

South Bay Salt Ponds Initial Stewardship Plan Draft Environmental Impact Report/Environmental Impact Statement

December 2003



California Department of
Fish and Game

Submitted by:



United States Fish and
Wildlife Service

SOUTH BAY SALT PONDS INITIAL STEWARDSHIP PLAN

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Draft
South Bay Salt Pond Initial Stewardship Project
Environmental Impact Report /
Environmental Impact Statement

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EXECUTIVE SUMMARY

Introduction

On March 16, 2003, the State of California and the United States of America acquired 16,500 acres of commercial salt ponds in San Francisco Bay from Cargill, Inc. This acquisition set the stage for the development of the largest tidal wetland restoration project on the West Coast. Specifically, the purpose of this acquisition was to protect, restore and enhance the property for fish and wildlife, as well as to provide opportunities for wildlife-oriented recreation and education. Of the acquired lands, 15,100 acres are located in South San Francisco Bay and the remaining lands are in the North Bay in Napa County. This Environmental Impact Report/Environmental Impact Statement (EIR/EIS) only addresses the 15,100 acres acquired in South San Francisco Bay.

Under commercial salt production, Cargill managed the South Bay salt ponds as shallow water ponds at various salinity levels. The salinity levels varied both geographically, based on the location of the pond within the system (for example, the highest salinities occurred in ponds closest to the production plant sites) and temporally, based on seasonal and climatic conditions (for example, salinities decreased during the winter rainy season and during wet years). Although these ponds were managed for commercial salt production, they provided habitat for many water bird species including waterfowl and shorebirds. Ponds that were owned by Cargill in fee title were closed to public access. Other ponds, for which Cargill only held salt-making rights and which were parts of the Don Edwards San Francisco Bay National Wildlife Refuge, were open to several types of public use.

The restoration of the salt ponds is taking place in three independent stages. First, Cargill is reducing the salinity levels in the ponds by moving the saltiest brines to its plant site in Newark. After they reduce the salinities to levels that are permitted to be discharged to the Bay, Cargill will no longer manage the ponds for salt production. Management of the Baumberg ponds will be turned over to the California Department of Fish and Game and management of the Alviso ponds and West Bay ponds will be turned over to the U.S. Fish and Wildlife Service.

In the second stage of restoration, the ponds will be managed by the agencies in a manner that provides habitat values while the long-term restoration plan is being developed and implemented. In this Initial Stewardship stage, Bay waters will be circulated through the ponds following installation of water control structures and the existing levees will be maintained for minimum flood protection. This EIR/EIS covers only the second stage of restoration, i.e., Initial Stewardship .

The third stage of restoration is the actual long-term restoration of the salt ponds to a mix of tidal marshes, managed ponds and other habitats. The planning process for this long-term restoration is just beginning and will include a substantial amount of data collection, studies, modeling efforts, and public involvement. The long-term planning process will include development of a separate EIR/EIS and therefore long-term activities are not discussed further in this document.

Purpose and Need

The purpose of the project is to maintain and enhance, to the extent possible, the biological and physical conditions within the south bay salt ponds in the interim period between the cessation of salt-making activities and the implementation of a long term restoration plan. The ponds currently support populations of fish and wildlife, including endangered species, migratory waterfowl, shorebirds, other water associated birds, resident fish and invertebrates.

The project is needed because:

- The ponds will be disconnected from ongoing salt making operations.
- Without initial stewardship the ponds will be subject to increasing salinity and declining ecological value.
- Deterioration of levees could lead to levee breaches and uncontrolled high-salinity discharges, resulting in potential adverse effects on aquatic populations in the adjacent open bay.
- Restoration costs would be increased with site deterioration.
- Water levels would become unmanageable and, especially during the summer months, would result in increased salinity, acidic conditions, and drying of most of the ponds..

Implementing the project will benefit the environment by

- Maintaining and enhancing to the maximum extent possible the ecological and physical health of the salt ponds until a long term restoration plan is completed and implemented
- Improving water circulation within the ponds to maintain and enhance existing fish and wildlife populations.

As part of normal salt making operations, bay water is brought in to the pond systems at several locations around the bay. After entering the system, it is moved through the concentrator ponds over five years until the salinities are ready for the precipitation of salt for harvest at the Newark Plant site. The salt making process is a closed system with water being taken with no discharge to the bay. End products of the process are (1) salt, which is harvested as a crop and (2) bittern, a byproduct which cannot be discharged back to the bay and is stored and used for commercial applications.

The salt making system included an array of ponds of varying salinities (low to high) and water levels (shallow to deep). Pond salinities and depths varied during the seasons depending on water movements within the system to optimize the salt concentration process. The ponds incidentally provided habitat for many species of fish and wildlife. Fish and wildlife values were not a management objective of the salt making process.

With acquisition of the South Bay Salt Ponds by the Department of Fish and Game and the U. S. Fish and Wildlife Service, the ponds will no longer be part of the salt making process. Consequently they must be managed as separate systems to assure that they

provide fish and wildlife habitat value while minimizing future restoration costs. This management must continue through the planning and implementation of the long-term restoration plan. Implementation of the long-term restoration plan is expected to be conducted in phases beginning in about 5 years, but with subsequent phases extending to 20+ years. Therefore, some ponds may be managed under an initial stewardship plan for as little as 5 years, while others may require such management for 20+ years.

To achieve the purpose of the project, the two agencies must have the ability to establish a water circulation system which allows the bay water to discharge back into San Francisco Bay. Without the ability to discharge, bay water brought into the pond system will evaporate resulting in elevated salinities which will ultimately reduce fish and wildlife values as seen in the North Bay salt ponds. If the agencies are not able to circulate water through the system, they will not be able to bring bay water into the system due to the potential for increasing pond salinities to unmanageable levels. This will change the character of the pond system from what is currently shallow open water pond habitat of varying salinities, to seasonal pond habitat filled primarily by rain water during the winter and dry the remainder of the year. This change could significantly reduce the value of the ponds to fish and wildlife.

Project Alternatives

The purpose of this project is to provide a biologically sound interim management program for the ponds during planning and implementation of the long-term salt pond restoration. One No Action and three action alternatives were analyzed in detail in the EIR/EIS. A summary of the alternatives is shown on Table S-1, a comparison of alternatives in meeting project need is shown on Table S-2, and a comparison of project impacts of project alternatives is shown on S-3.

Table S-1: Summary of Alternatives

Alternative	Levee Maintenance	Initial Release Period (~2 months)	Continuous Circulation Period (5+ years)	Public Access
No Project/ No Action	No	N/A	N/A	No new access; existing access at risk
Seasonal Ponds	Yes	N/A	N/A	No new access; existing access maintained.
Simultaneous March/April Release	Yes	Low to mid-salinity brines released from most ponds at same time in spring	Ponds managed as combination of continuous flow through ponds, batch ponds and seasonal ponds, with options for changing	New docent-led tours/limited hunting; existing access maintained

Alternative	Levee Maintenance	Initial Release Period (~2 months)	Continuous Circulation Period (5+ years)	Public Access
			management based on monitoring.	
Phased Initial Discharge	Yes	Low to mid-salinity brines released from different ponds over several years in July and March/April	Ponds managed as combination of continuous flow through ponds, batch ponds and seasonal ponds, with options for changing management based on monitoring.	New docent-led tours/limited hunting; existing access maintained

Under the No Action alternative, the pond waters/brines remaining in the ponds would be allowed to evaporate. The ponds would then fill seasonally with rainwater in winter and dry through the evaporation process in summer. No new public access would be available. No action would be conducted by the agencies, including levee maintenance, and some levees would likely fail during this period. Existing public access would be lost in areas of levee failure.

In Action Alternative 1 (Seasonal Pond Alternative), the pond waters/brines remaining in the ponds would be allowed to evaporate. The ponds would then fill seasonally with rainwater in winter and dry through the evaporation process in summer. No new public access would be available. The only action taken by the agencies would be to maintain the levees at their current standard of maintenance (i.e., salt pond maintenance, not for flood control).

Under the two action alternatives which include circulation of bay waters through the ponds, the pond levees would continue to be maintained at the current level and the ponds previously kept closed by Cargill would be open to some public access, including docent led tours and limited hunting activities. These two action alternatives differ in the timing of the initial release of the existing low to mid salinity brines in the ponds.

In Action Alternative 2 (Simultaneous March/April Initial Release), the contents of most of the Alviso and Baumberg Ponds would be released simultaneously in March and April. The ponds would then be managed as a mix of continuous circulation ponds, seasonal ponds and batch ponds, though management of some ponds could be altered through adaptive management during the continuous circulation period. Higher salinity ponds in Alviso and in the West Bay would be discharged in March and April in a later year when salinities in the ponds have been reduced to appropriate levels. The Island Ponds (A-19, 20, and 21) would be breached and open to tidal waters.

In Action Alternative 3 (Phased Initial Release), many of the lower salinity ponds in Alviso and Baumberg would be discharged in July, and the medium salinity ponds would

be discharged the following March and April. These ponds would then be managed in the same manner as in Alternative 2 during the continuous circulation period. The higher salinity ponds would also be managed as in Alternative 2.

Table S-2. Comparison of Alternatives in Meeting Project Objectives

Project Objective	No Project/ No Action	Seasonal Ponds	Simultaneous Discharge	Phased Discharge
Cease Salt Making Process ¹	+	+	++	+++
Circulate Bay waters through ponds/ Introduce tidal waters to Island Ponds ¹	- - -	- - -	++	+++
Maintain existing open water and wetland habitat	- - -	- - -	+++	+++
Maintain ponds in restorable condition	-	+	+++	+++
Meet all regulatory requirements, including discharge ²	-	+	+++	+++
Work within existing funding constraints	+++	+++	++	++
Maintain existing levels of flood control	- - -	+++	+++	+++

¹ Includes time required before salt-making ceases and circulation begins

² Includes compliance with regulatory policies and air quality requirements

Environmental Impacts and Mitigation Measures

The major environmental impacts of the project and alternatives are summarized on Table S-3 and are briefly described by topic below.

Hydrology

Implementation of Alternatives 2 and 3 could lead to increased tidal prism within the ponds and subsequent suspension and deposition of sediments in receiving waters. Additionally, breaching of the Island Ponds could potentially lead to erosion of mud flats and impacts to the Southern Pacific railroad bridge pier. These impacts are potentially significant but would be mitigated to less than significant levels by implementation of mitigation measures identified in this EIR/EIS.

Water Quality

Under Alternative 1 (Seasonal Ponds), most of the existing open water habitats currently used by wildlife in the South Bay would be lost. This alternative minimizes all impacts from discharge of pond contents to sloughs, creeks and the bay.

In general, Alternatives 2 and 3 could have potentially significant and significant short-term (24 hours to 8 weeks) impacts from elevated salinity in discharges to several of the

creeks and sloughs in the project area during the initial release period. These short term impacts would be mitigated to less than significant levels by implementation of mitigation measures identified in this EIR/EIS. Long term impacts would be less than significant during continuous circulation period .

In some circumstances discharges under Alternatives 2 and 3 could lead to excursions from the Basin Plan Water Quality Objectives and have potentially significant impacts (total mercury, dissolved oxygen, turbidity, temperature, and pH) These excursions are dependent on a number of environmental factors (including temperature, rainfall, and water level in the ponds) and may occur both during initial release and continuous circulation. These impacts would be mitigated to less than significant levels by implementation of mitigation measures identified in this EIR/EIS.

Sediments

Changes in pond management under all the alternatives could lead to increased mobility and bioavailability of inorganic contaminants and increased exposure of wildlife to contaminants. Implementation of Alternative 1 does not allow for water level management which would mitigate these impacts. Adaptive management strategies described under Alternatives 2 and 3 allow these impacts to be mitigated to less than significant.

Biological Resources

Benthic Organisms- Under Alternative 1, benthic invertebrates in the existing ponds would be impacted by seasonal water fluctuations. In general, Alternatives 2 and 3 could have potentially significant and significant short-term (24 hours to 8 weeks) impacts from elevated salinity in discharges to benthic organisms in several of the creeks and sloughs in the project area during the initial release period. These short term impacts would be mitigated to less than significant levels by implementation of mitigation measures identified in this EIR/EIS. The long-term impacts would be less than significant during continuous circulation period.

Vegetation- Disturbance from construction of water control structures or creation of new suitable habitat under Alternatives 2 and 3 could lead to the spread of invasive cordgrass. These impacts could be mitigated to less than significant levels by implementation of mitigation measures identified in this EIR/EIS. Under these alternatives, breaching of the Island Ponds would lead to the establishment of transitional salt marsh and brackish marsh habitat; this would be a beneficial impact.

Wildlife- Changes in pond management under all the alternatives would result in wildlife habitat changes with positive or negative impacts for some wildlife species. For example conversion of project area salt ponds to seasonal ponds would result in a substantial loss of open water foraging habitat for water birds. This conversion would be beneficial to snowy plovers. Reduction in medium and high salinity ponds will substantially reduce the available foraging habitat for waterbirds which favor this habitat. These impacts could be mitigated to potentially significant levels by implementation of mitigation measures identified in this EIR/EIS.

Fish- Alternative 1 would have impacts to fishing living in the existing salt ponds by seasonally drying their habitat. In general, Alternatives 2 and 3 could have potentially significant and significant short-term (24 hours to 8 weeks) impacts from elevated salinity in discharges to fish in several of the creeks and sloughs in the project area during the Initial Release Period. There is also a potential for impacts to juvenile fish by entrainment by the water control structures. These short-term impacts would be mitigated to less than significant levels by implementation of mitigation measures identified in this EIR/EIS. Long-term impacts would be less than significant during the continuous circulation period.

Cultural Resources

Implementation of Alternatives 2 and 3 could result in potentially significant impacts to unmapped surface archeological sites. These impacts could be mitigated to less than significant levels by implementation of mitigation measures identified in this EIR/EIS.

Recreation, Public Access, Visual Resources, and Public Health

Changes in pond management under all the alternatives could lead to increased mosquito production. Implementation of Alternative 1 does not allow for water level management which could mitigate these impacts. Under Alternatives 2 and 3, these impacts could be mitigated to less than significant levels by implementation of mitigation measures identified in this EIR/EIS.

Air Quality

Changes in pond management under all the alternatives could expose the public to objectionable odors. Implementation of Alternative 1 does not allow for water level management which could mitigate these impacts. Under Alternatives 2 and 3, these impacts could be mitigated to less than significant levels by implementation of mitigation measures identified in this EIR/EIS.

Socio-Economic Resources

All impacts were considered to be less than significant.

Land Use Planning

Impacts to land use are possible due to potential changes in air quality; impacts and mitigation are the same.

Unavoidable Significant 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.

Comparison of the Alternatives

There is a strong contrast in the comparisons of the NO Project/No Action Alternative and Alternative 1 (Seasonal Ponds) and the Pond Management Alternatives (2 and 3)

from the perspectives of long-term versus short-term environmental consequences. Normally, with private development or public works projects, the “no action” alternative is associated with more environmentally benign protection of existing natural resources. In this case, the existing natural resources will undergo long-term degradation because if salinity and water levels are not managed.

The contrast between Alternatives 2 and 3 is more subtle. Under Alternative 2, circulation of bay waters through the low salinity ponds would be delayed for another year. This could push back the project for the medium and high salinity ponds and delay the restoration of the Island ponds several more years depending on future weather conditions. During the initial release period, short-term impacts (24 hour to 8 weeks) to juvenile bay shrimp may be somewhat less under Alternative 2 and potential for bioaccumulation of mercury by early stage benthic organisms may be somewhat less under Alternative 3.

Environmentally Superior (CEQA) and Preferred (NEPA) Alternative

The No-Project No-Action Alternative is not considered the environmentally superior alternative because of the continued deterioration of the site and potential for long-term impacts to wildlife and the physical environment.

Because the project is, in effect, the first stage of the long-term environmental restoration project, its primary adverse impacts are short-term, during the initial release of the pond contents. As described above, Alternatives 2 and 3 are very similar in their environmental impacts. However, Alternative 3 offers the added protection that monitoring of the impacts of the first releases can provide data to adaptively manage subsequent releases and thus reduce overall impacts. In addition, Alternative 3 will allow circulation of bay waters to occur at an earlier time for a substantial number of ponds resulting in more rapid restoration of the ponds.

TABLE S-3. COMPARISON OF IMPACTS OF PROJECT ALTERNATIVES

Impacts	No Project/No Action	Alternative 1 Seasonal Ponds	Alternative 2 (Simultaneous March/April Initial Discharge)	Alternative 3 (Phased Initial Discharge)
Hydrology				
H-1: Increased flooding of adjacent properties may result from erosion of salt pond levees that offer some flood control benefit.	PS	PS	LTS	LTS
Post Mitigation Significance	PS	PS	NS	NS
H-2: Increased tidal prism within the ponds would re-suspend sediments, resulting in deposition in receiving waters.	NS	PS	PS	PS
Post Mitigation Significance	NS	PS	LTS	LTS
H-3: Breaching of Island Ponds could result in erosion of mud flats and damage to the Southern Pacific railroad bridge piers.	NS	NS	PS	PS
Post Mitigation Significance	NS	NS	LTS	LTS
H-4: Flow into the ponds may result in excessive sediment deposition near inlet/outlet structures that could impact operation of water control structures.	NS	NS	NS/PS	NS/PS
Post Mitigation Significance	NS	NS	LTS	LTS
Water Quality				
WQ (S)-1 Salinity in ponds could be concentrated by evaporation. Unplanned breaches of ponds could result in increased salinity in receiving waters.	PS	NS	NS	NS

Impacts	No Project/No Action	Alternative 1 Seasonal Ponds	Alternative 2 (Simultaneous March/April Initial Discharge)	Alternative 3 (Phased Initial Discharge)
WQ-(CONSTRUCTION) 2-: Impacts from contaminants and/or suspended sediments could result from the mobilization of construction equipment to repair breached levee sites or install water control structures.	NA	PS	LTS	LTS
Post Mitigation Significance	NA	LTS	LTS	LTS
WQ (S)-3: Discharges from ISP ponds could result in increased salinity inputs to the South Bay	NA	NA	IRP-LTS CCP-LTS	IRP-LTS CCP-LTS
Post Mitigation Significance	NA	NA	LTS	LTS
WQ (S) -4: Discharges from ISP ponds could result in increased salinity inputs to Coyote Creek (Alviso Complex)	NA	NA	IRP-LTS CCP-LTS	IRP-LTS CCP-LTS
Post Mitigation Significance	NA	NA	NA	LTS
BENEFICIAL WQ (S) -1: Discharges from ISP ponds could result in beneficial water quality impacts from increased salinity inputs to Coyote Creek, mitigating releases of fresh water from the San Jose WTP	NA	NA	B	B
WQ (S) -5: Discharges from ISP ponds could result in increased salinity inputs to Alviso Slough (Alviso Complex)	NA	NA	IRP-PS CCP-LTS	IRP-PS CCP-LTS
Post Mitigation Significance	NA	NA	LTS	LTS
WQ (S) -6: Discharges from ISP ponds could result in increased salinity inputs to Guadalupe Slough (Alviso Complex)	NA	NA	IRP-LTS CCP-LTS	IRP-LTS CCP-LTS
Post Mitigation Significance	NA	NA	NA	LTS
WQ (S) -7: Discharges from ISP ponds could result in increased salinity inputs to Alameda Flood Control Channel (AFCC) (Baumberg Complex)	NA	NA	IRP-S CCP-LTS	IRP-S CCP-LTS

Impacts	No Project/No Action	Alternative 1 Seasonal Ponds	Alternative 2 (Simultaneous March/April Initial Discharge)	Alternative 3 (Phased Initial Discharge)
<i>Post Mitigation Significance</i>	NA	NA	LTS	NA
WQ (S) -8: Discharges from ISP ponds could result in increased salinity inputs to Old Alameda Creek (Baumberg Complex)	NA	NA	IRP-S CCP-LTS	IRP-S CCP-LTS
<i>Post-Mitigation Significance</i>	NA	NA	LTS	LTS
WQ (M) -1: Metals in pond sediments could be released or chemically changed by cycles of wetting and drying. Unplanned breaches of ponds could result in increased metals concentrations in the ponds and localized areas of the Bay.	PS	NS	NS	NS
WQ (M) -2: Exceedances of the nickel WQOs at the point of discharge may occur during the IRP only.	NA	NA	LTS	LTS
WQ (M) -3: Under some circumstances total mercury in discharged water and receiving water will exceed total mercury WQOs and may have short-term impacts on water quality.	NA	NA	PS	PS
<i>Post Mitigation Significance</i>	PS	NS	LTS	LTS
WQ (DO) 1- Increased algal activity in ponds leads to decreased dissolved oxygen in receiving waters. The potential for excursion from the basin plan standards are most likely to occur during the warmer summer and fall months, especially on windless days.	PS	NA	PS	PS
<i>Post Mitigation Significance</i>	PS	NA	LTS	LTS
WQ (TURBIDITY) 2 - Unplanned breaches of ponds could result in significant water quality and wildlife impacts from increased turbidity.	PS	NS	NS	NS
WQ (TURBIDITY) 1 - Discharge of pond water could lead to a greater than 10% increase in turbidity of receiving water and may adversely affect water quality and biota in adjacent waterways	NA	NA	PS	PS

Impacts	No Project/No Action	Alternative 1 Seasonal Ponds	Alternative 2 (Simultaneous March/April Initial Discharge)	Alternative 3 (Phased Initial Discharge)
<i>Post Mitigation Significance</i>	PS	NS	LTS	LTS
WQ (T°) -1: Unplanned breaches of ponds could result in significant water quality and wildlife impacts from increased temperature	PS	NS	NS	NS
WQ (T°) -2: Discharge of pond water at temperatures more than 20° degrees Fahrenheit above the temperature of the receiving water may adversely affect water quality and biota in adjacent waterways.	NA	NA	PS	PS
<i>Post Mitigation Significance</i>	PS	NA	LTS	LTS
WQ (PH) -1: Unplanned breaches of ponds could result in significant water quality and wildlife impacts from pH changes in receiving waters.	PS	NS	NS	NS
WQ (pH) – 2: Discharge of pond water could lead to excursions from the Basin Plan Water Quality Objectives	NA	NA	PS	PS
<i>Post Mitigation Significance</i>	PS	NS	LTS	LTS
Sediments				
SED-1: The mobility and bioavailability of inorganic contaminants may increase within project ponds.	PS	PS	PS	PS
<i>Post Mitigation Significance</i>	PS	PS	LTS	LTS
SED-2: Long-term pond drying may result in the formation and exposure of gypsum/salt-affected soils, limiting future restoration options.	PS	PS	PS	PS

Impacts	No Project/No Action	Alternative 1 Seasonal Ponds	Alternative 2 (Simultaneous March/April Initial Discharge)	Alternative 3 (Phased Initial Discharge)
<i>Post Mitigation Significance</i>	PS	PS	LTS	LTS
SED-3: Changes in pond water levels may alter exposure of wildlife to contaminants in sediments.	PS	PS	PS	PS
<i>Post Mitigation Significance</i>	PS	PS	LTS	LTS
SED-4: Unplanned breaches of ponds could result in significant water quality and wildlife impacts from contaminants in sediments.	PS	NS	NS	NS
<i>Post Mitigation Significance</i>	PS	NS	LTS	LTS
BENEFICIAL SED-1: Higher average water levels in some ponds could decrease the mobility and bioavailability of contaminants and the potential for wildlife exposure to contaminants in those ponds.	NA	NA	B	B
BENEFICIAL SED-2: In the CCP, freshening of salt/gypsum affected sediments will produce sediment and water conditions that can promote habitats more endemic to the South Bay ecosystem.	NA	NA	B	B
Biological Resources				
BENTHIC-1 If levee failure occurs, existing benthic communities located near the breach will be impacted.	PS	LTS	LTS	LTS
BENTHIC-2: The project would cause a reduction in aquatic habitat suitability because of deterioration of water quality	PS	NS	IRP-S CCP-LTS	IRP-S CCP-LTS
<i>Post Mitigation Significance</i>	PS	LTS	LTS	LTS
VEG-1: If levee failure occurs, existing vegetation, possibly including rare plant species, would be impacted.	PS	LTS	LTS	LTS
VEG-2: Disturbance of existing vegetation could promote the spread of invasive cordgrasses.	PS	LTS	PS	PS

Impacts	No Project/No Action	Alternative 1 Seasonal Ponds	Alternative 2 (Simultaneous March/April Initial Discharge)	Alternative 3 (Phased Initial Discharge)
<i>Post Mitigation Significance</i>	PS	LTS	LTS	LTS
BENEFICIAL VEG -1: Breaching of the Island Ponds would allow the establishment of transitional salt marsh and brackish marsh communities.	NA	NA	B	B
VEG-3: Installation or replacement of water control structures would remove or disturb existing areas of vegetation	NA	NA	LTS	LTS
VEG-4: Installation or replacement of water control structures would cause changes in pond parameters, which would have permanent indirect impacts on vegetation in the project area.	NA	NA	LTS	LTS
VEG-6: Seasonal wetting and drying cycles in ponds will create saline soil conditions that will inhibit vegetation growth within the ponds and at the pond margins.	LTS	LTS	LTS	LTS
VEG-7: Increase in pond water salinity in high salinity batch ponds will result in loss of vegetation along the shoreline.	NA	NA	LTS	LTS
VEG-8: Differences in seasonal management of ponds would cause a decrease in average pond depth and decreased fluctuations in salinity in some of the ponds, which could result in indirect impacts to vegetation, including elevation and type shifts of plant communities.	NA	NA	LTS/B	LTS/B
VEG-9: Muted tidal influence in the summertime in Baumberg Ponds 8A and 8X would create conditions favorable to invasive cordgrass.	NA	NA	PS	PS
<i>Post Mitigation Significance</i>	LTS	LTS	LTS	LTS
BENEFICIAL WL -1: An increase in the area of seasonal ponds would benefit western snowy plovers.	B	B	B	B

Impacts	No Project/No Action	Alternative 1 Seasonal Ponds	Alternative 2 (Simultaneous March/April Initial Discharge)	Alternative 3 (Phased Initial Discharge)
WL-1: Changes in pond hydrology would result in wildlife habitat changes with positive or negative impacts for some wildlife species.	S	S	S	S
WL-1A: Conversion of project area ponds to seasonal ponds would result in a substantial loss of open water foraging habitat for water birds including special status birds.	S	S	PS	PS
<i>Post Mitigation Significance</i>	S	S	PS	PS
WL-2: Changes in water levels in some ponds would result in impacts to nesting bird colonies from increased predator access and/or flooding, thereby substantially reducing the breeding habitat for certain waterbird species.	S	S	PS	PS
WL-2A: Drying of project area ponds would result in “land-bridging” of existing nesting colonies on islands and isolated interior levees, exposing special status species and other birds to increased predation.	S	S	PS	PS
WL-2C: Collapse of pond levees would result in the loss of nesting habitat on levees for special status species and other bird species.	S	LTS	LTS	LTS
<i>Post Mitigation Significance</i>	S	S	LTS	LTS
WL-3: Lower average water levels in project ponds could increase the exposure of some foraging water birds to contaminated sediments on the bottoms of ponds, potentially resulting in a reduction in foraging habitat for some species.	S	S	S	S
WL-3A: Drying of project ponds would increase the exposure of western snowy plover as well as other foraging birds to contaminated sediments on pond bottoms.	S	S	S	S

Impacts	No Project/No Action	Alternative 1 Seasonal Ponds	Alternative 2 (Simultaneous March/April Initial Discharge)	Alternative 3 (Phased Initial Discharge)
<i>Post Mitigation Significance</i>	S	S	LTS	LTS
WL-4: The overall reduction in pond salinities and water depths may create conditions suitable for avian botulism, and could substantially reduce the populations of special status bird species and other waterbird species.	NA	NA	PS	PS
<i>Post Mitigation Significance</i>	NA	NA	LTS	LTS
WL-5: Construction could impact existing tidal salt marsh habitat for the California clapper rail.	NA	NA	PS	PS
<i>Post Mitigation Significance</i>	NA	NA	LTS	LTS
WL-6: Construction could impact existing tidal or non-tidal salt marsh habitat for the salt marsh harvest mouse and salt marsh wandering shrew.	NA	NA	PS	PS
<i>Post Mitigation Significance</i>	NA	NA	LTS	LTS
WL-7: Construction could impact burrowing owls and/or nesting northern harriers on the levees within the project area.	NA	NA	PS	PS
<i>Post Mitigation Significance</i>	NA	NA	LTS	LTS
WL-8: Construction could result in disturbance to breeding activity of salt marsh common yellowthroat, Alameda song sparrow, and/or several nesting waterbird species.	NA	NA	PS	PS
<i>Post Mitigation Significance</i>	NA	NA	LTS	LTS
WL-9: Construction for implementation of the ISP, and various maintenance operations, may impact harbor seals in the area.	NA	NA	PS	PS

Impacts	No Project/No Action	Alternative 1 Seasonal Ponds	Alternative 2 (Simultaneous March/April Initial Discharge)	Alternative 3 (Phased Initial Discharge)
<i>Post Mitigation Significance</i>	NA	NA	LTS	LTS
F-1: Discharge of pond contents would increase salinity levels in the receiving waters in the immediate vicinity of discharges beyond normal tolerance ranges for fish and macroinvertebrates, resulting in direct impacts to these aquatic organisms and indirect impacts to fish impacts to their food source (macroinvertebrates).	PS	NA	IRP - S CCP - LTS	IRP - S CCP - LTS
<i>Post Mitigation Significance</i>	PS	NA	LTS	LTS
F-2: Discharge of pond contents may impact other water quality variables (i.e., it may raise temperatures, decrease DO, and increase BOD) in the receiving waters in the immediate vicinity of discharges beyond normal tolerance ranges for fish.	PS	NA	LTS	LTS
F-3: Impacts from contaminants and/or suspended sediments could result from the mobilization of construction equipment to repair breached levee sites.	NA	LTS	LTS	LTS
BENEFICIAL F-1: Breach Island ponds resulting in tidal exchange and access for fish and macroinvertebrates to suitable habitat.	NA	NA	B	B
F-4: Changes in water quality during the Continuous Circulation Phase of the ISP could disrupt adult salmonid migration though dilution of “natal stream” signal and/or imprinting by juvenile salmonids.	NA	NA	CCP-LTS	CCP-LTS
F-5: Changes in water quality could disrupt fish migration though creation of salinity gradient reversals.	NA	NA	IRP - LTS CCP - LTS	IRP - LTS CCP - LTS
F-6: Installation of water control structures could lead to juvenile fish entrainment.	NA	NA	PS	PS

Impacts	No Project/No Action	Alternative 1 Seasonal Ponds	Alternative 2 (Simultaneous March/April Initial Discharge)	Alternative 3 (Phased Initial Discharge)
<i>Post Mitigation Significance</i>	PS	LTS	LTS	LTS
Cultural Resources				
C-1. Potentially significant archeological sites or human remains could be exposed through erosion and evaporation	PS	LTS	NA	NA
C-2. Accidental breaches of levees could result in impacts to surface archeological sites and features of the built environment.	PS	LTS	LTS	LTS
C-3. Ground-disturbing activities and use of heavy vehicles and machinery could damage known and unknown archaeological sites that meet the criteria for listing on the NRHP or CRHR.	NA	NS	PS	PS
<i>Post Mitigation Significance</i>	PS	LTS	LTS	LTS
C-4. Ground-disturbing activities and use of heavy vehicles and machinery could disturb or damage buried human remains not identified during field surveys.	NA	NS	PS	PS
<i>Post Mitigation Significance</i>	NA	NS	LTS	LTS
C-5. Project construction and elevated water levels resulting from implementing the ISP could affect potentially significant features of the built environment	NS	NS	PS	PS
C-6. Planned breaches of the Island Ponds could result in impacts to surface archeological sites and features of the built environment	NS	NS	PS	PS
<i>Post Mitigation Significance</i>	NS	NS	PS	PS
Recreation, Public Access, Visual Resources, and Public Health				
R-1. Recreational use and views of the project areas may be impacted by the loss of levee trail access.	PS	LTS	LTS	LTS

Impacts	No Project/No Action	Alternative 1 Seasonal Ponds	Alternative 2 (Simultaneous March/April Initial Discharge)	Alternative 3 (Phased Initial Discharge)
R-2. Recreational use and views of the project areas may be impacted a consequence of changes in wildlife populations.	LTS	LTS	LTS	LTS
R-3. Construction of proposed water control structures would have temporary effects on public access to and recreational use of the project areas.	LTS	LTS	LTS	LTS
<i>Post Mitigation Significance</i>	PS	LTS	LTS	LTS
BENEFICIAL R -1. Additional public access will be available on previously closed private lands.	NA	NA	B	B
VIS-1. The quality of views of the project areas may be impacted as a consequence of changes in wildlife populations.	LTS	LTS	LTS	LTS
<i>Post Mitigation Significance</i>	LTS	LTS	LTS/B	LTS/B
VIS-2. Construction of proposed water control structures would have temporary effects on the quality of views of the project areas.	NA	NA	LTS	LTS
PH-1. As seasonal ponds dry down increased mosquito production may result from deterioration of pond water quality, requiring the MADs to undertake additional mosquito control and abatement.	S	S	PS	PS
<i>Post Mitigation Significance</i>	S	PS	LTS	LTS
Air Quality				
AQ-1. Increased dust generation due to exposed dry pond bottoms in seasonal ponds	PS	PS	LTS	LTS
AQ-2. Eutrophication of salt ponds has the potential to expose the public to objectionable odors.	PS	PS	PS	PS

Impacts	No Project/No Action	Alternative 1 Seasonal Ponds	Alternative 2 (Simultaneous March/April Initial Discharge)	Alternative 3 (Phased Initial Discharge)
<i>Post Mitigation Significance</i>	NA	NA	LTS	LTS
AQ-3. Increased combustion emissions. The construction of structures required by Alternative 2 and 3, may result in a temporary increase in combustion emissions from construction equipment.			LTS	LTS
<i>Post Mitigation Significance</i>	NA	NA	LTS	LTS
Socio-Economic Resources				
<i>All impacts considered less than significant</i>				
Land Use Planning				
LU -1. Lack of management of the ponds has the potential to produce objectionable odors. These odors would be incompatible with nearby residential and commercial land uses.	PS	PS	NA	NA
LU -2 .The managed wetting and drying in the seasonal ponds have the potential to produce objectionable odors. These odors would be incompatible with nearby residential and commercial land uses.	NA	NA	PS	PS
<i>Post Mitigation Significance</i>	S	S	LTS	LTS

B = Beneficial PS= Potentially Significant
 NS = Non Significant
 LTS = Less than Significant
 NA = Not Applicable
 S = Significant