 2. The 2007 South Bay Salt Pond Restoration Project EIS/R (2007 EIS/R), which was both a Programmatic and a Phase 1-level document, analyzed the larger, program-wide details of the SBSP Restoration Project. Where feasible and appropriate, this Final EIS/R uses information and analysis from the 2007 EIS/R for analysis of the project-level impacts of the SBSP Restoration Project, Phase 2.

The 2007 EIS/R evaluated a program-level No Action Alternative[1] and two program-level Action Alternatives for restoring or enhancing the former salt ponds in the SBSP Restoration Project area. The two Action Alternatives established a set of "bookends" for the long-term project goals. Under these bookends, Programmatic Alternative B would work toward a gradual restoration of 50 percent of the total project acreage being restored to tidal marsh. The other 50 percent would be maintained or enhanced as managed ponds. Programmatic Alternative C would continue past the 50 percent tidal marsh goal and end in 90 percent of the total project area being restored to tidal marsh, leaving only 10 percent as enhanced managed ponds. Programmatic Alternative A is the alternative under which no actions would have been taken (the No Action Alternative).

The 2007 EIS/R evaluated the environmental impacts of these programmatic alternatives and found that Programmatic Alternative A would not meet the project purpose and need of restoring tidal marshes in South San Francisco Bay. The 2007 EIS/R selected Programmatic Alternative C, because the SBSP Restoration Project would need many years and multiple project-level phases to even approach the 50 percent tidal marsh goal of Programmatic Alternative B. As that level of tidal marsh restoration was being approached, the Project Management Team (PMT) and other stakeholders would use the findings of the Adaptive Management Plan (AMP) and the directed scientific research questions to determine whether to stop at the 50 percent tidal marsh goal or continue progress toward the 90 percent goal or some other percentage between those bookends.

The Phase 2 project alternatives evaluated in this Final EIS/R would advance the program-level goals of both Programmatic Alternatives B and C. Completing Phase 2 would move the larger project closer to the 50 percent tidal marsh/50 percent managed ponds goal of Alternative B, but it would not reach it. Thus,

[1] "No Action Alternative" is the NEPA term. It corresponds to the CEQA term "No Project Alternative." This Final EIS/R uses No Action throughout.

completing Phase 2 would still allow the project to cease restoration activities at some point between the bookends of Programmatic Alternatives B and C.

4.2 Cumulative Setting

The 2007 EIS/R analysis of cumulative impacts was prepared from a list of past, current, and probable future projects that could result in similar impacts and benefits as those of the SBSP Restoration Project. Regional plans were also reviewed to characterize development trends and growth projections in the South Bay over the long-term planning period, which the 2007 EIS/R set at 50 years. These projects are considered in the cumulative impact discussion, together with the SBSP Restoration Project, to determine if the combined effects of all of the projects would be cumulatively considerable and thus would result in significant cumulative impacts. This Final EIS/R expands on that cumulative setting by reviewing additional general and regional plans and considering other reasonably foreseeable projects envisioned since the 2007 EIS/R was adopted.

4.2.1 General and Regional Plans

Plan Bay Area

Plan Bay Area is a long-range integrated transportation and land-use/housing strategy through 2040 for the San Francisco Bay Area. On July 18, 2013, the plan was jointly approved by the Association of Bay Area Governments (ABAG) Executive Board and the Metropolitan Transportation Commission (MTC). The plan includes the region's Sustainable Communities Strategy and the 2040 Regional Transportation Plan and represents the next iteration of a planning process that has been in place for decades.

Plan Bay Area marks the nine-county region's first long-range plan to meet the requirements of California's landmark 2008 Senate Bill 375, which calls on each of the state's 18 metropolitan areas to develop a Sustainable Communities Strategy to accommodate future population growth and reduce greenhouse gas (GHG) emissions from cars and light trucks. Working in collaboration with cities and counties, the Plan Bay Area advances initiatives to expand housing and transportation choices, create healthier communities, and build a stronger regional economy.

San Francisco Bay Plan—San Francisco Bay Conservation and Development Commission

The McAteer-Petris Act (Cal. Govt. Code Sections 66600–66694) is the California state law that established the San Francisco Bay Conservation and Development Commission (BCDC) as a state agency; prescribes BCDC's powers, responsibilities, and structure; and describes the broad policies BCDC must use to determine whether permits can be issued for activities in and along the shoreline of San Francisco Bay. BCDC's jurisdiction, regulations, and plans are described in Section 3.5, Biological Resources; Section 3.6, Recreation Resources; and Section 3.16, Visual Resources.

Alameda County General Plan

The Alviso-Island Ponds are within unincorporated Alameda County and are designated as Open Space in the Alameda County General Plan (County of Alameda 1973). The Alameda County General Plan, adopted in 1973, does not include a Land Use Element; instead, it incorporates land use elements from each city's general plan and each unincorporated area's specific plan. However, policies applicable to the salt ponds are discussed in the May 4, 1995, Amended Open Space Element. These policies are "Preserve

Natural Ecological Habitats in Shoreline Areas" and "Provide for Orderly Transition of Phased Out Salt Extraction Areas to Uses Compatible with the Open Space Plan."

San Mateo County General Plan

The Ravenswood pond complex is partially within unincorporated San Mateo County and is designated as Open Space in the San Mateo County General Plan. The San Mateo County General Plan was adopted in November 1986. The goals in the plan that are relevant to the salt ponds are discussed in the "Vegetative, Water, Fish and Wildlife Resources Policies" section of the Land Use Element (County of San Mateo 1986) and are described in Section 3.8.2, Regulatory Setting.

Santa Clara County General Plan

The Alviso-Mountain View and Alviso-A8 pond clusters are partially in unincorporated Santa Clara County. The Santa Clara County General Plan 1995–2010 was adopted on December 20, 1994. The vision of this general plan is expressed through a series of goals organized under four basic and equally important themes: Managed, Balanced Growth; Livable Communities; Responsible Resource Conservation; and Social and Economic Well-Being (County of Santa Clara 1994). These goals provide the overall direction for the strategies, policies, and implementing actions of the plan.

Santa Clara Valley Habitat Conservation Plan

The Alviso-Mountain View and Alviso-A8 pond clusters are adjacent to the area covered under the Santa Clara Valley Habitat Conservation Plan (Valley Habitat Plan) (ICF International 2012). This plan provides a framework for promoting the protection and recovery of natural resources, including endangered species, while streamlining the permitting process for planned development, infrastructure, and maintenance activities. In 2013, the Valley Habitat Plan was adopted by all local participating agencies and permits were issued by the U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife. The Valley Habitat Plan is both a federal Habitat Conservation Plan and a State Natural Community Conservation Plan. The Valley Habitat Plan helps private and public entities plan and implement projects and activities in ways that avoid or minimize and mitigate for impacts on natural resources, including specific threatened and endangered species, identifies regional lands to be preserved or restored to benefit those species, and describes how habitat reserves will be managed and monitored to ensure that they benefit those species. In providing a long-term, coordinated program for habitat restoration and conservation, the Valley Habitat Plan aims to enhance the viability and promote recovery of threatened and endangered species throughout the Santa Clara Valley.

City of Fremont General Plan

The Alviso-Island Ponds are partially within the City of Fremont. The city adopted its General Plan 2030 in December 2011, establishing a new 25-year vision for the community based on technical and legal requirements, extensive discussions with the community, and policymaker input (City of Fremont 2011). That document makes the following statement: "Fremont will serve as a national model of how an auto-oriented suburb can evolve into a sustainable, strategically urban, modern city." The general plan aims for a flourishing downtown; more jobs to match an increasing resident workforce; a variety of housing types; and thriving, pedestrian-oriented commercial districts. The plan addresses the overarching vision of Fremont as a "green" city through goals and policies to meet climate change objectives, reduce solid waste, and enhance the pedestrian and cycling network.

City of Menlo Park General Plan

A portion of the area included in Phase 2 alternatives at the Ravenswood Ponds is within the City of Menlo Park, and the city's Bedwell Bayfront Park would be used for access, construction, and maintenance of Phase 2 projects. The City of Menlo Park General Plan was adopted in 1994, and the Open Space/Conservation, Noise, and Safety Elements were amended in 2013 (City of Menlo Park [1994] 2013). The general plan's purpose is to maintain Menlo Park's special character as a residential community that includes a broad range of residential, business, and employment opportunities and to provide for the change necessary to maintain a vital community.

City of Mountain View 2030 General Plan

Portions of the area included in the Phase 2 alternatives at the Alviso-Mountain View Ponds are within the City of Mountain View, and the city's Shoreline Park would be used for access, construction, and maintenance of Phase 2 projects. The City of Mountain View 2030 General Plan acknowledges that the SBSP Restoration Project "will restore vital habitat around the Bay" (City of Mountain View 2012). No mention of the salt ponds is made within the context of land use, though Goal POS 2.4 encourages access to the Bay and other natural areas, and Goal POS 3 provides for protection of open space areas with natural characteristics (City of Mountain View 2012). Some of the city's natural resources, namely Shoreline Park and two restored brackish marshes, abut the Mountain View Ponds. Policy INC 16.2 encourages management of Shoreline Park to balance the needs of open space, habitat, commercial, and other uses.

City of Redwood City General Plan

The Ravenswood Ponds are not contiguous with Redwood City, but the City of Redwood City's Bayfront Canal and Atherton Channel Project is being considered for inclusion in Alternative Ravenswood D. The City of Redwood City General Plan was adopted in 2010. The city's approach to natural resource conservation includes "preserving, protecting, conserving, re-using, and efficiently using Redwood City's natural resources" (City of Redwood City 2010). Goals relevant to the salt ponds and the Don Edwards San Francisco Bay National Wildlife Refuge (Refuge) are discussed in the Natural Resources Element, which reads in part as follows: Goal NR-5: Protect, restore, and maintain creeks, sloughs, and streams to ensure adequate water flow, prevent erosion, provide for viable riparian plant and wildlife habitat and, where appropriate, allow for recreation opportunities; and Goal NR-6: Preserve and enhance the baylands, natural wetlands, and ecosystem to assist with improved air quality and carbon dioxide sequestration.

The Envision San Jose 2040 General Plan

The Alviso-A8 pond cluster is adjacent to the city of San Jose. The Envision San Jose 2040 General Plan sets forth a vision and a comprehensive road map to guide the city's continued growth through the year 2040 (City of San Jose 2007). The plan includes land use policies to shape the transformation of strategically identified and historically underutilized growth areas into higher-density, mixed-use urban districts or "urban villages" that can accommodate employment and housing growth and reduce the environmental impacts of that growth by promoting transit use and walkability. This land use strategy, in combination with progressive economic and environmental policies, will guide the city toward fulfillment of its future vision.

Alviso Master Plan

The former salt-production ponds are specifically referred to in the Alviso Master Plan, which designates uses and policies pertinent to the section of incorporated San Jose immediately adjacent to the Alviso pond complex. The community of Alviso was incorporated into San Jose in 1968. The Alviso Master Plan—adopted in 1998 and addressed in the San Jose 2020 General Plan by way of the Alviso Planned Community (APC)—establishes a long-term development plan for the sensitive Alviso planning area by guiding appropriate new development, community facilities, infrastructure, and beautification (City of San Jose 1998). The majority of land uses allowed by the APC adjacent to the Alviso pond complex are Public Parks and Open Space, and Private Open Space.

4.2.2 Cumulative Projects

Table 4-1 lists recently completed past projects, projects currently under construction, and probable future projects that would overlap with project construction and/or operation and that could impact the same resources. This table provides a brief description of the projects included in the cumulative impact analysis, their locations, their estimated construction schedules, related major roadways and waterways, and the potential cumulative impacts that could occur in combination with those of the proposed project. For future projects, the analysis was based on estimated construction schedules. Where construction schedules were unavailable, it was conservatively assumed that construction periods would overlap with the project, which would be constructed during the dry season over 3 years from 2016 to 2019.

To gather relevant projects, projects and plans for the cities of Fremont, San Jose, Sunnyvale, Mountain View, Palo Alto, East Palo Alto, Redwood City and Menlo Park and county plans for Alameda, Santa Clara, and San Mateo were reviewed. Only those projects or plans far enough along in the development stage to assess their potential contribution to cumulative impacts were included in this analysis. The Santa Clara County Master Plan Trails Element (1977) was not included because it would not add to the cumulative impact analysis. However, future and planned trails from that element are incorporated into the analysis in Section 3.6, Recreation Resources.

4.3 Cumulative Impacts and Mitigation Measures

This section evaluates the potential environmental impacts of the proposed project when considered together with other projects. The analysis addresses only the types of impacts that could occur as a result of project construction and operation, based on the significance criteria provided for each resource discussion in Chapter 3, Environmental Setting, Impacts, and Mitigation Measures.

The project's potential to adversely contribute to cumulative air quality, greenhouse gas emissions, traffic, noise, and recreation resources impacts would occur primarily during construction. Operational cumulative impacts could occur to biological resources; hydrology, flood management, and infrastructure; water quality and sediment; and public health and vector control.

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Table 4-1 Projects Considered in Cumulative Impacts Analysis for the South Bay Salt Pond Restoration Project

PROJECT	PROJECT DESCRIPTION	LOCATION, NEAREST PROJECT POND	PROJECT PHASE	RELATED MAJOR ACCESS ROADS	RELATED WATERWAYS	POTENTIAL CUMULATIVE IMPACT ISSUES	CUMULATIVE IMPACT CONTRIBUTION
Ongoing Mosquito Abatement Projects							
Santa Clara County Mosquito Control	Aerial treatment to control for the breeding of salt marsh mosquitoes in the Alviso marshes and other nearby areas.	Santa Clara County, Mountain View Ponds and A8 Ponds	Ongoing	Interstate 880 (I-880), State Route (SR) 237	Guadalupe River, Alviso and Artesian Sloughs	Public health and vector management	No considerable contribution; project is considered in baseline analysis
Alameda County Mosquito Control	The county's mosquito control agency treats tidal pools and salt marshes with a larvacide to reduce mosquito populations.	Alameda County, Island Ponds	Ongoing	I-880	Coyote Creek, Alviso Slough	Public health and vector management	No considerable contribution; project is considered in baseline analysis
San Mateo County Mosquito Control	Technicians inspect marshes throughout the county on a weekly basis. When mosquito larvae are found, they are treated with biorational materials.	San Mateo County, Ravenswood Ponds	Ongoing	U.S. Highway 101 (U.S. 101)	Ravenswood Slough	Public health and vector management	No considerable contribution; project is considered in baseline analysis
Restoration Projects							
San Francisco Estuary Invasive Spartina Project	The Invasive Spartina Project has been implementing a coordinated, region-wide program comprising a number of on-the-ground treatment techniques to eradicate non-native invasive cordgrasses (Spartina alterniflora and its hybrids and S. densiflora, S. patens, and S. anglica). The project is focused within the nearly 40,000 acres of tidal marsh and 29,000 acres of tidal flats that constitute the shoreline areas of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma, and Sacramento Counties.	Bay Area, all ponds	Ongoing	Not applicable (NA)	San Francisco Bay	Hydrology, flood management, and infrastructure; water quality and sediment; biological resources; cultural resources	No considerable contribution; project is considered in baseline analysis
Shoreline Study	The study assesses the need for flood protection in the South Bay, extends along South San Francisco Bay and includes the three pond complexes within the SBSP Restoration Project area as well as shoreline and floodplain areas in Alameda, San Mateo, and Santa Clara Counties.	South Bay, all Alviso ponds	Ongoing	I-880, SR 237, U.S. 101	Coyote Creek; Mud, Alviso, and Guadalupe Sloughs	Hydrology, flood management, and infrastructure; water quality and sediment; geology, soils, and seismicity; biological resources; recreation resources; cultural resources	No considerable contribution; project is considered in baseline analysis
Stanford Steelhead Habitat Enhancement Project	Stanford University is proposing to modify its existing water diversion and storage facilities at three locations: Felt Lake Reservoir, the diversion facility on Los Trancos Creek, and the diversion facility on San Francisquito Creek.	City of Palo Alto, Mountain View Ponds	Ongoing	NA	Felt Lake Reservoir, Los Trancos Creek, San Francisquito Creek	Hydrology, flood management, and infrastructure; water quality and sediment; biological resource; cultural resources	No considerable contribution; project is too far from project area
South Bay Salt Pond Restoration Project – Phase 2 at Eden Landing Ecological Reserve; Future project phases at all three pond complexes	Future SBSP Restoration Project phases at Eden Landing Ecological Reserve and other locations of this long-term, multi-phase project (the subject of this EIS/R) include a mix of tidal marsh and enhanced managed pond restoration activities, increased public access and recreation, and flood protection.	Bay Area, all ponds	Ongoing/ Planned	I-880, SR 237, SR 92, SR 84, U.S. 101	South SF Bay; Alameda County Federal Flood Control Channel; Old Alameda Creek; Coyote Creek; Stevens Creek; Mt. Eden Creek; Mud, Alviso, and Guadalupe Sloughs	Biological resources; hydrology; flood management; recreation resources; water quality	No considerable contribution; project will be implemented using the SBSP Restoration Project's Adaptive Management Plan (as described in the 2007 EIS/R and subsequent documents) to avoid, minimize, and mitigate potential cumulative impacts and contributions to them; project is thus considered in baseline analysis.

Table 4-1 Projects Considered in Cumulative Impacts Analysis for the South Bay Salt Pond Restoration Project

PROJECT	PROJECT DESCRIPTION	LOCATION, NEAREST PROJECT POND	PROJECT PHASE	RELATED MAJOR ACCESS ROADS	RELATED WATERWAYS	POTENTIAL CUMULATIVE IMPACT ISSUES	CUMULATIVE IMPACT CONTRIBUTION
Redwood City Inner Harbor Studies and Plans	The U.S. Army Corps of Engineers (USACE) is studying deepening the Redwood City Harbor.	City of Redwood City, Ravenswood Ponds	Ongoing	U.S. 101	None	Hydrology, flood management, and infrastructure; water quality and sediment; ; biological resources; cultural resources; air quality	Project could contribute to cumulative impacts
San Jose/Santa Clara Water Pollution Control Plant (WPCP) Master Plan	The master plan covers a variety of long-range improvements to the WPCP's facilities and operations over the next 30 years (through 2040). The master plan also covers the phased development of the surrounding lands, including the creation and restoration of habitats and natural corridors to support wildlife, parks, and amenities to foster a greater connection between the community and the coastal environment.	City of San Jose, A8 Ponds	Ongoing	SR 237	San Francisco Bay, Coyote Creek, Guadalupe River	Hydrology, flood management, and infrastructure; water quality and sediment; biological resources; recreation resources	Project could contribute to cumulative impacts
Final Damage Assessment and Restoration Plan for the November 7, 2007 Cosco Busan Oil Spill	Under the Oil Pollution Act of 1990, the Natural Resource Trustees prepared the Damage Assessment and Restoration Plan/Environmental Assessment (DARP/EA) to assess injuries and evaluate restoration alternatives for natural resources injured by the Cosco Busan Oil Spill. The DARP/EA describes multiple restoration actions to benefit natural resources and compensate for loss of recreation services, including wildlife habitat projects, eelgrass restoration, sandy beach and salt marsh/mudflat habitat restoration, and recreation/human use projects.	San Francisco Bay Area, all ponds	Ongoing	NA	San Francisco Bay Area, all ponds	Hydrology, flood management, and infrastructure; water quality and sediment; biological resources; recreation resources	Project could contribute to cumulative impacts
Bonde Weir Fish Passage and Channel Stabilization Project	The project includes removing an 11-foot-long by 45-foot-wide concrete sill known as the Bonde weir, re-grading and excavating the creek bed, and installing a roughened channel in its place. The Bonde Weir spans the entire creek width and is a barrier for fish passage under low and high flows. The roughened channel will be engineered to remain relatively stable using a framework of large boulders with a matrix of heterogeneous mix of cobbles, gravel, sand, and silt.	City of Palo Alto, Ravenswood Ponds	Completed	El Camino Real (SR 82)	San Francisquito Creek	Hydrology, flood management, and infrastructure; geology, soils, and seismicity; biological resources; cultural resources	No considerable contribution; project is completed
Bair Island Restoration Project	The project involves import and placement of over 1 million cubic yards of fill to raise the elevations of Outer, Middle, and Inner Bair Islands to create a more natural tidal wetland, observation platforms, a rebuilt trail, and other amenities. Project was completed and new public access features were opened to public in 2015.	City of Redwood City, Ravenswood Ponds	In progress	U.S. 101	Redwood Creek, Corkscrew Slough, Smith Slough, Steinberger Slough	Biological resources, traffic, air quality, greenhouse gas emissions	No considerable contribution; restoration project nearly complete
Kaiser Fish Screen Project	The project involves construction of a new diversion pipeline and cylindrical fish screen to abandon the existing unscreened pipeline. The replacement facility will be constructed about 530 feet downstream of the existing diversion pipe and 2,400 feet upstream of Alameda County Water District's (ACWD's) Rubber Dam 1, where the Union Pacific Railroad (UPRR) and San Francisco Bay Area Rapid Transit District (BART) bridges cross over Alameda Creek.	City of Fremont, Island Ponds	Completed	I-880	Alameda Creek	Hydrology, flood management, and infrastructure; water quality and sediment; biological resources; cultural resources	No considerable contribution; project is completed
Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP)	A multi-species HCP/NCCP for most of Santa Clara County, encompassing covered activities that include urban and rural development, in-stream and rural operation and maintenance (O&M) projects, and implementation of a conservation strategy that envisions a reserve system of up to 46,920 acres. The HCP/NCCP provides take authorization for 18 listed and non-listed species (covered species). The former salt ponds and intertidal areas are explicitly excluded from that HCP/NCCP.	Santa Clara County, Island Ponds and A8 Ponds	Ongoing (i.e. approved and being implemented)	NA	All waterways in county	Hydrology, flood management, and infrastructure; water quality and sediment; biological resources; cultural resources	Project could contribute to cumulative impacts

Table 4-1 Projects Considered in Cumulative Impacts Analysis for the South Bay Salt Pond Restoration Project

PROJECT	PROJECT DESCRIPTION	LOCATION, NEAREST PROJECT POND	PROJECT PHASE	RELATED MAJOR ACCESS ROADS	RELATED WATERWAYS	POTENTIAL CUMULATIVE IMPACT ISSUES	CUMULATIVE IMPACT CONTRIBUTION
Flood Protection Projects							
Lower Guadalupe River Flood Protection Project	This flood protection project was constructed to prepare the channels to handle stormwater runoff in the event of a 100-year flood, protect endangered species, preserve fish and migratory bird habitat, and allow for open-space recreation. The Santa Clara Valley Water District (SCVWD) installed flood protection improvements along 6.5 miles of the Guadalupe River from the I-880 bridge north to the UPRR bridge in Alviso.	City of San Jose, A8 Ponds	Completed	I-880	Guadalupe River	Hydrology, flood management, and infrastructure; water quality and sediment; geology, soils, and seismicity; biological resources; recreation resources; cultural resources; traffic	No considerable contribution; project is completed
Sailing Lake Access Road	Design, permit, and construct drainage and slope stability improvements to the access road to limit seepage and improve the levee's structural capacity.	City of Mountain View, Mountain View Ponds	Planning	U.S. 101	Sailing lake, Mountain View Slough	Hydrology, flood management, and infrastructure; water quality and sediment; geology, soils, and seismicity	Project could contribute to cumulative impacts
Strategy to Advance Flood protection, Ecosystems and Recreation along the Bay (SAFER Bay)	The SAFER Bay project will provide tidal flood protection to communities in East Palo Alto and Menlo Park as well as private businesses, public lands, and facilities of the State of California that are currently in the Federal Emergency Management Area (FEMA) 100-year floodplain, with the objective of integrating measures to protect these communities against tidal surges and the impacts of projected sea-level rise.	Cities of East Palo Alto and Menlo Park, Mountain View Ponds	Planning	U.S. 101	San Francisco Bay, San Francisquito Creek	Water quality and sediment; geology, soils, and seismicity; biological resources; recreation resources; cultural resources; air quality; visual resources; greenhouse gas emissions	No considerable contribution; project is considered in baseline analysis
San Francisquito Creek Flood Reduction, Ecosystem Restoration, and Recreation Project San Francisco Bay to Highway 101	The project is constructing flood reduction facilities along an approximately 1.5-mile stretch of San Francisquito Creek from East Bayshore Road to San Francisco Bay.	Cities of East Palo Alto, Palo Alto, and Menlo Park; Mountain View Ponds	Ongoing	U.S. 101	San Francisco Bay, San Francisquito Creek	Hydrology, flood management, and infrastructure; biological resources; recreation resources	Project could contribute to cumulative impacts
Sunnyvale East and West Channel Flood Protection Project	The Sunnyvale East and West Channel Flood Protection Project would provide flood protection for residents, businesses, and infrastructure along a 9.5-mile length of the Sunnyvale East and West Channels in the cities of Sunnyvale and Cupertino. The project consists of developing new flood protection infrastructure necessary to provide 100-year riverine flood protection, developing water quality improvements where possible, and making recommendations for recreation improvements.	City of Sunnyvale, A8 Ponds	Ongoing	SR 237	Guadalupe Slough	Water quality and sediment; geology, soils, and seismicity; biological resources; recreation resources; cultural resources; air quality; visual resources; greenhouse gas emissions	Project could contribute to cumulative impacts
Santa Clara Valley Water District Stream Maintenance Program	The Santa Clara Valley Water District's Stream Maintenance Program is an ongoing program to address routine maintenance activities in Santa Clara County streams, creeks, and flood control channels. Routine maintenance activities include sediment removal, vegetation management, bank stabilization, minor maintenance, and management of animal conflicts.	Santa Clara County, A8 Ponds	Ongoing	SR 237	Several streams and sloughs in Santa Clara County, including the Guadalupe River, San Tomas Aquino Creek, and others	Water quality and sediment; geology, soils, and seismicity; biological resources; recreation resources; cultural resources; air quality; visual resources; greenhouse gas emissions	Project could contribute to cumulative impacts
Charleston Slough and Palo Alto Flood Basin Levee Improvement	Design, permit, and construct improvements to a 6,600-foot section of levee that separates Charleston Slough and the Palo Alto Flood Basin. The levee improvements include raising the crest elevation and providing erosion protection. Because of the shared risk across local government boundaries at the Palo Alto Flood Basin, this aspect of the City of Mountain View's flood exposure is best managed through city participation in a regional planning effort and cost sharing.	City of Mountain View, Mountain View Ponds	Planning	U.S. 101	Palo Alto Flood Basin, Charleston Slough	Water quality and sediment, biological resources, cultural resources, public health and vector management, traffic, noise, air quality (and odors), visual resources, greenhouse gas emissions	No considerable contribution; project is considered in baseline analysis
Coast Casey North Levee Improvement	Design, permit, and construct coastal flood levee improvement to help protect property in the City of Mountain View's northwest corner from flooding caused by San Francisco Bay. The levee will extend 1,300 feet from the high ground of the city's Shoreline Park landfill to the city's boundary with Palo Alto.	City of Mountain View, Mountain View Ponds	Planning	U.S. 101	Coast Casey Forebay	Water quality and sediment, biological resources, cultural resources, public health and vector management, traffic, noise, air quality (and odors), visual resources, greenhouse gas emissions	No considerable contribution; project is considered in baseline analysis

Table 4-1 Projects Considered in Cumulative Impacts Analysis for the South Bay Salt Pond Restoration Project

PROJECT	PROJECT DESCRIPTION	LOCATION, NEAREST PROJECT POND	PROJECT PHASE	RELATED MAJOR ACCESS ROADS	RELATED WATERWAYS	POTENTIAL CUMULATIVE IMPACT ISSUES	CUMULATIVE IMPACT CONTRIBUTION
Landfill Erosion Protection	Design, permit, and construct erosion protection for the levees on the north side of the East and West Landfill.	City of Mountain View, Mountain View Ponds	Planning	U.S. 101	Pond A1, Pond A2W	Water quality and sediment, biological resources, cultural resources, public health and vector management, traffic, noise, air quality (and odors), visual resources, greenhouse gas emissions	Project could contribute to cumulative impacts
Lower Permanente Creek Levee and Floodwall Improvements	Design, permit, and construct flood protection measures to protect property along lower Permanente Creek. The measures will consist of raising crest elevations for multiple levee sections, constructing one new floodwall, and raising the crest elevation of three other floodwall sections.	City of Mountain View, Mountain View Ponds	Planning	U.S. 101	Permanente Creek	Water quality and sediment, biological resources, cultural resources, public health and vector management, traffic, noise, air quality (and odors), visual resources, greenhouse gas emissions	Project could contribute to cumulative impacts
Golf Course Facilities High Ground Augmentation	Design, permit, and construct engineered fill to the north of the City of Mountain View–owned golf course facilities and North Shoreline Boulevard and south of the Mountain View Tidal Marsh to provide flood protection for golf course facilities, including buildings, sanitary sewer lift station, parking lots, and roadway.	City of Mountain View, Mountain View Ponds	Planning	U.S. 101	Mountain View Tidal Marsh	Water quality and sediment, biological resources, cultural resources, public health and vector management, traffic, noise, air quality (and odors), visual resources, greenhouse gas emissions	Project could contribute to cumulative impacts
Lower Stevens Creek Levee Improvements	Design, permit, and construct levee improvements along lower Stevens Creek, north of Crittenden Lane. The improvements consist of improvements to existing levees, a short section of new levee with drainage culverts, and levee access and maintenance elements.	City of Mountain View, Mountain View Ponds	Ongoing	U.S. 101	Stevens Creek	Water quality and sediment, biological resources, cultural resources, public health and vector management, traffic, noise, air quality (and odors), visual resources, greenhouse gas emissions	Project could contribute to cumulative impacts
Coast Casey Pump Station Improvement	Design and construct a project to improve pump station capacity at the Coast Casey Stormwater Pump Station to counter sea-level rise impacts on pump station hydraulics.	City of Mountain View, Mountain View Ponds	Ongoing	U.S. 101	Coast Casey Forebay	Water quality and sediment, biological resources, cultural resources, public health and vector management, traffic, noise, air quality (and odors), visual resources, greenhouse gas emissions	No considerable contribution; project is considered in baseline analysis
Lower Permanente Creek Storm Drain Improvements	Design and construct the realignment of storm drain systems and the installation of three pump stations to evacuate interior drainage from the storm drains to lower Permanente Creek.	City of Mountain View, Mountain View Ponds	Ongoing	U.S. 101	Permanente Creek	Water quality and sediment, biological resources, cultural resources, public health and vector management, traffic, noise, air quality (and odors), visual resources, greenhouse gas emissions	Project could contribute to cumulative impacts
Sailing Lake Intake Pump Station Modification	Design, permit, and implement alterations to the Sailing Lake Pump Station to adapt the pump station, intake, and suction and discharge piping.	City of Mountain View, Mountain View Ponds	Ongoing	U.S. 101	Charleston Slough, Pond A1, Sailing Lake	Water quality and sediment, biological resources, cultural resources, public health and vector management, traffic, noise, air quality (and odors), visual resources, greenhouse gas emissions	Project could contribute to cumulative impacts
Charleston Slough Tide Gates Improvement	Revise Inner Charleston Slough tide gate operations to maintain water levels within targeted range.	City of Mountain View, Mountain View Ponds	Ongoing	U.S. 101	Charleston Slough	Water quality and sediment, biological resources, cultural resources, public health and vector management, traffic, noise, air quality (and odors), visual resources, greenhouse gas emissions	No considerable contribution; project is considered in baseline analysis
Safe, Clean Water & Natural Flood Protection Program	The Safe, Clean Water & Natural Flood Protection Program is a 15-year program to help secure the present and future water resources of Santa Clara County. Includes component to bring sediments removed from creeks to maintain flood flow capacity to salt ponds to aid restoration.	Santa Clara County, A8 Ponds	Ongoing	SR 237	San Francisco Bay, Francisquito Creek, Guadalupe River	Hydrology, flood management, and infrastructure; water quality and sediment; geology, soils, and seismicity; biological resources; cultural resources	Project could contribute to cumulative impacts

Table 4-1 Projects Considered in Cumulative Impacts Analysis for the South Bay Salt Pond Restoration Project

PROJECT	PROJECT DESCRIPTION	LOCATION, NEAREST PROJECT POND	PROJECT PHASE	RELATED MAJOR ACCESS ROADS	RELATED WATERWAYS	POTENTIAL CUMULATIVE IMPACT ISSUES	CUMULATIVE IMPACT CONTRIBUTION
Bayfront Canal and Atherton Channel Project	The City of Redwood City is partnering with the California State Coastal Conservancy to integrate the Salt Pond Restoration Project with the Bayfront Canal and Atherton Channel Project. The South Bay Salt Pond Restoration Project is the largest tidal wetland restoration project on the West Coast. When complete, the project will restore 15,100 acres of industrial salt ponds to tidal wetlands and other habitats. This integrated project will direct stormwater to Ponds S5 & R5 to enhance the habitat and serve as stormwater detention for the Bayfront Canal and Atherton Channel drainage areas.	City of Redwood City, Ravenswood Ponds	Ongoing	U.S. 101	Bayfront Canal, Atherton Channel, Flood Slough, San Francisco Bay	Hydrology, flood management, and infrastructure; water quality and sediment; biological resources; recreation resources	Project could contribute to cumulative impacts
Development Projects							
Newby Island Sanitary Landfill	Increase the permitted top elevation of the landfill from 150 to 245 feet mean sea level to allow an increase in the capacity of the landfill by approximately 15.12 million cubic yards, excluding cover materials.	City of San Jose, Island Ponds	Unknown	I-880	Coyote Creek	Biological resources, public health and vector management, air quality	Project could contribute to cumulative impacts
Maintenance Dredging of the Federal Navigation Channels in San Francisco Bay, Fiscal Years 2015–2024	Operation and maintenance dredging to remove sediment to authorized depths to fulfill the USACE's Navigation Mission to provide safe, reliable, and efficient waterborne transportation systems (channels, harbors, and waterways) for the movement of commerce, national security needs, and recreation.	San Francisco Bay Area, all ponds	Ongoing	NA	San Francisco Bay	Hydrology, flood management, and infrastructure; water quality and sediment; biological resources; recreation resources	Project could contribute to cumulative impacts
Zanker Materials Recycling Facility	Allow changes to development and operations on the project site: increase the maximum height of the landfill from 50 to 80 feet; increase the remaining landfill capacity from 62,000 to 700,000 cubic yards; modify the phasing plan of daily waste tonnage accepted; and plan to develop a 200,000-square-foot materials recovery facility on a 52.5-acre site.	City of San Jose, Island Ponds	Ongoing	SR 237 and Los Esteros Road	Guadalupe River	Water quality and sediment, biological resources, cultural resources, public health and vector management, traffic, noise, air quality (and odors), visual resources, greenhouse gas emissions	Project could contribute to cumulative impacts
San Jose/Santa Clara Water Pollution Control Plan	The City of San Jose prepared a master plan to address aging infrastructure, reduce odors, accommodate projected population growth in the service area, comply with changing regulations, and develop a comprehensive land use plan for the entire project site.	City of San Jose, A8 Ponds	Ongoing	SR 237	Guadalupe Slough	Water quality and sediment, biological resources, cultural resources, traffic, noise air quality (and odors), greenhouse gas emissions	Project could contribute to cumulative impacts
Palo Alto Municipal Golf Course Reconfiguration Project and the Baylands Athletic Center Expansion Project	The City of Palo Alto plans to begin the renovation and reconfiguration of the existing Palo Alto Municipal Golf Course and expand the Baylands Athletic Center.	City of Palo Alto, Mountain View Ponds	Completed	U.S. 101	San Francisquito Creek, Charleston Slough	Water quality and sediment, biological resources, recreation resources, cultural resources, traffic, noise, air quality, greenhouse gas emissions	No considerable contribution; project is completed
Facebook Campus Project	Facebook proposes to move its operations to two sites north of U.S. 101 near the intersection of Bayfront Expressway and Willow Road. The project site consists of a 56.9-acre East Campus and a 22-acre West Campus.	City of Menlo Park, Ravenswood Ponds	Completed	SR 84	Ravenswood Slough	Water quality and sediment, biological resources, recreation resources, cultural resources, traffic, noise, air quality, visual resources, greenhouse gas emissions	No considerable contribution; project is completed
Menlo Gateway Project	The development would take place on two sites totaling 15.9 acres near the U.S. 101/Marsh Road interchange. Project would include a cafe/restaurant (4,245 square feet), a health club (68,519 square feet), a hotel (171,563 square feet; 230 rooms), neighborhood-serving retail and community facilities (10,420 square feet), three office and research and development (R&D) buildings (694,669 square feet), and three parking structures.	City of Menlo Park, Ravenswood Ponds	Ongoing	SR 84 and U.S. 101	None	Biological resources, cultural resources, traffic, noise, air quality, visual resources, greenhouse gas emissions	Project could contribute to cumulative impacts

Table 4-1 Projects Considered in Cumulative Impacts Analysis for the South Bay Salt Pond Restoration Project

PROJECT	PROJECT DESCRIPTION	LOCATION, NEAREST PROJECT POND	PROJECT PHASE	RELATED MAJOR ACCESS ROADS	RELATED WATERWAYS	POTENTIAL CUMULATIVE IMPACT ISSUES	CUMULATIVE IMPACT CONTRIBUTION
Warm Springs South Fremont Community Plan	The plan includes approximately 879 acres around the Warm Springs BART station; about 11.5 million square feet of light industrial, R&D, office, retail, and hotel uses; and 4,000 residential units and an elementary school.	City of Fremont, Island Ponds	Planning	I-880, I-680, Mission Boulevard and Warm Springs Boulevard	None	Traffic, noise, air quality, greenhouse gas emissions	Project could contribute to cumulative impacts
San Francisco Public Utilities Commission's (SFPUC) Water System Improvement Project (WSIP)	The SFPUC proposes to adopt and implement WSIP to increase the reliability of the regional water system, which provides drinking water to 2.4 million people in San Francisco, San Mateo, Santa Clara, Alameda, and Tuolumne Counties. The WSIP is a program to implement the service goals and system performance objectives established by the SFPUC for the regional water system in the areas of water quality, seismic reliability, delivery reliability, and water supply through the year 2030.	San Francisco Bay, all ponds	Ongoing	NA	San Francisco Bay	Water quality and sediment; geology, soils, and seismicity; utilities	Project could contribute to cumulative impacts
South Bay Advanced Recycled Water Treatment Facility (ARWTF) Project	The ARWTF treats up to 10 million gallons per day of secondary effluent from the San Jose/Santa Clara WPCP with advanced tertiary treatment and blends the high-purity effluent with tertiary effluent from the San Jose/Santa Clara WPCP for use in the South Bay Water Recycling system.	City of San Jose, A8 Ponds	Ongoing	SR 237	San Francisco Bay, Coyote Creek, Guadalupe Creek	Hydrology, flood management, and infrastructure; water quality and sediment; biological resources; utilities	Project could contribute to cumulative impacts
2600 Marine Way Office Project	The project is the redevelopment of existing office/light industrial properties with new office uses. The proposed 364,000 square feet of new office space would be an increase of approximately 231,213 square feet over the existing development on the site.	City of Mountain View, Mountain View Ponds	Completed	San Antonio Road	Charleston Slough, Mountain View Slough	Water quality and sediment, biological resources, recreation resources, cultural resources, traffic, noise, air quality, visual resources, greenhouse gas emissions	No considerable contribution; project is completed
Palo Alto Landfill Phase 11C Closure Project	Landfill closure is final land use.	City of Palo Alto, Mountain View Ponds	Completed	U.S. 101	Mayfield Slough	Water quality and sediment, air quality	No considerable contribution; project is completed
North Bayshore Precise Plan	The project is the preparation of a City of Mountain View–initiated Precise Plan and Program Environmental Impact Report for the area identified in the Mountain View 2030 General Plan as the North Bayshore Change Area.	City of Mountain View, Mountain View Ponds	Ongoing	San Antonio Road	Charleston Slough, Mountain View Slough	Recreation resources, traffic, air quality, greenhouse gas emissions	Project could contribute to cumulative impacts
Cooley Landing Park	The proposed project is the implementation of the Cooley Landing Vision Plan for land in eastern East Palo Alto and Menlo Park.	City of East Palo Alto, and City of Menlo Park Ravenswood Ponds	Ongoing	SR 84	None	Biological resources, recreation	Project could contribute to cumulative impacts
The Preserve at Redwood Shores Precise Plan	The Preserve at Redwood Shores is a 124-acre mixed-use development project, approved by the City of Redwood City that involves site acquisition and the construction of a new elementary school known as Redwood Shores Elementary School on a 7-acre site within the larger parcel. The project includes the construction of a new levee system and realignment of and improvements to the Bay Trail	City of Redwood City, Ravenswood Ponds	Ongoing	U.S. 101	San Francisco Bay, Belmont Slough, Redwood Shores Lagoon, Steinberger Slough	Water quality and sediment; geology, soils, and seismicity; biological resources; recreation resources; cultural resources; air quality; visual resources; greenhouse gas emissions	Project could contribute to cumulative impacts
SRI International Campus Modernization Project	SRI International is proposing to modernize its campus with phased development over the next 25 years.	City of Menlo Park, Ravenswood Ponds	Ongoing	U.S. 101	None	Traffic, air quality, greenhouse gas emissions	Project could contribute to cumulative impacts
Shoreline Athletic Fields, Project 11-33	The Shoreline Athletic Fields Project involves construction of multi-use athletic fields over a closed landfill site, which is now used for storage of equipment and materials; soil stockpiles for maintenance of the landfill, golf course, and park; a storage building for athletic equipment; a children's play area; a burrowing owl foraging area; and parking.	City of Mountain View, Ravenswood Ponds	Completed	U.S. 101	Permanente Creek	Water quality and sediment; geology, soils, and seismicity; biological resources; recreation resources; cultural resources; air quality; visual resources; greenhouse gas emissions	No considerable contribution; project is completed

Table 4-1 Projects Considered in Cumulative Impacts Analysis for the South Bay Salt Pond Restoration Project

PROJECT	PROJECT DESCRIPTION	LOCATION, NEAREST PROJECT POND	PROJECT PHASE	RELATED MAJOR ACCESS ROADS	RELATED WATERWAYS	POTENTIAL CUMULATIVE IMPACT ISSUES	CUMULATIVE IMPACT CONTRIBUTION
Stanford University Medical Center Facilities Renewal and Replacement (SUMC Project)	The SUMC Project involves demolition, replacement, and expansion at the Stanford Hospitals and Clinics, the Lucile Packard Children's Hospital, and the Stanford University School of Medicine.	City of Palo Alto, Ravenswood Ponds	Ongoing	I-280, U.S. 101	San Francisquito Creek	Water quality and sediment, biological resources, recreation resources, cultural resources, visual resources, traffic, noise, air quality, greenhouse gas emissions	Project could contribute to cumulative impacts
Great America Expansion Project	Project to construct up to 718,000 square feet of new office space in up to three new buildings for a maximum build-out of 1,018,000 square feet of office development, up to two five-level parking structures and surface parking lots with a maximum of 3,360 total parking spaces, potential demolition of an existing 118,000-square-foot office building, and landscaping and site improvements.	City of Sunnyvale, A8 Ponds	Ongoing	Great America Parkway	NA	Traffic, air quality, greenhouse gas emissions	Project could contribute to cumulative impacts
Moffett Place	The Moffett Place campus project is a proposed development of a 55.394-acre office complex that will consist of six eight-story office buildings, one two-story amenities building, surface parking, and one three-level parking structure, for a total of 1.7 million square feet of total building area. The project's buildings will also surround two large green common spaces to accommodate active and passive recreation on-site.	City of Sunnyvale, A8 Ponds	Ongoing	SR 237	NA	Traffic, air quality, greenhouse gas emissions, recreation resources	Project could contribute to cumulative impacts
Yahoo! Santa Clara Campus	The proposed project is the phased development of a 3,060,000-square-foot office/research and development campus consisting of 13 six-story buildings, three two-story commons buildings, surface parking lots, two-levels of below-grade parking, site circulation, and landscaping following demolition of the existing buildings on the site. The project includes the use of the Hetch Hetchy right-of-way for construction staging and project parking.	City of Sunnyvale, A8 Ponds	Planning	SR 237	Calabasas Creek, San Tomas Aquino Creek, Guadalupe River	Water quality and sediment, biological resources, recreation resources, cultural resources, traffic, noise, air quality, visual resources, greenhouse gas emissions	Project could contribute to cumulative impacts
49ers Stadium Project	The project includes four specific components: Stadium, Substation Relocation, Off-Site Surface Parking, and Parking Garage (Shared Use). The stadium has a permanent seating capacity of up to 68,500 seats and is designed to expand to approximately 75,000 seats for special events.	City of Sunnyvale, A8 Ponds	Completed	SR 237	NA	Traffic, air quality, greenhouse gas emissions	Project could contribute to cumulative impacts
Google campus expansion	Google expansion onto and throughout the former Moffett Airfield.	City of Mountain View, Mountain View Ponds	Planning	U.S. 101	None	Water quality and sediment, biological resources, recreation resources, cultural resources, traffic, noise, air quality, visual resources, greenhouse gas emissions	Project could contribute to cumulative impacts
Creekside Landing Project	The proposed project consists of the development of 524,000 square feet of commercial retail uses (Creekside Landing) and the extension of Fremont Boulevard and the San Francisco Bay Trail from Flood Channel B to Dixon Landing Road.	City of Fremont, Island Ponds	Ongoing	I-880	Coyote Creek	Water quality and sediment, biological resources, recreation resources, cultural resources, traffic, noise, air quality, visual resources, greenhouse gas emissions	Project could contribute to cumulative impacts
Transportation Projects							
Shoreline Boulevard 101 Off-Ramp Modification Feasibility Study	Study alternative configurations of the Highway 101 off- and on-ramps at Shoreline Boulevard to serve as a foundation for a subsequent California Department of Transportation (Caltrans) Project Study Report.	City of Mountain View, Mountain View Ponds	Completed	U.S. 101	None	Traffic, noise, air quality, greenhouse gas emissions	No considerable contribution; project is completed
Transportation 2035 Plan for the San Francisco Bay Area	The proposed Transportation 2035 Plan is the Bay Area's long-range regional transportation plan; it lays out the transportation policies and projects to address the mobility, accessibility, and performance needs of the region through the 2035 planning horizon.	San Francisco Bay Area, all ponds	Ongoing	NA	None	Recreation resources, traffic, air quality, greenhouse gas emissions	Project could contribute to cumulative impacts

Table 4-1 Projects Considered in Cumulative Impacts Analysis for the South Bay Salt Pond Restoration Project

PROJECT	PROJECT DESCRIPTION	LOCATION, NEAREST PROJECT POND	PROJECT PHASE	RELATED MAJOR ACCESS ROADS	RELATED WATERWAYS	POTENTIAL CUMULATIVE IMPACT ISSUES	CUMULATIVE IMPACT CONTRIBUTION
U.S. 101/Willow Road Interchange Reconstruction Project	The project proposes to reconstruct the U.S. 101/Willow Road (also known as SR 114) Interchange on its existing alignment to a partial cloverleaf interchange.	City of Menlo Park, Ravenswood Ponds	Ongoing	U.S. 101, SR 84	NA	Traffic, air quality, greenhouse gas emissions	Project would contribute to cumulative impacts
Route 101 San Francisquito Creek Bridge Replacement Project	The project proposes to replace the San Francisquito Creek Bridge (Bridge # 35-0013), which is between the University Avenue interchange and the Embarcadero Road interchange on U.S. 101.	City of Palo Alto, Ravenswood Ponds	Ongoing	U.S. 101	San Francisquito Creek	Hydrology, flood management, and infrastructure; recreation resources; traffic, air quality; greenhouse gas emissions	Project could contribute to cumulative impacts
Route 101 Auxiliary Lanes Project, between the Embarcadero Road interchange in the City of Palo Alto and the Marsh Road interchange in the City of Menlo Park.	The project provides auxiliary lanes in both directions by widening U.S. 101 between the Embarcadero Road to the Marsh Road interchange. The proposed project also includes extending the support foundation over the Hetch Hetchy aqueduct, widening the on-ramps, and relocating the existing stormwater lift station adjacent to the Henderson railroad overcrossing.	Cities of Menlo Park, East Palo Alto, and Palo Alto; Ravenswood Ponds	Completed	U.S. 101	NA	Traffic, air quality, greenhouse gas emissions	No considerable contribution; project is completed
U.S. 101 Auxiliary Lanes form State Route 85 to Embarcadero Road	Construct roadway improvements, including auxiliary lanes, and lengthen existing high-occupancy vehicle (HOV) lanes on U.S. 101 in the city of Palo Alto.	Cities of Mountain View and Palo Alto, Ravenswood Ponds	Completed	U.S. 101	NA	Traffic, air quality, greenhouse gas emissions	No considerable contribution; project is completed
Stevens Creek Crossings Project	The project is to create two new two-lane restricted access vehicular bridge crossings extending over Charleston Road and Crittenden Lane, across Stevens Creek, and into the Planetary Ventures leasehold within the Bay View Area of the National Aeronautics and Space Administration (NASA) Ames Research Center, in Mountain View.	City of Mountain View, Ravenswood Ponds	Ongoing (in planning phase)	U.S. 101	Stevens Creek	Traffic; air quality; greenhouse gas emissions; hydrology, flood management, and infrastructure; biological resources; recreation resources	Project could contribute to cumulative impacts
Route 262/Warren Avenue/I-880 Interchange Reconstruction and I-880 Widening	Improve the interchange at SR 84 and Palomares Road, and realign the intersection. Roadway improvements, including bridge replacement and HOV lanes in each direction on a portion of I-880 and SR 262 in and near the cities of Milpitas and Fremont.	City of Fremont, Island Ponds	Ongoing	I-880	Coyote Creek	Traffic, air quality, greenhouse gas emissions	Project could contribute to cumulative impacts
Los Gatos Creek Bridge Replacement/South Terminal Phase III Project	The proposed project replaces the structurally deficient two-track railroad bridge that crosses Los Gatos Creek and provides a tail track south of San Jose Diridon Station.	City of San Jose, A8 Ponds	Ongoing	San Carlos Street	Los Gatos Creek	Hydrology, flood management, and infrastructure; water quality and sediment; biological resources	Project could contribute to cumulative impacts
Pacific Gas and Electric Company (PG&E) NERC Compliance Efforts	The Federal Energy Regulatory Commission grants the North American Electric Reliability Corporation (NERC) the legal authority to establish and enforce reliability standards for the bulk-power system. PG&E's efforts to comply with NERC have included the upgrading of many of PG&E's overhead transmission systems to meet the requirements of NERC.	San Francisco Bay, all ponds	Ongoing	NA	NA	Hydrology, flood management, and infrastructure; water quality and sediment; geology, soils, and seismicity; biological resources; cultural resources; visual resources	Project could contribute to cumulative impacts
Recreation Projects							
Permanente Creek Trail – Amphitheatre Parkway Crossing, Construction	Construct improvements to the existing trail under-crossing at Amphitheatre Parkway.	City of Mountain View, Mountain View Ponds	Ongoing	U.S. 101	Permanente Creek	Recreation resources	Project could contribute to cumulative impacts
San Francisco Bay Area Water Trail Plan	The plan provides recommendations and guidance for a network of landing and launching sites at various locations on the margins of San Francisco Bay and its tributaries. Water Trail access is being considered for at least 112 locations. The plan would also increase use of San Francisco Bay by non-motorized small boats.	San Francisco Bay, all ponds	Ongoing	NA	None	Recreation resources	Project could contribute to cumulative impacts

Table 4-1 Projects Considered in Cumulative Impacts Analysis for the South Bay Salt Pond Restoration Project

PROJECT	PROJECT DESCRIPTION	LOCATION, NEAREST PROJECT POND	PROJECT PHASE	RELATED MAJOR ACCESS ROADS	RELATED WATERWAYS	POTENTIAL CUMULATIVE IMPACT ISSUES	CUMULATIVE IMPACT CONTRIBUTION
Facebook Campus State Route 84 Overpass Trail	This Facebook-sponsored project would build a pedestrian/bicycle bridge over SR 84 near the Ravenswood pond complex. It would serve the general public in providing a new public access and recreation facility and would also connect two Facebook campuses on either side of the highway.	Ravenswood pond complex	Planning	SR 84	Ravenswood Slough	Recreation resources; Biological Resources (through recreation's disturbance of sensitive wildlife species)	Project could contribute to cumulative impacts on biological resources
Coyote Creek Trail Project: Story Road to Phelan Avenue	Coyote Creek Trail is a multi-use, Class I pedestrian and bicycle trail along Coyote Creek through San Jose. When completed, the trail will extend approximately 30 miles from its northern end at the San Francisco Bay Trail (SR 237 Bikeway) in north San Jose to its southern end near Anderson Lake County Park.	City of San Jose, Island Ponds	Ongoing	SR 237	Coyote Creek	Biological resources, recreation resources, cultural resources, noise	Project could contribute to cumulative impacts

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The analysis of cumulative impacts followed a multi-step approach. First, an evaluation was made as to whether a significant cumulative impact existed within each relevant study area for the impact under consideration. This evaluation was made by reviewing the conclusions of the No Action Alternative in the "Cumulative Impacts" section of the 2007 EIS/R. Then those conclusions were re-examined based on the updated cumulative project information presented in Table 4-1. Next, the Phase 2 project impacts were evaluated as to whether they, in combination with impacts from the other projects, would create a new significant cumulative impact. If so, then a potentially significant impact was found, and mitigation measures from Chapter 3, Environmental Setting, Impacts, and Mitigation Measures, were identified and recommended to reduce this impact to a less-than-significant level. In cases where a significant cumulative impact already exists, even without the SBSP Restoration Project, the Phase 2 project's impacts were examined to determine if they would make a considerable contribution to that impact. If it was determined that the Phase 2 project impacts would not make a considerable contribution to a significant cumulative impact, the impacts were determined to be less than significant.

If a Phase 2 project impact were to have a considerable contribution to a cumulative impact, then mitigation from the project impact analysis in Chapter 3 would be recommended to reduce the project's contribution to cumulative impacts to a level that is less than considerable. However, no considerable contributions to a cumulative impact were found. In contrast to this approach, the 2007 EIS/R determined that if a significant cumulative impact existed even without the project, the project cumulative impact was deemed significant regardless of the project's contribution to that impact.

Hydrology, Flood Management, and Infrastructure

The geographic scope for the cumulative impacts analysis for hydrology, flood management, and related infrastructure encompasses the creeks, sloughs, and other waterways within the project area that feed into South San Francisco Bay. These include Guadalupe River; Coyote and San Francisquito Creeks; and Mud, Alviso, Guadalupe, Ravenswood, and Charleston Sloughs.

The types of projects listed in Table 4-1 that could contribute to cumulative impacts associated with hydrology, flood management, and infrastructure include restoration projects, flood protection projects, and some transportation projects (e.g., bridge replacements). Review of the 2007 EIS/R and the cumulative projects listed in Table 4-1 indicates that less-than-significant or beneficial cumulative impacts exist in the study area associated with hydrology, flood management, and infrastructure in the project area.

Cumulative Impacts of the No Action Alternatives

No new activities would occur under the Phase 2 No Action Alternatives and the pond clusters would continue to be monitored and managed through the activities described in the AMP and in accordance with current United States Fish and Wildlife Service (USFWS) practices. The existing breached levees would continue to undergo scour from hydraulic action and degrade naturally. Ongoing monitoring and studies to track the progress of these ponds toward tidal marsh restoration would be the principal component of the continued implementation of the AMP.

Under the No Action Alternatives, tidal inundation would cause existing breaches at some of the pond clusters to widen and adjacent levee areas to continue to scour until equilibrium conditions are met. Over a 50-year horizon, tidally restored ponds would be expected to develop into mature salt marsh. Sedimentation would raise pond-bottom elevations above vegetation-colonization elevations, vegetation would establish, and marsh channels would develop within the restored marsh. Mature salt marsh

typically exists within the South Bay at an elevation near mean higher high water (MHHW); so bottom elevations are assumed to eventually rise to this level.

Other levees around some of the Phase 2 ponds are high-priority levees to be maintained for habitat management and public access as well as maintain current levels of de facto flood protection. These levees would be maintained (or repaired after unexpected failure) by the Refuge and/or by the Santa Clara Valley Water District or other flood control agencies with a mission and policy to perform those maintenance operations. Because existing levels of flood protection would be maintained and adaptive management would be used to actively monitor and assess flood protection measures, impacts to flood protection under the No Action Alternatives would be less than significant.

Under the No Action Alternatives, existing pond operations and drainage patterns would be maintained. Some ponds would be operated to allow muted tidal exchange. The potential for erosion from water circulating within the ponds and accretion rates within the ponds would be similar to existing conditions because some ponds are not fully tidal and because flows are mediated through tide gates or other engineered water control structures. The Phase 2 SBSP Restoration Project area currently contains few navigable sloughs and waterways—major sloughs have silted in over a period of decades, reducing navigability. At low tide, navigation into or out of shallow sloughs can be problematic. Small craft (e.g., kayaks) are more amenable to the shallow water environments and are more likely to navigate tidal sloughs.

Under the No Action Alternatives, no new improvements to existing levees would occur. Some existing levees would be maintained. Existing breached levees would continue to be scoured from hydraulic action and naturally degrade over time. As such, no additional maintenance (beyond that described above) to repair or improve portions of levees for increased performance during a tsunami and/or seiche would occur under the No Action Alternatives. However, because no habitable structures would be constructed and warning systems would allow for evacuation of the shoreline in such an event, inundation by tsunamis or seiches would not expose people to potential injury or death.

As discussed above, no significant cumulative impacts associated with hydrology, flood management, and infrastructure exist in the project area. The Phase 2 No Action Alternatives would cause less than significant hydrology impacts. Existing levels of flood protection would be maintained and adaptive management would be used to actively monitor and assess flood protection measures. No habitable structures would be constructed and warning systems would allow for evacuation of the shoreline during a tsunami. There would not be a significant cumulative hydrology impact caused by the Phase 2 No Action Alternatives.

Cumulative Impacts of Phase 2 Action Alternatives

Under the Phase 2 Action Alternatives, most pond clusters would be breached to introduce tidal flows, enable (or enhance, in the case of the Island Ponds) sediment accretion, support hydraulic connectivity, alter circulation patterns, and increase habitat complexity. Increases in sediment accumulation and/or sediment distribution in the ponds could help achieve a future flood protection goal of ensuring that the rate of sediment accretion and marsh development keeps pace with expected future sea-level rise.

At those ponds and other waterways already exposed to tidal flows, Phase 2 actions would not change the total volume of water that fills and drains. At those ponds not already exposed to such flows, tides would be introduced through new breaches in most cases and through water control structures at Ponds R5 and S5 at the Ravenswood Ponds. Monitoring and adaptive management would be used at all areas to verify

that the Phase 2 actions are performing as intended and to modify or correct those that aren't. Changes to coastal and fluvial flood risk would be minimal for the above-mentioned reasons, and therefore the impacts would be less than significant.

At the Island Ponds, although sediment distribution within the ponds would change due to the breaches, total sediment demand from the ponds would not increase. There would be no change to sediment demand at the A8 Ponds. At the Mountain View Ponds and the Ravenswood Ponds, sediment accretion would begin after breaching, and some erosion of the adjacent mudflats would be expected.

At the Mountain View Ponds and the Ravenswood Ponds, the Phase 2 designs include several improvements to existing levees and berms to maintain or enhance the levels of flood protection currently provided by the former salt ponds and other flood protection infrastructure. At the Mountain View Ponds, some of these enhancements are beyond those required of the SBSP Restoration Project and would be more extensive to meet the City of Mountain View's goals for sea-level rise planning. At the Ravenswood Ponds, the inclusion of that Redwood City's Bayfront Canal and Atherton Channel Project would help reduce an ongoing fluvial flooding problem.

Habitat transition zones would be constructed in some of the Phase 2 ponds. These habitat transition zones would perform several functions: adding some flood protection, buffering against sea-level rise, and adding transitional wildlife habitat. Because adaptive management would be used to actively monitor and assess flood protection measures and existing levels of flood protection would be maintained, impacts to flood protection would be less than significant.

Under the Phase 2 Action Alternatives, drainage patterns within some ponds would change because they would be breached. Sediment would accrete, and marsh channels in portions of the ponds would develop, increasing habitat complexity. The new breaches and the marsh channels would be affected by tidal scour. Levee breaches would increase tidal flows in the sloughs downstream of the breaches, widening and deepening the sloughs over time. Slough width and depths upstream of the breaches would be less affected by levee breaching.

The long-term regional sediment supply in the far South Bay has been studied by Shellenbarger et al. (2013) for the SBSP Restoration Project area. It is estimated that between 29 and 45 million cubic meters of sediment would be required to raise all of the SBSP Restoration Project area to mean tidal level. Sediment influx from the South Bay (north of the Dumbarton Bridge) would supply this amount of sediment in about 90 to 600 years.[2] This estimate reflects the long-term regional sediment supply assuming that there is no net loss of mudflats and marshes in the area and that the volume of sediment needed in the ponds does not change due to sea-level rise or construction. However, some of the subsided ponds would be maintained as managed ponds and not restored to tidal action, so the SBSP Restoration Project as a whole, and Phase 2 in particular, would require less sediment than the estimate provided here. Furthermore, to meet the sediment deficit without overly scouring mudflats, restoration is being phased over many decades to match sediment demand with the rate at which sediment naturally enters the far South Bay, and in future project phases ponds may be partially filled with clean dredged sediments and/or upland material to reduce their demand.

The Phase 2 Action Alternatives would not result in significant adverse impacts to navigation. Over a period of years, some sloughs are expected to scour, increasing channel dimensions. Larger channel cross-

[2] These data are based on using water year 2009 and 2010 sediment budget results. Also, Programmatic Alternative C, analyzed in the 2007 EIS/R, had an upper range of 90 percent tidal restoration, not 100 percent tidal restoration.

sectional areas would reduce the short-term velocity increases associated with the breaches and provide improved navigation in the long term.

The Phase 2 Action Alternatives would not include construction of habitable structures. Also, existing warning systems (e.g., the National Weather Service) would allow for evacuation of the shoreline during a tsunami or seiche, so inundation by tsunamis or seiches would not expose people to potential injury or death.

As discussed above, no significant cumulative impacts associated with hydrology, flood management, and infrastructure exist in the project area. The Phase 2 Action Alternatives would cause less than significant hydrology impacts. Changes to coastal and fluvial flood risk would be minimal and existing levels of flood protection would be maintained. Minor tidal scour and mudflat erosion could occur from breaching of levees but these effects would be monitored through the AMP and corrective actions would be implemented if performance metrics are not met. The magnitude of the impacts is so small relative to the background dynamics in the existing environment that there would not be a significant cumulative hydrology impact caused by the Phase 2 Action Alternatives.

Water Quality

The former salt ponds are at the interface between the urban environment and San Francisco Bay (Bay). The geographic scope for water quality cumulative impacts includes the South Bay itself, the SBSP Restoration Project pond complexes, and the lower, adjacent portions of upland watershed areas.

The types of projects listed in Table 4-1 that could contribute to cumulative impacts associated with water quality include restoration projects, flood protection projects, and development projects. Review of the 2007 EIS/R and the cumulative projects listed in Table 4-1 indicates that potentially significant cumulative impacts relative to water quality exist in the study region. Restoration of salt ponds to tidal marsh habitat has the potential to increase phytoplankton (algae) abundance and composition as levees are breached. Phytoplankton abundance could increase as a result of biostimulation due to increased light penetration as sediment accretion creates localized areas of low turbidity outside of breached levees. Other cumulative tidal habitat restoration projects have the potential to cause similar impacts. Risk factors that could cause increased algal abundance are biostimulation due to excessive nutrients or increased water transparency. One risk factor that could cause changes in phytoplankton composition is the opening of new breaches between ponds and Bay waters, thereby introducing new or exotic algal species. Another risk factor is the release of substances toxic to algae from urban runoff, herbicide application, and other sources, thereby selecting for species more resistant to toxicants. Project activities (proposed by the SBSP Restoration Project or by the cumulative projects) that are likely to cause one or more of these risk factors would result in a potentially significant impact.

Some of the cumulative projects would have potentially significant impacts when considering the long-term cumulative impacts of discharge of biological oxygen demand (BOD) and/or chemical oxygen demand (COD) into the Bay, because they would involve opening breaches between ponds and the Bay. Without appropriate adaptive management, it is assumed that other cumulative projects would have potentially significant impacts.

Mobilization and transport of mercury-contaminated sediments is a regional issue that is regulated by the Bay Total Maximum daily Load (TMDL) requirement to drive down the inventory of mercury in the actively resuspended sediment layer. The risk factors for mobilization and transport of mercury-contaminated sediments would come from projects that would involve substantial earthmoving and

dredging activities or that would enhance tidal scour and that are near known or suspected sources of mercury-contaminated sediments. Some of the cumulative projects would have impacts when considering the long-term cumulative impacts of mobilization and transport of mercury-contaminated sediments and do not as yet have well-defined adaptive management plans and therefore have potentially significant impacts. On balance, the cumulative impacts of other cumulative projects would be potentially significant.

Some cumulative projects would result in a potential increase in net methylmercury production and bioaccumulation and were deemed to have potentially significant impacts because they do not include an adaptive management plan, or the monitoring tools and adaptive management actions for those projects have not yet been defined. For the purposes of this analysis, it is assumed that the other cumulative projects would have potentially significant impacts.

Because it is not known whether other cumulative projects would implement policies and regulations that are required, and there is uncertainty about the scope and timing of regulations to manage particle-associated contaminants such as polychlorinated biphenyls (PCBs) and legacy pesticides, it is assumed that other cumulative projects would result in potentially significant water quality impacts from other contaminants.

Cumulative Impacts of No Action Alternatives

Under the Phase 2 No Action Alternatives, existing breaches or other connections to the Bay would continue to allow tidal inundation or muted tidal exchange at some of the ponds. Tidal flows would bring slough water through the openings, near which suspended sediments would settle out from the water prior to ebb flows. Accretion in the ponds would decrease suspended sediment supply in the surrounding sloughs and the open waters of the Bay, potentially resulting in increased light penetration and algal abundance outside of the ponds. At the Phase 2 ponds that currently have little or no hydraulic connection to the Bay, the ponds would persist as the seasonal ponds (Ravenswood Ponds) or deep-water ponds (Mountain View Ponds) they are now. In all of these cases, adaptive management would be used to address adverse changes in algal species abundance and composition. If triggers are exceeded as a result of high risk factors, then adaptive management actions would be implemented to convert high-risk factors to low-risk factors. Because of monitoring and implementation of adaptive management measures, all of these potential impacts would be less than significant.

At the Island Ponds, tidal flows would also bring Bay water through existing breaches, near which suspended sediments would settle out from the water prior to ebb flows. Fully tidal systems have relatively high reaeration rates because filling and draining of the ponds causes increased mixing and higher flow rates to the ponds and downstream sloughs, and because ponds are subject to wind mixing. Therefore, the risk of poor dissolved oxygen levels in currently breached ponds would be low, and impacts would be less than significant. Some ponds (the Mountain View Ponds and the A8 Ponds) would continue to be operated with limited directional circulation. Maintaining adequate dissolved oxygen levels in some of these ponds has been the major water quality challenge. Adaptive management practices have been implemented to address issues with low dissolved oxygen levels. The ponds are now operated to maximize flow-through and reduce stagnant areas in the back portions of the ponds. Under the No Action Alternatives, similar adaptive management measures would be implemented during low dissolved oxygen conditions (e.g., changing residence times and/or water depths).

Sediment mercury concentrations in the ponds are expected to be similar to concentrations found in suspended sediments in the lower South Bay. Long-term mercury concentrations in the sediment of the lower South Bay are greater than the target concentration of 0.2 milligram per kilogram (mg/kg), but similar to other areas of the Bay. Managed ponds could have higher rates of net methylmercury production than fully tidal systems. The large pool of easily degraded organic matter in managed ponds (from algal production) could lead to higher methylmercury concentrations in sediment, water, and biota. Labile organic matter fuels the bacteria that methylate inorganic mercury. Ponds that experience very high rates of primary production would likely benefit (in terms of lowering current methylmercury concentrations) from tidal flushing (Grenier et al. 2010). Ponds in some complexes have elevated mercury concentrations in sediments due to deposition of mercury-laden sediments from the Guadalupe River watershed. Adaptive management would continue to be used to monitor effects from managed ponds. Adaptive management monitoring could include methylmercury concentrations in water and sediments and special studies of methylmercury production, degradation, transport, and changes in food web indicators and sentinel species. Adaptive management actions would be triggered when the mercury concentrations of sentinel species increase substantially, regardless of whether they are over or under desirable levels. If triggers are exceeded, then adaptive management actions would be implemented.

Although construction activities would not occur under the No Action Alternatives, hazards could result from the routine maintenance activities required for managed ponds, which may include levee repair, dredging, small-scale construction, and general cleaning. Hazardous materials that could lead to water or sediment quality impairments if spilled would primarily include spills and leaks of liquids (fuels and oils) from maintenance vehicles and equipment. Project proponents would implement control measures specified in the project's waste discharge requirements (Regional Water Quality Control Board (Region 2) Order No. R2-2008-0078, as revised by R2-2012-0014, or current version). Provisions include specifications for repair, replacement, and servicing of existing facilities; dredging and placement of dredge and/or imported fill material on existing levees; placement of riprap; and general maintenance activities. Implementations of control measures for O&M activities would ensure that impacts would be less than significant.

There are potentially significant cumulative impacts relative to water quality in the study region. Other cumulative tidal habitat restoration projects have the potential to increase phytoplankton (algae) abundance and composition as levees are breached. Some of the cumulative projects would have potentially significant impacts when considering the long-term cumulative impacts of discharge of biological oxygen demand (BOD) and/or chemical oxygen demand (COD) into the Bay. Some of the cumulative projects would have impacts when considering the long-term cumulative impacts of mobilization and transport of mercury-contaminated sediments and do not as yet have well-defined adaptive management plans and therefore have potentially significant impacts. However, the contribution of the Phase 2 No Action Alternatives to these cumulative impacts would not be considerable. As discussed above, all impacts to water quality from the Phase 2 No Action Alternatives are less than significant. Adaptive management measures would be used to address harmful changes in the abundance and composition of algal species. Adaptive management measures (e.g., changing residence times and/or water depths) also would be implemented to reduce the potential for the adverse conditions associated with low dissolved oxygen levels and substantial methylmercury levels. Because adaptive management measures would be implemented for all Phase 2 No Action Alternatives, their contribution to a significant cumulative water quality impact would not be considerable relative to the existing environment.

Cumulative Impacts of Phase 2 Action Alternatives

Under the Phase 2 Action Alternatives, some pond levees would be lowered or removed and others would be breached. Areas near the new levee breaches would have increased accretion. Fully tidal systems (both tidal ponds and sloughs) have relatively short retention times, are well mixed by tidal flows, and are often subject to wind and wave action. In general, Phase 2 actions would increase both the amount and the spatial distribution of tidal mixing, and in no cases would these actions reduce this mixing. Therefore, risk factors are low and potential changes in algal abundance are likely to be minimal. Furthermore, monitoring and implementation of adaptive management measures would be used to address harmful changes in the abundance and composition of algal species. Therefore, impacts would be less than significant.

Some Phase 2 ponds (Ponds R5 and S5 at the Ravenswood Ponds and the A8 Ponds) would not be opened to fully tidal flows but would instead be enhanced as managed ponds with muted tidal flows through water control structures. If not well managed, these ponds could become stagnant and rich in nutrients, and therefore would have higher risk factors for changes to algal abundance. However, water control structures would allow directional circulation and other management activities to minimize adverse effects. Should managed ponds cause adverse changes to algal abundance and composition, adaptive management measures would be implemented to reduce potential impacts (e.g., manipulating hydraulic residence time or altering the depths of the managed ponds). Because adaptive management would be used to minimize adverse effects from managed ponds, impacts would be less than significant.

Initial breaching of some ponds may temporarily increase the amount of biological oxygen demand in ebb flows, but tidal currents would also provide mixing, improve reaeration, and dilute nutrients, and the shallow water environment would allow dissolved oxygen from surface reaeration to rapidly become vertically well mixed. Some ponds would continue to have very limited tidal mixing and the residence time in the ponds could be on the order of hours to days. If residence times were long, water in the managed ponds would likely be stagnant and rich in nutrients, particularly in summer months, and therefore dissolved oxygen concentrations may be low. Adaptive management measures (e.g., changing residence times and/or water depths) would be implemented during low dissolved oxygen conditions to reduce the potential for the adverse conditions associated with low dissolved oxygen levels, such as mortality of aquatic or benthic organisms, odors that cause nuisance, degraded habitat, or unacceptably high methylmercury production rates. Because of monitoring and the implementation of adaptive management measures, impacts would be less than significant.

The increasing tidal flows in some ponds resulting from the breaching levees would allow full tidal inundation to these ponds and increase tidal flows and scour in adjacent sloughs. Although wetting and drying cycles could enhance methylmercury production, the conversion of deep or stagnant ponds to fully tidal marsh would likely lessen the risk of a mercury problem within the pond. The restored tidal marsh would produce less labile organic matter than what is produced in the managed pond, providing less fuel for methylating bacteria and leading to less methylmercury production. There is a potential risk associated with the remobilization of mercury-laden sediment in sloughs downstream of breaches due to scour from the increased tidal prism following reconnection of ponds to full tidal flows. This scour could increase the amount of inorganic mercury that is available for methylmercury production and uptake into the food web, at least in the short term. However, the remobilized sediment would mix with other sediment, be dispersed by the tides, and proceed through various fates of deposition, burial or further transport (Grenier et al. 2010). Adaptive management would be used to monitor effects from tidal marsh restoration and could include methylmercury concentrations in water and sediments and special studies of methylmercury

production, degradation, transport, and changes in food web indicators and sentinel species. Adaptive management actions would be triggered when the mercury concentrations of sentinel species increase substantially, regardless of whether they are over or under desirable levels. If triggers are exceeded, then adaptive management actions would be implemented to avoid significant impacts. Examples of such actions include capping with clean fill, removing mercury-contaminated sediments, or manipulating other factors such as dissolved oxygen concentrations, light penetration, or encouraging development of favorable plant species. Because adaptive management would be used to minimize adverse effects, impacts would be less than significant.

Construction-related activities could lead to short-term, transient adverse water quality impacts during or shortly after the period of construction. Construction activities that could affect water and sediment quality include placement and grading of levee fill, placement of fill material for habitat transition zones, breaching levees, and construction of hardened crossings, all of which could result in short-term increases in turbidity. Construction activities would increase the possibility of exposure to or release of hazardous materials and waste associated with construction, such as fuels or oils, as a result of accidents or equipment malfunction or maintenance. Hazards could also result from the routine maintenance activities required for the ponds and public access facilities; such activities may include levee repair, dredging, small-scale construction, and general cleaning. Hazardous materials that could lead to water or sediment quality impairments if spilled would primarily include spills and leaks of liquids (fuels and oils) from maintenance vehicles and equipment. Potential effects to water quality from contaminants other than mercury, methylmercury, and dissolved oxygen could occur. With proper management and oversight, impacts associated with construction activities should not result in exceedances of any thresholds of significant impact. Also, it is unlikely that the impacts associated with mobilization and transport of contaminated sediment would be of a sufficient magnitude or extent as to cause exceedances of the thresholds identified after mitigation. Programmatic mitigation measure **SBSP Mitigation Measure 3.3-4a: Storm Water Pollution Prevention Plan** would be implemented to further reduce this impact to less than significant.

There are potentially significant cumulative impacts relative to water quality in the study region. Other cumulative tidal habitat restoration projects have the potential to increase phytoplankton (algae) abundance and composition as levees are breached. Some of the cumulative projects would have potentially significant impacts when considering the long-term cumulative impacts of discharge of biological oxygen demand (BOD) and/or chemical oxygen demand (COD) into the Bay. Some of the cumulative projects would have impacts when considering the long-term cumulative impacts of mobilization and transport of mercury-contaminated sediments and do not as yet have well-defined adaptive management plans and therefore have potentially significant impacts. As discussed above, all impacts to water quality from the Phase 2 Action Alternatives are less than significant. Many of the Phase 2 Action Alternatives would actually improve water quality conditions or reduce a water quality problem by increasing tidal flows. Adaptive management measures would be used to address harmful changes in the abundance and composition of algal species. Adaptive management measures (e.g., changing residence times and/or water depths) also would be implemented to reduce the potential for the adverse conditions associated with low dissolved oxygen levels and substantial methylmercury levels. Because adaptive management measures would be implemented for all Phase 2 Action Alternatives, their contribution to a significant cumulative water quality impact would not be considerable relative to the existing environment.

Geology, Soils, and Seismicity

The geographic scope of potential cumulative geology, soils, and seismicity impacts is limited to the vicinity of the SBSP Restoration Project. The NEPA- and CEQA-related impacts associated with geological hazards are generally site-specific and depend on localized geologic and soil conditions. As a result, they are not typically additive or cumulative in nature.

Due to the location of the SBSP Restoration Project, only flood management projects are considered in the cumulative analysis. Other cumulative flood management projects considered in the 2007 EIS/R and those listed in Table 4-1would be designed to maintain or improve levels of flood protection, and as such would consider local ongoing and future settlement and subsidence from consolidation of bay mud and liquefaction as part of their design and construction. Review of the 2007 EIS/R and the cumulative projects listed in Table 4-1 indicates that less-than-significant cumulative impacts are associated with geology, soils, and seismicity in the study region.

Cumulative Impacts of No Action Alternatives

Under the Phase 2 No Action Alternatives, the existing salt pond levees would be allowed to continue to degrade, and no new structures or weight would be added that could expedite any already occurring rates of subsidence or increase the risks associated with liquefaction or fault rupture. Therefore, implementation of the No Action Alternatives at any of the Phase 2 pond clusters would not increase the risk of any of these hazards. This impact would be less than significant.

No significant cumulative impacts associated with geology, soils, and seismicity exist in the project area, and the contribution of the Phase 2 No Action Alternatives to cumulative impacts related geology, soils, and seismicity would not be considerable and would not trigger a significant cumulative impact.

Cumulative Impacts of Phase 2 Action Alternatives

Under the Phase 2 Action Alternatives, raising or improving levees, building habitat islands, or constructing habitat transition zones would add additional weight to some areas underlain by bay mud, thereby potentially increasing the existing rate of settlement. However, the levees and other improvements would be designed and constructed to compensate for settlement and consolidation that would prevent tidal overtopping and be intended to prevent flooding. Also, the levees and other features would be improved and designed to withstand seismic events to the extent practicable. These features would not be placed so as to create new impacts or worsen existing potential impacts on people or property. The long-term settlement of improved levees and other structures resulting from increased weight would be offset by required maintenance to ensure minimum elevations are achieved and potential effects on people and property would be less than significant. The nearby associated infrastructure (roads, railways, bridges, utility access structures, etc.) would continue to be maintained as needed. As such, potential effects from settlement due to consolidation of bay mud would be less than significant.

The Phase 2 Action Alternatives would not cause habitable structures to be constructed within the project areas and would not create new opportunities to expose people to damages resulting from liquefaction, lateral spreading, or fault rupture.

No significant cumulative impacts associated with geology, soils, and seismicity exist in the project area. As discussed above, the Phase 2 Action Alternatives would create less than significant geology impacts. The long-term settlement of improved levees resulting from increased weight would be offset by required

maintenance to ensure minimum elevations are achieved. Any failures of upland flood control levees caused by liquefaction or lateral spreading would be repaired similar to what would occur under the management strategy of the AMP. Improved levees would be constructed to withstand failure from fault rupture to the extent practicable. Also, given the site-specific nature of geology impacts under CEQA or NEPA, the Phase 2 Action Alternatives contribution to cumulative impacts would not trigger a significant cumulative impact.

Biological Resources

The geographic scope for the biological resources cumulative impact analysis encompasses areas (including wetlands, intertidal areas, sensitive habitats, and riparian habitats) that could be affected by the proposed project and the projects identified in Table 4-1. This region is appropriate because the habitats and wildlife species that would be affected by the project are part of a broader ecosystem, and the potential disturbance of individual areas has repercussions for a wider region than the immediate project vicinity.

The cumulative impact projects with the greatest potential to affect these are the restoration projects, water treatment plant projects, and the flood protection projects because those projects have the greatest potential to have effects to biological resources. Review of the 2007 EIS/R and the cumulative projects listed in Table 4-1 indicates potentially significant cumulative impacts relative to biology exist in the study region. Additional tidal restoration efforts that are under way or proposed in San Francisco Bay could reduce the availability of high-tide habitat for small shorebirds to some degree. High-tide roosting habitat is unlikely to limit populations, because pond levees, islands, and other alternative habitats can support high densities of roosting birds. However, conversion of existing ponds to tidal habitats would reduce the numbers of sites where shorebirds can congregate at high tide, potentially resulting in increased predation, crowding effects (possibly including increased susceptibility to disease), and increased disturbance (and associated increases in energy expenditure) by predators and humans. The effects of restoration projects in other parts of the Bay on high-tide foraging habitat are expected to be fairly minor, because the highest numbers of shorebirds using salt ponds in the Bay Area occur in the South Bay.

Tidal wetland restoration projects are expected to influence mudflat habitat acreage and productivity, whereas other cumulative projects are expected to have minimal effect on mudflat habitat acreage or productivity. Approximately 2,500 acres of tidal wetlands have been restored or are planned to be restored in the South Bay in addition to the SBSP Restoration Project. Additional current pond habitat is planned to be opened to the tides and begin accreting sediment to form vegetated tidal salt marsh and other associated tidal wetlands. The sediment demand associated with the cumulative amount of tidal wetland restoration in San Francisco Bay, and the South Bay in particular, in light of sea-level rise would potentially result in a significant loss of mudflat area. Furthermore, some mudflat loss may be offset by increases in mudflat productivity due to marsh restoration and the transport of organic material from restored marshes to mudflats. Therefore, the extent to which mudflat loss would result in a decline in mudflat-associated wildlife species is uncertain. Nevertheless, because of the potential loss of mudflats as a result of sea-level rise and the cumulative tidal wetland restoration projects, a potentially significant cumulative impact could occur. The potential loss of mudflats as a result of cumulative tidal wetland restoration projects and sea-level rise is expected to reduce the area of mudflat foraging habitat for small shorebirds. As a result of this potential mudflat loss, coupled with the conversion of high-tide foraging habitat in managed ponds to tidal habitats, other tidal restoration projects and sea-level rise could

potentially result in a significant cumulative impact to small shorebird numbers and the populations of other mudflat-dependent species in the South Bay.

Cumulative Impacts of No Action Alternatives

This section first summarizes the discussions of significance determinations in Section 3.5, Biological Resources, for each of the 25 numbered impacts at the various Phase 2 pond clusters under the No Action Alternatives. The discussion generally follows the order of those numbered impacts. It then discusses whether the Phase 2 No Action Alternatives make a considerable contribution to any existing or newly identified cumulatively significant impacts.

Under the Phase 2 No Action Alternatives, there would either be less-than-significant impacts or no impacts to biological resources, depending on the pond clusters and impacts in question. Under the No Action Alternatives, no new construction activities would occur. The USFWS would continue to operate and maintain the ponds in accordance with ongoing management practices that have been in place since the implementation of Initial Stewardship Plan (ISP) actions. In general, small shorebird habitat would remain relatively unaffected, resulting in less-than-significant impacts to small shorebirds. In the long term, the area of mudflats would decrease for the Alviso-Island Ponds as the ponds become vegetated, though some mudflat habitat would remain along the channels and sloughs. Relative to the existing amounts of mudflat habitat for wildlife species in the South Bay, this change would be less than significant. There would be no change to intertidal mudflat habitat for the other pond complexes and less-than-significant or no impacts to wildlife species in the South Bay.

Several species of small shorebirds (examples of common species include semipalmated plover, western sandpiper, least sandpiper, dunlin, short-billed dowitcher, and long-billed dowitcher) occur in the San Francisco Bay Area, primarily during migration and in winter (roughly July through April). San Francisco Bay is one of the most important stopover and wintering areas on the west coast for these species. Within San Francisco Bay, the majority of these birds are typically found in the South Bay. There are potentially significant cumulative impacts to small shorebirds in the project area. However, the Phase 2 No Action Alternatives cause no impacts to shorebirds except in the Alviso-Island Ponds, where the impact is less than significant. Therefore, the Phase 2 No Action Alternatives would not have a considerable contribution to a cumulative impact.

Western snowy plovers have found suitable habitat conditions in some former salt ponds that are managed as seasonally dry ponds. However, of the Phase 2 pond clusters, only the Ravenswood Ponds presently provide western snowy plover habitat. Under the No Action Alternatives, there would be no change in impacts to western snowy plover habitat at the Ravenswood Ponds or any of the Phase 2 pond clusters. Also, the USFWS Refuge management team is already planning and implementing a number of habitat enhancements and other management techniques to increase western snowy plover populations. These techniques may include treating the nesting substrates (pond bottoms) with shells and other surfaces to increase camouflage and thus nesting success (as is taking place at California Department of Fish and Wildlife–owned and managed Eden Landing), constructing habitat islands to provide isolated nesting areas (as at Eden Landing Ponds E12 and E13 and Refuge Pond SF2), conducting social attraction experiments such as those currently under way at Pond SF2, and harassing predator species such as gulls. Regardless of which No Action Alternative is selected for Phase 2, the Refuge will continue to actively monitor and manage for western snowy plover, adapt and reapply the results of these experiments, and implement the appropriate actions to maintain western snowy plover populations and protect their habitat.

American avocets, black-necked stilts, Forster's terns, and Caspian terns are colonial waterbirds that nest and forage within portions of the SBSP Restoration Project area. These birds nest on islands within ponds and, in the case of stilts and avocets, on salt pond levees; in dry salt panne habitat; in marshes on higher ground around marsh ponds; and in other bayside habitats. There would be small changes in available nesting, roosting, and foraging habitat for pond-associated waterbirds over time under the No Action Alternatives in the Alviso-Island pond cluster. These changes are extremely unlikely to cause the populations of pond-associated waterbirds to decline 10 percent or greater. There would be no changes under the No Action Alternatives at the other Phase 2 pond clusters.

Diving ducks, such as lesser and greater scaup, bufflehead, canvasbacks, and other species, occur in the South Bay primarily during the nonbreeding season. Although no construction activities or actions would be conducted under the No Action Alternatives, there would be changes over time to the baseline foraging habitat of diving ducks at the Alviso-Island Ponds as they transition to tidal marsh. The Alviso-Mountain View Ponds would be maintained in their current condition and would generally continue to provide the same habitat functions as they do now, though Charleston Slough is intended to slowly transition to tidal marsh. Over time, the open water habitat at the Alviso-A8 Ponds would be slowly lost as the ponds accrete sediment and begin to transition to tidal marsh. This transition is expected to take several decades unless there are structural or operational changes to the A8 Ponds. The Ravenswood Ponds do not currently provide forage habitat for diving ducks, so there would be no impacts on this species. These changes are not expected to produce substantial declines in flyway-level populations or reduce the population of diving ducks 20 percent below baseline levels.

Although small numbers of ruddy ducks breed in the South Bay, this species occurs in the project area primarily during their winter migration. In contrast with most of the diving ducks addressed above, ruddy ducks are diving ducks that, in the South Bay, forage and roost primarily in salt ponds, with relatively few individuals using tidal habitats in the South Bay. Currently, a small number of ruddy ducks use the Island Ponds and adjacent sloughs for foraging. As the ponds transition to tidal marsh under the No Action Alternatives, they would be expected to be used less, though some foraging habitat would still be available within the channels inside the marsh. These changes would not be expected to produce substantial declines in flyway-level populations. The Alviso-Mountain View Ponds would be maintained in their current condition and would continue to provide substantial amounts of suitable ruddy duck foraging habitat. Seasonally muted tidal pond habitat suitable for foraging ruddy ducks occurs at the Alviso-A8 Ponds. Over time, this open water habitat will be lost as the ponds transition to tidal marsh, though this could take several decades to occur. However, open water habitat for ruddy ducks is present elsewhere in the South Bay. Neither substantial declines in flyway-level populations nor a 15 percent reduction in population is expected under the No Action Alternatives.

Dabbling ducks forage in a variety of habitats in the South Bay, including mudflats, shallow subtidal habitats, tidal sloughs and marsh channels, marsh ponds, managed and muted tidal marsh, seasonal wetlands, managed ponds, and water treatment plants. The tidal marshes that would develop in the breached ponds in the Alviso-Island Ponds are expected to provide roosting and foraging habitat for dabbling ducks. This habitat would be a beneficial impact under NEPA. There would be no impacts to dabbling ducks in any of the other Phase 2 pond clusters under the No Action Alternatives.

The California least tern uses levees in the South Bay as post-breeding roosting sites. After breeding (primarily at Central Bay sites), adult California least terns bring their juvenile offspring to the South Bay to forage before migration. The No Action Alternatives would have less-than-significant impacts on the California least tern at the Alviso-A8 Ponds and no impacts at the other pond complexes.

Small losses of pickleweed-dominated tidal marsh at the Alviso-Island Ponds may occur where uncontrolled breaching occurs, due to erosion and scour. Because such breaches would be unintentional, the locations and extent of habitat loss would not be controlled at all, and thus salt marsh harvest mouse and wandering shrew dispersal in any given area may be adversely affected in the short term. However, in the long term, both the marsh formation in the previously breached ponds and any uncontrolled breaching would ultimately result in increases in tidal marsh habitat, a beneficial effect for tidal marsh-associated wildlife. This increase in habitat would offset any minor short-term impacts to pickleweed dominated tidal marsh and the dispersal or habitat of marsh-associated species. No changes would occur to pickleweed-dominated tidal salt marsh at the other Phase 2 pond clusters.

In the South Bay, managed ponds support lower diversity of native fishes than tidal habitats. Conversely, many of the fish recorded in the South Bay use tidal channels and mudflats at high tide, when they are inundated. These tidal habitats are particularly important as nursery habitat for juvenile fish. Based on the location of the Alviso-Island Ponds (between Coyote Creek and Mud Slough, which are known to contain steelhead), these aquatic habitats are expected to be used by steelhead and other estuarine fish species. These ponds are currently transitioning to tidal marsh habitat as a result of activities implemented under the ISP. As a result, diversified estuarine habitat would continue to develop under the No Action Alternatives, offering shelter and foraging habitat for juvenile steelhead and estuarine fish. This habitat would be a beneficial impact under NEPA. There would be no impacts to steelhead or estuarine fish in any of the other Phase 2 pond clusters under the No Action Alternatives.

The piscivorous birds (e.g., pelicans, cormorants, grebes) of the South Bay forage in a variety of habitats and locations where prey fish are available. The low-salinity salt ponds that support fish, tidal sloughs and channels, edges of intertidal mudflats, non-tidal ponds and channels, and artificial lakes provide the highest-quality foraging areas. The shallow ponds in the Alviso-Island Ponds currently provide limited foraging opportunities for piscivorous birds. The ongoing restoration of tidal marsh habitat is expected to increase the abundance of estuarine fish. This increase would be beneficial to piscivorous birds, because it would increase their prey base, which would be a beneficial impact under NEPA. There would be no impacts to piscivorous birds in any of the other Phase 2 pond clusters under the No Action Alternatives.

Pacific harbor seals are currently the only marine mammals that are permanent residents of San Francisco Bay. Harbor seals forage in nearshore marine habitats on a variety of fishes and invertebrates. The No Action Alternatives would have no impacts on harbor seals at any of the pond complexes. Also, under the No Action Alternatives, no increased recreation access would be provided and no new impacts to sensitive species and their habitats would occur from recreation-orientated activities.

Currently, no threatened or endangered plants species are known to occur in the Phase 2 project area. However, a watch list species (CNPS 4.3), dwarf spikerush (*Eleocharis parvula*), was identified on the surrounding levees in the Alviso-Island Ponds area. Because there would be no actions under the No Action Alternatives, there would be no impact to this species. Over time, new habitat may develop for special-status marsh plants, making the impact of the No Action Alternatives less than significant and potentially beneficial.

The potential uncontrolled nature of levee breaching or failure under the No Action Alternatives could lead to locations and timing of tidal restoration that temporarily increase colonizable land in areas where control is difficult due to access. However, in general, non-native Spartina colonization is expected to be controlled by the Invasive Spartina Project in the near term, and any on-going control would be implemented by land management and resource agencies. Monitoring and management of changes in

abundance of smooth cordgrass and its hybrids in the SBSP Restoration Project area are described in the AMP. With the AMP, which would be implemented under all alternatives, and in collaboration with the Invasive Spartina Project, non-native Spartina would be monitored and controlled to reduce impacts to a less than significant level.

Large stands of *Lepidium* are present along adjacent Mud Slough and Coyote Creek. During the transition to tidal marsh in the Alviso-Island Ponds, *Lepidium* could become established, particularly along the margins of new channels that develop within the ponds. The AMP, as discussed in the 2007 EIS/R, addresses monitoring and control of *Lepidium* colonization. The implementation of the AMP would reduce this impact to less than significant.

Of the wildlife diseases that could potentially affect species in the South Bay, those affecting birds are of greatest concern because of the ease with which they may be transmitted (due to birds' mobility) and the large numbers of individuals that can potentially be exposed to diseases in flocks or colonies. Avian botulism, the avian disease with the greatest potential to affect large numbers of birds, is caused by a toxin produced by the bacterium *Clostridium botulinum*. Under the No Action Alternatives, levees breached in 2006 at the Alviso-Island Ponds would continue to naturally degrade, and tidally delivered sediment would continue to accrete in these ponds, allowing for a long-term transition to tidal marsh. Future gradual levee erosion and degradation would increase circulation and decrease conditions that are suitable for avian botulism. The developing tidal marshes are not expected to harbor conditions that are conducive to avian botulism due to the tidal exchange that will keep warm pools from establishing. Other pond complexes would maintain the managed low-salinity ponds in their current state. Under the No Action Alternatives, there would be no increase in exposure of wildlife to avian botulism and other diseases.

The epifaunal invertebrate community in the South Bay is dominated by several species of shrimps and crabs. Two native caridean shrimps, the California bay shrimp and the blacktail bay shrimp, are common in tidal sloughs and in the Bay itself. Bay shrimp may utilize tidal sloughs within the marsh as nurseries. Under the No Action Alternatives, bay shrimp are expected to benefit from the increase in tidal habitat that would occur due to the natural transition to tidal marsh habitat at the Island Ponds. Therefore, impacts are less than significant under CEQA and beneficial under NEPA. Low water quality in discharges could potentially adversely affect bay shrimp. Under the No Action Alternatives, there would be no change in the discharges compared to baseline.

Jurisdictional wetlands and non-wetland waters of the United States (WUS) occur at all project ponds (URS 2014). Under the No Action Alternatives at the Island Ponds (and to a lesser extent at the A8 Ponds and in Charleston Slough), there would be a decrease in water habitat and an increase in vegetated marsh habitat over time. These losses of water habitat would be replaced by high-value wetland habitat. At the Mountain View Ponds and the Ravenswood Ponds, there would be no changes in the area of waters or wetlands. Impacts to existing jurisdictional wetlands or waters would be less than significant.

Potentially significant cumulative impacts associated with biological resources are present in the project area. There is a potential loss of mudflats as a result of sea-level rise and the cumulative tidal wetland restoration projects in the project area. As a result of this potential mudflat loss, coupled with the conversion of high-tide foraging habitat in managed ponds to tidal habitats, other tidal restoration projects and sea-level rise could potentially result in a significant cumulative impact to small shorebird numbers and the populations of other mudflat-dependent species in the South Bay. Under the Phase 2 No Action Alternatives small shorebird habitat would remain relatively unaffected. In the long term, the area of

mudflats would decrease for the Alviso-Island Ponds as the ponds become vegetated, though some mudflat habitat would remain along the channels and sloughs. Relative to the existing amounts of mudflat habitat for wildlife species in the South Bay, this contribution to a significant cumulative impact would not be considerable relative to the existing environment. As stated above, impacts of the Phase 2 No Action Alternatives to biological resources would either be less than significant, no impact, or beneficial. The less than significant impacts are relatively minor and would not trigger a significant cumulative impact when combined with the impacts of other cumulative projects.

Cumulative Impacts of Phase 2 Action Alternatives

As discussed in Section 3.5, Biological Resources, under the Phase 2 Action Alternatives, there would be less-than-significant impacts or no impacts to biological resources under all of the Phase 2 Action Alternatives.

Under the Phase 2 Action Alternatives, at most of the pond clusters (except at the A8 Ponds, as discussed below), levees would be breached and/or lowered or removed to introduce tidal flows to the former salt production ponds to either begin or improve their transition to tidal marsh habitat. The Action Alternatives also include habitat improvements such as islands, habitat transition zones, and pilot channels. In a few locations, notably along the All-American Canal at the Ravenswood Ponds and at the southwestern end of the Mountain View Ponds, levee raising and other improvements would be made to maintain or improve the existing levels of flood protection. The Phase 2 Action Alternatives habitat enhancements and public access features would include trails and viewing platforms and—at the Mountain View Ponds—a revised water-intake system for Shoreline Park's sailing lake in Mountain View. At the Ravenswood Ponds, the Phase 2 alternatives include several different configurations of water control structures and other hydraulic connections to surrounding waterways that would allow two small seasonal ponds to become enhanced managed ponds that would provide a different type of managed pond habitat, depending on the Action Alternative selected. The various Action Alternatives present variations in the number, location, and size of these breaches; other levee and pond modifications; habitat enhancements; water control structures; and public access features.

At the A8 Ponds, the only Phase 2 Action Alternative being considered is the import of fill material from off-site, upland excavation projects and its placement into the southern corners of Pond A8S to form habitat transition zone between the pond bottom and the adjacent uplands. There are no public access features, flood control, or other habitat restoration components to this alternative.

All of these Action Alternative changes are discussed in detail in Chapter 2, Alternatives. The expected effects of 25 individually numbered impacts were analyzed for each Action Alternative at each Phase 2 pond cluster and presented in depth in Section 3.5, Biological Resources. To simplify the cumulative impacts analysis, this section describes the significance determination of those impacts in a high-level/overview fashion that is intended to identify the types of changes that could have potential to cause a new cumulative adverse impact or to make a considerable contribution to an existing cumulative impact.

The Phase 2 Action Alternatives were found to have the potential to affect biological resources in a number of ways:

- Habitat conversion or loss;
- Import and placement of material;

- Disturbance from recreational use of public access features;
- Construction-related effects;
- Increased crowding or susceptibility of wildlife species to predation or disease;
- Creating conditions that are suitable for establishment of invasive plant species; or
- Loss of jurisdictional wetlands and waters of the United States.

As Section 3.5, Biological Resources, explains in detail, most of these changes are expected to be beneficial or neutral to most of the specific biological resources or types/categories of them included in the 2007 EIS/R. Program-level avoidance and minimization measures, implementation of the AMP and other standard management practices used by the Refuge, ongoing collaboration with the adjacent city and county agencies (SCVWD; the Cities of Redwood City, Menlo Park, Mountain View, and Palo Alto), and continued implementation of monitoring and control programs such as the Invasive Spartina Project are expected to be effective in reducing impacts to levels that are less than significant, even on a cumulative basis.

Thus, in almost all cases, the potential for cumulative adverse impacts on biological resources is minimal; most of the effects of the SBSP Restoration Project would be beneficial to at least some of these resources. In the cases where small and short-term adverse impacts are expected and planned for—for example, excavating a channel through an existing fringing tidal marsh to connect a pond to the Bay—the long-term benefits are expected to be much greater: the acreage of the restored tidal marsh in the former pond would be several orders of magnitude larger than that lost in the excavated channel. Further, many of the cumulative impact projects listed in Table 4-1 are similarly oriented toward some form of habitat restoration, meaning that many of the cumulative impacts are themselves beneficial when taken in the aggregate.

The exceptions to this general statement were found to be limited to those biological resources that utilize the existing former salt ponds and/or their surrounding levees in their current configuration. Some wildlife species or guilds—most notably, birds that use shallow or deep-water ponds, intertidal mudflats, or dry salt pannes and their surroundings for nesting, roosting, and/or foraging—would see an overall reduction in the quantities of those habitats. However, with the exception of dry salt pannes, these habitat types are not in short supply in the South Bay. As discussed in Section 3.5, Biological Resources, in most cases affected species do not wholly depend on these particular habitats or features, and Section 3.5 concluded that affected species would be able to gradually relocate to other, similar habitats in the vicinity without losses of individuals in high enough numbers to trigger a significance impact. Nevertheless, the Phase 2 Action Alternatives at the Mountain View Ponds do include islands and other habitat enhancements intended to help minimize the adverse effects of restoring tidal flows to those ponds.

Western snowy plover use the dry salt panne habitat currently present at the Ravenswood Ponds for nesting, and they forage in adjacent shallow water areas within salt ponds. This habitat would be reduced by all of the Ravenswood Action Alternatives. In all three of the Action Alternatives, the proposed on-site western snowy plover habitat enhancements were viewed as effective enough to offset these adverse impacts to a less-than-significant level.

Several species of small shorebirds (examples of common species include semipalmated plover, western sandpiper, least sandpiper, dunlin, short-billed dowitcher, and long-billed dowitcher) occur in the San Francisco Bay Area, primarily during migration and in winter (roughly July through April). Restoration of former salt ponds to tidal habitats is expected to increase the availability of intertidal mudflat foraging area at low tide in the short term, as some of the breached ponds would provide intertidal mudflat habitat for some time before accreting enough sediment to become vegetated. However, in the long term, sedimentation patterns of the South Bay are expected to result in a loss of intertidal mudflat.

The Phase 2 Action Alternatives could potentially affect numbers of diving ducks in the South Bay in several ways. By converting ponds that currently provide foraging habitat for diving ducks to tidal habitats or enhanced managed ponds with a different hydrological regime (e.g., intertidal mudflats in Alternative Ravenswood C), the project would result in an overall loss of managed pond habitat. This conversion is expected to adversely affect habitat for bufflehead, which occur in the South Bay primarily in managed ponds and make relatively little use of tidal waters. However, subtidal habitat in sloughs and larger channels within restored ponds would provide foraging habitat for species such as canvasbacks and scaup, potentially offsetting the effects of the loss of managed pond habitat. Because there is so little existing forage habitat for diving ducks now, Phase 2 activities are unlikely to cause a population decline of 20 percent below baseline level or substantially reduce flyway-level populations. Also, open water habitat for diving ducks is present elsewhere in the South Bay.

Although small numbers of ruddy ducks breed in the South Bay, this species occurs in the project area primarily during winter and their migration. Population trends for this species in the San Francisco Bay between 1981 and 2012 show high variability between years. Ruddy duck survey observations between 1981 and 2012 show a stable 20-year average population across the Pacific flyway despite inter-annual variability in the Bay Area that often exceed 50% of the previous year. These yearly shifts in population indicate not only the highly mutable nature of the Bay Area ecosystem but also the resilient nature of the species and its ability to relocate to suitable ponds in response to environmental changes. Though Phase 2 activities, in conjunction with long-term implementation of the Shoreline Study (including Alviso Ponds A9-A19) and Phase 2 at CDFW's Eden Landing Ecological Reserve (Ponds E1-E7, E1C, E2C, E4C, and E5C) will result in pond habitat loss and conversion, the timeline for implementation is anticipated to provide sufficient time for ruddy duck populations to disperse to other areas of suitable habitat in the South Bay or elsewhere. This species has a documented ability to recover from stochastic events. Also, the relatively slow pace of Phase 2 implementation will allow for ample study and monitoring of yearly population changes and overall population trends, as well as for development and implementation of adaptive management responses. Thus, these changes are not expected to produce substantial declines in flyway-level populations or reduce the population of ruddy ducks 15 percent below baseline levels. Compared to the habitat present for ruddy ducks in the South Bay, the changes to habitat would be small and less than significant.

The tidal marshes that develop under the Phase 2 Action Alternatives for Alviso-Island Ponds and Ravenswood Ponds are expected to provide roosting and foraging habitat for dabbling ducks. This habitat would be a beneficial impact under NEPA. There would be less-than-significant impacts or no impacts to dabbling ducks with any of the other Phase 2 Action Alternatives.

Increased recreational access resulting from Phase 2 Action Alternatives may impact sensitive species and their habitats. However, such disturbance would likely be limited to relatively narrow corridors along the edges of the ponds where trails get added or improved. Further, these effects would be monitored and managed, and implementation of the AMP would ensure that impacts do not reach significant levels.

Public access has considerable potential to result in long-term benefits to sensitive species in the South Bay by improving public education concerning the importance of the SBSP Restoration Project and habitat restoration and South Bay conservation in general. With monitoring and implementation of the AMP, impacts of recreation would be less than significant.

The ongoing balancing of SBSP Restoration Project impacts across many locations as part of the AMP allows minor losses or conversions of some area of one type of habitat in one location can be offset with enhancement of that same type of habitat in that same location or elsewhere. Such enhancements would allow smaller areas of habitat to be equally valuable and beneficial to that particular species or other biological resources.

Because of the less-than-significant impacts or the lack of adverse impacts summarized above most types of cumulative impacts were ruled out categorically. The remaining ones are effects to western snowy plover, small shorebirds, and ducks. The effects on these resources were considered in combinations with the expected impacts of the cumulative impact projects listed in Table 4-1. In other cases where potential impacts were identified but concluded to be less than significant, the magnitude of the impacts is so small relative to the background dynamics in the existing environment that there would not be a considerable contribution to any significant cumulative impact that may exist. The impacts of construction-related noise on wildlife species is an example.

Recreation Resources

The geographic scope for cumulative impacts on recreational resources includes the cities and other communities where the proposed project and cumulative projects would be located (the cities of East Palo Alto, Fremont, Hayward, Menlo Park, Mountain View, Palo Alto, Redwood City, San Jose, and Sunnyvale and portions of unincorporated Alameda, San Mateo, and Santa Clara Counties). This geographic scope is appropriate for this analysis because the displacement of recreational uses from one area can result in the increased use of recreational facilities in another.

The types of projects listed in Table 4-1 that could contribute to cumulative impacts associated with recreation resources include restoration projects, flood protection projects, development projects, and recreation projects. Review of the 2007 EIS/R and the cumulative projects listed in Table 4-1 indicates no significant cumulative impacts associated with the provision of new public access and recreation facilities in the study region. Recreation-related projects (e.g., construction of trails and park facilities) identified in the planned project lists of local jurisdictions and other cumulative restoration and flood control projects would provide new recreation opportunities (both active and passive) through the development of public access, trails, or other recreation features. Also, it is possible that some of these cumulative trail projects would fill the gaps of the regional Bay Trail network. Other cumulative projects (e.g., residential or commercial development projects) may also require the installation of recreational components.

Cumulative Impacts of No Action Alternatives

Under the Phase 2 No Action Alternatives, no new recreation activities would occur, and no new facilities would be provided. The pond clusters would continue to be monitored and managed through the activities described in the AMP. Existing recreation use would continue to be similar to that under existing conditions and would not change in the long term.

No significant cumulative impacts associated with recreation resources exist in the project area, and the contribution of the Phase 2 No Action Alternatives to cumulative impacts related to recreation resources would not be considerable and would not trigger a significant cumulative impact.

Cumulative Impacts of Phase 2 Action Alternatives

In general, the Phase 2 SBSP Restoration Project's Action Alternatives would increase the availability and quality of public access and recreation opportunities in the communities surrounding the alternatives. The Phase 2 Action Alternatives are not expected to cause any significant adverse environmental effects on recreational facilities or to affect long-term recreational use of the study area except for temporary closures of certain parks, parking areas, or trails associated with the actual construction of some of the Phase 2 projects. When considered in conjunction with the projects listed in the 2007 EIS/R and Table 4-1 and the ongoing uses of the study region, the effects of the Phase 2 Action Alternatives on recreational resources are not expected to cause or contribute to cumulative short-term interruptions of recreational use of regional facilities such as the Bay Trail; short-term or long-term losses of recreational opportunities; or short-term or long-term needs for construction of new recreational facilities.

Restoration of the existing ponds to tidal marsh habitat involves activities that would cause changes to the existing trail system. New trail segments would be constructed as part of the Phase 2 project. With these improvements, the contribution of the Phase 2 Action Alternatives to cumulative impacts to recreation is not considerable.

No significant cumulative impacts associated with recreation resources exist in the project area. The Phase 2 Action Alternatives generally provide greater recreational benefits than currently exist or have no impact to recreation resources. Therefore, the Phase 2 Action Alternatives contribution to cumulative impacts would not be considerable and would not trigger a significant cumulative impact.

Cultural Resources

The geographic scope for cultural resources cumulative impacts includes all areas that would be disturbed by the projects identified in the 2007 EIS/R and those listed in Table 4-1. This scope is appropriate because it is large enough to encompass a representative sample of prehistoric and historic populations that once occupied the region.

The cumulative projects that involve ground disturbance or that would generate groundborne vibration could affect cultural resources by uncovering previously undiscovered archaeological or paleontological resources or by damaging historic structures, potentially resulting in additional cumulative impacts on these resources. The past, present, and reasonably foreseeable future actions considered by this cumulative impacts analysis are residential and non-residential development in the cumulative study area that could affect cultural resources.

All of the types of projects listed in Table 4-1 that would cause ground-disturbing activities could contribute to cumulative impacts associated with cultural resources. Review of the 2007 EIS/R and the cumulative projects listed in Table 4-1 indicates that no significant cumulative impacts to cultural resources occur in the study region. By law, all projects are required to take appropriate actions in the event of a find of cultural resources, as stated in **SBSP Mitigation Measure 3.8-1** of the SBSP Restoration Project (see Section 3.8, Cultural Resources, of the 2007 EIS/R). These required actions include stopping work, having a qualified archaeologist examine and determine the significance of the find, determining measures for treatment of the cultural resources, and contacting a Native American

most likely descendant. Because such measures are required to address the potential for disturbance to cultural resources, the impacts associated with cumulative projects would be less than significant.

The scale and scope of the SBSP Restoration Project area necessarily means that there is a wide range of known and unknown cultural resources that may be disturbed by some aspect of individual restoration activities. Because so many of these resources are probably obscured, they may only be encountered during project-related earthmoving activities. Accidental discoveries made during construction may be unavoidable; however, as emphasized in the National Historic Preservation Act (NHPA), CEQA, and local plans and policies, wherever practicable, preservation of cultural resources is preferred over additional damage and/or data recovery.

Cumulative Impacts of No Action Alternatives

Under the Phase 2 No Action Alternatives at each pond cluster, the ponds and their surroundings would continue to be monitored and managed through the activities described in the AMP. No new activities would occur and no cultural resources would be adversely affected.

No significant cumulative impacts associated with cultural resources exist in the project area, and the contribution of the Phase 2 No Action Alternatives to cumulative impacts related to cultural resources would not be considerable and would not trigger a significant cumulative impact.

Cumulative Impacts of Phase 2 Action Alternatives

Under the Phase 2 Action Alternatives at each pond cluster, there is the potential that previously undocumented cultural resources are present below the surface and could be affected by project activities. However, implementation of **SBSP Mitigation Measure 3.8-1** (described in Chapter 2, Alternatives) would reduce project-related impacts to recorded or unrecorded cultural resources to less-than-significant levels.

The Phase 2 Project Action Alternatives would alter the Alviso Salt Pond Historic Landscape by converting the salt pond and levee complex to tidal marsh. **SBSP Mitigation Measure 3.8-2** (described in Chapter 2, Alternatives) would reduce project-related impacts to recorded or unrecorded cultural resources to less-than-significant levels.

No significant cumulative impacts associated with cultural resources exist in the project area. As discussed above, the Phase 2 Action Alternatives would create less than significant impacts to cultural resources since SBSP Mitigation Measure 3.8-1 and SBSP Mitigation Measure 3.8-2 would be implemented as part of the project. Therefore, the contribution of the Phase 2 Action Alternatives to cumulative impacts would not be considerable and would not trigger a significant cumulative impact.

Land Use

The geographic scope for cumulative impacts on land use includes the cities and communities where the proposed project and cumulative projects would be located (the cities of East Palo Alto, Fremont, Menlo Park, Mountain View, Palo Alto, Redwood City, San Jose and Sunnyvale and portions of unincorporated Alameda, San Mateo, and Santa Clara Counties).

Review of the 2007 EIS/R and the cumulative projects listed in Table 4-1 indicates that no significant cumulative impacts on land use and planning resources occur in the study region. Most cumulative projects (especially residential, commercial, and industrial development) are required to conform to the

designated uses of general plans and the zoning ordinances of affected jurisdictions before approval. These projects include the cumulative projects listed in the 2007 EIS/R and those listed in Table 4-1. Development projects, in particular, must go through the affected jurisdiction's review process to determine conformity with designated uses, and if required, applicants must apply for a land use zoning amendment for the proposed development parcel before obtaining project approval and construction. Some cumulative public projects may not conform to designated land uses or zoning, but proposed uses are typically compatible with surrounding land uses (e.g., water-related projects within residential areas). Because all projects need to either conform to the appropriate land use designations or be compatible with surrounding land uses, cumulative land use impacts associated with other cumulative projects would be less than significant.

Cumulative Impacts of No Action Alternatives

Under the No Action Alternatives, the pond clusters would continue to be monitored and managed through the activities described in the AMP. No new activities would occur.

No significant cumulative impacts associated with land use exist in the project area, and the contribution of the Phase 2 No Action Alternatives to cumulative impacts related to land use would not be considerable and would not trigger a significant cumulative impact.

Cumulative Impacts of Phase 2 Action Alternatives

None of the activities that would occur under the Phase 2 Action Alternatives would create a land use incompatibility. The preservation of open space areas, protection of wildlife habitat, and provision of new recreation facilities would result in a beneficial impact and would be consistent with land use plans and other plans adopted for the purposes of avoiding or mitigating an environmental impact. Therefore, the Phase 2 Action Alternatives would not introduce land uses that would be incompatible with surrounding uses.

Because all projects need to either conform to the appropriate land use designations or be compatible with surrounding land uses, no significant cumulative impacts associated with land use exist in the project area. As stated above, all Phase 2 Action Alternatives would have less than significant land use impacts. The contribution of the Phase 2 Action Alternatives to cumulative impacts related to land use would not be considerable and would not trigger a significant cumulative impact.

Public Health and Vector Management

The geographic scope for public health and vector management includes three mosquito abatement districts: the Alameda County Mosquito Abatement District, the Santa Clara County Vector Control District, and the San Mateo County Mosquito and Vector Control District. All three districts use source reduction, source prevention, larvicide programs, fish programs, mosquito monitoring, vectorborne disease monitoring, and other tools to avoid, reduce, and manage mosquito problems. The districts spray larvicide into the salt marshes and other waterways at various times, as needed, and contribute to the cumulative condition for public health vector management.

The ongoing mosquito abatement projects listed in Table 4-1 could contribute to avoiding cumulative impacts associated with public health and vector management. Review of the 2007 EIS/R and the cumulative projects listed in Table 4-1 indicates that no significant cumulative impacts regarding public health vector management exist in the study region. In other parts of the Bay, ongoing and proposed tidal

restoration projects are expected to reduce the extent and quality of mosquito breeding habitat, thus reducing the need for vector management. Such reductions would result from the conversion of impounded and diked habitats, which often contain standing water with vegetation, to well-drained tidal marshes that are less suitable for use by breeding mosquitoes. Other cumulative projects listed in the 2007 EIS/R and in Table 4-1 (e.g., development and transportation or flood protection projects) are not expected to increase or decrease mosquito populations. Cumulative projects would result in a less-than-significant cumulative impact associated with increases in mosquito populations.

Cumulative Impacts of No Action Alternatives

Under the No Action Alternatives, the pond clusters would continue to be monitored and managed through the activities described in the AMP. No new activities would occur.

No significant cumulative impacts associated with public health and vector management exist in the project area, and the contribution of the Phase 2 No Action Alternatives to cumulative impacts related to public health and vector management would not be considerable and would not trigger a significant cumulative impact.

Cumulative Impacts of Phase 2 Action Alternatives

The Phase 2 Action Alternatives, for the most part, would likely result in an overall decrease in potential mosquito breeding habitat for the salt-marsh-dwelling mosquito species by providing more thorough tidal flushing. However, in some instances, opening ponds to tidal flows could result in an increase in mosquito habitat relative to the existing conditions. Tidal marshes (once they are established) are suitable habitat for some mosquito species, while the currently large salt ponds with vigorous wind action provide minimal habitat. Thus, there could be an increase the potential habitat for some types of salt marsh mosquito species. Also, the planned habitat transition zones could result in an overall increase in potential mosquito breeding habitat if they are not designed, constructed, and maintained so that water does not pool in them and allow mosquito breeding. Mosquito and vector management would continue to follow the general O&M procedures of the abatement districts and the Refuge and use the AMP for vector control. By design, the implementation of the AMP management actions would occur early enough, due to the established AMP management triggers, to avoid substantial increases in the need for vector management activities while minimizing potential increases in mosquito populations.

No significant cumulative impacts associated with public health and vector management exist in the project area. For the Phase 2 Action Alternatives mosquito and vector management would continue to follow the general O&M procedures of the abatement districts and the Refuge and use the AMP for vector control minimizing potential increases in mosquito populations. The contribution of the Phase 2 Action Alternatives to cumulative impacts related to public health and vector management would not be considerable and would not trigger a significant cumulative impact.

Socioeconomics and Environmental Justice

The study area for the socioeconomics and environmental justice cumulative impacts analysis includes the cities of Redwood City, Menlo Park, East Palo Alto, Palo Alto, Mountain View, Sunnyvale, Sunnyvale, Santa Clara, San Jose and Fremont and the unincorporated areas of San Mateo, Santa Clara and Alameda counties in the vicinity of the Phase 2 pond clusters.

Review of the 2007 EIS/R and the cumulative projects listed in Table 4-1 indicates that less-than-significant cumulative impacts regarding socioeconomics exist in the study area. Cumulative projects would likely have substantial effects on the local economy by increasing the number of residents, jobs, and commerce. For example, the increase in new residential, commercial, and industrial uses could increase the tax base of the affected jurisdictions, which in turn would lead to improved public services (including police, fire, and recreation services). Recreation-related cumulative projects would increase recreation opportunities in the region, which in turn would increase commerce for businesses that cater to recreational users.

The 2007 EIS/R concluded that the extent to which the cumulative projects would disproportionately affect minority and low-income communities (environmental justice) over the 50-year planning period cannot be determined. For example, industrial or utilities projects could be constructed near minority or low-income communities, which would result in a disproportionate land use compatibility effects such as air quality, traffic, and noise impacts. Because specific information is not available, it cannot be assumed that cumulative impacts of other cumulative projects would be less than significant. Therefore, it is assumed that the other cumulative projects would have a potentially significant cumulative impact on minority and low-income populations.

Cumulative Impacts of No Action Alternatives

Under the No Action Alternatives at each Phase 2 pond cluster, no new activities would occur as part of the SBSP Restoration Project. The pond clusters would continue to be monitored and managed through the activities described in the AMP and in accordance with current USFWS practices. Recreation activities would remain similar to those under existing conditions and would not be expected to change business conditions in the long term. Therefore, no impact to area businesses would occur and the communities would remain similar to existing conditions.

No significant cumulative impacts associated with socioeconomics exist in the project area. Since no impact to area businesses would occur and the communities would remain similar to existing conditions, the contribution of the Phase 2 No Action Alternatives to cumulative impacts related to socioeconomics would not be considerable and would not trigger a significant cumulative impact.

Although there are potentially significant cumulative impacts relative to environmental justice in the study region (because specific information is not available, it cannot be assumed that cumulative impacts of other cumulative projects would be less than significant), the Phase 2 No Action Alternatives would have no disproportionate effects on low income or minority populations and would not contribute to Environmental Justice cumulative impacts.

Cumulative Impacts of Phase 2 Action Alternatives

The Phase 2 Action Alternatives propose the construction of a range of new recreational and public access facilities at two of the pond clusters and restoration activities at all four of them. An increase in use of the additional recreational and public access facilities—as well as the currently existing ones—may incrementally increase activity at businesses associated with recreational users. The construction of the Phase 2 Action Alternatives would result in some new recreation facilities. These facilities would primarily be extensions of existing services (e.g., viewing platforms, interpretative stations, and some new trails) and are not expected to substantially increase the recreational uses of the facilities. Business activity at surrounding businesses that cater to these recreational users could expect a slight increase in their business revenues. Further, the planned restoration activities are generally a long-term

environmental benefit to surrounding communities in terms of improving water or air quality, maintaining or improving flood protection, and so on.

No significant cumulative socioeconomic impacts exist in the project area. Socioeconomic impacts under the Phase 2 Action Alternatives would generally be beneficial. The contribution of the completed Phase 2 project activities to cumulative impacts regarding socioeconomics would not be considerable and would not trigger a significant cumulative socioeconomic impact.

The Phase 2 Action Alternatives would involve earthmoving activities at each pond complex that may cause short-term construction disturbance impacts (e.g., noise from construction equipment, increase in dust, and truck traffic). These activities would also occur at some distance from residents and be similarly experienced by non-residents in the nearby business parks and on public roads and trails. Users of these facilities are drawn from the general population. Construction activities would be temporary and generally would not occur exclusively in areas where the minority population is a greater percentage than that of the surrounding cities' populations.

There are potentially significant cumulative impacts relative to environmental justice in the study region (because specific information is not available, it cannot be assumed that cumulative impacts of other cumulative projects would be less than significant). However, the Phase 2 Action Alternatives would have no disproportionate effect on minority or low income communities. Therefore, the contribution of the Phase 2 Action Alternatives to cumulative impacts related to environmental justice would not be considerable.

Traffic

The geographic scope for cumulative traffic impacts includes the South San Francisco Bay Area in the vicinity of Fremont, San Jose, Mountain View, and Menlo Park, within Alameda, Santa Clara, and San Mateo Counties. The transportation network in and around South San Francisco Bay consists of highways, surface streets, bicycle routes, public transit, railways, and air transportation facilities.

Review of the 2007 EIS/R and the cumulative projects listed in Table 4-1 indicates that potentially significant cumulative impacts regarding construction-related traffic exist in the study region. The development of future cumulative projects, specifically large-scale residential, commercial, and industrial development as well as restoration and flood control projects, would require construction activities that necessitate the transportation of equipment, machinery, soils, and workers to and from the work sites. Construction-related traffic would be expected to increase on the local and regional transportation network if these projects were to occur simultaneously. Specifically, if all construction-related traffic were to occur during the weekday peak hours, then significant cumulative traffic levels on roadways or intersections could occur, because traffic congestion within the South Bay occurs primarily during the weekday peak hours. Cumulative projects would likely be scattered both geographically (throughout the South Bay) and over time (over the 50-year planning period). Also, construction-related traffic for the cumulative projects would likely occur throughout the day, rather than concentrate only during the peak hours. However, because the number of construction-related truck trips is not known for the combination of cumulative projects that would be occurring at any given time, potential impacts from other cumulative projects must be assumed to be potentially significant.

The population of the South Bay is expected to increase over the next 25 years. This increase would result in a corresponding increase in long-term traffic volumes. The increase in long-term traffic, particularly during the weekday peak hours, could potentially degrade traffic levels on a roadway or at an intersection.

Projects identified in the MTC Transportation 2030 Plan (2005) are intended to maintain, manage, and improve surface transportation in the Bay Area. Project proponents are typically required to mitigate for adverse operational-traffic effects generated by their projects either by improving traffic facilities (e.g., widening roads, installing signals) or contributing to a regional fund for traffic improvements. Although MTC projects and mitigation measures for individual development projects are expected to address the potential for long-term degradation of traffic levels on roadways and intersections, due to the uncertainty of funding for these projects and the actual implementation of mitigation measures by project proponents, potential operational-traffic-related effects from cumulative projects would be potentially significant.

With the exception of worker vehicles that are primarily passenger cars, construction-related vehicles would involve the use of heavy trucks. These trucks would be required to follow the local jurisdictions' designated haul routes to the extent feasible; these routes consist primarily of larger roads capable of handling heavy loads. The increase in truck trips could increase wear and tear on local and regional roadways. Although major arterials and collectors are designed to accommodate a mix of vehicle types, including heavy trucks, residential streets are not designed with a pavement thickness that can withstand substantial truck traffic volumes. Because the increase in construction-related truck traffic traveling on designated routes and road improvements for the cumulative projects is not known, the impacts on roadways from cumulative construction projects would be potentially significant.

Cumulative Impacts of No Action Alternatives

Because the No Action Alternatives at each of the Phase 2 pond clusters would not involve construction of new facilities or features within the pond complexes, no construction-related traffic would be generated. As such, no increase in wear and tear on the designated haul routes during construction would occur under the No Action Alternatives. Consequently, the No Action Alternatives would not contribute to cumulative impacts.

Operation of the ponds under the No Action Alternatives at each Phase 2 pond cluster would require limited, intermittent vehicular traffic associated with O&M activities over the 50-year planning period; this traffic would constitute a less-than-significant contribution to cumulative impacts.

Although potentially significant cumulative impacts relative to construction traffic exist in the study region, the contribution of the Phase 2 No Action Alternatives to cumulative impacts related to traffic would not be considerable.

Cumulative Impacts of Phase 2 Action Alternatives

Implementation of the Phase 2 Action Alternatives would involve several construction activities that generate construction traffic. The construction traffic would be temporary in nature, lasting the duration of the construction phase. Construction activities would generate traffic associated with the transport of materials and equipment at all four pond clusters, and the delivery of fill material for a number of construction seasons, ranging from one season (at the A8 Ponds and some alternatives at the Ravenswood and Mountain View Ponds) to multiple seasons (for more extensive alternatives at the Ravenswood and Mountain View Ponds). Truck trips would be required for the transport of equipment at the beginning and end of each construction season and for worker commuting on a daily basis. As discussed in Section 3.11.3, Environmental Impacts and Mitigation Measures, the trips resulting from the delivery of equipment and workers would not noticeably contribute to local traffic delays, with the exception of Alternative Ravenswood B, which proposes mitigation to reduce project-related traffic delays to a level that the City of Menlo Park does not deem significant.

During construction of the Phase 2 Action Alternatives, construction traffic would be directed to use designated haul routes. The designated access routes are classified as major arterial streets. As such, these roads were designed to withstand substantial truck traffic. If residential streets are part of the designated haul routes, a video record of road conditions would be prepared before the start of construction for the residential streets affected by the project. A similar video of road conditions would be prepared after project construction is completed. An agreement would be entered into before construction that would detail the pre-construction conditions and post-construction requirements of the roadway rehabilitation program.

O&M activities for components of the pond cluster within the Refuge would continue to follow the AMP. These activities would include pond maintenance, levee maintenance, nesting island maintenance, habitat transition zone maintenance, and maintenance of public access and recreational features. Also, PG&E would continue to operate and maintain its infrastructure in and around some of the pond clusters. The increase in traffic volumes associated with routine maintenance and monitoring activities would be minimal relative to the baseline.

Under the Phase 2 Action Alternatives, new facilities would be installed to improve recreation and public access to two of the pond clusters. Operation of the new recreational facilities would be anticipated to result in a minor increase in visitation. However, the increased visitation is not anticipated to result in a substantial increase in vehicle traffic relative to the traffic volumes of the local network. Due to the periodic nature of the O&M traffic, the limited number of trips generated by workers visiting the ponds, and the minimal increase in visitation, the implementation of the Action Alternatives would not result in a substantial increase in traffic volumes compared to the current traffic levels in the area.

There are potentially significant cumulative impacts relative to traffic in the study region. Construction-related traffic would be expected to increase on the local and regional transportation network if the cumulative projects were to occur simultaneously. Trips resulting from the delivery of equipment and workers during construction would not noticeably contribute to local traffic delays, with the exception of Alternative Ravenswood B, which proposes mitigation to reduce project-related traffic delays to a level that the City of Menlo Park does not deem significant. Also, cumulative projects would likely be scattered both geographically (throughout the South Bay) and over time (over the 50-year planning period). There would be very little additional traffic associated with operation of the Phase 2 Action Alternatives. Therefore, the contribution of the Phase 2 Action Alternatives to cumulative impacts related to traffic would not be considerable.

Noise

Noise and vibration impacts are localized such that the geographic area in which cumulative impacts may occur is limited to the vicinity of the proposed project and the areas adjacent to the proposed construction access and haul routes.

Review of the 2007 EIS/R and the cumulative projects listed in Table 4-1 indicates that less-than-significant cumulative impacts regarding short-term construction noise exist in the study region. The development of future cumulative projects, specifically large-scale residential, commercial, and industrial development as well as restoration and flood control projects, would require construction activities that generate noise. However, cumulative projects would likely be scattered both geographically (throughout the South Bay) and over time (over the 50-year planning period). Also, because project proponents are required to comply with the requirements of the noise regulations of affected jurisdictions, and

exemptions are provided specifically for construction noise, the potential noise effects of cumulative projects during construction would be less than significant.

Cumulative Impacts of No Action Alternatives

Under the No Action Alternatives, no new construction would occur under Phase 2 and the pond clusters would continue to be monitored and managed through the activities described in the AMP and in accordance with current USFWS practices.

No significant cumulative impacts associated with noise exist in the project area, and the contribution of the Phase 2 No Action Alternatives to cumulative impacts related to noise would not be considerable and would not trigger a significant cumulative impact.

Cumulative Impacts of Phase 2 Action Alternatives

As described above, other cumulative projects in the vicinity of the project area would generally result in less-than-significant, short-term construction noise cumulative impacts because project proponents are required to comply with the requirements of noise regulations of the affected jurisdictions, and exemptions are provided specifically for construction noise. Implementation of the Phase 2 Action Alternatives would involve noise-generating construction and earthmoving activities as well as noise related to construction traffic. The Phase 2 project has incorporated programmatic mitigation measure **SBSP Mitigation Measure 3.13-1,** which ensures that construction activities shall be limited to the days and hours or noise levels designated for the local jurisdictions where work activities occur. Therefore, construction activities will not occur during noise-sensitive hours. The Phase 2 project has also incorporated programmatic mitigation measure **SBSP Mitigation Measure 3.13-2,** which requires trucks to avoid residential areas for haul routes.

Periodic maintenance of the pond infrastructure would be required following construction under the Phase 2 Action Alternatives. Maintenance would require approximately one maintenance staff person to travel to the pond clusters one or two times a week to perform activities such as predator control, general vegetation control, and vandalism repairs. Also, AMP monitoring activities would occur, which could require additional workers (e.g., staff, scientific researchers) to access the pond clusters. The frequency of visits to the pond clusters to conduct AMP monitoring activities would depend on the actual activities and would vary by season (e.g., during the bird breeding season, there could be more trips to the site than during the non-breeding season). However, the number of trips to the project site for maintenance is not expected to increase over the baseline number by more than a few trips per week.

No significant cumulative impacts associated with noise exist in the project area. There would be very little additional noise associated with operation of the Phase 2 Action Alternatives. Construction noise would temporary. Noise resulting from the delivery of equipment and workers during construction would not noticeably increase the ambient noise levels in the project area. Noise from construction activities at the pond clusters would not exceed the applicable local noise standards. Also, cumulative projects would likely be scattered both geographically (throughout the South Bay) and over time (over the 50-year planning period). Therefore, the contribution of the Phase 2 Action Alternatives to cumulative impacts related to construction-related noise would not be considerable and would not trigger a significant cumulative noise impact.

Air Quality

The geographic study area for cumulative air quality impacts is the area surrounding the proposed construction activities in the pond clusters and the San Francisco Bay Area Air Basin (SFBAAB) in general. To address cumulative impacts on regional air quality, the Bay Area Air Quality Management District (BAAQMD) has established thresholds of significance for construction-related and operational emissions of criteria pollutants. These thresholds represent the levels at which a project's individual emissions of criteria pollutants and precursors would result in a cumulatively considerable contribution to the region's existing air quality conditions. In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Therefore, additional analysis to assess cumulative impacts would be unnecessary.

The simultaneous construction of cumulative projects, including residential, commercial, industrial, restoration, flood control, and recreation projects, would generate air pollutant emissions, and if these project overlap geographically, could create a significant cumulative impact.

Cumulative Impacts of No Action Alternatives

Under the Phase 2 No Action Alternatives at each pond cluster, no construction activities would occur. Although O&M activities would be ongoing, they would be the same as those that occur now. Further, they are considered part of project operation and not construction. As such, no construction-generated emissions would occur.

Under the No Action Alternatives, operations at each pond cluster would involve no new activities. The pond clusters would continue to be monitored and managed through the activities described in the AMP and in accordance with current USFWS practices. The level of activity would be the same as the activities occurring under existing conditions and would not result in a change in emissions. O&M activities could require the use of diesel-powered equipment and vehicles that have the potential to generate toxic air contaminant (TAC) emissions. However, the use of this equipment would be limited in extent and occur intermittently and rarely over the multi-decadal lifetime of the project. As such, the potential for exposure of sensitive receptors to TAC emissions from use of diesel-powered equipment and vehicles would be less than significant. Therefore, potential impacts from long-term operational emissions would be less than significant.

According to the BAAQMD 2011 Guidelines, projects that would not result in significant impacts may be considered consistent with the applicable air quality plan (BAAQMD 2011). Because operational emissions would be less than significant, the No Project Alternatives would not conflict with the applicable air quality plan.

Potentially significant cumulative impacts relative to air quality exist in the study region. Under the Phase 2 No Action Alternatives the level of activity would be the same as the activities occurring under existing conditions and would not result in a change in emissions. Therefore, the contribution of the Phase 2 No Action Alternatives to cumulative impacts related to air quality would not be considerable.

Cumulative Impacts of Phase 2 Action Alternatives

Implementation of the Phase 2 Action Alternatives would involve—depending on the pond cluster and alternative in question—levee breaches; lowering, removal, or improvement of levees; construction of habitat islands and habitat transition zones; installation of water control structures; and construction of public access and recreational facilities. Construction activities would last up to 35 months for the most construction-intensive alternative and 5 weeks for the shortest-duration alternative. Construction activities would result in the temporary generation of emissions from earthmoving activities; exhaust from off-road equipment, material hauling, worker commute activity; and other miscellaneous activities. Of the four different pond clusters in Phase 2, it is unlikely that project implementation would take place at more than one or two of them at one time.

As shown in Tables 3.13-6 through 3.13-13 in Section 3.13, Air Quality, construction-generated daily emissions of reactive organic gases (ROGs), nitrogen oxides (NO_x), respirable particulate matter (PM_{10}) exhaust, and fine particulate matter ($PM_{2.5}$) exhaust would not exceed the applicable regional significance thresholds. Annual emissions of ROGs, carbon monoxide (CO), NO_x, and $PM_{2.5}$ would not exceed applicable de minimis thresholds for general conformity. Therefore, construction of the Phase 2 Action Alternatives would conform to the State Implementation Plan (SIP).

According to the BAAQMD 2011 Guidelines, projects that would not result in significant impacts may be considered consistent with the applicable air quality plan (BAAQMD 2011). Because construction-generated emissions would not exceed the thresholds of significance for any of the Action Alternatives, none of the Action Alternatives would conflict with the applicable air quality plan.

Earthmoving activities would result in temporary construction fugitive dust emissions that have the potential to represent a significant impact with respect to air quality. Project design features include several dust control measures that would meet the BAAQMD's current Basic Construction Mitigation Measures Recommended for All Proposed Projects from the 2011 Guidelines (BAAQMD 2011), and therefore the Action Alternatives would not result in significant fugitive dust impacts.

Because the construction activities associated with the Phase 2 Action Alternatives would conform to the SIP, result in construction-generated emissions that would not exceed a significance threshold, not conflict with the applicable air quality plan, and include adequate fugitive dust control measures, the short-term construction-generated air pollutant emissions resulting from the Phase 2 Action Alternatives would be less than significant.

Operations under the Phase 2 Action Alternatives would be similar to existing conditions and would not result in a substantial increase in emissions compared to the existing operational activity. Therefore, the potential impacts from long-term operational emissions would be less than significant for all Phase 2 Action Alternatives.

According to the BAAQMD 2011 Guidelines, projects that would not result in significant impacts may be considered consistent with the applicable air quality plan. Because operational emissions would be less than significant, Phase 2 Action Alternatives would not conflict with the applicable air quality plan.

The BAAQMD's CEQA Guidelines also require evaluation of the project's contribution to cumulative TAC exposure of sensitive receptors in the project vicinity by considering all sources within 1,000 feet of the project site. In accordance with these guidelines, a project would have a cumulatively considerable impact if the total of these local sources plus the contribution from the project exceeds BAAQMD's

cumulative risk and hazard thresholds of 100 in a 1 million excess cancer risk, a Hazard Index (chronic and acute non-cancer risks) of 10, or an annual average $PM_{2.5}$ concentration of 0.8 micrograms per cubic meter ($\mu g/m^3$).

Construction of the Phase 2 Action Alternatives would result in short-term diesel exhaust emissions from on-site heavy duty equipment. Sensitive receptors are approximately 1,000 feet southwest of the Ravenswood pond cluster. BAAQMD recommends that a site screening be conducted to determine if the project would result in the receptors being within 1,000 feet of a particulate matter (PM) or TAC source. Construction would occur throughout this pond cluster site, and many construction activities would occur at distances much greater than 1,000 feet from these receptors. A health risk screening analysis was performed to evaluate potential impacts on sensitive receptors from diesel PM emissions from construction activities. The screening assessment indicated that risks from construction activities under the Phase 2 Action Alternatives would not exceed the BAAQMD health risk and hazard thresholds. Therefore, short-term construction activities would not expose sensitive receptors to substantial PM and TAC emissions.

Project design features for the Action Alternatives would include requirements for the preparation of a Health and Safety Plan that would reduce the potential for workers and nearby residents to be exposed to airborne TACs entrained in fugitive dust during construction.

One of the cumulative projects, the Menlo Gateway Project, is just within 1,000 feet of the Phase 2 Action Alternatives at the Ravenswood Ponds and also may also occur simultaneously with construction work at that pond cluster. However, that project is well over 1,000 feet from the Maximally Exposed Individual (MEI) potentially affected by the Phase 2 Action Alternatives. Therefore, the project's contribution to cumulative risk and hazard impacts would not be cumulatively considerable.

The only criteria pollutant emissions associated with operation of the project would result from maintenance traffic and activities and would remain similar to those associated with existing maintenance activities. Therefore, there would not be a substantial increase in operational risk and hazard impacts associated with operation of the project, and the project would not have a cumulatively considerable contribution to the region's existing air quality conditions as a result of project operation. Visits to some of the Phase 2 ponds could increase somewhat following the addition of some new public access and recreation opportunities, but emissions from these visits would be barely noticeable against the background emissions that already exist.

O&M activities would require the use of diesel-powered equipment and vehicles that have the potential to generate TAC emissions. However, the use of this equipment would be limited in extent and occur intermittently over the lifetime of the project and would not substantially differ from existing O&M activities. As such, the potential increased exposure of sensitive receptors to TAC emissions during operations would not occur.

The use of results from the health risk screening analysis for construction emissions, the preparation of a Health and Safety Plan, and the intermittent nature of operational activities, the impacts to sensitive receptors from the Phase 2 Action Alternatives would be less than significant.

Although there are potentially significant cumulative impacts relative to air quality in the study region, because the Phase 2 Action Alternatives would not conflict with the applicable air quality plan and the potential increased exposure of sensitive receptors to TAC emissions during operations would not occur,

the contribution of the Phase 2 Action Alternatives to cumulative impacts related to air quality would not be considerable.

Public Services

The geographic scope for cumulative impacts on public services includes the cities and communities where the proposed project and cumulative projects would be located (the cities of East Palo Alto, Fremont, Menlo Park, Mountain View, Palo Alto, Redwood City, San Jose and Sunnyvale and portions of unincorporated Alameda, San Mateo, and Santa Clara Counties).

Review of the 2007 EIS/R and the cumulative projects listed in Table 4-1 indicates that less-than-significant cumulative impacts regarding public services exist in the study region. Development and operation of many cumulative projects, particularly residential, commercial and industrial projects, would increase the demand for fire and police protection services. Municipalities respond to increases in demand for emergency services by expanding their fire and police protection departments to keep with their service ratio goals. As part of this response, municipalities plan to ensure that sufficient services are provided for future growth. Therefore, impacts on fire and police protection services from cumulative projects would be less than significant.

Cumulative Impacts of No Action Alternatives

Under the Phase 2 No Action Alternatives, the pond clusters and their surroundings would continue to be monitored and managed through the activities described in the AMP and in accordance with current practices. No new public services facilities would be provided under the No Action Alternatives; thus, there would be no substantial increases in visitor use or increased demand for fire and police protection services. Similarly, the habitat restoration actions and the various flood protection actions would not change the demand for public services or the ability of agencies to provide them.

No significant cumulative impacts associated with public services exist in the project area, and the contribution of the Phase 2 No Action Alternatives to cumulative impacts related to public services would not be considerable and would not trigger a significant cumulative impact.

Cumulative Impacts of Phase 2 Action Alternatives

Under the Phase 2 Action Alternatives, some ponds would be breached to introduce tidal flows, and other habitat enhancement features would be added. Existing trails on many of the levees would continue to be maintained. Construction of Phase 2 Action Alternatives would result in limited new recreation facilities. These facilities would be primarily an extension of existing services (e.g., viewing platforms and interpretative stations) and would not be expected to substantially increase the need for police and fire protection services in a manner that would require new facilities or additional staff. The proposed recreation facilities would be designed in a manner that would facilitate the movement of emergency service providers in the event of an emergency (e.g., sufficient trail width to accommodate vehicles and provision of entrances). The Phase 2 Action Alternatives would not be expected to increase the need for public services to such an extent that they would cause a reduction in the acceptable response time or outpace natural growth in the region and require construction of new police and fire protection stations.

No significant cumulative impacts associated with public services exist in the project area. The Phase 2 Action Alternatives would not be expected to increase the need for public services to such an extent that they would cause a reduction in the acceptable response time or outpace natural growth in the region and

require construction of new police and fire protection stations. The contribution of the Phase 2 Action Alternatives to cumulative impacts related to public services would not be considerable and would not create a significant cumulative impact.

Utilities

The geographic scope for cumulative impacts on utilities includes the cities and communities where the proposed project and cumulative projects would be located (the cities of East Palo Alto, Fremont, Menlo Park, Mountain View, Palo Alto, Redwood City, San Jose, and Sunnyvale and portions of unincorporated Alameda, San Mateo, and Santa Clara Counties).

The types of projects listed in Table 4-1 that could contribute to cumulative impacts associated with utilities include flood protection projects and development projects. Review of the 2007 EIS/R and the cumulative projects listed in Table 4-1 indicates less-than-significant cumulative impacts regarding utilities exist in the study region except for potential effects to storm drains. Tidal inundation of ponds as a result of unplanned levee breaches, along with other tidal habitat restoration projects, could contribute to reduced access to PG&E towers in the baylands at a time when continued population growth in the Bay Area is expected to increase the demand on these facilities. Other types of cumulative projects are not expected to contribute to reduced access to PG&E towers in the baylands. Other tidal wetland restoration projects are in areas containing towers for power transmission or distribution lines and may result in reduced PG&E access. The number of towers in these tidal restoration areas is small compared to the total number of towers in the South Bay and compared to the number of towers PG&E maintains in existing tidal areas. Impacts at restoration locations where the towers can be accessed by road are expected to be negligible. Therefore, cumulative projects would not significantly reduce access to PG&E towers in the South Bay.

Unplanned breaches in other portions of the SBSP Restoration Project area could affect storm drains in the vicinity of those breaches, and storm drain improvements implemented as part of other projects in the area would not offset adverse effects in these areas. These cumulative impacts would therefore be potentially significant.

Other cumulative projects are not expected to result in changes in water level, tidal flow, or sedimentation near pumping facilities and sewer force mains and outfalls.

Other cumulative projects are not expected to disrupt Hetch Hetchy Aqueduct services and are not expected to disrupt rail service.

Cumulative Impacts of No Action Alternatives

Under the Phase 2 No Action Alternatives, no new activities would be implemented as part of Phase 2. The pond clusters would continue to be managed through the activities described in the AMP and in accordance with current USFWS practices. In addition to levee maintenance, PG&E tower improvements would be made as part of routine maintenance, to comply with the requirements of the NERC program, and to adapt to sea-level rise. These improvements may involve raising towers and/or raising and strengthening the foundations or superstructures of towers. Because of the continued maintenance of levees and ponds and improvements planned for the towers under the NERC program, PG&E's ability to access existing towers via levees and boardwalks would be maintained.

Unplanned levee breaches could temporarily affect water level, tidal flow, and sedimentation near storm drain systems, but no changes are expected to water surface elevations during high tide. Therefore, any potential changes resulting from unplanned breaches are not expected to affect the ability to operate storm drain systems.

Impacts resulting from changes in water level, tidal flow, or sedimentation near pumping facilities would be less than significant. There are no sewer force mains or outfalls in close proximity to any of the Phase 2 pond clusters. Therefore, there would be no potential for changes in water level, tidal flow, or sedimentation near sewer force mains and outfalls.

The Phase 2 No Action Alternatives would have no impacts regarding disruption of rail service.

There are potentially significant cumulative impacts relative to changes in water level, tidal flow, and sedimentation near storm drain systems in the study region. Unplanned breaches in other portions of the SBSP Restoration Project area could affect storm drains in the vicinity of those breaches. Under the Phase 2 No Action Alternatives, unplanned levee breaches could temporarily affect water level, tidal flow, and sedimentation near storm drain systems, but no changes are expected to water surface elevations during high tide. Therefore, any potential changes resulting from unplanned breaches are not expected to affect the ability to operate storm drain systems. Therefore, the contribution of the Phase 2 No Action Alternatives to cumulative impacts related to storm drain systems would not be considerable.

No significant cumulative impacts associated with other utilities exist in the project area. Under the Phase 2 No Action Alternatives access to PG&E's transmission towers would be maintained. Operation of storm drain systems are not expected to be affected. No sewer force mains or outfalls are in close proximity to any of the Phase 2 pond clusters. Therefore, the contribution of the Phase 2 No Action Alternatives to cumulative impacts related to other utilities would not be considerable and would not trigger a significant cumulative impact.

Cumulative Impacts of Phase 2 Action Alternatives

Under the Phase 2 Action Alternatives, no changes to PG&E towers, storm water management, or other utilities are planned at most of the pond clusters. However, at the Mountain View Ponds, Phase 2 would include raising the concrete foundations of the PG&E towers and raising and improving the maintenance boardwalks to retain access after the ponds are breached. Bridges would be installed across some breaches to maintain the connectivity of the existing PG&E access road on this levee. Some of the habitat transition zones would be constructed around and beneath existing PG&E transmission towers and maintenance boardwalks. The boardwalks would be raised above the high-tide levels. The towers would continue to be maintained by PG&E. Access to the transmission towers outside of pond levees by boat or helicopter would not be impacted.

Other potential impacts to utilities include sedimentation near storm drain systems, pumping facilities, and sewer force mains and outfalls; disruption to Hetch Hetchy Aqueduct service; disruption of rail service; and reduced access to sewer force mains. However, as with the Phase 2 No Action Alternatives, none of the Phase 2 Action Alternatives would directly affect or modify these systems, impair the functioning or operation and maintenance of these systems or their infrastructure, or otherwise adversely affect them.

There are potentially significant cumulative impacts relative to changes in water level, tidal flow, and sedimentation near storm drain systems in the study region. Unplanned breaches in other portions of the

SBSP Restoration Project area could affect storm drains in the vicinity of those breaches. Overall, the expected changes in water levels and sedimentation patterns associated with the Phase 2 Action Alternatives are not expected to substantially affect the operation of storm drain systems or pumping facilities. Therefore the contribution of the Phase 2 No Action Alternatives to cumulative impacts related to storm drain systems would not be considerable.

No significant cumulative impacts associated with other utilities exist in the project area. The Phase 2 Action Alternatives would have no impacts to the other utilities in the project area (i.e., electrical transmission lines, towers, sewer force mains, Hetch Hetchy Aqueduct, or rail). As such, the contribution of the Phase 2 Action Alternatives to cumulative impacts related to utilities would not be considerable and would not create a significant cumulative impact.

Visual Resources

The geographic scope for the visual resources cumulative impact analysis consists of the immediate, publicly viewable area within or surrounding the existing salt ponds.

Review of the 2007 EIS/R and the cumulative projects listed in Table 4-1 indicates potentially significant visual resources cumulative impacts exist within the study region. Cumulative projects (including residential, commercial, industrial, flood control, restoration, and recreation projects) would alter views of the South Bay, including the SBSP Restoration Project area, through construction of new facilities (e.g., buildings, recreational features, levees, floodwalls) or expansion of existing facilities (e.g., expansion of commercial centers). For those cumulative impact projects that would include features that could alter views, these changes would be required to comply with applicable government policies and guidelines related to aesthetic resources pertaining to the location of development, height restrictions, and architectural design. These policies and guidelines are intended to limit development of incongruous visual features and maximize visual integration. Flood protection projects and development projects could construct facilities that would obstruct scenic views. Because it is not known whether the cumulative projects would obstruct views or where facilities obstructing views would be constructed, the potential effects on views cannot be evaluated. Consequently, for this analysis, it is assumed that impacts on views resulting from cumulative projects would be potentially significant.

Cumulative Impacts of No Action Alternatives

Under the No Action Alternatives, the ponds would continue to be managed through the activities described in the AMP and there would be no alteration of views in the SBSP Restoration Project area.

Although there are potentially significant cumulative impacts relative to visual resources in the study region, the contribution of the Phase 2 No Action Alternatives to cumulative impacts related to visual resources would not be considerable.

Cumulative Impacts of Phase 2 Action Alternatives

Some of the Phase 2 Action Alternatives would open some ponds to tidal flows to restore them to tidal marsh, improve levees to provide additional flood protection, create habitat transition zones and other habitat enhancement features, increase pond connectivity, and add or improve public access features. The major effect of these actions would be the creation of tidal marsh habitat, which would change the visual environment of the Phase 2 pond clusters in various ways. The Alviso-Island Ponds are already open to tidal flows and are transitioning to marshes; the Action Alternatives for the Island Ponds would not

change that end condition but would change the spatial distribution and complexity of that marsh. At the Alviso-Mountain View Ponds, the Action Alternatives would change the ponds from deepwater ponds to vegetated marshes, which would alter the texture and color of the views. At the Alviso-A8 Ponds, the Action Alternative would add habitat transition zones, which would introduce a minor visual change of the vegetated slopes into the ponds. At the Ravenswood Ponds, the Action Alternatives would change seasonal ponds to vegetated marshes, which would alter the texture and color of the views.

There are potentially significant cumulative impacts relative to visual resources in the study region. Cumulative projects would alter views of the South Bay, including the SBSP Restoration Project area, through construction of new facilities or expansion of existing. The Phase 2 Action Alternatives would create a less than significant impact to visual resources by altering the texture and color of the views and introducing a minor visual change. Although this represents a change to the visual character, this very minor change to the visual character of the study region as a whole would not be a considerable contribution to the cumulative impact.

Greenhouse Gas Emissions

Because GHG emissions affect global climate change, the evaluation of GHG emissions is inherently a cumulative impact issue. However, it is not feasible to evaluate GHG emissions impacts based on the sum of all past, present, and reasonably foreseeable future projects on a global scale. Therefore, the geographic scopes for cumulative GHG emissions impacts are the SFBAAB and the state of California as a whole.

Cumulative Impacts of No Action Alternatives

Under the No Action Alternatives, no construction activities would occur within the Phase 2 ponds. Although limited O&M activities would be ongoing, they are considered part of baseline operations, not construction. As such, no additional construction-generated GHG emissions would occur. Operations under the No Action Alternatives would involve limited O&M activities, such as levee repair, railroad track maintenance, and biological surveys. These activities would occur intermittently over the 50-year lifetime of the project. O&M activities would generate GHG emissions associated with the use of vehicles and other equipment. However, the level of activity would be similar to the O&M activities occurring under existing conditions and would not result in a substantial increase in GHG emissions compared to the existing operational activity. Therefore, potential impacts from long-term operational GHG emissions under the No Action Alternatives would be less than significant and would not make a considerable contribution to a cumulative impact.

Cumulative Impacts of Phase 2 Action Alternatives

Implementation of the Phase 2 Action Alternatives would involve GHG-emitting activities such as levee improvements, creation of nesting islands, creation of habitat transition zones, and construction of recreational facilities. Up to 730,000 cubic yards of material would be transported from off-site locations, depending on the alternatives selected. The Phase 2 Action Alternatives would generate construction-related GHG emissions from off-road equipment, material hauling, and worker commute activity.

The environmental impacts of GHG emissions are long-term and global in nature. For that reason, unlike any of the other environmental resources or impacts analyzed in this Final EIS/R, it is useful to include an estimate of the maximum GHG emission from the combined actions at the four pond clusters included in Phase 2. Assuming the alternative with the most GHG emissions at the Island Ponds, the A8 Ponds, the Mountain View Ponds, and the Ravenswood Ponds is selected, the sum of the estimated GHG emissions

values from Tables 3.17-1 through 3.17-4 (in Section 3.17) can be used to analyze this highest potential emissions scenario. To do this, the construction GHG emissions from the most highly emitting alternatives at each pond cluster were summed and amortized over the 50-year lifetime of the project.

Using those values, the sum of estimated GHG emissions from construction actions under Alternative Island C, Alternative Mountain View C, Alternative A8 B, and Alternative Ravenswood C is 1,688 metric tons of CO_2e. Amortized over the 50-year project lifetime, this sum is 33.76 metric tons of CO_2e per year. This value for amortized construction GHG emissions would not exceed the bright line emissions threshold of 1,100 metric tons of CO_2e per year, which is the applicable regional significance threshold, and would thus be less than significant.

Further, the restored tidal marshes are projected to be a net absorber of carbon dioxide, the most common GHG, which would reduce the net emissions from the project. Relative to the overall emissions of GHGs in the southern portions of the SFBAAB and in California as a whole, the GHG emissions from Phase 2 Action Alternatives are extremely minor. As a result, this impact would be less than significant and would not make a considerable contribution to a cumulative impact.