12.0 CUMULATIVE IMPACTS AND OTHER REQUIRED ANALYSES

12.1 Introduction to Cumulative Analysis

NEPA and CEQA require the analysis of cumulative impacts (Sections 12.1 and 12.2), irreversible and irretrievable commitments of resources (Section 12.3), the relationship between short-term uses of the environment and the maintenance and enhancement of long-term environmental productivity (Section 12.4), and growth-inducing effects (Section 12.5). NEPA also requires a consideration of impacts to environmental justice and the protection of children (Section 12.6). Finally, this chapter identifies any significant unavoidable adverse impacts that were identified during preparation of the EIR/EIS (Section 12.7).

Cumulative impacts are effects which result incrementally from an action or undertaking and other past, present, and reasonably foreseeable near-term future actions, taken together (regardless of the agencies or parties involved). In other words, significant cumulative impacts can result from the combination of effects within a given locality or region that are not individually significant.

For the purposes of this analysis, "past actions" are actions within the project region of influence (ROI) that occurred within the past 10 years. "Present actions" include (1) current operations within the ROI and (2) current resource management programs, land use activities and development projects that are being implemented by other governmental agencies and the private sector (where they can be identified) within the region. To avoid undue speculation about possible future projects that may contribute to cumulative effects, "reasonably foreseeable future actions" are those which have been approved for implementation by appropriate authorities and can be identified and defined with some respect to time frame and location.

For this project, the ROI is the South Bay; that is, approximately the portion of the Bay from the vicinity of the San Mateo Bridge (Highway 92) and to the south. In addition, the 9,456-acre Napa Restoration Project in the North Bay is included because of its scale and similar nature to the South Bay Salt Ponds Project, making it a likely contributor to cumulative impacts.

12.1.1 Methodology

The project specific effects of the alternatives were evaluated to assess the potential cumulative effects. Only those effects that were identified as permanent effects and that have the potential to be additive to the effects of other projects in the region are analyzed. The analysis focuses on the following resource categories:

- Hydrology
- Water-quality
- Sediments
- Biological resources—benthic organisms
- Biological resources—birds and other wildlife

- Biological resources—fish

Effects to the following resource categories discussed in detail in this EIR were found not to have the potential to contribute to cumulative impacts because effects are expected to be extremely minor, of very short duration, and/or to have no potential to be additive and therefore contribute to cumulative impacts:

- Cultural resources (see Chapter 7)— No significant impacts to cultural resources have been identified. The project will involve construction on the salt pond levees. The levees are historic features of the salt production industry in the South Bay, portions of which may be over 100 years old. Any disturbance to the levees will be similar in nature to disturbances that have been a routine part of Cargill's operations and maintenance activities at the ponds. The South Bay salt works have not been evaluated for National Register or California Register eligibility. However, the project will not impact the integrity of the salt works beyond the impacts that have already occurred under existing salt operations.
- Recreation and public access (see Chapter 8)— Although the No Project/No Action alternative could affect existing public access, all other project alternatives will maintain existing public access. The two pond management alternatives provide a modest increase in public recreation and access opportunities. In addition, none of the alternatives foreclose options for future development of public access facilities, which are being planned under the Long Term Salt Pond Restoration Plan.
- Air quality (see Chapter 9)— Impacts from pond odors in ponds that are managed seasonally are limited to the immediate project area, are similar to existing conditions, and are therefore not considered subject to cumulative impacts. Construction of the water control structures proposed under the ISP would involve very limited production of fugitive dust and emissions from construction vehicles. This would be insignificant compared to impacts from other construction projects and from motor vehicle emissions on highways and streets in the project area.
- Socio-economic resources (see Chapter 10)— The project would not contribute to significant loss of jobs, movement of people, or loss of taxes or other revenue; therefore, the project would not contribute to cumulatively socio-economic impacts.
- Land use planning (see Chapter 11)— Implementation of the ISP is part of a long-range strategy to convert land use of the project sites from mixed industrial/wildlife conservation/recreation to a focus on wildlife conservation/recreation uses. This change is consistent with existing local and regional plans and policies and is considered an overall positive land use impact.

In addition, the following resource categories were eliminated from detailed discussion in this EIR (see explanation in Section 1.6.1):

- Agriculture
- Indian trust assets
- Navigation and navigation safety
- Noise
- Population and housing

- Soils, geology and geologic hazards
- Transportation, traffic and roadway safety
- Public services and utilities

The project would have a significant cumulative impact if it, in conjunction with other projects, would exceed the significance criteria established for a resource topic.

The methodology used to analyze the cumulative impacts associated with the key resource topics identified above included:

1. Developing a list of past-present and reasonably foreseeable future projects in the vicinity of the project area (see Section 12.1.2 below)
2. Reviewing concerns recently expressed by a scientific panel about the cumulative impacts of bay-wide restoration and mitigation efforts
3. Reviewing the general plans of local counties
4. Qualitatively evaluating the cumulative impacts of past, present, and future projects

12.1.2 Projects Addressed in the Cumulative Impacts Analysis

Past, ongoing, and reasonably projects in the South San Francisco Bay region that could result in cumulative impacts are summarized in Table 12-1. Most of these are wetlands restoration, enhancement, and creation projects, representing a total of approximately 6,409 wetland acres (including tidal wetlands, muted tidal wetlands, managed marsh, perennial and seasonal non-tidal wetlands) in the South Bay.

The Napa Restoration Project in the North Bay is not included in Table 12-1, but is also included in the cumulative impacts analysis because of its scale and similarity to the South Bay Salt Ponds Project. This project is not included in Table 12-1, but is discussed further below. The Lower Guadalupe Flood Control Project does not include any plans for wetlands restoration, enhancement, or creation, but its scale and location upstream of the Alviso project ponds makes it a potential contributor to cumulative impacts. This project is also excluded from Table 12-1, but is discussed further below.

Together with the 15,100 acres of Cargill salt ponds being considered in this EIR, and the 9,456-acre Napa Restoration Project, the total area of completed and planned wetlands that are subject to cumulative impacts under the proposed project is 30,965 acres.

Table 12-1
Past, ongoing, and reasonably foreseeable future projects in the project region of influence (ROI), subject to cumulative impacts.

Project/Component Projects	County[1]	Acreage[2]	Status
Completed Projects			
Bair Island SFO Mitigation	SM	220.16	Completed 2000
Bayside Business Park, Phase II	A	40.6	Completed 2002
Cargill Mitigation Marsh (Baumberg)	A	49.16	Completed 1998
Charleston Slough	SC	101.32	Completed 1996
Cooley Landing	SM	118.43	Completed 2002
Harvey Marsh	SC	52.01	Completed 1994
Hayward Shoreline Enhancement Project	A	72.07	Completed 2002
KGO Towers	A	1.27	Completed 1996
La Riviere Marsh	A	141.22	Completed 1987
Oro Loma Mitigation Marsh	A	12.87	Completed 2000
Oro Loma Restoration	A	316.74	Completed 1997
Pacific Commons	A	878.66	Completed 2002
Pacific Shores Deep Water Slough	SM	113.67	Completed 2000
Palo Alto Harbor	SC	14.29	Completed 1994-1997
Plummer Creek Mitigation	A	26.94	Completed 1998
Ravenswood Triangle	SM	3.03	Completed 2001
San Carlos Airport North Clear Zone	SM	0.37	Completed 1997
Sanchez Creek Wetland	SM	3.12	Completed 1987
Seal Slough	SM	47.19	Completed 1983
Triangle Marsh, Hayward Shoreline	A	8.69	Completed 1990
Triangle Marsh, Refuge Entry	A	9.37	Completed 2001
Planned Projects			
Bair Island, USFWS	SM	1,385.22	Planned
Coyote Creek Flood Control Project	SC	77.28	Planned
Eden Landing	A	854.00	Under construction
Perry Gun Club (at Eden Landing)	A	62.04	2002
Foster City Marsh	SM	29.15	Planned
Hayward Shoreline Enhancement Project – Oliver Salt Ponds	A	134	Planned 2004
Moseley Tract	SM	60.99	Planned
Pond A4	SC	306.43	Planned
Pond A18	SC	855.56	Planned
San Mateo Shoreline Parks	SM	13.1	Planned
Warm Springs Pasture	A	295.41	Planned

Source: San Francisco Estuary Institute's website: dev.sfei.org

[1] Counties: A=Alameda, SC=Santa Clara, SM=San Mateo

[2] Where different mapped and reported acreages were provided, the mapped acreage was selected for this table.

Primary Contributors to Cumulative Impacts

Additional information is provided below on several projects that, due to their scale, location, and/or relationship to the proposed South Bay Salt Ponds Project, are expected to be the primary projects contributing to cumulative impacts.

CDFG Eden Landing Ecological Reserve—The CDFG Eden Landing Ecological Reserve was established in May 1996 to restore former salt ponds and crystallizers to tidal salt marsh and seasonal wetlands. Restoration was initiated in 2001 and is ongoing.

Lower Guadalupe River Flood Protection Project—The Santa Clara Valley Water District (SCVWD) is in the process of obtaining permits to implement the Lower Guadalupe River Flood Protection Project, which will accommodate the 17,000 cfs 100-year flood capacity of the Guadalupe River Flood Control Project currently under construction. The Guadalupe River Project is located upstream of the Lower Guadalupe River Flood Protection Project and is scheduled to go on line in spring 2004.

As currently designed, the Lower Guadalupe River Flood Protection Project would affect the magnitude and duration of flooding downstream of the project at the Cargill Salt Ponds, and in Alviso. Currently, when flood flows in the lower Guadalupe River exceed 6,800 cfs, Alviso Slough downstream of the Union Pacific Railroad crossing will over-top its west bank at Pond A8W. The flood control project would increase lower Guadalupe River channel capacity at the railroad crossing to 17,000 cfs and therefore increase the potential for flooding conditions in the downstream salt ponds. During flood conditions, estimated depths in ponds A5, A7, A8D and A8W would increase by up to 1 foot compared to current conditions. Flood volumes would increase from 15 to 21% and duration of flooding would increase by 12 to 30%. Without pumping or other evacuation methods, it would take months, even years for the floodwaters to evaporate under current conditions.

To reduce the potential for flooding and duration of flooding in the ponds, addition mitigation measures to be implemented include constructing an Alviso Slough Overflow Weir at Pond A8W and hardening of the Pond A6 levee. Continuing flood flows into ponds A5, A6, A7, A8, and A8D via the Alviso Weir would allow adequate storage of flood waters to minimize over-banking in Alviso Slough.

Alviso Pond A4—Alviso Pond A4 will be used by the SCVWD to restore wetland and riparian habitats to mitigate for losses resulting from construction of the Lower Guadalupe River Flood Protection Project.

Pond A5 includes an existing siphon under Guadalupe Slough from Pond A4. Pond A4 has been acquired by the SCVWD for a proposed restoration project. Based on the proposed schedule for the long-term restoration of pond A4 there may be a requirement for interim management of the pond during the initial stewardship period for the CDFG and USFWS ponds. One or more alternatives being considered by the SCVWD for interim management may include operation of Pond A4 as a batch pond with periodic outflows through the siphon to Pond A5. If SCVWD and USFWS agree that flows from A4 are appropriate, the flows would be restricted to time periods and salinity levels that would not have a significant effect on flow rates or discharge salinities from Pond A7. SCVWD would be responsible for preparation of a suitable operation plan for interim management of Pond A4 in coordination with the operation of System A7.

Alviso Pond A18—The City of San Jose recently purchased Alviso Pond A18 from Cargill. Plans for the 855.56 acres that comprise this pond have not yet been developed.

Napa-Sonoma Marshes Restoration Project—Salt marsh habitat restoration efforts are ongoing at the 9,456-acre Napa River Unit of the Napa-Sonoma Marshes Wildlife Area (NSMWA). This site consists of 7,190 acres of salt ponds and levees and 2,266 acres of fringing marsh and slough. This project is in the planning phase. The DEIR/EIS for this project was circulated in April 2003 and the comment period has closed.

12.2 CUMULATIVE ANALYSIS

The impacts of the proposed South Bay Salt Ponds ISP and other wetlands restoration, enhancement, and creation projects in the Bay can generally be considered cumulatively beneficial. These projects will result in a long-term net increase in habitat suitable for sensitive plant communities and special-status plant species. They will provide improved habitat for fish in the Bay. In the long-term, they will result in improvements to water quality by sediment filtering and other mechanisms by which wetlands can improve water quality.

Although the proposed South Bay Salt Ponds ISP will have some initial impacts from increased salinity in receiving waters following initial pond discharges, these impacts are considered to be short-term and are not subject to cumulative effects. Following the short-term impacts during the Initial Release Period, longer-term impacts are expected to be the same for the two Pond Management alternatives. Since cumulative impacts are generally limited to the longer-term impacts, cumulative impacts are also expected to be the same for the two Pond Management alternatives. The No Project Alternative may also be subject to cumulative impacts in a few resource categories and these cases are explained below. Generally, mitigation proposed for significant impacts of each of the Project alternatives will also serve to mitigate any potential contribution these alternatives would have to cumulative effects.

12.2.1 Hydrologic and Hydraulic Conditions

The No Project alternative could result in increased flood risk for the ponds and adjacent property from some levee erosion and unplanned levee failures. Alternative 1, Seasonal Ponds, would include maintenance of existing levees and facilities and would not change the existing risk of flooding. For both the No Project alternative and Alternative 1, the water levels in the ponds would be lower than existing conditions and would increase the available storage within the ponds to contain potential overflows from adjacent creeks or sloughs.

For Alternatives 2 and 3, the existing levees and facilities would be maintained and the existing risk of flooding due to unplanned levee failures would not be affected. In general, water levels in the ponds would be similar to existing conditions and would not affect the available storage within the ponds to contain potential overflows from adjacent creeks or sloughs. The proposed Lower Guadalupe River Flood Control Project would include flood overflows in large flood events (greater than a 10-year flood) into Pond A8 and the A7 system. The proposed water levels in Ponds A5 and A7 would be similar to existing conditions. Pond A8 would be a seasonal pond with winter water levels lower than existing conditions. The ISP project would not reduce the existing available storage in the ponds. The Lower Guadalupe River Flood Control Project also identified a smaller overflow into Pond A12 in the A14 system. The A14 system includes two ponds (A9 and A10) with water levels which would increase during the ISP. The estimated overflow volume during the 100-year design flood would not exceed the existing pond system capacity. In addition, inflow to the A14 system would be stopped during the winter to protect salmonids. Therefore, the winter water levels in the system could be maintained a levels similar to existing conditions. The potential for increased flooding would be less than significant.

Discharge of ISP pond waters would only occur at low tides when water levels in the creek or slough are low. The ISP discharges would not occur during flood events when channel water levels are high. Therefore, the ISP discharges would not affect the peak flow conditions considered in the design of the lower Guadalupe River channel capacity, and would not increase potential channel impacts from erosion, scour, re-suspension of sediments, and deposition into receiving waters.

12.2.2 Water Quality

The reintroduction of tidal influence to the project site and other restoration projects in the region would generally improve water quality in San Francisco Bay. Implementation of the ISP could result in some potentially significant temporary water quality impacts; however, these impacts would be limited in scope and duration and are unlikely to contribute to cumulative water quality impacts in the Bay or any of its tributaries. Operation of construction equipment during construction of proposed water control structures under the Pond Management alternatives could result in minor releases of contaminants and minor erosional impacts that would not contribute significantly to cumulative impacts. Likewise, potentially significant water quality impacts from saline discharges from project ponds into Alviso Slough, Guadalupe Slough, the Alameda Flood Control Channel, and Old Alameda Creek are expected to be limited to a 3- to 5-week period and would not, therefore, contribute to cumulative water quality impacts in these waters or in the Bay to which they discharge.

Differences in conventional constituents (e.g., pH, temperature, TSS, DO, BOD and biostimulatory nutrients [nitrogen and phosphorus] between the project ponds and background receiving waters are relatively low, compared to the differences in salinities in the ponds and receiving waters. Therefore, careful management of salinity during ISP implementation should result in small changes in conventional constituents in the receiving waters. Project impacts from heavy metals are limited to exceedances of the nickel water quality objectives (WQOs) at the pond discharge points. The limited scope of this impact exempts it from cumulative impact analysis.

In the long-term, the impact of the project and other wetlands restoration, enhancement, and creation projects, is expected to be positive since wetlands are generally acknowledged to provide favorable water quality improvement mechanisms, such as filtration, settling and entrapment of sediment, photodegradation, adsorption, and enhanced biological activity (uptake, chemical transformation, degradation). The project would also have a specific beneficial impact in Coyote Creek, where the discharge of saline pond water would mitigate impacts in the creek from the release of fresh water from the San Jose Wastewater Treatment Plant, located upstream of the ISP ponds.

Results from data collection efforts at the project sites will be shared with regional natural resource managers who are evaluating habitat conditions within the San Francisco Bay as a whole and with planners who are developing the Long Term Salt Pond Restoration Plan. Information on the relationship between water quality and impacts to biological organisms may be gained from monitoring included as a part of the project or as project mitigation. By shedding additional light on this issue and providing the opportunity to respond to problem areas, the project may be considered to have an overall beneficial impact. If the project is not implemented, the opportunity of monitoring and responsive adaptive management would be lost.

12.2.3 Sediments

Project impacts, including increases in the mobility and bioavailability of contaminants in sediments, formation of salt/gypsum-affected soils, and changes in pond water levels resulting in greater potential exposure of wildlife to contaminants in pond sediments, are largely limited in scope to the ponds themselves. However, these changes could cause indirect cumulative impacts to birds and other wildlife that may be exposed to mercury, nickel, and other contaminants at other locations, as well as at the South Bay Salt Ponds project area. On the other hand, information on the relationship between the mobility and bioavailability of contaminants in sediments and impacts to biological organisms may be gained from monitoring included as a part of the project or as project mitigation. By shedding additional light on this issue and providing the opportunity to respond to problem areas, the project may be considered to have an overall beneficial impact. If the project is not implemented, the opportunity of monitoring and responsive adaptive management would be lost.

There is some concern that, with the scale of wetland restoration projects being undertaken around the San Francisco Bay, there may not be adequate local sediments available for the restoration projects. Many of the proposed sites are subsided and would require substantial sedimentation before restoration could proceed. In addition, there is a concern that these large-scale projects could alter the sediment balance in the Bay and result in a reduction in mudflat/shallow water habitats. Implementation of the ISP only involves marsh restoration on the Island Ponds site. This area involves a relatively small acreage and higher elevation ponds, and is therefore not expected to be a major sedimentation "sink", Consequently, the project is not expected to contribute to cumulative impacts to the sediment balance in the Bay.

12.2.4 Biological Resources-

Potentially significant adverse cumulative impacts to biological resources include the spread of invasive plant species, such as invasive cordgrasses; conversion of open water habitat favored by some shorebirds to habitat favoring tidal marsh-dependent bird species; and the overall loss of medium- to high-salinity pond waters with resulting impacts to water birds.

Benthic Organisms

Impacts to benthic organisms are tied largely to impacts to the quality of the water they inhabit. As noted above (see Section 12.2.2), water quality impacts from the proposed project are anticipated to be of short duration and scope and are therefore not considered subject to cumulative effects. The primary impacts of the project to benthic organisms would be from increased salinity in waters that receive initial pond discharges. Potentially significant elevations in salinity in receiving waters would be limited to 3- to 5-weeks following the Initial Release Period. This may result in some mortality of benthic organisms and some shifts in location of sessile benthic organisms. For example, the major change for bay shrimp as a result of the initial high saline discharges would probably be a shift in their preferred habitat to locations upstream. After the Initial Release Period, juvenile and adult shrimp in receiving sloughs and creeks will not be significantly impacted by continuous circulation of relatively low salinity pond water.

Benthic organisms in the Bay Area have in the past shown a remarkable resiliency to ecosystemic disturbances, including changes in water salinity. Although the benthic

community in the South Bay will likely exhibit such resiliency in response to the short-term changes in salinity and other water quality constituents immediately following the initial discharge of project ponds, continued challenges to these communities could, over time, weaken their ability to rebound. However, other projects in the vicinity are not expected to have similar impacts to water quality. Therefore, cumulative impacts to benthic organisms from the proposed project are not anticipated.

Vegetation and Wetlands

Implementation of ISP is part of a long-term strategy to re-create a complex mosaic of wetlands habitats in the San Francisco Bay area. The installation or replacement of water control structures would remove or disturb small areas containing jurisdictional wetland vegetation and pickleweed cover (significant because it provides habitat for the state- and federally-listed endangered salt marsh harvest mouse and because there is so little existing vegetation at the project sites). The total area of disturbance at all three pond complexes (Alviso, Baumberg, and West Bay) would be approximately 2.91 acres of jurisdictional wetlands, including 1.99 acres of areas with a greater than 25% pickleweed cover. However,, the overall cumulative impact of the project on marsh and wetland vegetation will be positive.

The project presents the opportunity to restore sensitive wetlands vegetation communities on over 15,000 acres of lands in the South Bay. Some actions proposed in the ISP would contribute directly to the cumulative beneficial impacts of other restoration projects in the Bay Area. Specifically, breaching the Island Ponds under Pond Management Alternatives 1 and 2 would allow the establishment of transitional salt marsh and brackish marsh plant communities within an area of 475 acres, contributing to other efforts to restore, enhance, or create these types of plant communities in the Bay Area. Although the ISP does not include proposals for wetlands restoration (other than the tidal wetland restoration that would naturally occur following the proposed breaching of the Island Pond levees), it should be viewed as part of a long-range plan for habitat restoration on the over 15,000 acres of the South Bay Salt Ponds.

The project may contribute to negative cumulative impacts related to the invasion of aggressive non-native plant species. The project, along with other proposed or reasonably foreseeable tidal restoration projects would expand tidal habitat suitable for the rapid invasion and dominance by non-native cordgrasses (*Spartina alterniflora, S. densiflora, S. patens*) and other aggressive exotic plant species. Smooth cordgrasses and other non-native invasive species are aggressive colonizers of open, unvegetated habitats typical of early tidal marsh restoration projects.

As discussed in Section 6.2, if left unabated, *S. alterniflora* could become a dominant salt marsh plant species in the South Bay, changing important ecosystem functions such as sedimentation dynamics and detrital production. Once established in the San Francisco Bay Estuary, invasive cordgrasses could rapidly spread to other estuaries along the California coast through seed dispersal on the tides, potentially resulting in a variety of long-term cumulative impacts to existing plants and wildlife throughout the California coast.

The number of restoration projects planned in the area increases the availability of suitable habitat for colonization. Several restoration projects along San Francisco Bay have been degraded because non-native, smooth cordgrass has out-competed native

California cordgrass. Concerning the proposed South Bay Salt Ponds ISP, the proposed breaching of the Island Ponds could create conditions favorable for establishment of invasive cordgrass species and their hybrids on approximately 475 acres. Monitoring by the San Francisco Estuary Invasive *Spartina* Project found that non-native *Spartina* species had spread to dominate nearly 500 acres of tidal marsh, predominantly in the South and Central Bay, by the year 2000 (CSCC and USFWS, 2003). Additional cordgrass colonization on the 475 acres made suitable by the Island Pond breaching would be a significant contribution to this cumulative impact.

The ability to successfully control the cumulative effects and spread of exotic species of cordgrass and other plants requires a region-wide effort and the willingness of resource agencies to fund bay-wide control programs. The ISP includes provisions for monitoring and control of exotic pest plant species within the restored marsh and adjacent tidal marshes. USFWS will coordinate with the SCVWD to ensure that existing clusters of *S. alterniflora* in the vicinity of the Island Ponds are removed prior to breaching the ponds. USFWS and CDFG will also coordinate the ISP implementation with the Invasive *Spartina* Project, a region-wide program to control non-native *Spartina* in the San Francisco Estuary.

Birds and Other Wildlife

Implementation of the project in conjunction with other projects envisioned in the area would result in an overall increase in the availability, and ultimately the quality, of marsh fringe aquatic habitats throughout the San Francisco Bay area. Nursery habitat for many birds and other wildlife species would be greatly enhanced by the implementation of this and other restoration efforts. Changes in water levels in some of the ISP project ponds could result in impacts to nesting colonies of certain water birds in the South Bay from increased predator access and/or flooding. However, wetlands restoration, enhancement, and creation projects in the South Bay would generally provide a cumulative benefit to nesting birds. In addition, monitoring of impacts to bird species is included in the project alternatives or mitigation measures.

Impacts to birds and other wildlife from increased mobility and bioavailability of contaminants in sediments are discussed in Section 12.2.3. As stated there, these impacts are not expected to contribute to cumulative impacts and the impacts would be largely mitigated by monitoring measures included in the project alternatives or in mitigation measures. Any potential impacts from avian botulism would also be reduced to less than significant by monitoring and adaptive actions, and would not be subject to cumulative effects.

Restoration of tidal action to the 475-acre Island Pond area, following the proposed breaching of the Island Ponds, would result in a substantial long-term increase in lower marsh and middle marsh habitats. These habitats are suitable for various endangered species and species of special concern, including the California clapper rail, California black rail, salt marsh harvest mouse, salt marsh wandering shrew, northern harrier, and salt marsh common yellowthroat.

Although the ISP does not include proposals for wetlands restoration (other than the tidal wetland restoration that would naturally occur following the proposed breaching of the Island Pond levees), it should be viewed as part of a long-range plan for habitat restoration on the over 15,000 acres of the South Bay Salt Ponds. Cumulatively, habitat

restoration efforts in the South Bay would result in greater habitat complexity, diversity, and productivity.

Impacts to Waterbirds from Loss of Medium- and High-Salinity Ponds— Under the No Project/No Action and Seasonal Pond Alternatives, 100% of the Medium and High Salinity Ponds in the project area (5,702 acres) would be lost. From a regional perspective (including the ISP project area and the remaining active salt ponds in Fremont and Newark), the acreage of medium or high salinity ponds would be reduced from 10,402 acres to 4,700 acres (a 49% decrease).

Under the Pond Management Alternatives, the total number of medium- or high-salinity ponds would be reduced from 24 to 3 (Alviso Ponds A12, A13, and A15) (Table 2-1), which represents a decrease from 5,702 to 827 acres (an 85 percent decrease). From a regional perspective (including the ISP project area and Cargill's Newark ponds), the acreage of medium- or high-salinity ponds would be reduced from 10,402 to 5,527 acres (a 47 percent decrease). These habitat changes would substantially reduce the amount of available foraging habitat in the South Bay for waterbird species that favor medium- and high-salinity ponds.

However, under various adaptive management strategies, the following ponds could be managed as medium-salinity batch ponds rather than low-salinity ponds, if the ISP manager determines such alternative operations are necessary: Alviso Ponds A2E, A3N, and A8 and Baumberg Ponds 4, 7, 1C, 5C, 12, 13, and 14. As a result, the area of medium- and high-salinity habitat would be reduced from 5,702 to 1,872 acres (67 % decrease) . Thus, under the Pond Management alternatives, the reduction in medium to high salinity ponds in the project area could range between 67% and 85%. From a regional perspective (including the ISP project area and the remaining active salt ponds in Fremont and Newark), the acreage of medium- and high-salinity ponds would be reduced from 10,402 to 6,572 acres (a 37 percent decrease), compared to the 47 percent decrease without adaptive management).

Note: please see Section 6.3.1.1 (Habitat Conditions) for the definitions of salinity categories, which differ from those in other sections of the EIR/EIS.

Impacts to Shorebirds and Waterfowl from Loss of Open Water Habitat—The potential large-scale conversion of salt ponds and other types of seasonal wetland habitats to tidal habitats could have a long-term adverse impact on shorebird and waterfowl populations and use in the Bay. A cumulative change in open water habitats used by migratory shorebirds and waterfowl is expected over the next 20 to 50 years. This change could result in either an increase or decrease of open –water habitat, depending on which restoration/mitigation projects are implemented.

Under the No Project/No Action and Seasonal Pond alternatives, all 15,000 acres of salt ponds would be dry in the summer and ponded with shallow water in wet years during winter. This would result in loss of open water habitat year round for waterbirds that use deep water habitat (diving ducks and piscivorous birds) and during summer and fall for shorebirds that use shallow ponds. However, these unmanaged seasonal ponds would provide additional habitat for the threatened Western Snowy Plover.

Implementation of the Managed Pond alternatives would contribute much less to a cumulative loss of open water habitat. Approximately 475 acres of open waters within

the Island Ponds would be converted to tidal habitat and the area of managed seasonal ponds within the project area would increase from 715 to at least 3,233 acres..

Since San Francisco Bay is one of only a few sites in North America that regularly support shorebirds in the hundreds of thousands, the loss of such habitat could have significant impacts on regional shorebird populations, especially for the shorebird species noted above. San Francisco Bay is also a critically important site for wintering and migrating water birds in the Pacific Flyway and the project could contribute to cumulative impacts on water bird populations throughout the Pacific Flyway.

The San Francisco Bay Ecosystems Goals Project (1999) has attempted to address this issue and develop recommendations for goals for key habitats in different regions in the Bay. In the South Bay subregion, the habitat goal recommendations are to increase tidal marsh habitats from the approximately 9,000 acres to 25,000 or 30,000 acres and managing 10,000 to 15,000 acres of salt pond habitat. This equates to a rough ratio of 2 to 2.5 acres of tidal marsh to 1 acre of managed salt pond habitat. Implementation of the ISP would contribute approximately 475 acres of tidal marsh restoration and during the interim project period it would contribute approximately 14,500 acres of managed salt pond/panne habitat to these broad, long-term goals.

Cumulative impacts to migratory shorebirds and waterfowl could be mitigated to some degree by the availability of numerous foraging and refuge areas throughout the Bay. Migratory shorebirds and waterfowl would likely re-distribute among available habitats in the South Bay, such as the existing salt ponds at Don Edwards National Wildlife Refuge, the Cargill Salt Ponds, and the open waters of the Eden Landing Ecological Reserve and Outer Bair Island.

Impacts to Special Status Species Habitat—Implementation of the ISP would result in the short-term loss of existing salt marsh harvest mouse habitat (SMHM), a state- and federally-listed endangered species and California species of special concern. This loss of this habitat could also impact other endangered species and species of special concern, including the California clapper rail, California black rail, salt marsh wandering shrew, northern harrier, and salt marsh common yellowthroat. This loss (approximately 1.99 acres of >25% pickleweed cover) is very small in comparison to habitat loss that has occurred or is expected to occur as a result of other past, present, or future foreseeable tidal restoration and development projects, and is not likely to contribute to cumulative impacts to SMHM or other special status species. Overall, the project is likely to provide a very significant beneficial effect to SMHM with the potential for a significant increase in SMHM habitat within the 475-acre Island Pond area, following breaching of the Island Ponds. This, together with improvement in SMHM habitat resulting from other habitat projects, would contribute to a cumulative benefit by improving long-term habitat viability and expanding and connecting existing habitat areas as part of the recovery strategy for the species.

It should be noted that the cumulative acreage of impacted SMHM habitat is not a good measure of the significance of the impact to the species. This is because SMHM populations tend to be confined to small, disjunct marsh areas. The populations are typically genetically isolated and the long-term survival of these individual populations is dependent on the ability to maintain viable numbers of individuals within the specific habitat area. The significance of impacts to the species is based on the ability to sustain these separate populations. Impacts of habitat loss or gain would only be cumulatively

significant if the loss or gain reduced, eliminated, or improved the ability of a site to sustain or expand the population at that site.

Construction-related impacts to other special status wildlife species would be extremely minor and/or of short duration and are not likely to contribute to significant cumulative effects.

Fish

Implementation of the project in conjunction with other projects envisioned in the area could result in an overall increase in the availability, and ultimately the quality, of marsh fringe aquatic habitats throughout the San Francisco Bay area. Juvenile and rearing habitat for many species of fish would be greatly enhanced by the implementation of this and other restoration efforts. Restoration of the tidal marshes in the project area would result in a substantial long-term increase in lower marsh and middle marsh habitats. Cumulatively, restoration efforts would result in greater habitat complexity, diversity, and productivity and contribute to the overall re-establishment of tidal marsh habitats throughout the Bay.

The installation of water control structures required by the project could lead to juvenile fish entrainment. This would be a potentially significant impact for anadromous fish only. Other fish that become entrained in the project ponds would readily adapt to the in-pond habitat. Following the initial saline discharges from these ponds, the ponds would provide significantly improved habitat for non-anadromous fish. To mitigate any potentially significant impacts to anadromous fish, the inlet structures located on migration corridors will be closed during periods of juvenile fish migration.

The Lower Guadalupe Flood Control Project proposes to use Pond A8 during flood events to reduce flooding. Following implementation of the flood control project, juvenile fish may be entrained in Pond A8 during flood events, which in combination with impacts to anadromous fish under the proposed ISP, could cause cumulative impacts to anadromous fish. However, since the pond inlet structures along Alviso Slough (Guadalupe River) will be closed during the period flooding is likely to occur,, it is not expected to cause significant cumulative impacts.

12.3 Irreversible and Irretrievable Commitment of Resources

The project would require a relatively small and insignificant, but irretrievable commitment of fossil fuels and other energy sources to construct water control features at the ponds. Discharge of pond waters to receiving waters and the proposed breaching of the Island Ponds are actions that could theoretically be reversed at some point in the future.

12.4 Relationship Between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

Short-term uses of the environment that would occur with restoration include the impacts on existing wetlands and habitat and those from construction-related activities. However, in the long term, the site is expected to be substantially more productive for habitat and wildlife values.

12.5 Growth-Inducing Impacts

Section 15162.2(d) of the State CEQA Guidelines requires that an EIR address the potential growth-inducing impacts of a proposed project. Specifically, the EIR shall "discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing either directly or indirectly, in the surrounding environment."

Implementation of the ISP would not foster economic or population growth or the construction of additional housing, and therefore would not have a growth-inducing impact.

12.6 Environmental Justice and Protection of Children

For NEPA purposes, developments or population/housing changes that cause impacts in terms of environmental justice are considered significant. On February 11, 1994, President Clinton issued Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low Income Populations*. The purpose of the order is to avoid the disproportionate placement of adverse environmental, economic, social, or health impacts from federal actions and policies on minority and low-income populations that might be affected by implementation of the proposed action or alternatives.

On April 21, 1997, the President issued Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. Each federal agency must, according to this order, address disproportionate risks to children resulting from environmental health risks or safety risks in all policies, programs, activities, and standards.

Implementation of the ISP would not result in environmental justice impacts; that is, it would not result in disproportionate placement of adverse environmental, economic, social, or health impacts from federal actions and policies on minority and low-income populations. Nor would it cause disproportionate environmental health or safety risks to children.

12.7 Significant Unavoidable Adverse Impacts

The impact to waterbirds from the loss of medium- and high-salinity ponds under the project alternatives is a significant impact. Measures are proposed to mitigate this impact (see Section 6.3.3.2), but the impact remains potentially significant even with these measures. All other impacts identified in this EIR/EIS are expected to be less than significant with the implementation of proposed mitigation measures.