UNITED STATES FISH AND WILDLIFE SERVICE

ENVIRONMENTAL ACTION STATEMENT

Within the spirit and intent of the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA; 40 CFR 1500-1508), and other statutes, orders, and policies that protect fish and wildlife resources, I have established the following administrative record and determined that no additional NEPA documentation is required.

1.0 Proposed Action

The U.S. Fish and Wildlife Service (Service) is proposing to restore two former salt ponds at the Don Edwards San Francisco Bay National Wildlife Refuge to tidal and managed pond habitat as part of the larger South Bay Salt Pond Restoration (SBSPR) project. A Final Environmental Impact Statement/Report (FEIS/R) was prepared in 2007 and a Record of Decision (ROD) was issued by the Service for the project in 2009. McMillen, LLC was contracted by the Service to prepare construction ready design documents for the project. During the design process, modifications were made to the conceptual design outlined in the FEIS/R. As a result, some of the revised actions have not been analyzed for their potential impacts on the environment as required under National Environmental Policy Act (NEPA) regulations. The project has been separated into two phases. Phase 1 consists of actions that were analyzed and approved in the 2007 FEIS/R and 2009 ROD and Phase 2 which consists of actions that have not been analyzed and approved in the 2007 FEIS/R and 2009 ROD.

The actions described in this Environmental Action Statement do not warrant reexamination of the environmental affects that were described in the 2007 FEIS/R. The environmental impacts would either result in less impact or have no change from the existing determination as described in the memorandums titled *2011 Recommended Approach for NEPA/CEQA Compliance for the Revised Design of Phase 1 Actions at Ponds A16 and A17* prepared by the SBSPR consultant team (Attachment A) and 2011 Alviso Pond A16-A17 Restoration Design Modification Implications to Existing Environmental Permits prepared by McMillen, LLC (Attachment B). Table 1 lists the actions proposed for the project and which applicable phase they apply to:

Table 1 Project Phasing

Item	Phase 1	Phase 2
Nesting Islands	X	X
A17 Levee Lowering along Coyote Creek and Artesian Slough		X
A17 Levee Lowering along southern levee		X
Existing A17 Intake Structure Removal		X
A16 Intake WCS		X
A16 Intake Fish Screen		X

Item	Phase 1	Phase 2
A16 Outlet WCS	X	
A16 Outlet Pilot Channel	X	
A16 Levee		X
Intake WCS Levee		X
A17 Water Control Berm		X
A17 Fishing Platform		X
A16 Viewing Platform	X	
Interpretive Signage		X
Cable Fence		X
Crushed Rock Surfacing		X
Water Pollution Control Plant's Pipeline	X	

This Environmental Action Statement applies to both Phase 1 and 2 actions. Phase 2 actions have been analyzed as discussed in this Environmental Action Statement and no further action is required.

2.0 Environmental Documentation

The NEPA documents that were previously prepared for Ponds A16-A17 as part of the SBSPR project include the following:

- South Bay Salt Pond Restoration Project Final Environmental Impact Statement/Report Volume 1. Submitted to the Service and CDFG. Prepared by EDAW, Philip Williams and Associates, Ltd., H.T. Harvey and Associates, Brown and Caldwell, and Geomatrix. December 2007.
- Final Environmental Impact Statement Record of Decision Date Issued: January 27, 2009.

3.0 Proposed Changes

The following describes the Phase 1 and 2 actions as listed in Table 1 and identifies any variances from the 2007 FEIS/R. The actions have been separated into three categories: 1) New Actions, 2) Modifications to Existing Actions, or 3) No Change to an Existing Action.

3.1 New Actions

A17 Intake Water Control Structure Removal and Levee Lowering

The A17 intake water control structure (WCS) would be completely removed during Phase 2 of the project once the A16 intake WCS structure and fish screen are operational. The removal of this structure and levee lowering will result in the restoration of Pond A17 to tidal marsh habitat instead of remaining a managed pond as per the earlier design.

The A17 levee will be lowered in the following locations to allow tidal flows to enter above approximately elevation 7.0 feet NAVD88:

- 2,050 feet of A17 levee along Coyote Creek.
- 5,000 feet of A17 levee along Artesian Slough.
- 2,260 feet of A17 levee along the southern boundary.

The dry material excavated from the lowered levees would be used to either 1) construct the nesting islands during Phase 1 and 2, 2) construct levees and berms, and/or 3) fill in the adjacent borrow ditch next to the levee lowering locations. Lowering the levee to the approximate elevation of the existing adjacent marsh habitat would reduce erosion when water flows over the marsh and lowered levee into Pond A17. Sporadic hummocks above the high tide elevation every 200 feet would be left for escape cover providing upland refugia for listed species such as salt marsh harvest mice and California clapper rails.

Conclusion: The project specific environmental affects for removing the existing A17 Intake WCS and lowering the levee were not analyzed in the 2007 FEIS/R. However, the restoration of Pond A17 to tidal habitat was approved under the programmatic portion of the 2007 FEIS/R for the South Bay Salt Pond Program Alternative C. Based on an analysis described in the 2011 memorandum Alviso Pond A16-A17 Restoration Design Modification Implications to Existing Environmental Permits, the environmental affects determination is Less than Significant and this action is hereby approved under this Environmental Action Statement. Through this Environmental Action Statement, we are also adding an annual inspection of the railroad bridge and supports in Coyote Creek for signs of scour or erosion. The monitoring plan specifically prepared for this action is located in Appendix C and has been added to the Monitoring and Adaptive Management Plan as an addendum for the South Bay Salt Pond Restoration Project. Any potential impacts related to adjacent levees or bridges would be monitored as part of the project through the implementation of the Monitoring and Adaptive Management Plan (MAMP). Remedial actions, if required, are outlined in the addendum to the MAMP (Attachment C) as well as the NEPA/CEQA Compliance memo (Attachment A).

A17 Water Control Berm

A new water control berm would be constructed in the borrow ditch on the east side of Pond A17 approximately 400 feet in length. The elevation of this berm would be set at 11.0 feet NAVD88 at the levee and sloping down to approximately 4.0 NAVD88 feet at the pond/marsh surface. The berm is intended to divert water through the western borrow ditch during incoming tidal flow. The diversion of water through the west borrow ditch would increase flow velocity and reduce the amount of sediment that would settle in the west borrow ditch. In addition, the berm is expected to enhance sedimentation in the east borrow ditch by reducing flow velocities. This berm would be constructed from the dry A17 levee lowering material.

Conclusion: There are no changes to the existing environmental affects determination outlined in the 2007 FEIS/R and there are no new environmental impacts associated with the A17 Water Control Berm.

A17 Fishing Platform

The A17 fishing platform would be located at the northwest corner of Pond A17 to provide opportunities to the public for fishing in Coyote Creek during medium to high tides. The platform will be built on piers and allow fishing as well as viewing of Coyote Creek and the historical Drawbridge site across Coyote Creek. The platform would be extended to the end of the salt marsh along Coyote Creek and would have a boardwalk approximately 50 feet long leading up to it from the levee. The platform would be elevated above the top of the levee approximately three feet with an ADA compliant ramp, seating and fishing areas. The platform would extend into Coyote Creek far enough to allow for safe and unobstructed fishing by the public.

Conclusion: The A17 Fishing Platform was not analyzed in the 2007 FEIS/R. There are no changes to the existing environmental affects determination outlined in the 2007 FEIS/R and there are no new environmental impacts associated with the A17 Fishing Platform.

Water Pollution Control Plant's Pipeline

The Pond A16 Pilot Channel would cross the San Jose/Santa Clara Water Pollution Control Plant's abandoned concrete sewer pipeline. The pipeline is located along the south bank of Artesian Slough, within the 50-foot wide strip of salt marsh owned by the City of San Jose. Removal of a section of this pipeline is proposed so that the pipe does not impede drainage from the outlet structure.

Conclusion: This pipeline was not described in the 2007 FEIS/R. However, because it is no longer used by the City of San Jose they have concurred with removal of a section. This action is associated with the A16 Outlet Pilot Channel and any impacts associated with the removal of a section of the sewer pipeline would have the same effects determination. Therefore, there are no changes to the existing environmental affects determination described for the A16 Outlet Pilot Channel. There are no new environmental impacts associated with the Water Pollution Control Plant's Pipeline either as described for the A16 Outlet Pilot Channel.

3.2 Modifications to Existing Actions

Nesting Islands

The nesting islands will be built from bay mud within Pond A16, imported clean fill material or material from lowering of the A17 levee. There has been a reduction from 50 to 16 islands (8 circular and 8 linear) but there is still enough available space within Pond A16 to construct 34 additional islands in the future. The islands will be constructed during Phase 1 to allow settlement into the pond bottom for approximately one year. During Phase 2, additional material will be placed on top of the islands to bring the

elevation of the island up to proper grade following expected settlement and the islands will be shaped to their final configuration.

Conclusion: There are no changes to the existing environmental affects determination outlined in the 2007 FEIS/R and there are no new environmental impacts associated with these nesting islands.

A16 Intake WCS

The proposed location of the A16 Intake WCS is near the southwest corner of Pond A17 at the western end of the levee lowering. It would be used to screen and regulate flow into Pond A16. The intake structure would be built perpendicular to the borrow ditch allowing water and debris to flow past the structure reducing the possibility for excessive debris and sediment build-up. In addition, timber piles and a log boom would be constructed around the front of the intake structure to prevent large floating debris from damaging the fish screens.

Water will be conveyed from the A16 Intake WCS to Pond A16 via one 63-inch HDPE culvert (approximately 320 feet) located under the A16 Intake WCS Levee. The intake culvert would have a tide gate to prevent water from flowing back into Pond A17. The hydraulic capacity of the inflow through the intake culvert would be higher than the fish screens hydraulic capacity at high tide to prevent backwatering.

Conclusion: The proposed location of the A16 Intake WCS is different from the location outlined in the 2007 FEIS/R; however, the type of environmental impacts will be similar to the levee, surrounding salt marsh and interior of the ponds. There are no changes to the existing environmental affects determination outlined in the 2007 FEIS/R and there are no new environmental impacts.

A16 Outlet WCS

The A16 Outlet WCS would be located in the same location as the existing WCS. The existing outlet structure would be demolished and replaced. The flow control into the structure would be regulated by an overflow weir located within Pond A16. The crest of the weir would be constructed at elevation 3.0 feet NAVD88 with an adjustable overflow weir installed along the top of the wall to allow the weir elevation to be raised up to 4.0 feet NAVD88. Two slide gates would be installed at the bottom of the weir structure (0.0 feet NAVD88) to allow additional drainage of Pond A16 if maintenance activities are required in the future.

Water leaving Pond A16 would flow through the following structures and devices. A slide gate would be installed on the upstream side of the water control structure to regulate flows. A tide gate would be located inside the water control structure to prevent water from entering back into Pond A16 from Artesian Slough. After flowing through the tide gate, the water would flow through a 4-foot tall by 8-foot wide concrete culvert beneath the Pond A16 levee. The flow would be discharged from the culvert into a pilot channel leading directly into Artesian Slough.

Conclusion: The 2007 FEIS/R described the addition of a second outlet structure in Pond A16 levee to the south of the existing outlet structure. The design proposes to install only one new large culvert in the same location as the existing outlet structure. By demolishing the existing culvert and constructing the new one in its place, impacts to the pond and surrounding salt marsh environment are significantly reduced. There are fewer impacts from the proposed action than what was described in the 2007 FEIS/R environmental impact section for the A16 Outlet WCS and there are no new environmental impacts associated with the A16 Outlet WCS.

A16 Outlet Pilot Channel

The 2007 FEIS/R described and analyzed a new pilot channel from the new A16 Outlet WCS (described above) directly into Artesian Slough. The proposed action has eliminated the need for a new pilot channel associated with the new A16 Outlet WCS in the southeastern portion of the levee. However, a new pilot channel will be required to transport water from the A16 Outlet WCS directly into Artesian Slough. This new pilot channel will impact approximately the same type of habitat over the same area as the pilot channel discussed in the 2007 FEIS/R.

Conclusion: The impacts offset one another and there are no changes to the existing environmental affects determination outlined in the 2007 FEIS/R and there are no new environmental impacts associated with the A16 Outlet Pilot Channel.

A16 Levee

The A16 Levee would be constructed in the A16-A17 Canal near the southeast corner of Pond A17. This portion of the A16 levee would be created to separate tidal flows entering Pond A17 from the A16 managed pond. It would also connect the trail system allowing the public to walk around Pond A16. The new levee would be approximately 150 feet in length and the same width and height as the adjacent levees.

Conclusion: This area was originally approved for a WCS and the canal gap would have been filled and the trail reconnected as outlined in the 2007 FEIS/R. There are no changes to the existing environmental affects determination and there are no new environmental impacts associated with the A16 Levee.

A16 Intake WCS Levee

A new structural levee would be constructed from the A16 Intake WCS to the Pond A16 levee. This levee will connect the Pond A16 levee to the Pond A17 levee and is approximately 230 feet in length, 20 feet wide and the height would match the adjacent levees. The A16 Intake WCS culvert would be installed underneath this levee. This levee would also serve as the new trail route. This levee would be constructed from the dry A17 levee lowering material or imported clean fill.

Conclusion: There are no changes to the existing environmental affects determination outlined in the 2007 FEIS/R and there are no new environmental impacts associated with the A16 Levee.

A16 Viewing Platform

The 2007 FEIS/R described the wildlife viewing platform situated along the southern levee within Pond A16. The proposed wildlife viewing platform is still located in Pond A16 but along the eastern levee which would allow the public to view the nesting islands. The platform would accommodate parties of up to 15 people. The wildlife viewing platform would serve the same function as described in the 2007 FEIS/R. It would also be closer to the location of the nesting islands but still outside of the 600-foot buffer required for viewing platforms proximity to nesting islands.

Conclusion: There are no changes to the existing environmental affects determination outlined in the 2007 FEIS/R and there are no new environmental impacts associated with the A16 Viewing Platform.

Impact Volumes and Areas

The cut/fill volumes for the project have been calculated for each of the actions as described in 2011 McMillen memorandum Alviso Pond A16-A17 Restoration Design Modification Implications to Existing Environmental Permits. The volumes for Pond A16 and A17 are summarized in Table 1. Volumes have been separated between cut/fill above and below the MHHW of the San Francisco Bay (7.49 NAVD88). Overall, the amount of cut (85,450 cy yds)/fill (82,450cy yds) has been reduced for the project. There was not a set amount of cut/fill volumes identified in the 2007 FEIS/R that these numbers could be compared against. However, the California Regional Water Quality Control Board Order No. R2-2008-0078 identified the cut (265,482 cu yds)/fill (266,742 cu yds) volumes for the same conceptual design that was analyzed in the 2007 FEIS/R. The revised design described in this Environmental Action Statement has reduced the volume of cut/fill by approximately 70 percent and ultimately reduced the amount of environmental impact to Pond A16-A17.

Table 1. Pond A16-17 Cut/Fill Volumes

Pond	Below MHHW		Above MHHW	
	Cut (cu yds)	Fill (cu yds)	Cut (cu yds)	Fill (cu yds)
A16	43,900	60,670	1,600	9,790
A17	20,300	9,980	19,650	2,010
Total	**64,200**	**70,650**	**21,250**	**11,800**

The impact/restoration areas for the project have been calculated for each of the actions as described in 2011 McMillen memorandum Alviso Pond A16-A17 Restoration Design Modification Implications to Existing Environmental Permits. The areas for Pond A16 and A17 are summarized in Table 2. Overall, the impact area (22.74 acres) has been reduced for the project as compared to the 100 acres described in the 2007 FEIS/R. The revised design described in this Environmental Action Statement has reduced the impact area by approximately 80 percent. In addition, Pond A17 will be restored to tidal action which will add approximately 130 acres of tidal wetland habitat to the South San Francisco Bay.

Table 2. McMillen Design Pond A16-A17 Impact Areas

Design Element	Pond A16	Pond A17	Pond A16 Upland Levee	Pond A17 Upland Levee	Pond A16 Tidal Marsh	Pond A17 Tidal Marsh
New Tidal Wetland Restoration	-	130.14	-	-	-	-
New Managed Pond	236.43	-	-	-	-	-
Existing Upland Levee (No Impact)	-	-	15.89	1.41	-	-
Existing Tidal Marsh (No Impact)	-	-	-	-	48.61	36.85
Action Impacts	5.57	0.86	4.78	10.98	0.31	0.24
TOTAL ACRES	**242.00**	**131.00**	**20.67**	**12.39**	**48.92**	**37.09**

3.3 No Change to Existing Action

A16 Intake Fish Screen

The fish screen has been designed to meet the National Marine Fisheries Service fish screen criteria for tidal areas. Three independent inclined traveling belt fish screens would be installed inside of the A16 Intake WCS. Its function is to prevent fish from entering Pond A16 and the fish screen would be operated year-round. The fish screens would be installed at an angle so that debris would be collected and carried over the fish screen and flow into Pond A16. The fish screen structure would be installed on the face of the intake vault upstream of the outlet pipes.

Conclusion: There are no changes to the existing environmental affects determination outlined in the 2007 FEIS/R and there are no new environmental impacts associated with A16 Intake Fish Screen.

Interpretive Signage

Interpretive signage would be incorporated into the fishing and viewing platforms and would consist of the kiosks and associated mounting brackets. Two new trail map kiosks would be installed at the Environmental Education Center describing the new trail route along Pond A16 and A17. Information contained on these kiosks would be in both English and Spanish.

Conclusion: There are no changes to the existing environmental affects determination outlined in the 2007 FEIS/R and there are no new environmental impacts associated with the Interpretive Signage.

Cable Fence

Permanent black vinyl cable fencing would be installed to limit access around the fishing and viewing platforms.

Conclusion: There are no changes to the existing environmental affects determination outlined in the 2007 FEIS/R and there are no new environmental impacts associated with the Cable Fence.

Crushed Rock Trail Surfacing

Approximately 20,000 linear feet of ADA-compliant crushed aggregate would be installed on top of the levees. The crushed rock trail surfacing would be six inches deep by 12 feet wide.

Conclusion: There are no changes to the existing environmental affects determination outlined in the 2007 FEIS/R and there are no new environmental impacts associated with the Crushed Rock Trail Surfacing.

4.0 Public Involvement/Interagency Coordination

The Phase 1 and 2 actions are not considered a variance from the design described in the 2007 FEIS/R. During the original public involvement/interagency coordination for the project, there were extensive efforts made so that the public and interested agencies were aware of the proposed project and any potential impacts. The design and associated impacts to the environment have not changed to the point where additional public involvement/interagency coordination would be required under NEPA. However, public input on the revised design was solicited at several public forums, including the annual Stakeholder Forum, the Alviso Working Group meeting, a presentation at the Alviso Collaborative meeting, and a special meeting convened specifically to discuss the design changes at Pond A16-A17. At each of these meetings, the changes to the restoration and public access were discussed and feedback solicited. The public was overwhelmingly in support of the proposed changes.

5.0 Supporting Documents

The supporting documents that have been prepared for the Don Edwards Pond A16-A17 Restoration project include the following:

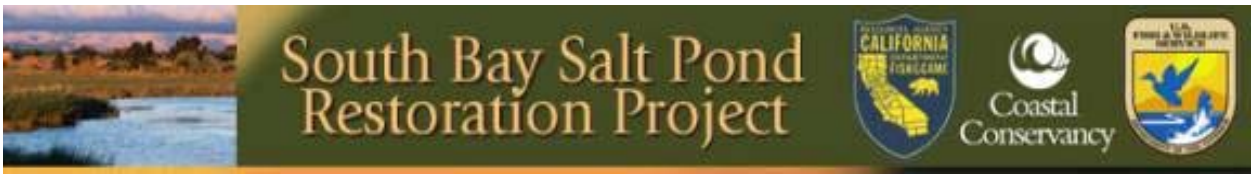
- South Bay Salt Pond Restoration Project Final Environmental Impact Statement/Report Volume 1. Submitted to the Service and CDFG. Prepared by EDAW, Philip Williams and Associates, Ltd., H.T. Harvey and Associates, Brown and Caldwell, and Geomatrix. December 2007.
- USFWS Final Environmental Impact Statement Record of Decision Date Issued: January 27, 2009.
- Design/Build of Ponds A16-A17 on the Don Edwards San Francisco Bay NWR Value Engineering Report. Submitted to Service. Prepared by McMillen, LLC. March 25, 2011.
- Design/Build of Ponds A16-A17 on the Don Edwards San Francisco Bay NWR 100% Design Documentation Report. Submitted to Service. Prepared by McMillen, LLC. September 15, 2011.
- Design/Build of Ponds A16-A17 on the Don Edwards San Francisco Bay NWR 100% Plans. Submitted to Service. Prepared by McMillen, LLC. September 15, 2011.

- Design/Build of Ponds A16-A17 on the Don Edwards San Francisco Bay NWR 100% Specifications. Submitted to Service. Prepared by McMillen, LLC. September 15, 2011.
- Recommended Approach for NEPA/CEQA Compliance for the Revised Design of Phase 1 Actions at Ponds A16 and A17. Submitted to SBSP Project Management Team. Prepared by SBSP Consultant Team. July 11, 2011.
- Alviso Pond A16-A17 Restoration Design Modification Implications to Existing Environmental Permits. Submitted to Service. Prepared by McMillen, LLC. August 18, 2011.

6.0 Signature

D. Mendel Stewart
(Project Leader)

11/22/2011
(Date)



M E M O R A N D U M

TO: SBSP Project Management Team

FROM: SBSP Consultant Team

DATE: July 11, 2011

RE: **Recommended Approach for NEPA/CEQA Compliance for the Revised Design of Phase 1 Actions at Ponds A16 and A17**

The purpose of this memorandum is to:

- Present an overview of the revised design of the Phase 1 actions at Ponds A16 and A17;
- Present National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) regulations concerning supplemental environmental documentation;
- Review environmental impacts presented in the 2007 SBSP Restoration Project Environmental Impact Statement/Report (2007 EIS/R) to determine if the revised design could affect any impacts or result in new impacts; and
- Recommend an approach for NEPA/CEQA compliance.

DESCRIPTION OF REVISED DESIGN OF PHASE 1 ACTIONS AT PONDS A16 AND A17

The SBSP consultant team (PWA and others 2007) completed a Preliminary Design Memorandum (PDM) for the Pond A16 restoration in June 2007 (**Figure 1**). Following preparation of the PDM, additional topographic and geotechnical information were obtained and assessed by the team. PWA subsequently worked with the Conservancy and Project Management Team (PMT) to develop a revised 30% design for Pond A16/17 that reduces costs and increases construction feasibility (**Figure 2**). It is this 30% design, delivered in February 2011, that is evaluated in this memo. Since February 2011, the design has been revised by the USFWS design-build contractor (McMillen, LLC). Changes between the February 2011 and current design have not been addressed in this memo.[1]

[1] The current design restores all of Pond A17 to tidal inundation. Compared to the February 2011 design, it provides a greater tidal area on A17 and a smaller managed pond area on Pond A16, with fewer nesting islands. It includes less earthwork than the February 2011 design.

The revised concept (**Figure 2**) extends the managed pond restoration into the southern part of Pond A17, reintroduces full tidal inundation to the northern part of Pond A17, and eliminates earthwork and construction in the deeper, southern part of Pond A16. The revised concept has only one managed cell with new islands, compared to three managed cells in the original design. The managed cell areas of Ponds A16 and A17 are connected by an existing open channel between the ponds. A new levee would be constructed to separate the tidal part of Pond A17 from the combined A16/17 managed cell. The southern, remaining part of Pond A16 would be separated from the managed cell by a berm. The southern part of Pond A16 is expected to have some managed pond value, but would not fully conform to the reconfigured managed pond restoration design criteria.

The revised design decreases the area of managed pond habitat from 150 acres previously to 60 acres for the revised concept. The number of nesting islands would decrease from 50 to 16. Approximately 90 acres of new tidal habitat would be created in Pond A17.

Recommended Revisions to the Monitoring and Adaptive Management Plan

As part of the revised design of the Phase 1 actions at Ponds A16 and A17, the SBSP consultant team recommends that the SBSP Restoration Project Monitoring and Adaptive Management Plan (MAMP) be revised to specify the following actions or equivalent to avoid potential impacts related to scour downstream of the levee breach at Pond A17:

(1) Conduct regular inspections of the Coyote Creek Union Pacific Railroad (UPR) bridge piers in coordination with a qualified engineer during the first five years following breaching to look for evidence of scour or scour-related damage to bridge pier supports that appears to be associated with Pond A17 restoration; and

(2) If the bridge inspections identify excessive scour or scour-related damage to bridge piers based on engineering judgment, then a more detailed engineering analysis shall be conducted to assess the potential effects of the project on the bridge; and

(3) If the more detailed analysis identifies potential effects of the project on the bridge, the lead agencies shall develop and implement a plan for protecting the piers. Possible measures to protect the piers include:

- Placing rock armor along the bed and banks of the channel at the bridge and along the bed and railway embankment on both sides of the bridge to limit scour;
- Placing rock armoring across the channel for some distance upstream and/or downstream of the bridge to limit scour at the bridge supports and approaches;
- Modifying the bridge structure, such as by constructing new pilings and underpinnings, to accommodate the scour;
- Closing the levee breach at Pond A17 to avoid causing scour at the UPR bridge.

These revisions to the MAMP are assumed for the review of environmental impacts presented below.

NEPA AND CEQA REGULATIONS CONCERNING SUPPLEMENTAL ENVIRONMENTAL DOCUMENTATION

NEPA Regulations

Section 1502.9(c)(1) of the Council on Environmental Quality's Regulations for Implementing NEPA (40 CFR 1502.9[c][1]) states that agencies shall prepare supplements to either draft or final environmental impact statements if:

(i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or

(ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

Agencies may also prepare supplements when the agency determines that the purposes of NEPA will be furthered by doing so (40 CFR 1502.9[c][2]).

CEQA Regulations

Section 15162(a) of the CEQA Guidelines requires the preparation of a Subsequent EIR when any of the three conditions below are met. Section 15162(a)(1) is relevant to the proposed project changes, with sections (2) and (3) presented for reference.

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:

(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

CEQA Guidelines Section 15162(b) states that if changes to a project or its circumstances occur or new information becomes available after adoption of a negative declaration, the lead agency shall prepare a subsequent EIR if required under Section 15162(a). Otherwise the lead agency shall determine whether to prepare a subsequent negative declaration, an addendum, or no further documentation.

CEQA Guidelines Section 15163 allows the lead agency to choose to prepare a supplement to an EIR rather than a subsequent EIR if only minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation.

Section 15164 of the CEQA Guidelines states that the lead agency or responsible agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred. An addendum need not be circulated for public review but can be included in or attached to the final EIR or adopted negative declaration. The decision making body shall consider the addendum with the final EIR or adopted negative declaration prior to making a decision on the project. A brief explanation of the decision not to prepare a subsequent EIR pursuant to Section 15162 should be included in an addendum to an EIR, the lead agency's findings on the project, or elsewhere in the record. The explanation must be supported by substantial evidence.

REVIEW OF ENVIRONMENTAL IMPACTS PRESENTED IN 2007 SBSP RESTORATION PROJECT EIS/R

The SBSP consultant team reviewed the impact analysis presented in the 2007 SBSP Restoration Project EIS/R to:

- Determine which impacts would be affected by the redesign of the Phase 1 action at Ponds A16 and A17;
- Generally describe how these impacts would be affected and determine whether the levels of significance conclusions presented in the 2007 EIS/R would change; and
- Identify any new impacts that may result from the redesign.

Impacts Potentially Affected by the Redesign of the Phase 1 Actions at Ponds A16 and A17

Following this review, the SBSP consultant team, with input from John Bourgeois, determined that the redesign has the potential to change impacts identified in the 2007 EIS/R for the following environmental issue areas:

- Hydrology, Flood Management and Infrastructure
- Surface Water, Sediment and Groundwater Quality
- Biological Resources
- Recreation and Public Access

The impacts related to these topics are discussed below. One new mpact was identified that was not discussed in the 2007 EIS/R. Otherwise, the impact conclusions presented in the 2007 EIS/R were determined to remain the same, have a beneficial change, or change from no impact to less than significant.

As stated above, this memorandum is intended to recommend an approach for NEPA/CEQA compliance; it does not constitute a full environmental review pursuant to NEPA and CEQA. The conclusions presented herein are preliminary and are based on a cursory review of the redesign of the Phase 1 actions at Ponds A16 and A17.

Impacts Determined Not to be Affected by the Redesign of the Phase 1 Actions at Ponds A16 and A17

The SBSP consultant team also reviewed the impacts identified in the 2007 EIS/R related to other environmental issue areas and determined that they would not be substantially affected by the redesign. **Table 1** lists these impacts along with a brief discussion explaining why they would not be affected.

Hydrology, Flood Management and Infrastructure

ESA/PWA reviewed the impacts presented in the Hydrology, Flood Management and Infrastructure section of the 2007 EIS/R and determined that the levels of significance for the previously identified impacts would not change as a result of the redesign of the Phase 1 actions at Ponds A16 and A17. One new significant impact was identified as a result of the breaching of the Pond A17 levee. These impacts are discussed below.

<u>Phase 1 Impact 3.3-1: Potential for increased coastal flood risk landward of the SBSP Restoration Project Area.</u>

The impact analysis presented in the 2007 EIS/R found that that the Phase 1 managed pond restoration at Pond A16 would not result in significant changes to water levels in the pond or surrounding areas because the project would not breach any existing levees. The revised design would breach the existing levee on the north side of Pond A17 and construct a new levee between the northern and southern parts of Pond A17 to maintain flood protection for the managed pond habitat and landward areas to the south. Coastal flood detention storage would be somewhat reduced. Given the remaining large storage volume of the south part of Pond A17 and all of Pond A16 to accommodate wave overtopping of the new levee and the increased culvert drainage capacity that would be added to Pond A16 as part of the managed pond restoration, it is expected that these changes would not significantly alter the coastal flood risk in areas

Table 1. Environmental Impacts Identified in the 2007 SBSP Restoration Project EIS/R That Would Not Be Affected by the Redesign of Phase 1 Actions at Ponds A16 and A17

Impact Topic	Reason Why Impacts Would Not Be Affected by Redesign
Geology, Soils and Seismicity	While the Phase 1 actions have been redesigned, they would still occur at Ponds A16 and A17, and potential effects from geologic hazards (settlement, subsidence, liquefaction, and lateral spreading), fault rupture, tsunami and/or seiche, and consolidation of Bay muds would be the same as those identified in the 2007 EIS/R.
Cultural Resources	While the Phase 1 actions have been redesigned, earthmoving activities would still occur at Ponds A16 and A17, and the potential effects on cultural resources including the historic salt ponds would be the same as those identified in the 2007 EIS/R.
Land Use	While the Phase 1 actions have been redesigned, they would still occur at Ponds A16 and A17, and would include the same types of activities and facilities as the previous design. The redesign would not introduce new land uses that would be incompatible with surrounding land uses, and the impact would not change.
Public Health and Vector Management	The redesign of the Phase 1 actions at Ponds A16 and A17 would include less managed ponds and more tidal habitat, and therefore it would provide less mosquito habitat than the previous design and would not increase mosquito populations. The impact would be the same as or less adverse than the impact identified in the 2007 EIS/R.
Socioeconomic and Environmental Justice	The redesign of the Phase 1 actions at Ponds A16 and A17 would not affect local businesses or change lifestyles or social interactions. The impact would not change.
Traffic	The redesign of the Phase 1 actions at Ponds A16 and A17 would require less material to be hauled to and from the site, and therefore it would generate fewer truck trips, resulting in less traffic and less roadway wear and tear than the previous design. The impact would be the same as or less adverse than the impact identified in the 2007 EIS/R.
Noise	While the Phase 1 actions have been redesigned, they would involve the same noise-generating activities as the previous design, and therefore noise impacts are expected to be similar to those identified in the 2007 EIS/R.
Air Quality	While the Phase 1 actions have been redesigned, they would involve the same construction and operation activities that generate air pollutant emissions as the previous design. Since the redesign would involve fewer truck trips, it would generate less air pollutant emissions, and therefore air quality impacts are expected to be less adverse than those identified in the 2007 EIS/R.
Public Services	The redesign of the Phase 1 actions at Ponds A16 and A17 would not change the demand for police and fire protection services, and therefore the impact would not change.

Table 1. Environmental Impacts Identified in the 2007 SBSP Restoration Project EIS/R That Would Not Be Affected by the Redesign of Phase 1 Actions at Ponds A16 and A17 (continued)

Impact Topic	Reason Why Impacts Would Not Be Affected by Redesign
Utilities	The redesign of the Phase 1 actions at Ponds A16 and A17 would not affect PG&E facilities, sewer and storm drain facilities, the Hetch Hetchy Aqueduct or rail service. The impacts would not change.
Visual Resources	The redesign of the Phase 1 actions would include activities and facilities that are similar to the previous design, and therefore impacts on visual resources are expected to be the same as those presented in the 2007 EIS/R.

landward of the project. The Union Pacific Railroad to the west of Pond A17 would not be affected by the reintroduction of tidal flows into Pond A17, since a tidal channel currently runs along the railroad alignment between the railroad and the west levee of Pond A17.

Preliminary Conclusion: No change in significance; impact would remain less than significant

Phase 1 Impact 3.3-2: Increased coastal flood risk due to regional changes in Bay bathymetry and hydrodynamics.

The impact analysis presented in the 2007 EIS/R found that the Phase 1 action at Pond A16 would not change regional Bay bathymetry and hydrodynamics in such a way that would increase coastal flooding in areas between and adjacent to the restoration area. The revised design would not result in substantial regional changes in mudflat elevations or Bay water levels.

Preliminary Conclusion: No change in significance; impact would remain less than significant

Phase 1 Impact 3.3-3: Increased fluvial flood risk.

The impact analysis presented in the 2007 EIS/R found that the Phase 1 action at Pond A16 would result in no changes to fluvial flooding because it would not breach any levees or significantly change water levels in the pond or surrounding areas. The revised design would breach the northern Pond A17 levee and re-introduce tidal inundation to the northern part of Pond A17. The revised design was not modeled to assess its impact on fluvial flooding. However, neither Pond A16 nor A17 is currently used for flood water storage during high fluvial discharge events, so the Pond A17 tidal restoration would have no significant impact on fluvial flood levels. Over time, as Coyote Creek scours in response to increased tidal prism associated with the proposed Pond A17 tidal restoration, the enlarged cross section may actually improve fluvial conveyance and reduce fluvial flood levels.

Preliminary Conclusion: No change in significance; impact would remain less than significant

Phase 1 Impact 3.3-4: Increased levee erosion along channel banks downstream of tidal breaches.

The impact analysis presented in the 2007 EIS/R found that the Phase 1 action at Pond A16 would not increase levee erosion along the channel banks downstream of the restoration area because the restoration

would not breach any levees at Pond A16 or A17. The revised design includes a levee breach and reintroduction of tidal inundation within the northern part of Pond A17. The increased tidal prism associated with the Pond A17 restoration may result in downstream scour of channel banks along Coyote Creek. Note that potential impacts associated with erosion of Coyote Creek and potential damage to the Union Pacific Railroad bridge are considered in a separate, new impact below.

A detailed analysis of the potential for downstream scour has not yet been carried out, but preliminary calculations by ESA PWA indicate that channel widening on the order of 20 to30 feet could occur immediately downstream of the Pond A17 breach. The primary area of impact is expected to be the stretch of Coyote Creek from the Pond A17 breach downstream to the confluence with Mud Slough. Channel widening effects farther downstream are expected to be negligible due to the relatively small increase in tidal prism associated with the Pond A17 tidal restoration. Over this reach, the northern Pond A15 levee along Coyote Creek is the only levee potentially affected by channel widening (the levee on the north side of Coyote Creek is adjacent to the tidally-restored Island Pond A21). Given the wide fringing marsh (approximately 250 feet minimum) along this stretch of levee, channel widening is not expected to result in levee erosion.

Preliminary Conclusion: No change in significance; impact would remain less than significant

Cumulative Impact 3.3-4: Increased levee erosion along channel banks downstream of tidal breaches.

A detailed analysis of the potential for downstream scour due to the combined effects of the Pond A17 tidal restoration and the Island Ponds restoration has not yet been carried out, but preliminary calculations by ESA PWA indicate that channel widening on the order of 90 feet could occur immediately downstream of the Pond A17 breach. It is expected that erosion of the wide fringing marsh (approximately 250 feet minimum) along the channel would be able to accommodate the enlarged channel width without threatening existing levees.

Preliminary Conclusion: No change in significance; impact would remain less than significant

Phase 1 Impact 3.3-5: Potential interference with navigation.

The impact analysis presented in the 2007 EIS/R found that the Phase 1 action at Pond A16 would have no effect on navigation because the restoration would not breach any levees. The revised design includes breaching of the northern Pond A17 levee along Coyote Creek. Immediately following breaching, tidal currents could be slightly stronger adjacent to the breach, but they would remain within an acceptable range for navigation then return to baseline values. The existing water control structure in the northern Pond A17 levee would be removed during creation of the breach, in particular the 12-inch diameter timber support piles, to avoid creating a navigation hazard for boats traveling through the breach and into Pond A17. If removal of the structure or parts of the structure proves cost prohibitive, then the breach location would be adjusted during design-build to allow unobstructed navigation. There are no known obstacles within Pond A17, such as overhead power lines, that could interfere with navigation of large

vessels. Note that it is not known at this time whether navigation would be allowed within the tidal part of Pond A17.

Preliminary Conclusion: No change in significance; impact would remain less than significant (CEQA) and beneficial (NEPA)

New impact: Breaching of the Pond A17 levee could result in erosion of Coyote Creek and damage to the Union Pacific Railroad bridge structure.

The revised design includes a levee breach and reintroduction of tidal inundation within the northern part of Pond A17. The increased tidal prism associated with the Pond A17 restoration may result in downstream scour (widening and deepening) along Coyote Creek and – in the absence of monitoring and adaptive management measures – could impact the structural stability of the UPR bridge immediately downstream of the restoration area.

Calculations by ESA PWA suggest that, if the channel behaves similar to unconstrained natural channels in San Francisco Bay, roughly 30 feet of channel widening and 1 foot of deepening may occur as a result of the Pond A17 tidal restoration. For comparison, the same calculation method estimates roughly 2.5 feet of channel deepening and 60 feet of widening due to the Island Ponds restoration[2], with cumulative scour (i.e., Pond A17 and Island Ponds) of roughly 4 feet of deepening and 90 feet of widening compared to pre-Island Pond restoration conditions.

A detailed analysis of scour impacts to the bridge as a result of Pond A17 and cumulative (with the Island Ponds) tidal restoration has not been carried out. If the bridge was constructed at a time when Coyote Creek was larger (i.e., prior to leveeing marshes upstream of the bridge, which may have caused deposition), the bridge may be designed for a larger channel and scour may not have an effect on the bridge. However, a more detailed analysis of bridge design criteria would be required to confirm this.

Previous tidal restoration upstream of the bridge has not resulted in measureable channel enlargement, though longer-term trends may not yet be apparent. Monitoring of the railroad bridge by Santa Clara Valley Water District (SCVWD) in the first three years following restoration of the Island Ponds identified small scour holes around the visible piles, with the scour being more pronounced on the piles on the north side of the bridge where the intertidal substrate is soft mud than on the south side where the substrate is firmer (a mix of mud, sand, and gravel). From the Island Ponds Year 3 monitoring report:

> There are no structural criteria to assess the significance of observed scour relative to pile function. However, the amount of scour at the base of all the piles appears to be less than one foot deep and is probably within the design allowance. … [R]ailroad personnel were contacted to discuss the need for more detailed bridge monitoring. Russell Young, Manager of Bridge Maintenance for the Union Pacific Railroad (UPR), confirmed that UPR staff inspect the bridge

[2] Hydrodynamic modeling of the breaches at the Island Ponds (Gross 2003) predicted erosion of approximately two to three feet in depth at the piers due to the Island Ponds project.

twice a year and that their inspections are confidential and for internal use only. He indicated that additional in depth monitoring of the bridge was not warranted, as they have not documented any signs of scour at this bridge.

Although the Island Ponds Year 3 monitoring has documented little scour at the bridge as of three years after breaching, it is ESA PWA's professional opinion that additional scour should be anticipated and that there is a potential, albeit a small one, for damage to the UPR bridge as a result of the Pond A17 tidal restoration. Possible explanations for not seeing larger scour at the bridge following the Island Ponds restoration are the time lag required for scour along the length of the channel, the presence of erosion-resistant (slow eroding) substrate at the bridge piles or elsewhere in the channel, seasonal fluctuations in erosion, uncertainties in the modeling and empirically-based tools, or a combination of these factors.

The long-term restoration plan relies on monitoring and adaptive management actions to avoid potential impacts related to scour downstream of tidal breaches. To avoid potential effects to the bridge, the Monitoring and Adaptive Management Plan (MAMP) will be revised as described above as part of the redesigned project.

Further analyses and design would be required to define the monitoring and adaptive management for scour mitigation and to quantify associated habitat impacts; however, it is likely that any habitat impacts associated with required bridge protection would be fully offset by the habitat benefits of the habitat restoration plan.

The lead agencies would not be responsible for repairing scour-related damage to the piers that is proven to be attributable to other factors (e.g., a major flood event).

Preliminary Conclusion: Less than significant

Surface Water, Sediment and Groundwater Quality

ESA/PWA and John Bourgeois reviewed the impacts presented in the Surface Water, Sediment and Groundwater Quality section of the 2007 EIS/R and determined that the levels of significance for the previously identified impacts would not change as a result of the redesign of the Phase 1 actions at Ponds A16 and A17. These impacts are discussed below.

<u>Phase 1 Impact 3.4-1: Changes in algal abundance and composition, which could in turn degrade water quality by lowering DO and/or promoting the growth of nuisance species.</u>

The impact analysis presented in the 2007 EIS/R found that the Phase 1 action at Pond A16 would likely increase algal abundance, but with appropriate design, operation, monitoring, and management, the effect would be less than significant. The revised design, with tidal restoration in part of Pond A17, would increase estuarine sedimentation and could decrease turbidity, possibly resulting in increased algal abundance. Any changes are expected to be minor.

Preliminary Conclusion: No change in significance; impact would remain less than significant

Phase 1 Impact 3.4-2: Potential to cause localized, seasonally low DO levels as a result of algal blooms, increased microbial activity, or decreased residence time of water.

The impact analysis presented in the 2007 EIS/R found that the Phase 1 action at Pond A16 would likely continue to experience periods of low dissolved oxygen (DO), but with appropriate design, operation, monitoring, and management, the effect would be less than significant. The revised design, with tidal restoration in part of Pond A17, would result in tidal flushing that would typically increase DO in the site and vicinity.

Preliminary Conclusion: No change in significance; impact would remain less than significant

Phase 1 Impact 3.4-3: Potential to mobilize, transport, and deposit mercury-contaminated sediments, leading to exceedance of numeric water quality objectives, TMDL allocations, or sediment quality guidelines for total mercury.

The revised design includes tidal restoration at Pond A17, which must be considered for the potential to mobilize, transport, and deposit mercury-contaminated sediments. Based on the information presented in the 2007 EIS/R (pages 3.4-95 to 97), potential impacts associated with tidal restoration of Pond A17 appear comparable to or possibly less than those for the tidal restoration of Pond A6, which were considered less than significant. Mercury data from the 2007 EIS/R are discussed further below. Updated results from the South Baylands Mercury Study, which were not available at the time the 2007 EIS/R was prepared, were also considered to determine whether they would affect the conclusions presented in the 2007 EIS/R.

Ponds A6 and A17 are similar in that neither were sampling locations for total mercury (THg) at the time the 2007 EIS/R was prepared, so the spatial distribution of mercury in the other Alviso Ponds was relied on to estimate potential impacts. As described in the 2007 EIS/R (pages 3.4-21 to 24), there is a clear spatial pattern with the highest THg sediment concentrations (Ponds A7, A8, A12, and A13) located adjacent to Alviso Slough, the current discharge point for the Guadalupe River.

The combined effects of all the Phase 1 actions in the Alviso Ponds, now including tidal restoration of Pond A17, must be considered with respect to the potential to exceed the Bay Mercury TMDL allocation that is based on a target for mercury in suspended sediments. The 2007 EIS/R program-level impact assessment (page 3.4-75) specifies that the Adaptive Management Plan would address the uncertainties regarding the relationship between Project activities and state water quality regulations based on total mercury loads and concentrations by monitoring loads, concentrations, and bioaccumulation in sentinel species and adaptively managing the Project to ensure that adverse effects do not reach a significant level. Adaptive management approaches would be utilized to avoid significant adverse impacts for Restoration Program Alternatives B and C. Including tidal restoration of Pond A17 in Phase 1 is not expected to significantly affect the ability of the Project to use adaptive management approaches to avoid significant

adverse impacts.

Preliminary Conclusion: No change in significance; impact would remain less than significant

Phase 1 Impact 3.4-4: Potential to increase net methylmercury production and bioaccumulation in the food web.

The revised design includes tidal restoration at Pond A17, which must be considered for the potential to increase net methylmercury production and bioaccumulation in the food web. As discussed for the above impact, based on the information presented in the 2007 EIS/R (pages 3.4-95 to 97), potential impacts associated with tidal restoration of Pond A17 appear comparable to or possibly less than those for the tidal restoration of Pond A6, which were considered less than significant. Updated results from the South Baylands Mercury Study, which were not available at the time the 2007 EIS/R was prepared, were also considered to determine whether they would affect the conclusions presented in the 2007 EIS/R. The report states that the "restored tidal marsh would likely produce less labile organic matter than what is currently produced in Pond A8, providing less fuel for methylating bacteria, and leading to less Me Hg production." However, it should be noted that the Pond A8 study in the South Baylands Mercury Report was not intended to be directly applied to any other pond.

Data collected since the 2007 EIS/R show that fish in Ponds A16 and A17 have above-average levels of mercury concentrations that are very similar to Ponds A19, 20 and 21 (the "Island Ponds"), but certainly not as high as some other ponds like A8 (Ackerman, unpublished data).

Recent research has shown inorganic mercury tends to not be correlated with methyl mercury in this system, making it difficult to predict how methyl mercury cycling would change within any particular pond. However, the potential impacts associated with tidal restoration of Pond A17 are likely comparable to, or possibly less than, those for Pond A6 or the Island Ponds, given that the proposed incremental change at Pond A17 (from damped tidal to full tidal) is less than has occurred at Pond A6 or the Island Ponds (from seasonal to full tidal), as explained below. While increased wetting and drying is known to increase methyl mercury production, seasonal wet/dry cycles tend to be worse than daily cycles because the sediments are able to dry out more fully. Both Pond A6 and the Island Ponds were subject to seasonal wet/dry cycles for decades prior to breaching, while Pond A17 was previously managed with water year-round and has gradually shifted to a damped tidal management as part of the Interim Stewardship Plan. Also, Pond A17 is located farther from the known source of mercury.

The combined effects of all the Phase 1 actions in the Alviso Ponds, now including tidal restoration of Pond A17, must be considered with respect to the potential to increase net methylmercury production and bioaccumulation in the food web. The 2007 EIS/R program-level impact assessment (page 3.4-75) specifies that the Adaptive Management Plan would address the uncertainties regarding the relationship between Project activities and state water quality regulations based on total mercury loads and concentrations by monitoring loads, concentrations, and bioaccumulation in sentinel species and adaptively managing the Project to ensure that adverse effects do not reach a significant level. Adaptive management approaches would be utilized to avoid significant adverse impacts for Restoration Program

Alternatives B and C. Including tidal restoration of Pond A17 in Phase 1 is not expected to significantly affect the ability of the Project to use adaptive management approaches to avoid significant adverse impacts.

Preliminary Conclusion: No change in significance; impact would remain less than significant

Phase 1 Impact 3.4-5: Potential impacts to water quality from other contaminants.

The impact analysis presented in the 2007 EIS/R found that the Phase 1 action at Pond A16 would be less than significant with mitigation. Breaching part of Pond A17 may cause tidal scour, erosion, and transport of potentially contaminated sediments. Potential impacts associated with tidal restoration are less than significant with mitigation at the program level.

Preliminary Conclusion: No change in significance; impact would remain less than significant with mitigation

Phase 1 Impact 3.4-6: Potential to cause seawater intrusion of regional groundwater sources.

The impact analysis presented in the 2007 EIS/R found that the Phase 1 action at Pond A16 would be less than significant with mitigation to ensure proper abandonment of any wells found on site before or during construction. The Pond A17 tidal restoration may increase salinity in Coyote Creek and impact aquifers upstream to an unknown extent, a potential impact that is less than significant with mitigation at the program level.

Preliminary Conclusion: No change in significance; impact would remain less than significant with mitigation

Biological Resources

H.T. Harvey & Associates reviewed the biological resources impacts that were presented in the 2007 EIS/R and determined that the impact conclusions for the following impacts would not change as a result of the redesign of the Phase 1 actions at Ponds A16 and A17:

- Impact 3.6-1: Potential reduction in numbers of small shorebirds using San Francisco Bay, resulting in substantial declines in flyway-level populations.
- Impact 3.6-5: Potential reduction in the population size of non-breeding, salt-pond-associated birds (e.g., phalaropes, eared grebes, and Bonaparte's gulls) as a result of habitat loss.
- Impact 3.6-6: Potential reduction in foraging habitat for diving ducks, resulting in a substantial decline in flyway-level populations.
- Impact 3.6-7: Potential reduction in foraging habitat for ruddy ducks, resulting in a substantial decline in flyway-level populations.

- Impact 3.6-8: Potential reduction in the numbers of California least terns foraging in the South Bay.
- Impact 3.6-11: Potential construction-related loss of, or disturbance to, nesting pond-associated birds.
- Impact 3.6-15: Potential impacts to piscivorous birds.
- Impact 3.6-16: Potential impacts to dabbling ducks.
- Impact 3.6-17: Potential impacts to harbor seals.
- Impact 3.6-18: Potential recreation-oriented impacts to sensitive species and their habitats.
- Impact 3.6-19: Potential impacts to special-status plants.
- Impact 3.6-22: Potential increase in exposure of wildlife to avian botulism and other diseases.

The remaining biological resources impacts presented in the 2007 EIS/R would not be adversely affected by the redesign, but require explanation. These impacts are discussed below. No new biological resources impacts were identified.

Impact 3.6-2: Loss of intertidal mudflats and reduction of habitat for mudflat-associated wildlife species.

The revised design decreases the area of managed pond habitat from approximately 150 acres to 60 acres, and would result in the creation of approximately 90 acres of new tidal habitat in Pond A17. The tidal habitat in Pond A17 would serve as a sediment sink for sediment eroding from existing mudflats. However, any reduction in mudflat area is expected to be minor and would be offset by mudflats that would be present along channels within restored marshes.

Preliminary Conclusion: No change in significance; impact would remain less than significant

Impact 3.6-3: Potential habitat conversion impacts to western snowy plovers.

In the 2007 EIS/R, the habitat enhancement at Pond A16 was expected to offset the loss of breeding habitat for nesting plovers due to the conversion of Pond A8 to subtidal habitat. There would be fewer nesting islands created in Pond A16 under the new design. However, the four existing islands in Pond A16 would not be removed as a result of the new design, which may offset the creation of fewer islands to some extent, particularly if water levels allow for successful nesting on the existing islands. Also, monitoring efforts indicate that western snowy plover use in Pond A8 has been low. In 2009 only one snowy plover nest was located in Pond A8 and in 2010 no plover nests were located in the pond (Robinson-Nilsen et al. 2009, 2010). Therefore the redesigned Pond A16/17 restoration should still fully compensate for the loss of snowy plover breeding habitat due to the conversion of Pond A8 to subtidal habitat.

Preliminary Conclusion: No change in significance; impact would remain less than significant

Impact 3.6-4: Potential reduction in the population size of breeding, pond-associated waterbirds (avocets, stilts, and terns) using the South Bay due to reduction in habitat, concentration effects, displacement by nesting California gulls, and other Project-related effects.

In the 2007 EIS/R, the construction of nesting islands in Pond A16 was expected to offset the adverse effects of tidal restoration activities in Ponds A5-A8 in terms of numbers of pairs of stilts, avocets, and terns that would be supported by Phase 1 activities. There would be fewer nesting islands created in Pond A16 under the new design. However, the four existing islands in Pond A16 would not be removed as a result of the new design, which may offset the creation of fewer islands to some extent, particularly if water levels allow for successful nesting on the existing islands. Although the number of islands has been reduced, Pond A16/17 restoration would provide sufficient breeding habitat to accommodate the numbers of birds displaced by other Phase 1 actions.

Preliminary Conclusion: No change in significance; impact would remain less than significant (CEQA) and beneficial (NEPA)

Impact 3.6-9: Potential loss of pickleweed-dominated tidal salt marsh habitat for the salt marsh harvest mouse and salt marsh wandering shrew, and further isolation of these animals' populations, due to breaching activities and scour.

With the redesign of the Phase 1 actions at Ponds A16 and A17, the tidal marsh restored in a large portion of Pond A17 would create new habitat for these species. The former restoration design designated this pond as a managed inlet for Pond A16 for an indeterminate period, whereas the new design would restore 90 acres of tidal marsh habitat. This would be a beneficial change over the previous design. Note: this judgment of beneficial change assumes that the newly created tidal marsh would be substantially connected to escape cover on the newly created southern levee, and with portions of the lowered levee along Artesian Slough.

Preliminary Conclusion: No change in significance; impact would remain less than significant (CEQA) and beneficial (NEPA)

Impact 3.6-10: Potential construction-related loss of, or disturbance to, special-status, marsh-associated wildlife.

With the redesign of the Phase 1 actions at Ponds A16 and A17, the tidal marsh restored in a large portion of Pond A17 would create 90 acres of new habitat for these species. Also, there would be less disturbance of the marsh outboard of Pond A17 as a tidal inlet channel is already in place for the existing water control structure and it would only need to be widened for the breach, whereas the original design required the dredging of a second pilot channel for an intake structure. This would be a beneficial change over the previous design.

Preliminary Conclusion*:* Beneficial change in significance; impact would remain less than significant (CEQA) and beneficial (NEPA)

Impact 3.6-12: Potential disturbance to, or loss of, sensitive wildlife species due to ongoing monitoring, maintenance, and management activities.

With the redesign of the Phase 1 actions at Ponds A16 and A17, there is some potential for reductions in the maintenance and monitoring activities in Pond A16, due to reduced numbers of islands; the impact would remain less than significant.

Preliminary Conclusion: No change in significance; impact would remain less than significant (CEQA) and beneficial (NEPA)

Impact 3.6-13: Potential effects of habitat conversion and pond management on steelhead.

Fish screens would be installed at the inlet between Ponds A17 and A16/A17 as part of the redesign of the Phase 1 actions at Ponds A16 and A17. The additional tidal wetlands area (the remainder of Pond A17) would be fully open to the tides, with no increase in risk to steelhead migrating in Coyote Creek. There may be a reduction in risk since the inlet is farther from Coyote Creek.

Preliminary Conclusion*:* No change in significance; impact would remain less than significant

Impact 3.6-14: Potential impacts to estuarine fish.

The redesign of the Phase 1 actions at Ponds A16 and A17 includes 90 acres of new tidal habitat in Pond A17 that would benefit many species of estuarine fish.

Preliminary Conclusion*:* Beneficial change in significance; impact would remain less than significant (CEQA) and beneficial (NEPA)

Impact 3.6-20: Colonization of mudflats and marshplain by non-native Spartina and its hybrids.

With the redesign of the Phase 1 actions at Ponds A16 and A17, there would be an increase in tidal habitat, which includes the possibility of colonization by non-native Spartina and its hybrids, but Spartina control methods would result in no change.

Preliminary Conclusion: No change in significance; impact would remain less than significant

Impact 3.6-21: Colonization by non-native Lepidium.

Portions of the 90 acres of tidal habitat would likely be colonized by Lepidium. However, the adaptive management triggers in place for non-native vegetation would prevent Lepidium from exceeding 10 percent before eradication efforts are initiated. Also vegetation maintenance is a key component of the Adaptive Management Plan for nesting birds.

Preliminary Conclusion: No change in significance; impact would remain less than significant

Impact 3.6-23: Potential impacts to bay shrimp populations.

The redesign of the Phase 1 actions at Ponds A16 and A17 includes 90 acres of new tidal habitat in Pond A17 that would benefit bay shrimp populations.

Preliminary Conclusion: Beneficial change in significance; impact would remain less than significant (CEQA) and beneficial (NEPA)

Recreation Resources

AECOM reviewed the two impacts presented in the Recreation Resources section of the 2007 EIS/R and determined that the level of significance would not change for one impact, and would change from no impact to less than significant for the other impact. These impacts are discussed below.

SBSP Impact 3.7-1: Provision of new public access and recreation facilities, including the opening of new areas for recreational purposes and completion of the Bay Trail spine.

The impact analysis presented in the 2007 EIS/R found that the Phase 1 actions at the Alviso pond complex would provide a wide range of public access and recreational facilities, including a viewing platform at Pond A16 that would be accessible from the existing Refuge Environmental Education Center for visitors to view and learn about the managed pond restoration. The redesign of the Phase 1 actions at Ponds A16 and A17 would relocate the new viewing platform and interpretive station from the south side of Pond A16 to the east side of Pond A16, as shown in **Figure 2**. The new location of the viewing platform and interpretive station would be approximately the same distance from the Refuge Environmental Education Center, and it would offer a similar visitor experience to the one that was previously planned along the south side of Pond A16 as both locations overlook the managed pond restoration and nesting islands. In addition, the redesign includes a second interpretive station along the east side of Pond A16.

Preliminary Conclusion: No change in significance; impact would remain less than significant (CEQA) and beneficial (NEPA)

SBSP Impact 3.7-2: Permanent removal of existing recreational features (trails) in locations that visitors have been accustomed to using and that would not be replaced in the general vicinity of the removed feature.

The impact analysis presented in the 2007 EIS/R found that the Phase 1 actions at the Alviso pond complex would not remove existing recreational features that visitors are accustomed to using, and concluded that there would be no impact. The redesign of the Phase 1 actions at Ponds A16 and A17 would remove a portion of the existing loop trail that extends around the north and east sides of Pond A17 near Coyote Creek, as shown in **Figure 2**. However, a new trail would extend along a new levee that would bisect Pond A17, providing a shorter loop trail that would offer a similar visitor experience to the one provided by the existing loop trail. The new loop trail would provide additional benefit in comparison to the old loop trail, as it would allow visitors to walk across Pond A17 and view the tidal

restoration in the northern portion of the pond as well as the managed pond restoration in the southern portion.

The existing trails that extend along the Pond A16 perimeter levee would not be affected by the redesign.

Preliminary Conclusion: Change in significance from no impact to less than significant

RECOMMENDED APPROACH FOR NEPA AND CEQA COMPLIANCE

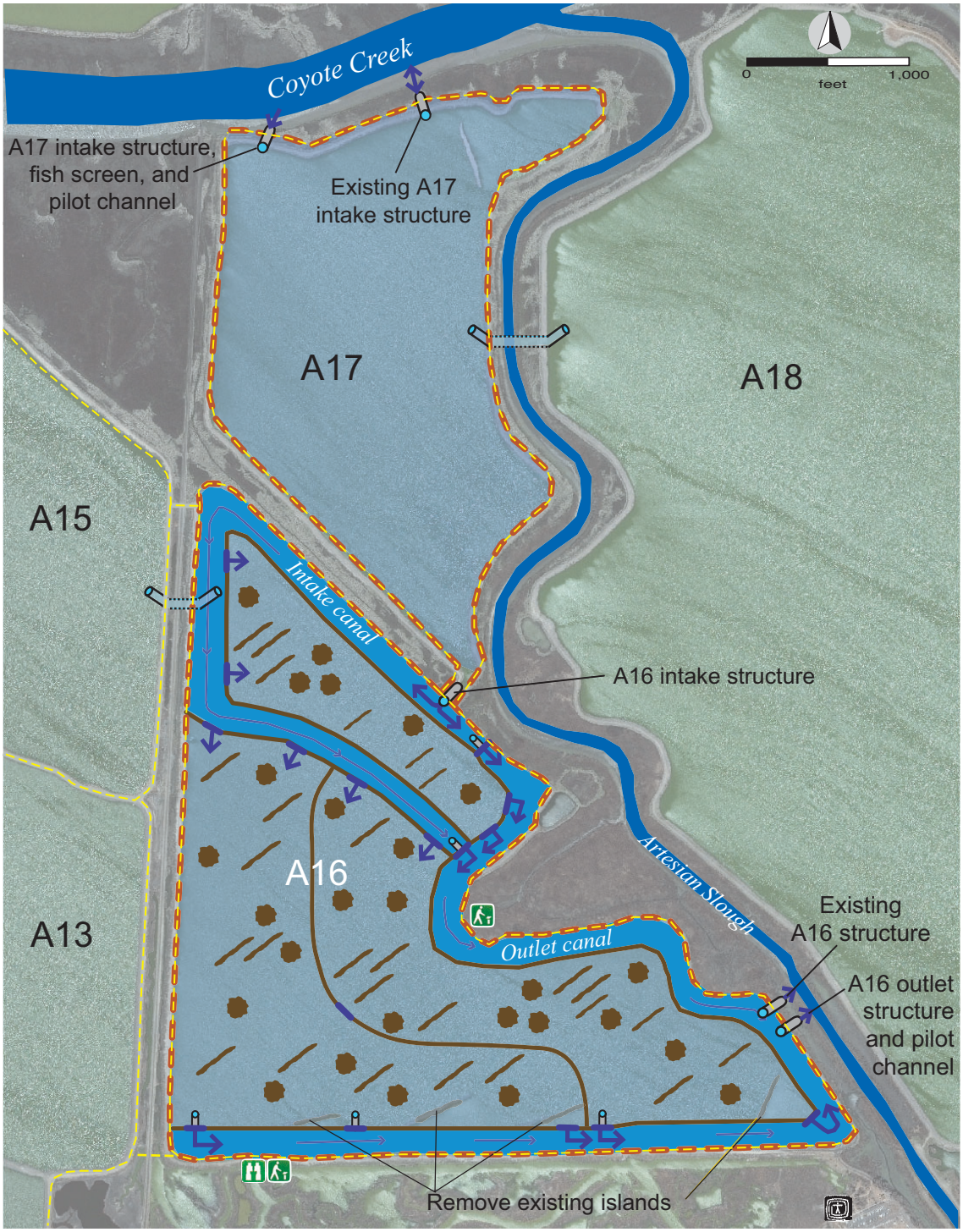
As stated above, Section 15162(a)(1) of the CEQA Guidelines requires preparation of a subsequent EIR when substantial changes are proposed in the project which result in one or more significant effects not discussed in the previous EIR.

As discussed above, the SBSP consultant team identified a new impact that would result from the redesign of the Phase 1 actions at Ponds A16 and A17: breaching of the Pond A17 levee could result in erosion of Coyote Creek and damage to the Union Pacific Railroad bridge structure. In the absence of monitoring and adaptive management, tidal restoration at Pond A17 could adversely affect the structural stability of the Union Pacific Railroad (UPR) bridge immediately downstream of the restoration area. However, the previously-approved Project included monitoring and adaptive management that would be used to avoid potential impacts associated with scour downstream of the tidal breaches. The discussion above, including proposed revisions to the MAMP to avoid potential effects to the bridge, is consistent with the intent of the monitoring and adaptive management plan. Assuming that the lead agencies commit to implementing the proposed MAMP revisions, none of the thresholds established by section 16162(a)(1) would be exceeded, and a supplemental EIR would not be required.

Section 1502.9(c)(1) of the Council on Environmental Quality's Regulations for Implementing NEPA requires that agencies prepare supplements to environmental impact statements if the agency makes substantial changes in the proposed action that are relevant to environmental concerns, or if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. As stated above, if the lead agencies commit to implementing monitoring and adaptive management measures to ensure that the redesign would not exceed any of the thresholds established in section 16162(a)(1), then a supplemental EIS/R would not be required.

If the lead agencies commit to implementing project elements, namely changes to the MAMP, to ensure that none of the thresholds in section 16162(a)(1) are exceeded, and they decide that a supplemental EIS/R is not required, an addendum to the 2007 EIS/R must be prepared in accordance with Section 15164 of the CEQA Guidelines to document the changes associated with the redesign of the Phase 1 actions at Ponds A16 and A17 and to provide evidence supporting the decision not to prepare a subsequent or supplemental EIR. The CEQA addendum need not be circulated for public review but will become part of the administrative record for the project.

NEPA does not have specific regulations regarding addenda to an EIS. The SBSP consultant team recommends the Department of the Interior's Office of the Solicitor be consulted to determine the appropriate documentation for NEPA compliance. It is expected that, at a minimum, a memorandum would be prepared that is similar to the CEQA addendum and it would be included in the project file and become part of the administrative record.



Cell intake/outlet water control structure:
- weir
- culvert with weir

Typical flow direction

Earth berm

Existing levee

Existing trail

Interpretive station

Existing slough channel

Nesting island-linear

Nesting island-circular

Pond intake/outlet water control structure (culverts with gates)

Existing siphon

Viewing platform

Existing Environmental Education Center

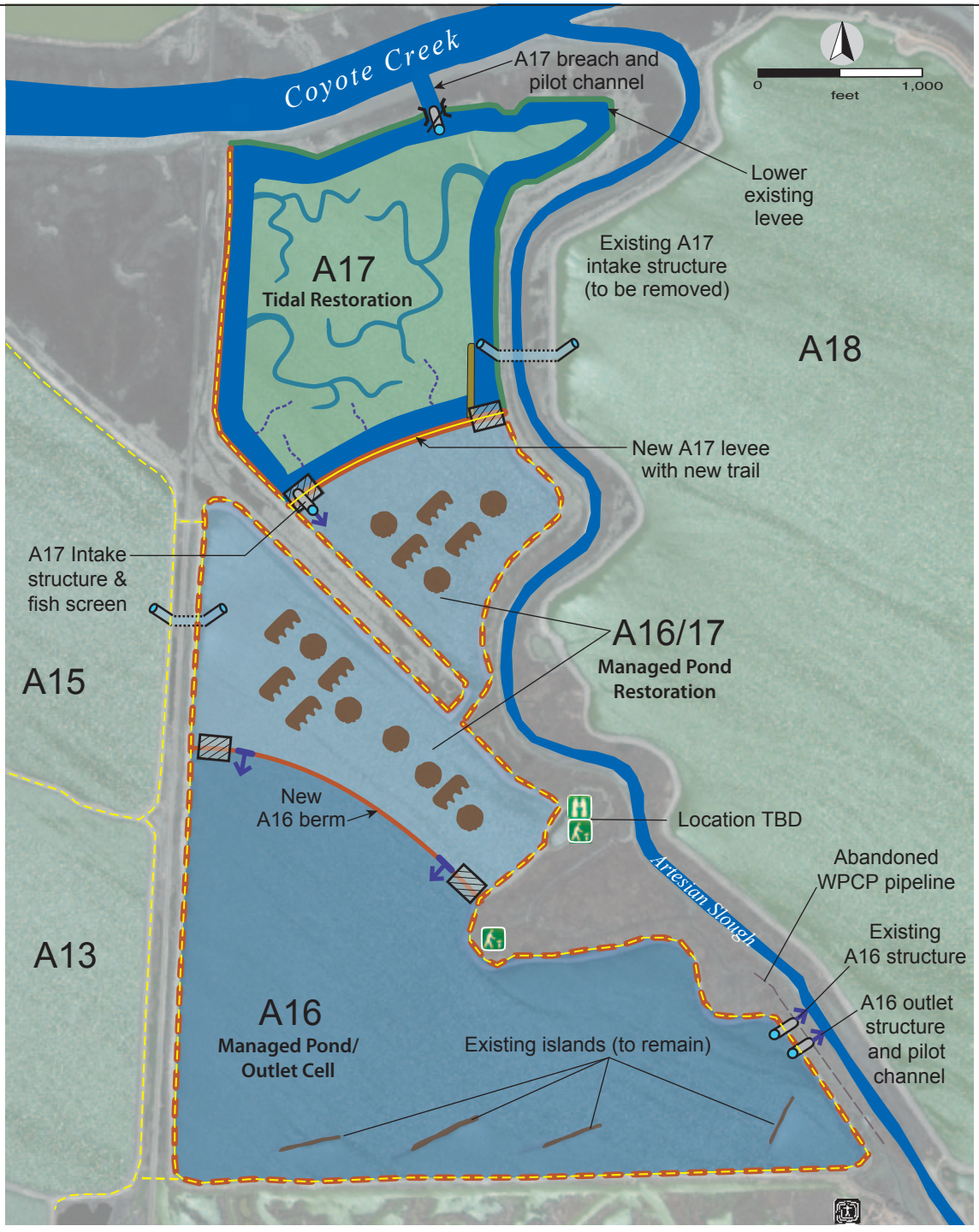
South Bay Salt Pond Restoration Project

figure 1

Alviso Pond A16 Restoration

2007 Preliminary Design

#1750/phase1/basemaps/concept plans/tidal ponds/AlvisoPondA16_5_31_07.ai



- Intake/outlet water control structure
- Weir
- Typical flow direction
- Existing levee
- Levee lowering
- New levee
- New berm
- Existing trail
- New trail
- Borrow ditch structural crossing
- Tidal drainage divide berm
- Levee breach
- Existing siphon
- Existing slough channel
- New starter channels
- Nesting islands-linear & circular
- Interpretive station
- Viewing platform
- Existing Environmental Education Center

South Bay Salt Pond Restoration Project

figure 2

Alviso Pond A16/17 Restoration

Revised 30% Design

DRAFT Jan 5, 2011

PWA

#1750/phase1/basemaps/concept plans/tidal ponds/AlvisoPondA16_01_05_11.ai

MEMORANDUM

MCMILLEN, LLC

To:	Eric Mruz (USFWS)	Project:	Design/Build of Ponds A16 and A17 on the Don Edwards San Francisco Bay NWR
Prepared by: Approved by:	Greg Allington (McMillen) Mort McMillen, PE (McMillen)	Cc:	Jim Burby (USFWS) Eric Mruz (USFWS) Mendel Stewart (USFWS) Melissa Helton (USFWS) John Bourgeois (CSCC) Dan Axness, PE (McMillen)
Date:	August 18, 2011	Contract No:	F11PD00552
Subject:	Alviso Pond A16-A17 Restoration Design Modification Implications to Existing Environmental Permits		

1.0 INTRODUCTION

McMillen, LLC (McMillen) was contracted by the United States Fish and Wildlife Service (USFWS) to perform design-build services for the Don Edwards National Wildlife Refuge Alviso Pond A16-A17 Restoration. The project is currently in the design phase and design modifications have been made from the conceptual design that was approved in the existing environmental permits.

1.1 Purpose

The purpose of this memorandum is to compare the McMillen modified design against the conceptual design that was considered for the exiting permit approvals. Based on these modifications, the environmental regulatory agencies and USFWS must determine the implications to the existing permit approvals and decide upon the next steps in order for the project to proceed to the construction phase estimated to start in the Fall 2011.

1.2 Scope

McMillen's scope of work for the design phase of the project includes preparing construction ready design documents and assisting USFWS with environmental permit supplements/addendums (if necessary). The scope of work for the construction phase includes constructing the project according to the construction ready design documents and performing biological surveys of the project area for sensitive species during construction.

1.3 Background

The original conceptual design drawings that were used in the original permit applications were prepared by ESA PWA and H.T. Harvey & Associates. These conceptual drawings were created to identify the overall goal of the Pond A16-A17 Restoration project. McMillen was contracted by USFWS to advance the conceptual design drawings to construction ready design documents. During this initial portion of the design phase, McMillen identified design modifications to achieve a better value for nesting island placement, water control in Pond A16 and create more suitable shallow water habitat. This memorandum

describes the modifications to the conceptual design and deviations from the existing permit approvals as well as details McMillen's approach to construct the project starting in the Fall 2011.

2.0 EXISTING ENVIRONMENTAL PERMITS

McMillen performed a review of the existing environmental permits that have been formally approved for the project. This permit documentation was obtained from the USFWS and the South Bay Salt Pond Restoration Project website (http://www.southbayrestoration.org/documents/). The following lists the permit applications and approvals that were identified:

- California Regional Water Quality Board (RWQB) San Francisco Bay Region 401 Water Quality Certification - Order No. R2-2008-0078 Date Issued: August 13, 2008;
- National Marine Fisheries Service (NMFS) Biological Opinion - 2007/08128 and 2008/02283 Date Issued: January 14, 2009. USACE Permit Enclosure 1;
- NMFS Essential Fish Habitat (EFH) Biological Opinion - 2007/08128 and 2008/02283 Date Issued: January 14, 2009. USACE Permit Enclosure 2;
- San Francisco Bay Conservation and Development Commission (BCDC) - Amendment No. Five to BCDC Consistency Determination No. CN 10-03 Date Issued: October 17, 2008; and
- United States Army Corps of Engineers (USACE) 404 Permit - Permit 27703S Date Issued: January 23, 2009;
- United States Fish and Wildlife Service (USFWS) Biological Opinion - 81420-08-F-0621 Date Issued: August 12, 2008. USACE Permit Enclosure 4;
- USFWS Final Environmental Impact Statement Record of Decision Date Issued: January 27, 2009.
- EDAW, Philip Williams and Associates, Ltd., H.T. Harvey and Associates, Brown and Caldwell, and Geomatrix. 2007b. South Bay Salt Pond Restoration Project Final Environmental Impact Statement/Report Volume 1. Submitted to USFWS and CDFG. December 2007.

2.1 Environmental Permit Contacts

The following is a list of the environmental permit contacts that this memorandum was sent to for a review:

- CDFG
  - Eric Larson
- California RWQB San Francisco Bay Region
  - Andree Breaux Greenberg
- Environmental Protection Agency
  - Luisa Valiela
- NMFS
  - Gary Stern
- San Francisco BCDC
  - Max Delaney
- USACE 404 Permit
  - Paula Gill
- USFWS
  - Joseph Terry

3.0 MCMILLEN DESIGN DESCRIPTION

McMillen's design took into consideration the conceptual design prepared for the original permit applications and incorporated some of those design elements. However, modifications have been made to the conceptual design and this section summarizes the McMillen design and describes the environmental permit discrepancies. In general, the redesign of Pond A16-A17 has decreased the number of structures and levees required to operate and maintain a fixed water surface elevation, which will reduce the overall cut and fill required for the new design and reduce the impacts to the surrounding environment. In fact, the redesign will provide ~131 acres of additional tidal marsh habitat in Pond A17, creating additional benefits for tidal marsh species consistent with the SBSPRP goals. The conceptual design drawing that was approved under the existing permits is located in Attachment A and McMillen's design drawings are located in Attachment B that depicts the revised layout of the project.

In order for construction to begin in Fall 2011, McMillen is proposing to break the project into two phases. Phase 1 would consist of implementing the design elements that meet the existing permit approvals. Phase 2 would consist of design elements that are a variance from the existing permit approvals and may require re-initiation of the permitting process. Some of the design elements in the following sections have been broken into Phase 1 and 2 construction elements and the specific project actions are described in detail. Section 4.1 outlines the overall construction approach and lists which construction element will be built in Phase 1 or 2.

3.1 Nesting Islands

3.1.1 Design Description

The following specific design criteria were used for the nesting islands:

- Spacing
    - No islands located within 300 feet from outboard levees.
    - No islands located within 100 feet from internal berms.
    - No islands located within 600 feet from proposed platforms.
    - No islands located within 100 feet from another island.
- 16 Islands (8 Circular and 8 Linear) in Pond A16.
    - Island crest height four feet above the average water level (3.2 feet NAVD) in managed Pond A16.
    - Two island shapes (linear and circular), each with a surface area of approximately 15,000 square feet above the average water level.
    - Undulations in the leeward edge of the linear nesting island to partition the nesting area.
    - Windward slope of 5:1 or flatter.
    - 10-foot bench between deep borrow areas and the toe of new islands.
    - Borrow areas connected to historic channels where feasible.

Nesting islands would be constructed within Pond A16 to provide bird nesting habitat. Islands would be constructed of bay mud during Phase 1 and dry fill material from the lowering of the existing A17 tidal levee adjacent to Coyote Creek and Artesian Slough during Phase 2. During Phase 1 the islands would be constructed using local bay mud from around the island. This fill would be used to load the island foundation to accelerate settlement and would not reflect the shape of the final nesting island design. In addition, the local bay mud would be allowed to dry and become firmer ("heal"). The "healed" mud would be reshaped into the final island configuration during Phase 2 along with the addition of dry levee lowering material. The circular and linear islands would have a ridge on the windward side to protect nesting birds and the linear islands would have undulations on the leeward side. Islands have been

located within Pond A16 based on the design criteria and the micro topography of the pond bottom for the least amount of pond bed disturbance.

The pond bed in Pond A16 ranges from 2.0 feet to 4.0 feet NAVD. The water surface level for Pond A16 would be set at the average water level of 3.2 feet NAVD. By setting the average water level at this elevation, it reduces the amount of material that is required to build the islands and creates suitable shorebird foraging habitat ranging from 2 to 12 inches in depth.

The sequence for the island construction would involve constructing the islands during Phase 1 with bay mud as approved in the existing permits. The islands would be built to an elevation of approximately between 5.0 and 7.0 feet NAVD in height. This bay mud would be allowed to dry and then it would be reshaped during Phase 2 after the islands have settled. The nesting islands would be allowed to settle while other construction tasks (i.e.-A16 Outlet WCS and A16 Wildlife Viewing Platform) are being constructed. After other site restoration tasks are completed, the islands would be shaped to final design at an elevation of 7.8 feet NAVD and the Phase 2 levee lowering dry material would be placed on the islands. The average island height would be overbuilt by 50% to account for additional settlement of the bay mud under the dry fill material.

3.1.2 Permit Review

The McMillen design approach proposes to construct 16 islands (8 circular and 8 linear) in Pond A16 during Phase 1 and 2 construction activities. The permit approvals state that 50 islands (25 circular and 25 linear) are to be constructed in Pond A16. The McMillen design allows for additional nesting islands to be constructed in Pond A16 without constructing any other water control structures in the pond itself. Depending on future funding in subsequent phases of this project, the potential for up to 34 additional nesting island locations are available within Pond A16. The potential future islands would be constructed using local bay mud or imported fill material.

3.2 A17 Intake WCS Removal and Levee Lowering

3.2.1 Design Description

The following design criteria were used for the A17 intake WCS removal and levee lowering:

- Completely remove the existing A17 intake structure.
- Lower approximately 2,050 feet of A17 levee along Coyote Creek to approximately MHW or 7.0 feet NAVD.
- Lower approximately 5,000 feet of A17 levee along Artesian Slough to approximately MHW or 7.0 feet NAVD.
- Leave sporadic upland hummocks for escape cover for salt marsh harvest mice during high tide events every 200 feet in portions of the levee adjacent to suitable habitat.
- Lower approximately 2,260 feet of A17 levee along the southern boundary to 4.0 feet NAVD.

The removal of the existing A17 Intake WCS in Phase 2 would tidally connect Pond A17 with Coyote Creek, and over time (50 year goal) it would create pickleweed marsh habitat and restore the tidal hydraulic connection between Pond A17 and the adjacent sloughs. There are no plans to dredge the existing pilot channel or make it wider after the existing intake structure is removed. This channel is expected to stabilize itself over time. Salvageable material from the intake structure would be used in other restoration tasks and all unsalvageable material would be disposed off-site at an appropriate facility.

The dry material excavated from the lowered levees would be used to construct the nesting islands and levees during Phase 2. Lowering the levee to the existing adjacent marsh habitat would reduce erosion when tidal water flows through the marsh habitat into Pond A17. Sporadic hummocks above the high tide elevation would be left for escape cover for salt marsh harvest mice.

The A17 levee along the southern portion of A17 would also be lowered during Phase 2. This levee would be removed to an elevation of 4.0 feet NAVD to match the existing marsh habitat. New structural levees would be built from this material at the new A16 levee and at the new A16 intake WCS levee to separate Pond A16 from the new tidal habitat.

3.2.2 Permit Review

The levee breach and structure removal at the inlet of Pond A17 from Coyote Creek is not permitted under existing permit approvals. Permit approvals state that the existing structure is to remain in place with a new fish screen installed and there is no approval for a complete levee breach in any location in Pond A17. By breaching the existing intake structure, it eliminates the need for a second intake structure. As a result, there would be no impacts to the salt marsh habitat on the northern side of Pond A17 levee.

Lowering of the levee along the northern, eastern and southern portions of Pond A17 is not permitted under the existing permit approvals. Permit approvals state that the only source of water entering Pond A17 is through the new and existing intake structures that would both require fish screens. However, the 50-year goal for Pond A17 according to the selected alternative (Alternative C) shown on Figure 2-7b in the Final Environmental Impact Statement/Report is to restore it to tidal habitat (Figure 1). The permit approvals do not approve this levee breaching and lowering; however, the intended use does meet the criteria of the 50-year long-term objective for this project.

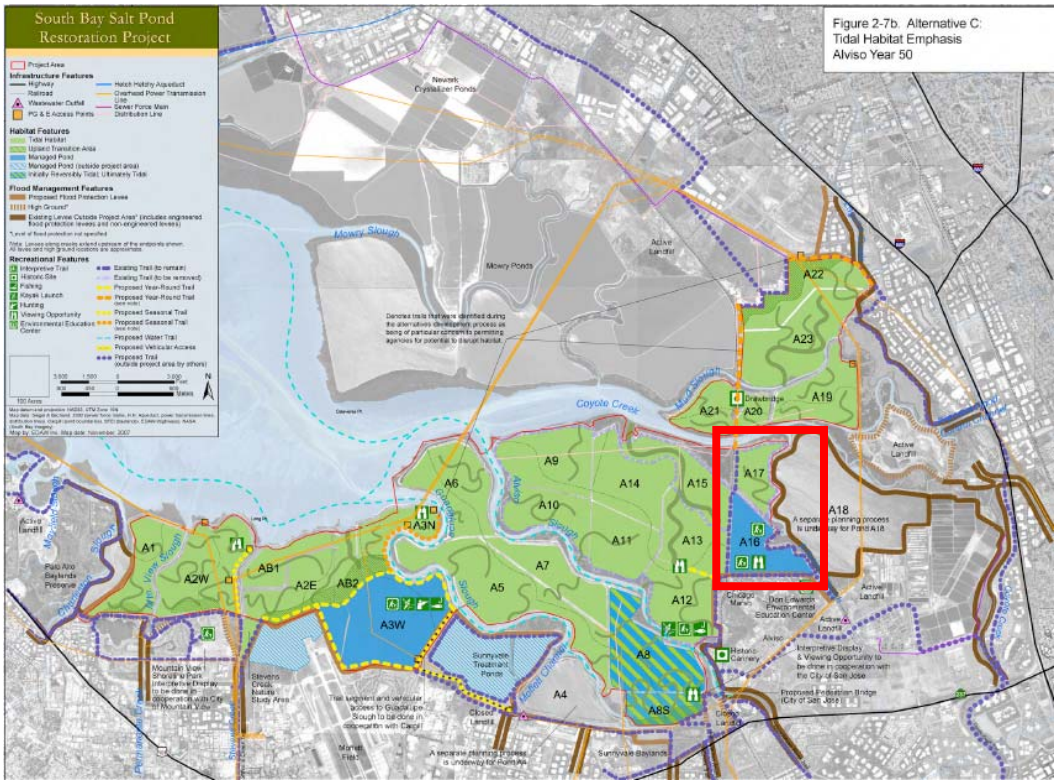


Figure 1. 50-Year Long Term Goal for Pond A17

Since the levee lowering is not approved under existing permit approvals, McMillen is proposing to perform this construction element during Phase 2. Phase 2 would excavate the entire levee down to approximately MHW which would allow high tides to enter Pond A17. This construction action is not approved under existing permits and may require additional permitting.

Lowering the A17 levee to approximately MHW would remove all upland areas that would stay dry during high tide events. The salt marsh harvest mouse has not been identified in areas adjacent to the A17 levee; however, suitable habitat is present and harvest mice may be present. During high tide events that inundate the marsh habitat, harvest mice escape to dry ground. Sporadic upland hummocks spaced approximately every 200 feet would be left on the levee to create this escape habitat for harvest mice during high tide events.

3.3 A16 Intake WCS

3.3.1 Design Description

The A16 Intake WCS design criterion consists of the following:

- Maximum capacity of 170 cfs at an approach velocity of 0.57 fps.
- Top of the structure elevation 13.0 feet NAVD.
- Fish screens would sit inside of guide slots cast into the concrete walls with one-way flow only through the fish screens.
- 63-inch HDPE outflow culvert with a flow line elevation of -3.0 feet NAVD.

The proposed location of the A16 Intake WCS is near the southwest corner of Pond A17 at the western end of the levee lowering. It would be used to screen and regulate flow into Pond A16. The intake structure would be built perpendicular to the borrow ditch allowing water and debris to flow past the structure reducing the possibility for excessive debris and sediment build-up. In addition, timber piles and a log boom would be constructed around the front of the intake structure to prevent large floating debris from damaging the fish screens.

Water will be conveyed from the A16 Intake WCS to Pond A16 via one 63-inch HDPE culvert (approximately 320 feet) located under the Intake WCS Levee. The intake culvert would have a tide gate to prevent water from flowing back into Pond A17. The hydraulic capacity of the inflow through the intake culvert would be higher than the fish screens hydraulic capacity at high tide to prevent backwatering.

Sheet pile would be installed around the perimeter of the intake slab to act as a cofferdam during construction. After construction of the intake is complete, the sheet pile would be cutoff at the top of the concrete slab at the upstream end so that there are no obstruction to water entering the intake wcs. A concrete slab would be supported concrete anchors in the levee using tie-backs and the concrete walls would be cast on top of the concrete slab. Fish screen guide slots would be cast into the floor and walls of the structure to support three travelling belt fish screens. The travelling belt fish screens would consist of a continuous plastic screen driven in a continuous loop. Water would flow through the screen while debris including cattails, bulrush, and pickle weed would be carried over the screen and discharged into the intake flow control vault and discharged into Pond A16.

Porosity baffles would be installed behind the fish screens to control the flow through the structure. A maintenance platform would be installed on the top of the intake to allow maintenance access to the fish screens and porosity baffles.

3.3.2 Permit Review

The permitted A17 intake structure is located on the outboard levee between Pond A17 and Coyote Creek. The relocation of this structure is not consistent with the permit approvals and also introduces new tidal habitat as discussed in Section 3.2. The relocation of this structure on the Pond A17 levee would eliminate impacts to the salt marsh habitat on the north side of Pond A17 levee where it was originally specified to be installed.

3.4 A16 Intake Fish Screen

3.4.1 Design Description

The fish screen design criteria consists of the following:

- Capacity of 80 cfs at an approach velocity of 0.33 ft/sec regulated by porosity baffles and slide gate (Note: the total capacity of the fish screen is greater than 80 cfs at faster approach velocities);
- Through flow above about 3.2 feet NAVD;
- Three independent inclined traveling belt fish screens;
- Top of the fish screens at 12.2 feet NAVD;
- Fish screens would sit at the face of a concrete vault; and
- Flap/tide gates would allow one-way flow through fish screens.

The fish screen has been designed to meet the NMFS fish screen criteria for tidal areas. Three independent inclined traveling belt fish screens would be installed inside of the A16 intake water control structure. Its function is to prevent fish from entering Pond A16 and the fish screen would be operated year-round. The fish screens would be installed at an angle so that debris would be collected and carried over the fish screen and flow into Pond A16. The fish screen structure would be installed on the face of the intake vault upstream of the outlet pipes. Porosity baffles would be installed behind the fish screen to adjust the volume of water flowing into Pond A16. The hydraulic capacity of the inflow through the fish screens would be approximately 90 to 100 acre-feet per day.

The fish screen is manufactured by Intralox and is constructed of stainless steel and ultraviolet resistant Acetal plastic. Each screen is operated independently and powered by one, 2 horsepower (hp) motor.

3.4.2 Permit Review

The new intake structure would have three independent fish screens leading to one intake culvert. The A16 intake culvert would be screened year-round and no fish would be allowed to enter Pond A16. This water intake regime is consistent with the NMFS BO *Table 1 SBSP Water Intake Structures at Managed Ponds – Operational Measures to Protect Juvenile Salmon and Steelhead* on Page 9 which states that the intake from Coyote Creek to Pond A17 must have a fish screen installed during both the summer and winter months (year round).

3.5 A16 Outlet WCS

3.5.1 Design Description

The A16 Outlet WCS design criteria consists of the following:

- Discharge at least 155 cfs to Artesian Slough during low tide events.
- Prevent water from flowing back into Pond A16 through the outlet structure.

The proposed location for the A16 Outlet WCS is in the east levee near the south end of Pond A16. The existing outlet structure would be demolished and the new structure would be constructed in the same location. The flow control into the structure would be regulated by an overflow weir located within Pond A16. The crest of the weir would be constructed at elevation 3.0 feet NAVD with and adjustable overflow weir installed along the top of the wall to allow the weir elevation to be raised up to 4.0 feet NAVD. Two sluice gates would be installed at the bottom of the weir structure (0.0 feet NAVD) to allow additional drainage of Pond A16 if maintenance activities would require in the future.

A sluice gate would be installed on the upstream side of the water control structure to regulate flows. A tide gate would be located inside the water control structure to prevent water from entering back into Pond A16 from Artesian Slough. After flowing through the tide gate, the water would flow through a 4-foot tall by 8-foot wide concrete culvert beneath the Pond A16 levee. The flow would be discharged from the culvert into a pilot channel leading directly into Artesian Slough.

The outlet structure would be supported by a 12-inch concrete slab on a subgrade of gravel and geotextile. Concrete walls would be cast on top of the concrete floor.

3.5.2 Permit Review

A new outlet structure in Pond A16 levee to the south of the existing outlet structure has been approved by the permitting agencies. This permitted structure consists of six new 4-foot outlet culverts with combination slide/flap gates on both ends. The McMillen design proposes to install only one new large culvert in the same location as the existing outlet structure. By demolishing the existing culvert and constructing the new one in its place, impacts to the pond and surrounding salt marsh environment are significantly reduced.

3.6 A16 Outlet Pilot Channel

3.6.1 Design Description

The following design criteria were used for the A16 outlet pilot channel:

- Approximately 140 feet in length through salt marsh into Artesian Slough.
- Channel invert elevation would be -1.0 feet NAVD, which is approximately 1 foot below the invert of the outlet structure culverts (0.0 feet NAVD).
- Channel bottom width would be approximately 25 feet.
- Channel top width would be approximately 75 feet.
- Channel maximum side slopes of 3:1.

The existing pilot channel associated with the existing outlet structure would be deepened if necessary to meet the design criteria. The pilot channel would also be extended by excavating through the adjacent salt marsh to extend the pilot channel directly into Artesian Slough. Material excavated from the pilot channel would be placed within the Pond A16 borrow ditch in the vicinity of the outlet structure.

3.6.2 Permit Review

The permits have approved a new pilot channel from the new A16 outlet structure directly into Artesian Slough. The permits anticipated a 50-foot long channel with 3:1 side slopes, 105-foot top width, 48-foot bottom width and the channel bottom would be 1-foot below the culvert invert. The McMillen design pilot channel does not meet permit approval requirements with the expansion of the pilot channel directly into Artesian Slough. However, impacts to the salt marsh from the construction of the second outlet structure have been eliminated as described in Section 3.5.

The salt marsh harvest mouse has not been identified in areas adjacent to the A16 outlet structure; however, suitable habitat is present and harvest mice may be present. Proper pre-construction mitigation efforts would be performed to reduce potential impacts.

3.7 A16 Levee

3.7.1 Design Description

The A16 Levee design criteria consists of the following:

- Located in the A16-A17 Canal near the southeast corner of Pond A17.
- Crest elevation set at 12.2 feet NAVD and width 12.0 feet.
- Side slope of 3:1 or match existing.

Fill material would be placed in the Pond A16-A17 canal to construct a new levee along the A16 levee approximately 150 feet in length. This new levee would be constructed out of dry A17 levee lowering material to 12.2 feet NAVD which will be the same elevation as the other levees. The dry fill material would be compacted using mechanical methods to reduce the amount of potential settlement.

3.7.2 Permit Review

The new A16 structural levee is located in the location of the conceptual design A16 intake structure. The permit approvals do not approve a new levee in this location. However, this levee is associated with larger design elements and helps to provide the overall goal of this project.

3.8 A16 Intake WCS Levee

3.8.1 Design Description

The A16 Intake WCS Levee design criteria consists of the following:

- Crest elevation at 12.2 feet NAVD and width of 20.0 feet.
- Side slope of 5:1.

A new structural levee would be constructed at the A16 intake structure into Pond A16 approximately 230 feet in length. The intake WCS culvert would be installed underneath this levee and the levee would

connect into the existing Pond A16 and A17 levees. This levee would be constructed to a height of 12.2 feet NAVD to match the adjacent levees and would also serve as the new trail route. This levee would be constructed from the dry A17 levee lowering material and compacted to reduce settlement.

3.8.2 Permit Review

This new structural levee is located in the old sewer discharge ditch between Pond A16 and A17. The permit approvals do not approve a new levee in this location. However, this levee is associated with larger design elements and help to provide the overall goal of this project.

3.9 A17 Water Control Berm

3.9.1 Design Description

The A17 water control berm design criteria consists of the following:

- Crest elevation of 11.0 feet NAVD at the levee –sloping down to approximately 4.0 feet NAVD where the berm ties into the marsh surface.
- Side slope of 5:1.
- Final net fill height would be approximately 120% of finished grade.

A new water control berm would be constructed in the borrow ditch on the east side of Pond A17 approximately 400 feet in length. The elevation of this berm would be set at 11.0 feet NAVD at the levee and sloping down to approximately 4.0 NAVD feet at the marsh surface. The berm is intended to divert water through the western borrow ditch during incoming tidal flow. The diversion of water through the west borrow ditch would increase flow velocity and reduce the amount of sediment that would settle in the west borrow ditch. In addition, the berm is expected to enhance sediment settlement in the east borrow ditch by reducing flow velocities. This berm would be constructed from the dry A17 levee lowering material and mechanically compacted to reduce settlement.

3.9.2 Permit Review

This new structural berm is located in the borrow ditch in Pond A17. The permit approvals do not approve a new berm in this location. However, this berm is associated with larger design elements and helps to provide the overall goal of this project.

3.10 A17 Fishing Platform

3.10.1 Design Description

The following design criteria were used for the A17 fishing platform:

- Platform supported by 14-inch square precast concrete piles.
- Decking is a plastic and wood fiber composite.
- Guard rail is a custom wood and steel picket rail.
- The fishing platform would have a deck elevation approximately three feet above the top of the levee.

The A17 fishing platform would be located at the northwest corner of Pond A17 for fishing in Coyote Creek during medium to high tides. The platform would be extended to the end of the salt marsh along

Coyote Creek and would have a boardwalk approximately 50 feet long leading up to it from the levee. The platform would be elevated above the top of the levee approximately three feet with an ADA compliant ramp, seating and fishing areas. The platform would extend into Coyote Creek far enough to allow for safe and unobstructed fishing by the general public.

The platform would consist of galvanized steel framing supported by precast concrete piles. Wood floor joists at 16-inch on-center would be attached to the steel framing and would support the composite decking.

3.10.2 Permit Review

This fishing platform is located in a different location than the permit approvals but allows the general public to fish in Coyote Creek and view the Drawbridge historical site across Coyote Creek. The pilings will be made of concrete and will require the use of a pile driver to install. Proper sound attenuation techniques will be used during installations of the piles.

3.11 A16 Wildlife Viewing Platform

3.11.1 Design Description

The following design criteria were used for the A16 wildlife viewing platform:

- Platform supported by 14-inch square precast concrete piles.
- Decking is a plastic and wood fiber composite.
- Guard rail is a custom wood and steel picket rail.

The A16 wildlife viewing platform would be located on the east side of Pond A16 for wildlife viewing. The platform would accommodate parties of up to 15 people. The levee would be raised in the area of the viewing platform so that the deck is approximately three feet above the majority of the levee and still be ADA accessible. The level of the platform deck would be the same height as the levee and there would be no ramp leading up to this platform.

The platform would consist of galvanized steel framing supported by precast concrete piles. Wood floor joists at 16-inch on-center would be attached to the steel framing and would support the composite decking.

3.11.2 Permit Review

This wildlife viewing platform is located in a different location than the permit approvals but will still be located within Pond A16 for wildlife viewing of the nesting islands. The pilings will be made of concrete and will require the use of a pile driver to install. Proper sound attenuation techniques will be used during installations of the piles.

3.12 Interpretive Signage

3.12.1 Design Description

The following design criteria were used for the interpretive signage:

- Interpretive signage would be incorporated into both the fishing and viewing platforms.

    - Three kiosks consisting of signs (24-inches by 36-inches) mounted on each platform.
- Interpretive signage at the Environmental Education Center depicting maps of the new trail and ponds.
    - Two kiosks consisting of signs (36-inches by 60-inches).

Interpretive signage would be incorporated into the fishing and viewing platforms and would consist of kiosk mounting brackets and the kiosks themselves. Two new trail map kiosks would be installed at the EEC describing the new trail route along Pond A16 and A17. Information contained on these kiosks would be in both English and Spanish.

3.12.2 Permit Review

The interpretive stations are consistent with the permit approvals. An extra interpretive station has been added in the northwestern corner of Pond A17 to describe the historical landmark of Drawbridge across Coyote Creek. These stations would be located in the upland and on platforms and are not expected to violate any permit conditions.

3.13 Construction Access

3.13.1 Design Description

The following design criteria were used for construction access:

- Two possible land construction access points.
    - East side of Pond A16 via Southbay Highway 237, Zanker Rd, Los Esteros Rd, Grant Rd, and through the EEC; and
    - West side of Pond A16 via Southbay Highway 237, North 1st St., Liberty St., Catherine St, Hope St. and through the Alviso Marina County Park restricted access path.
    - Levees may require grading and widening.
    - Heavy vehicles would avoid crossing water control structures if the vehicle exceeds the weight bearing capacity of the structure.
- Staging Area
    - A portion of the staging area would be located on Ponds A16 and A17 levees. These levees may be enlarged using fill material for additional room.
    - An expanded staging area is proposed to the south of the EEC.

Only land access is anticipated for construction access to Ponds A16 and A17. East side access would be required for the new A16 water control structure. Material and equipment delivery traffic may congest the EEC and parking lot area, and could potentially be restricted in order to prevent damage to the existing roadway.

The West side access is preferable for most material and equipment deliveries due to the shorter haul distance on the levee access roads; however, there is concern with ability to use the private railroad crossing required to get from Marina County Park access road to the northwest corner of Pond A16. If the west side access is deemed necessary for construction access, McMillen will coordinate with the railroad owner for written authorization to cross the railroad line.

If equipment sizing appears too large for the levee or water control structures, design modifications to the levees and/or water control structures would need to be performed.

Water access is not anticipated at this time.

3.13.2 Permit Review

The permit approvals outline the east side construction access but not the west side. The west side access would not impact any critical aquatic features or habitat. BMP's would be used on the west side construction access if the appropriate written authorization is received from the railroad owner.

3.14 Cable Fence

3.14.1 Design Description

The following design criteria were used for the cable fence:

- Install 500 linear feet of permanent cable fence.
- Black vinyl clad stainless steel cable.

Permanent cable fencing would be installed to limit access around the fishing and viewing platforms.

3.14.2 Permit Review

The permit approvals do not discuss cable fence. The cable fence along the viewing platforms would deter the general public from walking under the structure. It is not intended as a security fence but should serve as a deterrent. It is not expected to violate any of the permit conditions.

3.15 Crushed Rock Trail Surfacing

3.15.1 Design Description

The following design criteria were used for the crushed rock trail surfacing:

- Install approximately 20,000 linear feet of ADA-compliant crushed aggregate.
    - Six inches deep by 12 feet wide.
    - Installed on top of geotextile.
    - Slope the trail towards Pond A16-A17 at 2.0%.
    - Firmness: The degree to which the surface resist deformation by indentation when a person walks or wheels across the surface (0.3 inches).
    - Stability: The degree to which the surface remains unchanged by a person walking or maneuvering a wheelchair (0.5 inches).
    - Slip resistance: Based on the frictional force necessary to permit a person to ambulate without slipping.

All of the levees surrounding Ponds A16-17 that are not lowered would be raised to 12.2 feet NAVD and surfaced with gravel.

3.15.2 Permit Review

None of the crushed rock trail surfacing would be installed in water and it appears to comply with permit approvals.

3.16 Water Pollution Control Plant's Pipeline

3.16.1 Design Description

The following design criteria were used for the sewer pipeline:

- Obtain necessary permits/approvals from the City of San Jose/Santa Clara prior to pipeline removal.
- Saw cut the abandoned sewer pipeline on both ends of the A16 outlet pilot channel.
- Plug both open ends of the pipeline with a suitable fill material.

The proposed Pond A16 outlet structure pilot channel would cross the San Jose/Santa Clara Water Pollution Control Plant's former concrete sewer pipeline. The pipeline is located along the south bank of Artesian Slough, within the 50-foot wide strip of salt marsh land owned by the City of San Jose. Removal of a section of this pipeline is proposed so that the pipe does not impede drainage from the outlet structure or become a hazard.

3.16.2 Permit Review

McMillen will work with USFWS and the City of San Jose/Santa Clara to obtain the required easements and authorizations to demolish this pipeline during subsequent design phases of the project.

3.17 Hydraulics

3.17.1 Design Description

The following design criteria were used for hydraulic design:

- Managed cell water depths.
    - Average depth approximately 2 to 8 inches (range no greater than 2- to 12-inches) around nesting islands, preferably at the lower end of the range.
    - The minimum target water level at the average depth of 2 to 6 inches is approximately 3.2 feet NAVD.
    - The design should allow flexibility to adaptively increase the area of very shallow water habitat, as needed, via adjustment of the water control structures.
- Increase flows and decrease hydraulic residence times in Pond A16 compared to existing conditions to provide adequate flushing for bird habitat and water quality objectives during the summer season.
- Allow for full tidal exchange in Pond A17 to promote improved water quality.
- Prevent salmonid entrapment in Pond A16 year-round by using fish screens.
- Limit the level of effort required for the operation and maintenance during normal operations.
- Account for a storm surge or sea-level rise to increasing Bay tide levels by 16 inches (1.3 feet) relative to the baseline conditions.

Pond A16 would be managed hydraulically to meet the above stated design criteria for shallow water habitat. A large majority of Pond A16 bed has elevations ranging from 2.2 to 3.1 feet NAVD.

3.17.2 Permit Review

The hydraulics outlined in the McMillen design does not meet permit approvals in relation to the new tidal restoration in north Pond A17. These items have been previously discussed in this memorandum. The other design criteria appear to meet permit approvals.

3.18 Water Quality Management

3.18.1 Design Description

The following design criteria were used for water quality management:

- Provide sufficient hydraulic structure flow capacity to maximize flow through the managed cell to reduce residence time and maximize wind and flow-induced re-aeration.
- Design cells so that water levels can be raised or lowered for complete drainage.

The project elements have been designed to improve the existing water quality conditions within Ponds A16 and A17. Pond A16 would experience water quality improvements from the flushing of water twice a day by tide events above 3.2 feet NAVD. Pond A17 would experience water quality improvements from the breaching of the A17 intake WCS structure and levee lowering daily tidal prism exchange.

3.18.2 Permit Review

Water quality conditions for Pond A16 discharge have been established by the California Regional Water Quality Board – San Francisco Bay Region. It is uncertain after construction is complete whether the discharge would meet these requirements. However, the measures recommended in the McMillen design would provide increased mixing of water and decreased residence time in each pond unit. If water quality does not meet the standards upon construction completion, additional measures may also be required to bring water quality back within permit parameters and will be determined at that time.

3.19 Cut/Fill Volumes

The cut/fill volumes for the McMillen design described in this memorandum have been calculated for each of the design elements. These volumes are presented in Table 1 and 2 and have been separated between cut/fill above and below the MHHW of the San Francisco Bay (7.49 NAVD88). The impact areas are presented in Table 3.

Table 1. Pond A16 Restoration Fill/Removal Volumes

Design Element	Below MHHW		Above MHHW	
	Cut (cu yds)	Fill (cu yds)	Cut (cu yds)	Fill (cu yds)
Nesting Islands	40,000[1]	57,000	--	--
A17 Intake WCS Removal	--	--	--	--
A17 Levee Lowering	--	--	--	--
A16 Intake WCS	--	--	--	--
A16 Intake Fish Screen[2]	--	--	--	--
A16 Outlet WCS	1,000	1,600	1,000	1,200
A16 Outlet Pilot Channel	1,100	--	--	--
A16 Levee	100	300	--	200
A16 Intake WCS Levee	1,700	1,750	600	650
A17 Water Control Berm	--	--	--	--
A17 Fishing Platform	--	--	--	--
A16 Wildlife Viewing Platform	--	20	--	--
Crushed Rock Trail Surfacing	--	--	--	7,740
TOTAL VOLUME	**43,900**	**60,670**	**1,600**	**9,790**

[1] Cut calculated from the bay mud localized around each nesting island.
[2] Impacts associated with the fish screen are included in A16 intake wcs.

Table 2. Pond A17 Restoration Fill/Removal Volumes

Design Element	Below MHHW		Above MHHW	
	Cut (cu yds)	Fill (cu yds)	Cut (cu yds)	Fill (cu yds)
Nesting Islands	--	--	--	--
A17 Intake WCS Removal	1,500	--	1,000	--
A17 Levee Lowering	17,000[1]	--	18,000[1]	--
A16 Intake WCS	100	200	50	100
A16 Intake Fish Screen[2]	--	--	--	--
A16 Outlet WCS	--	--	--	--
A16 Outlet Pilot Channel	--	--	--	--
A16 Levee	--	--	--	--
A16 Intake WCS Levee	1,700	1,750	600	650
A17 Water Control Berm	--	8,000	--	--
A17 Fishing Platform	--	20	--	--
A16 Wildlife Viewing Platform	--	--	--	--
Crushed Rock Trail Surfacing	--	10	--	1,260
TOTAL VOLUME	**20,300**	**9,980**	**19,650**	**2,010**

[1] Cut associated with levee lowering will be used for fill in the nesting islands, A16 levee, A16 intake wcs levee, and A17 water control berm.
[2] Impacts associated with the fish screen are included in A16 intake wcs.

Table 3. Pond A16-A17 Restoration Impact Areas (Acres)

Design Element	Pond A16	Pond A17	Pond A16 Upland Levee	Pond A17 Upland Levee	Pond A16 Tidal Marsh	Pond A17 Tidal Marsh
New Tidal Wetland Restoration	-	130.14	-	-	-	-
New Managed Pond	236.43	-	-	-	-	-
Existing Upland Levee (No Impact)	-	-	15.89	1.41	-	-
Existing Tidal Marsh (No Impact)[1]	-	-	-	-	48.61	36.85
Design Element Impacts						
Nesting Islands	5.51	-	-	-	-	-
A17 Intake WCS Removal	-	0.03	-	0.04	-	0.05
A17 Levee Lowering	-	-	-	10.01	-	-
A16 Intake WCS	-	0.01	-	0.05	-	-
A16 Intake Fish Screen[2]	-	-	-	-	-	-
A16 Outlet WCS	0.03	-	0.04	-	0.03	-
A16 Outlet Pilot Channel	-	-	-	-	0.12	-
A16 Levee	0.02	-	-	-	-	-
A16 Intake WCS Levee	-	-	-	-	0.16	0.16
A17 Water Control Berm	-	0.82	-	-	-	-
A17 Fishing Platform	-	-	-	-	-	0.02
A16 Wildlife Viewing Platform	0.01	-	-	-	-	-
Crushed Rock Trail Surfacing	-	-	4.74	0.88	-	0.01
TOTAL ACRES	**242.00**	**131.00**	**20.67**	**12.39**	**48.92**	**37.09**

[1] The tidal marsh area was calculated from the outboard edge of the levee to the open water of Coyote Creek, Artesian Slough or other open water features.
[2] Impacts associated with the fish screen are included in A16 intake wcs.

4.0 NEPA/CEQA Analysis

The McMillen design reflects design modifications that were not described the 2007 FEIS/R. These modifications were analyzed by ESA PWA and AECOM in a memorandum titled *Recommended Approach for NEPA/CEQA Compliance for the revised Design o Phase 1 Actions at Ponds A16 and A17* dated July 11, 2011. The analysis performed in the memorandum was based on a conceptual 30% design that differs from the McMillen design outlined in this memorandum. However, both of these designs contain similar design elements and the analysis provided in the memorandum was used as the basis in the analysis of the McMillen design described in the following sections.

4.1 Supplemental NEPA/CEQA Documentation

4.1.1 NEPA Regulations

Section 1502.9(c)(1) of the Council on Environmental Quality's Regulations for Implementing NEPA (40 CFR 1502.9[c][1]) states that agencies shall prepare supplements to either draft or final environmental impact statements if:

i. The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or
ii. There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

Agencies may also prepare supplements when the agency determines that the purposes of NEPA will be furthered by doing so (40 CFR 1502.9[c][2]).

4.1.2 CEQA Regulations

Section 15162(a) of the CEQA Guidelines requires the preparation of a Subsequent EIR when any of the three conditions below are met. Section 15162(a)(1) is relevant to the proposed project changes, with sections (2) and (3) presented for reference.

1. Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
3. New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:
    a. The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
    b. Significant effects previously examined will be substantially more severe than shown in the previous EIR;
    c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
    d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

CEQA Guidelines Section 15162(b) states that if changes to a project or its circumstances occur or new information becomes available after adoption of a negative declaration, the lead agency shall prepare a subsequent EIR if required under Section 15162(a). Otherwise the lead agency shall determine whether to prepare a subsequent negative declaration, an addendum, or no further documentation.

CEQA Guidelines Section 15163 allows the lead agency to choose to prepare a supplement to an EIR rather than a subsequent EIR if only minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation.

Section 15164 of the CEQA Guidelines states that the lead agency or responsible agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred. An addendum need not be circulated for public review but can be included in or attached to the final EIR or adopted negative declaration. The decision making body shall consider the addendum with the final EIR or adopted negative declaration prior to making a decision on the project. A brief explanation of the decision not to prepare a subsequent EIR pursuant to Section 15162 should be included in an addendum to an EIR, the lead agency's findings on the project, or elsewhere in the record. The explanation must be supported by substantial evidence.

4.2 Environmental Impact Review

The impact analysis presented in the 2007 FEIS/R was reviewed to 1) determine which impacts would be affected by the redesign of Ponds A16-A17, 2) generally describe how these impacts would be affected and determine whether the levels of significance conclusions presented in the 2007 EIS/R would change, and 3) identify any new impacts that may result from the redesign.

4.2.1 No Change to Environmental Impact

All of the impacts presented in the 2007 FEIS/R were reviewed to identify environmental concerns not previously identified or analyzed in the McMillen design. Table 4 lists these impacts outlined in the 2007 FEIS/R that would not be substantially affected along with a brief discussion.

Table 4. Environmental Impacts Not Changed

Impact Item	Discussion
Geology, Soils and Seismicity Phase 1 Impacts 3.5-1 through 3.5-5	The McMillen design would still occur at Ponds A16 and A17, and potential effects from geologic hazards (settlement, subsidence, liquefaction, and lateral spreading), fault rupture, tsunami and/or seiche, and consolidation of Bay muds would be the same as those identified in the 2007 FEIS/R.
Cultural Resources Phase 1 Impacts 3.8-1 through 3.8-2	The McMillen design includes similar earthmoving activities that would still occur at Ponds A16 and A17, and the potential effects on cultural resources including the historic salt ponds would be the same as those identified in the 2007 FEIS/R.
Land Use Phase 1 Impact 3.9-1	The McMillen design would still occur at Ponds A16 and A17, and would include the same types of activities and facilities as the previous design. The redesign would not introduce new land uses that would be incompatible with surrounding land uses, and the impact would not change.
Public Health and Vector Management Phase 1 Impact 3.10-1	The McMillen design would include less managed ponds and more tidal habitat, and therefore it would provide less mosquito habitat than the previous design and would not increase mosquito populations. The impact would be the same as or less adverse than the impact identified in the 2007 FEIS/R.
Socioeconomic and Environmental Justice Phase 1 Impacts 3.11-1 through 3.11-3	The McMillen design would not affect local businesses or change lifestyles or social interactions. The impact would not change.
Traffic Phase 1 Impacts 3.12-1 through 3.12-4	The McMillen design would require less material to be hauled to and from the site, and therefore it would generate fewer truck trips, resulting in less traffic and less roadway wear and tear than the previous design. The impact would be the same as or less adverse than the impact identified in the 2007 FEIS/R.
Noise Phase 1 Impacts 3.13-1 through 3.13-5	The McMillen design would involve the same noise-generating activities as the previous design, and therefore noise impacts are expected to be similar to those identified in the 2007 EIS/R.
Air Quality Phase 1 Impacts 3.14-1 through 3.14-4	The McMillen design would involve the same construction and operation activities that generate air pollutant emissions as the previous design. Since the redesign would involve fewer truck trips, it would generate less air pollutant emissions, and therefore air quality impacts are expected to be less adverse than those identified in the 2007 FEIS/R.
Public Services	The McMillen design would not change the demand for police and fire

Impact Item	Discussion
Phase 1 Impact 3.15-1	protection services, and therefore the impact would not change.
Utilities Phase 1 Impacts 3.16-1 through 3.16-9	The McMillen design would not affect PG&E facilities, sewer and storm drain facilities, the Hetch Hetchy Aqueduct or rail service. The impacts would not change.
Visual Resources Phase 1 Impacts 3.17-1 through 3.17-2	The McMillen design would include activities and facilities that are similar to the previous design, and therefore impacts on visual resources are expected to be the same as those presented in the 2007 FEIS/R.

4.2.2 Potential Change to Environmental Impact

This review of the McMillen design has the potential to change impacts identified in the 2007 FEIS/R for the following environmental issue areas:

- Hydrology, Flood Management and Infrastructure
- Surface Water, Sediment and Groundwater Quality
- Biological Resources
- Recreation and Public Access

The impacts related to these topics are discussed below. One new impact was identified that was not discussed in the 2007 FEIS/R. Otherwise, the impact conclusions presented in the 2007 FEIS/R were determined to remain the same, have a beneficial change, or change from no impact to less than significant.

This memorandum is intended to recommend an approach for NEPA/CEQA compliance; it does not constitute a full environmental review pursuant to NEPA and CEQA. The conclusions presented herein are preliminary and are based on a cursory review of McMillen's design at Ponds A16 and A17.

4.2.2.1 Hydrology, Flood Management and Infrastructure

The impacts presented in the Hydrology, Flood Management and Infrastructure section of the 2007 FEIS/R were reviewed and determined that the levels of significance for the previously identified impacts would not change as a result of the redesign of the Phase 1 actions at Ponds A16-A17. One new impact was identified as a result of the breaching of the Pond A17 levee. These impacts are discussed below.

Phase 1 Impact 3.3-1: Potential for increased coastal flood risk landward of the SBSP Restoration Project Area.

The impact analysis presented in the 2007 FEIS/R found that that the Phase 1 managed pond restoration at Pond A16 would not result in significant changes to water levels in the pond or surrounding areas because the project would not breach any existing levees. The revised design would breach the existing levee on the northern and eastern sides of Pond A17. Flood protection for Pond A16 and landward areas to the south would be maintained in the same condition by upgrading the northern Pond A16 levee for flood protection. Coastal flood detention storage would be somewhat reduced by the breaching of Pond A17. Given the remaining large storage volume of Pond A16 to accommodate wave overtopping, it is expected that these changes would not significantly alter the coastal flood risk in areas landward of the project. The Union Pacific Railroad to the west of Pond A17 would not be affected by the reintroduction

of tidal flows into Pond A17, since a tidal channel currently runs along the railroad alignment between the railroad and the west levee of Pond A17.

Conclusion: No change in significance; impact would remain Less than Significant.

Phase 1 Impact 3.3-2: Increased coastal flood risk due to regional changes in Bay bathymetry and hydrodynamics.

The impact analysis presented in the 2007 FEIS/R found that the Phase 1 action at Pond A16 would not change regional Bay bathymetry and hydrodynamics in such a way that would increase coastal flooding in areas between and adjacent to the restoration area. The revised design would not result in substantial regional changes in mudflat elevations or Bay water levels.

Conclusion: No change in significance; impact would remain Less than Significant.

Phase 1 Impact 3.3-3: Increased fluvial flood risk.

The impact analysis presented in the 2007 FEIS/R found that the Phase 1 action at Pond A16 would result in no changes to fluvial flooding because it would not breach any levees or significantly change water levels in the pond or surrounding areas. The revised design would breach the northern and eastern sides of Pond A17 levee and re-introduce tidal inundation to Pond A17. The revised design was not modeled to assess its impact on fluvial flooding. However, neither Pond A16 nor A17 is currently used for flood water storage during high fluvial discharge events, so the Pond A17 tidal restoration would have no significant impact on fluvial flood levels. Over time, as Coyote Creek scours in response to increased tidal prism associated with the proposed Pond A17 tidal restoration, the enlarged cross section may actually improve fluvial conveyance and reduce fluvial flood levels.

Conclusion: No change in significance; impact would remain Less than Significant.

Phase 1 Impact 3.3-4: Increased levee erosion along channel banks downstream of tidal breaches.

The impact analysis presented in the 2007 FEIS/R found that the Phase 1 action at Pond A16 would not increase levee erosion along the channel banks downstream of the restoration area because the restoration would not breach any levees at Pond A16 or A17. The revised design includes a levee breach and reintroduction of tidal inundation in Pond A17. The increased tidal prism associated with the Pond A17 restoration may result in downstream scour of channel banks along Coyote Creek. (Note that potential impacts associated with erosion of Coyote Creek and potential damage to the Union Pacific Railroad bridge are considered in a separate, new impact below.) A detailed analysis of the potential for downstream scour has not yet been carried out, but preliminary calculations indicate that channel widening on the order of 20 to30 feet could occur immediately downstream of the Pond A17 breach. The primary area of impact is expected to be the stretch of Coyote Creek from the Pond A17 breach downstream to the confluence with Mud Slough. Channel widening effects farther downstream are expected to be negligible due to the relatively small increase in tidal prism associated with the Pond A17 tidal restoration. Over this reach, the northern Pond A15 levee along Coyote Creek is the only levee potentially affected by channel widening (the levee on the north side of Coyote Creek is adjacent to the tidally-restored Island Pond A21). Given the wide fringing marsh (approximately 250 feet minimum) along this stretch of levee, channel widening is not expected to result in levee erosion.

Conclusion: No change in significance; impact would remain less than significant

Cumulative Impact 3.3-4: Increased levee erosion along channel banks downstream of tidal breaches.

A detailed analysis of the potential for downstream scour due to the combined effects of the Pond A17 tidal restoration and the Island Ponds restoration has not yet been carried out, but preliminary calculations indicate that channel widening on the order of 90 feet could occur immediately downstream of the Pond A17 breach. It is expected that erosion of the wide fringing marsh (approximately 250 feet minimum) along the channel would be able to accommodate the enlarged channel width without threatening existing levees.

Conclusion: No change in significance; impact would remain Less than Significant.

Phase 1 Impact 3.3-5: Potential interference with navigation.

The impact analysis presented in the 2007 FEIS/R found that the Phase 1 action at Pond A16 would have no effect on navigation because the restoration would not breach any levees. The revised design includes breaching of the northern and eastern sides of Pond A17 levee. Immediately following breaching, tidal currents could be slightly stronger adjacent to the breach, but they would remain within an acceptable range for navigation then return to baseline values. The existing water control structure in the northern Pond A17 levee would be removed during creation of the breach, in particular the 12-inch diameter timber support piles, to avoid creating a navigation hazard for boats traveling through the breach and into Pond A17. There are no known obstacles within Pond A17, such as overhead power lines, that could interfere with navigation of large vessels.

Conclusion: No change in significance; impact would remain Less than Significant (CEQA); Beneficial (NEPA).

New Impact: Breaching of the Pond A17 levee could result in erosion of Coyote Creek and damage to the Union Pacific Railroad bridge structure.

The revised design includes a levee breach and reintroduction of tidal inundation within Pond A17. The increased tidal prism associated with the Pond A17 restoration may result in downstream scour (widening and deepening) along Coyote Creek and – in the absence of monitoring and adaptive management measures – could impact the structural stability of the Union Pacific Railroad Bridge immediately downstream of the restoration area.

Calculations suggest that, if the channel behaves similar to unconstrained natural channels in San Francisco Bay, roughly 30 feet of channel widening and 1 foot of deepening may occur as a result of the Pond A17 tidal restoration. For comparison, the same calculation method estimates roughly 2.5 feet of channel deepening and 60 feet of widening due to the Island Ponds restoration, with cumulative scour (i.e., Pond A17 and Island Ponds) of roughly 4 feet of deepening and 90 feet of widening compared to pre-Island Pond restoration conditions. Hydrodynamic modeling of the breaches at the Island Ponds (Gross 2003) predicted erosion of approximately two to three feet in depth at the piers due to the Island Ponds project.

A detailed analysis of scour impacts to the bridge as a result of Pond A17 and cumulative (with the Island Ponds) tidal restoration has not been carried out. If the bridge was constructed at a time when Coyote Creek was larger (i.e., prior to leveeing marshes upstream of the bridge, which may have caused deposition), the bridge may be designed for a larger channel and scour may not have an effect on the bridge. However, a more detailed analysis of bridge design criteria would be required to confirm this.

Previous tidal restoration upstream of the bridge has not resulted in measureable channel enlargement, though longer-term trends may not yet be apparent. Monitoring of the railroad bridge by Santa Clara Valley Water District (SCVWD) in the first three years following restoration of the Island Ponds identified small scour holes around the visible piles, with the scour being more pronounced on the piles on the north side of the bridge where the intertidal substrate is soft mud than on the south side where the substrate is firmer (a mix of mud, sand, and gravel). From the Island Ponds Year 3 monitoring report:

> "There are no structural criteria to assess the significance of observed scour relative to pile function. However, the amount of scour at the base of all the piles appears to be less than one foot deep and is probably within the design allowance. … [R]ailroad personnel were contacted to discuss the need for more detailed bridge monitoring. Russell Young, Manager of Bridge Maintenance for the Union Pacific Railroad (UPR), confirmed that UPR staff inspect the bridge twice a year and that their inspections are confidential and for internal use only. He indicated that additional in depth monitoring of the bridge was not warranted, as they have not documented any signs of scour at this bridge."

Although the Island Ponds Year 3 monitoring has documented little scour at the bridge as of three years after breaching, it is ESA PWA's professional opinion that additional scour should be anticipated and that there is a potential, albeit a small one, for damage to the UPR bridge as a result of the Pond A17 tidal restoration. Possible explanations for not seeing larger scour at the bridge following the Island Ponds restoration are the time lag required for scour along the length of the channel, the presence of erosion-resistant (slow eroding) substrate at the bridge piles or elsewhere in the channel, seasonal fluctuations in erosion, uncertainties in the modeling and empirically-based tools, or a combination of these factors.

The long-term restoration plan relies on monitoring and adaptive management actions to avoid potential impacts related to scour downstream of tidal breaches. To avoid potential effects to the bridge, the Monitoring and Adaptive Management Plan (MAMP) will be revised as described above as part of the redesigned project.

Further analyses and design would be required to define the monitoring and adaptive management for scour mitigation and to quantify associated habitat impacts; however, it is likely that any habitat impacts associated with required bridge protection would be fully offset by the habitat benefits created from the tidal restoration of Pond A17.

The lead agencies would not be responsible for repairing scour-related damage to the piers that is proven to be attributable to other factors (e.g., major flood event or accidents by trains or vessels).

Conclusion: Less than significant.

4.2.2.1 Surface Water, Sediment and Groundwater Quality

The impacts presented in the Surface Water, Sediment and Groundwater Quality section of the 2007 FEIS/R were reviewed and determined that the levels of significance for the previously identified impacts would not change as a result of the redesign of the Phase 1 actions at Ponds A16 and A17. These impacts are discussed below.

Phase 1 Impact 3.4-1: Changes in algal abundance and composition, which could in turn degrade water quality by lowering DO and/or promoting the growth of nuisance species.

The impact analysis presented in the 2007 FEIS/R found that the Phase 1 action at Pond A16 would likely increase algal abundance, but with appropriate design, operation, monitoring, and management, the effect

would be less than significant. The revised design, with tidal restoration in Pond A17, would increase estuarine sedimentation and could decrease turbidity, possibly resulting in increased algal abundance. Any changes are expected to be minor.

Conclusion: No change in significance; impact would remain Less than Significant.

Phase 1 Impact 3.4-2: Potential to cause localized, seasonally low DO levels as a result of algal blooms, increased microbial activity, or decreased residence time of water.

The impact analysis presented in the 2007 FEIS/R found that the Phase 1 action at Pond A16 would likely continue to experience periods of low dissolved oxygen (DO), but with appropriate design, operation, monitoring, and management, the effect would be less than significant. The revised design, with tidal restoration in Pond A17, would result in tidal flushing that would typically increase DO. The design in Pond A16 would flush the top layer of water on a regular basis decreasing the residence time and reducing the chance for algal blooms. DO levels within Pond A16 borrow ditches are expected to improve from the implementation of the A16 low level outlets which would flush water down to an elevation of 0.0 NAVD. However, as described in the 2007 FEIS/R, these borrow ditches will still experience periods of low DO.

Conclusion: No change in significance; impact would remain Less than Significant.

Phase 1 Impact 3.4-3: Potential to mobilize, transport, and deposit mercury-contaminated sediments, leading to exceedance of numeric water quality objectives, TMDL allocations, or sediment quality guidelines for total mercury.

The revised design includes tidal restoration at Pond A17, which must be considered for the potential to mobilize, transport, and deposit mercury-contaminated sediments. Based on the information presented in the 2007 FEIS/R (pages 3.4-95 to 97), potential impacts associated with tidal restoration of Pond A17 appear comparable to or possibly less than those for the tidal restoration of Pond A6, which were considered less than significant. Mercury data from the 2007 FEIS/R are discussed further below. Updated results from the South Baylands Mercury Study, which were not available at the time the 2007 FEIS/R was prepared, were also considered to determine whether they would affect the conclusions presented in the 2007 FEIS/R.

Ponds A6 and A17 are similar in that neither were sampling locations for total mercury (THg) at the time the 2007 FEIS/R was prepared, so the spatial distribution of mercury in the other Alviso Ponds was relied on to estimate potential impacts. As described in the 2007 FEIS/R (pages 3.4-21 to 24), there is a clear spatial pattern with the highest The sediment concentrations (Ponds A7, A8, A12, and A13) located adjacent to Alviso Slough, the current discharge point for the Guadalupe River.

The combined effects of all the Phase 1 actions in the Alviso Ponds, now including tidal restoration of Pond A17, must be considered with respect to the potential to exceed the Bay Mercury TMDL allocation that is based on a target for mercury in suspended sediments. The 2007 FEIS/R program-level impact assessment (page 3.4-75) specifies that the Adaptive Management Plan would address the uncertainties regarding the relationship between Project activities and state water quality regulations based on total mercury loads and concentrations by monitoring loads, concentrations, and bioaccumulation in sentinel species and adaptively managing the Project to ensure that adverse effects do not reach a significant level. Adaptive management approaches would be utilized to avoid significant adverse impacts for Restoration Program Alternatives B and C. Including tidal restoration of Pond A17 in Phase 1 is not expected to significantly affect the ability of the Project to use adaptive management approaches to avoid significant adverse impacts.

Conclusion: No change in significance; impact would remain Less than Significant.

Phase 1 Impact 3.4-4: Potential to increase net methylmercury production and bioaccumulation in the food web.

The revised design includes tidal restoration at Pond A17, which must be considered for the potential to increase net methylmercury production and bioaccumulation in the food web. As discussed for the above impact, based on the information presented in the 2007 FEIS/R (pages 3.4-95 to 97), potential impacts associated with tidal restoration of Pond A17 appear comparable to or possibly less than those for the tidal restoration of Pond A6, which were considered less than significant. Updated results from the South Baylands Mercury Study, which were not available at the time the 2007 FEIS/R was prepared, were also considered to determine whether they would affect the conclusions presented in the 2007 FEIS/R. The report states that the "restored tidal marsh would likely produce less labile organic matter than what is currently produced in Pond A8, providing less fuel for methylating bacteria, and leading to less Me Hg production." However, it should be noted that the Pond A8 study in the South Baylands Mercury Report was not intended to be directly applied to any other pond.

Data collected since the 2007 FEIS/R show that fish in Ponds A16 and A17 have above-average levels of mercury concentrations that are very similar to Ponds A19, 20 and 21 (the "Island Ponds"), but certainly not as high as some other ponds like A8 (Ackerman, unpublished data).

Recent research has shown inorganic mercury tends to not be correlated with methyl mercury in this system, making it difficult to predict how methyl mercury cycling would change within any particular pond. However, the potential impacts associated with tidal restoration of Pond A17 are likely comparable to, or possibly less than, those for Pond A6 or the Island Ponds, given that the proposed incremental change at Pond A17 (from damped tidal to full tidal) is less than has occurred at Pond A6 or the Island Ponds (from seasonal to full tidal), as explained below. While increased wetting and drying is known to increase methyl mercury production, seasonal wet/dry cycles tend to be worse than daily cycles because the sediments are able to dry out more fully. Both Pond A6 and the Island Ponds were subject to seasonal wet/dry cycles for decades prior to breaching, while Pond A17 was previously managed with water year-round and has gradually shifted to a damped tidal management as part of the Interim Stewardship Plan. Also, Pond A17 is located farther from the known source of mercury.

The combined effects of all the Phase 1 actions in the Alviso Ponds, now including tidal restoration of Pond A17, must be considered with respect to the potential to increase net methylmercury production and bioaccumulation in the food web. The 2007 FEIS/R program-level impact assessment (page 3.4-75) specifies that the Adaptive Management Plan would address the uncertainties regarding the relationship between Project activities and state water quality regulations based on total mercury loads and concentrations by monitoring loads, concentrations, and bioaccumulation in sentinel species and adaptively managing the Project to ensure that adverse effects do not reach a significant level. Adaptive management approaches would be utilized to avoid significant adverse impacts for Restoration Program Alternatives B and C. Including tidal restoration of Pond A17 in Phase 1 is not expected to significantly affect the ability of the Project to use adaptive management approaches to avoid significant adverse impacts.

Conclusion: No change in significance; impact would remain Less than Significant.

Phase 1 Impact 3.4-5: Potential impacts to water quality from other contaminants.

The impact analysis presented in the 2007 FEIS/R found that the Phase 1 action at Pond A16 would be less than significant with mitigation. Breaching Pond A17 may cause tidal scour, erosion, and transport of potentially contaminated sediments. Potential impacts associated with tidal restoration are less than significant with mitigation at the program level.

Conclusion: No change in significance; impact would remain Less than Significant with Mitigation

Phase 1 Impact 3.4-6: Potential to cause seawater intrusion of regional groundwater sources.

The impact analysis presented in the 2007 FEIS/R found that the Phase 1 action at Pond A16 would be less than significant with mitigation to ensure proper abandonment of any wells found on site before or during construction. The Pond A17 tidal restoration may increase salinity in Coyote Creek and impact aquifers upstream to an unknown extent, a potential impact that is less than significant with mitigation at the program level.

Conclusion: No change in significance; impact would remain Less than Significant with Mitigation.

4.2.2.3 Biological Resources

The biological resources impacts that were presented in the 2007 FEIS/R were reviewed and determined that the impact conclusions for the following impacts would not change as a result of the redesign of the Phase 1 actions at Ponds A16 and A17 and do not require further discussion:

- Impact 3.6-1: Potential reduction in numbers of small shorebirds using San Francisco Bay, resulting in substantial declines in flyway-level populations.
- Impact 3.6-5: Potential reduction in the population size of non-breeding, salt-pond-associated birds (e.g., phalaropes, eared grebes, and Bonaparte's gulls) as a result of habitat loss.
- Impact 3.6-6: Potential reduction in foraging habitat for diving ducks, resulting in a substantial decline in flyway-level populations.
- Impact 3.6-7: Potential reduction in foraging habitat for ruddy ducks, resulting in a substantial decline in flyway-level populations.
- Impact 3.6-8: Potential reduction in the numbers of California least terns foraging in the South Bay.
- Impact 3.6-11: Potential construction-related loss of, or disturbance to, nesting pond-associated birds.
- Impact 3.6-15: Potential impacts to piscivorous birds.
- Impact 3.6-16: Potential impacts to dabbling ducks.
- Impact 3.6-17: Potential impacts to harbor seals.
- Impact 3.6-18: Potential recreation-oriented impacts to sensitive species and their habitats.
- Impact 3.6-19: Potential impacts to special-status plants.
- Impact 3.6-22: Potential increase in exposure of wildlife to avian botulism and other diseases.

The remaining biological resources impacts presented in the 2007 FEIS/R would not be adversely affected by the redesign, but require explanation. These impacts are discussed below. No new biological resources impacts were identified.

Phase 1 Impact 3.6-2: Loss of intertidal mudflats and reduction of habitat for mudflat-associated wildlife species.

The revised design does not change the area of managed pond habitat in Pond A16 (242 acres) but results in approximately 130 acres of new tidal habitat in Pond A17. The tidal habitat in Pond A17 would serve as a sediment sink for sediment eroding from existing mudflats in the vicinity of the project as well as sediment being carried downstream in Coyote Creek and from South San Francisco Bay. However, any reduction in mudflat area is expected to be minor and would be offset by mudflats that would be present along channels within restored marshes as well as within Pond A17 where sedimentation accumulates.

Conclusion: No change in significance; impact would remain Less than Significant.

Phase 1 Impact 3.6-3: Potential habitat conversion impacts to western snowy plovers.

In the 2007 FEIS/R, the habitat enhancement at Pond A16 was expected to offset the loss of breeding habitat for nesting plovers due to the conversion of Pond A8 to subtidal habitat. There would be fewer nesting islands created in Pond A16 (reduction from 50 to 16) under the new design. However, the four existing islands in Pond A16 would not be removed as a result of the new design, which may offset the creation of fewer islands to some extent, particularly if water levels allow for successful nesting on the existing islands. Also, monitoring efforts indicate that western snowy plover use in Pond A8 has been low. In 2009 only one snowy plover nest was located in Pond A8 and in 2010 no plover nests were located in the pond (Robinson-Nilsen et al. 2009, 2010). Therefore the restoration of Pond A16 and A17 should still fully compensate for the loss of snowy plover breeding habitat due to the conversion of Pond A8 to subtidal habitat. The design of Pond A16 also allows the construction of up to 50 nesting islands in the future if snowy plover use is high in Pond A16. Monitoring of the nesting islands will determine if the project is successful and identify if additional nesting islands are warranted.

Conclusion: No change in significance; impact would remain Less than Significant

Phase 1 Impact 3.6-4: Potential reduction in the population size of breeding, pond-associated waterbirds (avocets, stilts, and terns) using the South Bay due to reduction in habitat, concentration effects, displacement by nesting California gulls, and other Project-related effects.

In the 2007 FEIS/R, the construction of nesting islands in Pond A16 was expected to offset the adverse effects of tidal restoration activities in Ponds A5-A8 in terms of numbers of pairs of stilts, avocets, and terns that would be supported by Phase 1 activities. There would be fewer nesting islands created in Pond A16 under the new design. However, the four existing islands in Pond A16 would not be removed as a result of the new design, which may offset the creation of fewer islands to some extent, particularly if water levels allow for successful nesting on the existing islands. Although the number of islands has been reduced, Pond A16 and A17 restoration would provide sufficient breeding habitat to accommodate the numbers of birds displaced by other Phase 1 actions. The design of Pond A16 also allows the construction of up to 50 nesting islands in the future if waterbird use is high in Pond A16. Monitoring of the nesting islands will determine if the project is successful and identify if additional nesting islands are warranted.

Conclusion: No change in significance; impact would remain Less than Significant (CEQA); Beneficial (NEPA).

Phase 1 Impact 3.6-9: Potential loss of pickleweed-dominated tidal salt marsh habitat for the salt marsh harvest mouse and salt marsh wandering shrew, and further isolation of these animals' populations, due to breaching activities and scour.

With the redesign of the Phase 1 actions at Ponds A16 and A17, the tidal marsh restored in Pond A17 would create new habitat for these species. The 2007 FEIS/R designated Pond A17 as a managed inlet for Pond A16 for an indeterminate period, whereas the revised design would restore 130 acres of tidal marsh habitat. The existing northern and eastern Pond A17 levee would be lowered to the same elevation as the surrounding salt marsh habitat. The salt marsh is anticipated to naturally expand into the Pond A17 pond bed. Sedimentation is also expected to occur within Pond A17 and the borrow ditch will fill to the surrounding marsh elevation from the construction of the Water Control Berm. Hummocks will be created every 200 feet along the A17 levee lowering for escape cover for terrestrial wildlife during high tide events that flood the salt marsh. This would be a beneficial change over the previous design.

Conclusion: No change in significance; impact would remain Less than Significant (CEQA); Beneficial (NEPA).

Phase 1 Impact 3.6-10: Potential construction-related loss of, or disturbance to, special-status, marsh-associated wildlife.

With the redesign of the Phase 1 actions at Ponds A16 and A17, tidal marsh restoration in Pond A17 would create 130 acres of new habitat for these species. Also, there would be less disturbance of the marsh outboard of Pond A17 as a tidal inlet channel is already in place for the existing water control structure and it would only need to be widened for the breach, whereas the original design required the dredging of a second pilot channel for an intake structure. The existing northern and eastern Pond A17 levee would be lowered to the same elevation as the surrounding salt marsh habitat. The salt marsh is anticipated to naturally expand into the Pond A17 pond bed. Sedimentation is also expected to occur within Pond A17 and the borrow ditch will fill to the surrounding marsh elevation from the construction of the Water Control Berm. Hummocks will be created every 200 feet along the A17 levee lowering for escape cover for terrestrial wildlife during high tide events that flood the salt marsh. This would be a beneficial change over the previous design.

Conclusion: Beneficial change in significance; impact would remain Less than Significant (CEQA); Beneficial (NEPA).

Phase 1 Impact 3.6-12: Potential disturbance to, or loss of, sensitive wildlife species due to ongoing monitoring, maintenance, and management activities.

With the redesign of the Phase 1 actions at Ponds A16 and A17, maintenance and monitoring activities will be reduced from the impacts outlined in the 2007 FEIS/R. Pond A17 will not have any water control structures that will require regular operations and maintenance. Pond A16 will have the same operations and maintenance activities associated with the intake and outlet WCS's. The maintenance of the nesting islands would be drastically reduced due to the reduction from 50 to 16 nesting islands. The impacts from the revised design of Ponds A16 and A17 would remain less than significant.

Conclusion: No change in significance; impact would remain Less than Significant (CEQA); Beneficial (NEPA).

Phase 1 Impact 3.6-13: Potential effects of habitat conversion and pond management on steelhead.

Fish screens would be installed at the A16 Intake WCS as part of the revised design of the Phase 1 actions at Ponds A16 and A17. These fish screen would operate year round and would exclude fish from entering Pond A16. The fish screen would also be designed with porosity baffles to meet the NOAA fish screen approach velocity criteria at0.33 ft/sec so that fish are not impinged on the fish screen during operation. Pond A17 would experience full tidal fluctuations from Coyote Creek and there would be no increased risk to steelhead migrating in Coyote Creek.

Conclusion: No change in significance; impact would remain Less than Significant.

Phase 1 Impact 3.6-14: Potential impacts to estuarine fish.

The redesign of the Phase 1 actions at Ponds A16 and A17 includes 130 acres of new tidal habitat in Pond A17 that would benefit many species of estuarine fish. Potential impacts from construction related activities would be offset by the use of Best Management Practices.

Conclusion: Beneficial change in significance; impact would remain Less than Significant (CEQA); Beneficial (NEPA).

Phase 1 Impact 3.6-20: Colonization of mudflats and marshplain by non-native Spartina and its hybrids.

With the redesign of the Phase 1 actions at Ponds A16 and A17, there would be an increase in tidal habitat, which includes the possibility of colonization by non-native Spartina and its hybrids. Through monitoring and implementation of adaptive management, the colonization of Spartina would be controlled when abundance exceeds 10 percent of the project area and there would be no change in impacts from the 2007 FEIS/R.

Conclusion: No change in significance; impact would remain Less than Significant.

Phase 1 Impact 3.6-21: Colonization by non-native Lepidium.

Portions of the 130 acres of tidal habitat would likely be colonized by Lepidium. However, the adaptive management triggers in place for non-native vegetation would prevent Lepidium from exceeding 10 percent before eradication efforts are initiated. Also vegetation maintenance is a key component of the Adaptive Management Plan for nesting birds and there would be no change in impacts from the 2007 FEIS/R.

Conclusion: No change in significance; impact would remain Less than Significant.

Phase 1 Impact 3.6-23: Potential impacts to bay shrimp populations.

The redesign of the Phase 1 actions at Ponds A16 and A17 includes 130 acres of new tidal habitat in Pond A17 that would benefit bay shrimp populations.

Conclusion: Beneficial change in significance; impact would remain Less than Significant (CEQA); Beneficial (NEPA).

4.2.2.4 Recreation Resources

The two impacts presented in the Recreation Resources section of the 2007 FEIS/R were reviewed and determined that the level of significance would not change for one impact, and would change from no impact to less than significant for the other impact. These impacts are discussed below.

Phase 1 Impact 3.7-1: Provision of new public access and recreation facilities, including the opening of new areas for recreational purposes and completion of the Bay Trail spine.

The impact analysis presented in the 2007 FEIS/R found that the Phase 1 actions at the Alviso pond complex would provide a wide range of public access and recreational facilities, including a viewing platform at Pond A16 that would be accessible from the existing Refuge Environmental Education Center for visitors to view and learn about the managed pond restoration. The revised design of the Phase 1 actions at Ponds A16 and A17 would relocate the wildlife viewing platform and interpretive station from the south side of Pond A16 to the east side of Pond A16. The new location of the viewing platform and interpretive station would be approximately the same distance from the Refuge Environmental Education Center, and it would offer a similar visitor experience to the one that was previously planned along the south side of Pond A16 as both locations overlook the managed pond restoration and nesting islands. The new location of the wildlife viewing platform is closer to the nesting islands and would allow the general public to observe waterbirds at a closer distance.

A new platform is proposed on the northwest corner of Pond A17 levee that would extend into Coyote Creek for fishing and views of the historical Drawbridge site located on the northern side of Coyote Creek. This fishing platform was not analyzed in the 2007 FEIS/R but this platform is expected to encourage the general public to use the full extent of the trail system around the new Pond A16 and A17 trail system.

Conclusion: No change in significance; impact would remain Less than Significant (CEQA); Beneficial (NEPA).

Phase 1 Impact 3.7-2: Permanent removal of existing recreational features (trails) in locations that visitors have been accustomed to using and that would not be replaced in the general vicinity of the removed feature.

The impact analysis presented in the 2007 FEIS/R found that the Phase 1 actions at the Alviso pond complex would not remove existing recreational features that visitors are accustomed to using, and concluded that there would be no impact. The redesign of the Phase 1 actions at Ponds A16 and A17 would remove a portion of the existing loop trail that extends around the north and east sides of Pond A17 near Coyote Creek. The new A16 levee proposed in the existing A16-A17 canal would connect the A16 loop and the new A16 Intake WCS Levee would connect the A16 loop to the western A17 levee leading up to the fishing platform. The new A17 trail would not be connected via loop and the public would have to return back to A16 on the same trail. The A17 trail will still give the public the same viewing experience of the tidal restoration area as well as views across Coyote Creek at the Drawbridge historical site. The impact to recreational features proposed under the redesign would be less than significant since the trail system will still connect to the other trail systems located within the Alviso pond system.

Conclusion: Change in significance from No Impact to Less than Significant.

4.3 Monitoring and Adaptive Management Plan

As part of the revised design of the Phase 1 actions at Ponds A16 and A17, the SBSP Restoration Project Monitoring and Adaptive Management Plan (MAMP) is recommended to be revised to specify the following actions or equivalent to avoid potential impacts related to scour downstream of the levee breach at Pond A17:

1. Conduct regular inspections of the Coyote Creek Union Pacific Railroad (UPR) bridge piers in coordination with a qualified engineer during the first five years following breaching to look for evidence of scour or scour-related damage to bridge pier supports that appears to be associated with Pond A17 restoration; and
2. If the bridge inspections identify excessive scour or scour-related damage to bridge piers based on engineering judgment, then a more detailed engineering analysis shall be conducted to assess the potential effects of the project on the bridge; and
3. If the more detailed analysis identifies potential effects of the project on the bridge, the lead agencies shall develop and implement a plan for protecting the pier at that time.

5.0 CONSTRUCTION APPROACH

During development of the McMillen design and through further understanding of permit conditions, McMillen concluded that the project schedule can be accomplished in a timely manner while continuing to remain highly sensitive to habitat conditions and concerns.

5.1 Schedule

To expedite the permitting process and allow construction starting in the Fall of 2011, McMillen is proposing to break the project into two phases. Phase 1 would consist of implementing the design elements that meet the existing permit approvals. Phase 2 would consist of design elements that are a variance from the existing permit approvals and may require re-initiation of the permitting process. Table 5 outlines the design elements that are proposed for each phase. Phase 1 construction activities may carry over into Phase 2.

Table 5. Construction Phasing

Item	Phase 1	Phase 2
Nesting Islands	X	X
A17 Levee Lowering (inside) along Coyote Creek and Artesian Slough		X
A17 Levee Lowering (outside) along Coyote Creek and Artesian Slough		X
A17 Levee Lowering along southern levee		X
Existing A17 Intake Structure Removal		X
A16 Intake WCS		X
A16 Intake Fish Screen		X
A16 Outlet WCS	X	
A16 Outlet Pilot Channel	X	
A16 Levee		X
Intake WCS Levee		X
A17 Water Control Berm		X
A17 Fishing Platform		X
A16 Viewing Platform	X	
Interpretive Signage		X

Item	Phase 1	Phase 2
Cable Fence		X
Crushed Rock Surfacing		X
Water Pollution Control Plant's Pipeline	X	

5.2 Biological Monitoring

Mobilization is expected to occur as early as the Fall of 2011 to begin Phase 1 construction activities. Directly following mobilization, a pre-construction survey would be completed by a qualified biologist to determine the presence of any special-status species prior to dewatering. Monitoring for special-status species would be performed on an on-going basis during construction.

As required by existing permit approvals, the timing of construction would reduce the probability that impacts would occur to special-status fish and wildlife species. Table 6 presents a summary of the construction window conditions that have been applied to specific habitat windows based on the existing permits approvals. There are no construction window changes being requested for this project.

Table 6. Construction Window Restrictions

Species	Construction Restriction	Buffer (feet)
Western Snowy Plover	March 1 - September 15	600
Least Tern	April 15 - August 15	300
Nesting Water Birds	Year-round	200
California Clapper Rail	February 1 - August 31	700[1] 750[2]
Burrowing Owls	February 1 - August 31	250
Northern Harrier	late March - August	200
Common Yellowthroat and Song Sparrow	Year-round	50
Salt Marsh Harvest Mouse	Avoid construction in suitable habitat	--
Harbor Seals – Haul-out Site	March - May (pupping season) June - August (molting season)	200
Harbor Seals – Pupping Site	March - May (pupping season) June - August (molting season)	500
Steelhead – Levee Breaching	February 1 - May 31	--
Steelhead	December 1 - May 31	--

[1] USFWS BO
[2] BCDC CN 10-03

McMillen plans to perform active hazing of suitable habitat to prevent birds from nesting as well as altering the substrate in certain locations that may attract birds to nest as approved under permit conditions. McMillen's schedule is currently planned to start after the majority of the construction restriction windows have ended. Once construction has started, active hazing would be employed so that portions of the site would not require seclusion during any portion of the project schedule. If special-status species are identified on the project site, McMillen will adhere to the conditions outlined in the environmental permits. McMillen will also adhere to the applicable conservation measures outlined in each of the South Bay Salt Pond Restoration Project permits as outlined in Section 2.0 during construction.

6.0 CONCLUSION

The purpose of this memorandum is to present the McMillen design (Attachment B) changes to the conceptual design (Attachment A) that was approved in each of the existing environmental permits. The McMillen design achieves the overall goals and objectives of the project as originally intended during the permitting process but has significantly reduced the cut and fill volumes associated with the project. These design changes may require coordination with the environmental regulatory agencies to determine which portions of the project are covered under the existing permit approvals and which portions may require additional permit coordination. McMillen has broken the project into two phases with the intent that Phase 1 construction activities will be covered under the existing permit approvals and can be constructed starting in late August 2011. Phase 2 activities may require additional permit coordination and may take up to one year to complete this process.

6.1 Next Steps

This permitting memorandum is being submitted to the environmental regulatory agencies outlined in Section 2.1 to begin coordination of the permitting process for the McMillen design outlined in this memorandum. McMillen recommends that USFWS obtain a formal response from each of the regulatory agencies acknowledging the design changes and implications to the existing permit approvals (if any). After a formal response has been obtained, McMillen will begin coordinating with the regulatory agencies on any additional permitting requirements for Phase 2 construction activities (if necessary).

ATTACHMENT A

CONCEPTUAL DESIGN DRAWINGS

ATTACHMENT B

MCMILLEN DESIGN DRAWINGS

DRAFT ADDENDUM
SOUTH BAY SALT POND RESTORATION PROJECT
MONITORING AND ADAPTIVE MANAGEMENT PLAN
OCTOBER 2011

Alviso Pond A16-A17 Restoration
Railroad Bridge Pier Scour

1.0 INTRODUCTION

The United States Fish and Wildlife Service (USFWS) contracted McMillen, LLC (McMillen) to perform design-build services for the Don Edwards National Wildlife Refuge Alviso Pond A16-A17 Restoration project. Pond A16 will be restored to 242 acres of a managed pond and Pond A17 will be restored to 131 acres of tidal action. This Monitoring and Adaptive Management Plan presents the approach necessary to satisfy mitigation and monitoring requirements for railroad bridge pier scouring as described in the National Environmental Policy Act (NEPA) Environmental Action Statement (EAS).

1.1 Background and Purpose

Ponds A16 and A17 are located at the southern end of the San Francisco Bay Estuary, near the mouth of Coyote Creek. USFWS acquired the salt making rights to these lands as part of the 16,500 acre state/federal salt pond purchase from Cargill in 2003. An Adaptive Management Plan was prepared for the 2007 Final Environmental Impact Statement/Report (FEIS/R) that described the monitoring and adaptive management process for the entire South Bay Salt Pond Restoration Project. The purpose of this memorandum is to describe the monitoring and adaptive management plan for the breaching of the Pond A17 levee and associated effects of scour on the railroad bridge piers crossing Coyote Creek approximately 1,000 feet downstream of the proposed breach.

1.2 NEPA Impact Analysis

The McMillen design reflects design modifications that were not described the 2007 FEIS/R. These modifications were analyzed by ESA PWA and AECOM in a memorandum titled *Recommended Approach for NEPA/CEQA Compliance for the revised Design o Phase 1 Actions at Ponds A16 and A17* dated July 11, 2011 (South Bay Salt Pond Consultant Team 2011). The analysis performed in the memorandum was based on a conceptual 30% design that differs from the McMillen design. However, both of these designs contain similar design elements and the analysis provided in the memorandum was used as the basis in the analysis of the McMillen design described in the memorandum titled *Alviso Pond A16-A17 Restoration Design Modification Implications to Existing Environmental Permits* dated August 18, 2011 (McMillen 2011).

1.2.1 Railroad Bridge Pier Scour

The following paragraphs are referenced from the McMillen memorandum (McMillen 2011).

"The revised design includes a breach on the A17 levee and reintroduction of tidal inundation within Pond A17. The increased tidal prism associated with the Pond A17 restoration may result in downstream scour (widening and deepening) along Coyote Creek and – in the absence of monitoring and adaptive management measures – could impact the structural stability of the Union Pacific Railroad Bridge immediately downstream of the restoration area.

Calculations suggest that, if the channel behaves similar to unconstrained natural channels in San Francisco Bay, roughly 30 feet of channel widening and 1 foot of deepening may occur as a result of the Pond A17 tidal restoration. For comparison, the same calculation method estimates roughly 2.5 feet of channel deepening and 60 feet of widening due to the Island Ponds restoration, with cumulative scour (i.e., Pond A17 and Island Ponds) of roughly 4 feet of deepening and 90 feet of widening compared to pre-Island Pond restoration conditions. Hydrodynamic modeling of the breaches at the Island Ponds (Gross 2003) predicted erosion of approximately two to three feet in depth at the piers due to the Island Ponds project.

A detailed analysis of scour impacts to the bridge as a result of Pond A17 and cumulative (with the Island Ponds) tidal restoration has not been carried out. If the bridge was constructed at a time when Coyote Creek was larger (i.e., prior to leveeing marshes upstream of the bridge, which may have caused deposition), the bridge may be designed for a larger channel and scour may not have an effect on the bridge. However, a more detailed analysis of bridge design criteria would be required to confirm this.

Previous tidal restoration upstream of the bridge has not resulted in measureable channel enlargement, though longer-term trends may not yet be apparent. Monitoring of the railroad bridge by Santa Clara Valley Water District (SCVWD) in the first three years following restoration of the Island Ponds identified small scour holes around the visible piles, with the scour being more pronounced on the piles on the north side of the bridge where the intertidal substrate is soft mud than on the south side where the substrate is firmer (a mix of mud, sand, and gravel). From the Island Ponds Year 3 monitoring report:

> "There are no structural criteria to assess the significance of observed scour relative to pile function. However, the amount of scour at the base of all the piles appears to be less than one foot deep and is probably within the design allowance. … [R]ailroad personnel were contacted to discuss the need for more detailed bridge monitoring. Russell Young, Manager of Bridge Maintenance for the Union Pacific Railroad (UPR), confirmed that UPR staff inspect the bridge twice a year and that their inspections are confidential and for internal use only. He indicated that additional in depth monitoring of the bridge was not warranted, as they have not documented any signs of scour at this bridge."

Although the Island Ponds Year 3 monitoring has documented little scour at the bridge as of three years after breaching, it is ESA PWA's professional opinion that additional scour should be anticipated and that there is a potential, albeit a small one, for damage to the UPR bridge as a

result of the Pond A17 tidal restoration. Possible explanations for not seeing larger scour at the bridge following the Island Ponds restoration are the time lag required for scour along the length of the channel, the presence of erosion-resistant (slow eroding) substrate at the bridge piles or elsewhere in the channel, seasonal fluctuations in erosion, uncertainties in the modeling and empirically-based tools, or a combination of these factors.

The long-term restoration plan relies on monitoring and adaptive management actions to avoid potential impacts related to scour downstream of tidal breaches. To avoid potential effects to the bridge, the Monitoring and Adaptive Management Plan (MAMP) will be revised as described above as part of the redesigned project.

Further analyses and design would be required to define the monitoring and adaptive management for scour mitigation and to quantify associated habitat impacts; however, it is likely that any habitat impacts associated with required bridge protection would be fully offset by the habitat benefits created from the tidal restoration of Pond A17.

The lead agencies would not be responsible for repairing scour-related damage to the piers that is proven to be attributable to other factors (e.g., major flood event or accidents by trains or vessels).

Conclusion: Less than significant."

1.3 Monitoring and Adaptive Management

The Monitoring and Adaptive Management approach described in the 2007 Adaptive Management Plan (Trulio *et al.* 2007) will be applied to this project in its entirety as applicable. However, scour on the railroad bridge piers from additional tidal volumes flowing into Pond A17 was not explicitly covered in the original plan. This addendum was prepared to supplement the 2007 Adaptive Management Plan and identify measures to monitor potential railroad bridge pier scour.

2.0 MONITORING

The monitoring program will allow detection of the nature and extent of adverse impacts if they occur. Detection of potential adverse impacts to the railroad bridge piers would trigger the evaluation and approach to perform corrective measures. The potential impact of concern is excessive scour around footings of the Union Pacific railroad bridge across Coyote Creek that may compromise bridge integrity (caused by project-related ebb-tide flow velocity increases in Coyote Creek downstream of breaches). Table 1 describes the monitoring frequency and timing of the railroad bridge piers.

Table 1. Railroad Bridge Pier Scour Monitoring

Monitoring Years	Monitoring Frequency[1]	Seasonal Timing
1 - 5	Quarterly	All
1 - 5	Once per 10-year storm event	As-needed
Begin at implementation of corrective measures (end 5 years after)	Quarterly	All

[1] Projected time estimates for scouring to occur, actual monitoring duration is dependent upon evolving conditions. If evolving conditions are observed then the monitoring will occur for the 15 year period.

The following two mitigation measures related to the railroad bridge will be implemented as part of this monitoring program:

1. A qualified engineer should conduct regular inspections during low tide of adjacent mudflats and the railroad bridge piers during the first 5 years following breaching to look for evidence of scour or damage to bridge pier supports. This inspection should be coordinated with regular bridge inspections conducted by Union Pacific. The engineer should prepare inspection reports documenting the results of the inspection and any recommendations for additional work.
2. If bridge inspections identify excessive scour or damage to bridge piers not related to weather patterns or upstream changes, then a qualified engineer shall develop a plan for protecting the piers and USFWS will work with the Union Pacific railroad to implement the plan.

Monitoring activities will be coordinated with Union Pacific railroad personnel to the extent practical to avoid duplicative efforts. Adaptive Management measures will be conducted if necessary by the USFWS. If problems are detected, then the duration of monitoring will be extended to cover a period of five years following implementation of any corrective measures to ensure effectiveness.

3.0 REPORTING AND ADAPTIVE MANAGEMENT

The annual mitigation and monitoring report deadline is February 1st of each monitoring year. The final monitoring report is due six months after field monitoring activities conclude, which is currently projected to occur after completion of year 15 of the project. Monitoring and adaptive management consist of as-built surveys, annual monitoring reports, adaptive management checkpoints based on annual monitoring results, and final monitoring.

3.1 As-Built Survey

Within 90 days of the completion of construction, USFWS will submit documentation of the as-built surveys to all regulatory and resource agencies involved in the project (USACE, USFWS, BCDC, CDFG, and RWQCB). These as-built surveys will be conducted in manners sufficient to

form the basis for evaluating geomorphic changes at the railroad bridge piers following levee breaches. The following as-built survey data will be collected and provided:

- **Levee Breaches:** Breaches in the levee will documented to illustrate that the construction of the breach was built according to the Design Plans; and
- **Bridge Pier Topography:** The topography surrounding the bridge pier will be documented (to the extent possible) identifying existing conditions at the end of construction. This survey may include a general description of how much of the railroad bridge piers are visible during low tide. This benchmark can be checked against during subsequent monitoring years to determine if more of the pier structure becomes visible in the future from excessive scouring.

All survey documentation will contain 1-foot topographic contours. For features that are not able to be physically surveyed, a mix of aerial and on-ground optical survey techniques will be used to document conditions.

3.2 Annual Monitoring Reports

The monitoring of the railroad bridge pier will be incorporated into the annual monitoring report that will be performed for the entire Pond A16-A17 Restoration Project. USFWS will submit annual monitoring reports to all regulatory and resource agencies by February 1 of each year. The annual monitoring report format will be based the 2004 Mitigation and Monitoring Proposal Guidelines developed by the San Francisco District USACE (USACE 2004). The outline below provides an annual report structure that will include the necessary content and detail to evaluate the railroad bridge pier scour.

- Project Information
- Site Information
- Figures
- Performance Criteria
- Tabular Results
- Summary of Field Data Collection
- Problems Notes and Proposed Remedial Measures

3.3 Adaptive Management

The goals of this adaptive management approach will be to:

1. Provide for periodic progress checkpoints between USFWS and regulatory and resource agencies to define and evaluate acceptable positive progress, to make adjustments to the monitoring effort (parameters monitored and monitoring frequency and start/end times), and to determine if any corrective measures are necessary. These determinations will be based on evolving site conditions and monitoring results.
2. Provide for the appropriate level of compliance monitoring in the face of continually evolving site conditions.

3. Determine when performance criteria and overall mitigation requirement compliance have been achieved, regardless of numbers of years following breach.

The monitoring program schedule anticipates that monitoring may occur for the entire 15-year period and longer if signs of scour are continually observed within 15 years. Within this 15-year period, adaptive management steps will be implemented; however, based on the results of monitoring, adaptive management measures may result in the reduction or termination of monitoring based on no adverse effects to the railroad bridge piers from potential scour.

- **Fixed Checkpoint at Year 3:** At the conclusion of the third year of monitoring and after submission and review of the Year 3 Monitoring Report, a progress checkpoint meeting will take place between USFWS and resource and regulatory agencies. At this checkpoint, it will be determined whether to continue, reduce or terminate the monitoring activity and whether any corrective measures are warranted to address any undesirable conditions at the railroad bridge piers.
- **Fixed Checkpoint at Year 10:** At the conclusion of the 10th year of monitoring and after submission and review of the Year 10 Monitoring Report, a progress checkpoint meeting will take place between USFWS and resource and regulatory agencies. At this checkpoint, it will be determined whether to continue, reduce or terminate the monitoring activity and whether any corrective measures are warranted to address any undesirable conditions at the railroad bridge piers. It is possible that railroad bridge scour will not have occurred and is not expected to occur prior to 10 years after the A17 levee is breached. If scour is not expected to occur, the Floating Checkpoint to Discontinue Adverse Impacts Monitoring Activities supersedes the need for this checkpoint.
- **Floating Checkpoint to Discontinue Adverse Impacts Monitoring Activities:** Within a few years after the A17 levee breach, monitoring of the railroad bridge piers for adverse impacts may not be necessary as scour, if it occurs at all, is expected to manifest soon after A17 is restored to tidal action. No *a priori* predictions of the duration of adverse-impact monitoring are possible; but, the monitoring data will provide clear information for determining whether adverse impacts are developing and thus whether further monitoring is still required. USFWS will petition the resource and regulatory agencies to cease adverse-impact monitoring activities when monitoring results support such a change. The regulatory and resource agencies will review the monitoring results and petition to determine whether to cease or continue monitoring. This meeting may be waived by the agencies if they determine that a discussion of the petition is unnecessary. If monitoring is deemed required until year 15, an analysis of the railroad bridge pier scour will be conducted and included in the Final Monitoring Report.

3.4 Final Monitoring

The final monitoring report will be prepared when all performance criteria have been satisfied or when regulatory agencies release the USFWS from their mitigation obligations. No more than six months after the final monitoring activities conclude, this report will be submitted to all regulatory and resource agencies. This final report will provide a summary of the monitoring. The report will compare the site conditions at the time of the final monitoring to the as-built conditions. As with the annual reports, the final report will present a schedule of monitoring

activities performed, monitoring methods, monitoring results, and a discussion of adaptive management implemented.

4.0 CONTINGENCIES

This section presents contingency measures that could be implemented if desired outcomes fail to materialize or if adverse outcomes occur. Due to unforeseen conditions that may occur from restoration efforts, it is difficult to predicted the extent (if any) of railroad bridge scour. The primary contingency consists of retaining a qualified engineer to monitor the bridge piers. If the bridge inspections identify excessive scour or scour-related damage to bridge piers based on engineering judgment, then a more detailed engineering analysis shall be conducted to assess the potential effects of the project on the bridge. If the more detailed analysis identifies potential effects of the project on the bridge, the USFWS shall develop and implement a plan for protecting the piers. Possible measures to protect the piers include:

- Placing rock armor along the bed and banks of the channel at the bridge and along the bed and railway embankment on both sides of the bridge to limit scour;
- Placing rock armoring across the channel for some distance upstream and/or downstream of the bridge to limit scour at the bridge supports and approaches;
- Modifying the bridge structure, such as by constructing new pilings and underpinnings, to accommodate the scour; and/or
- Closing the levee breach at Pond A17 to avoid causing scour at the bridge.

5.0 COMPLETION

When the required monitoring period is complete and USFWS believes that their respective monitoring requirements have been fulfilled, they shall each notify the resource and regulatory agencies in writing of their proposed completion status at the time of submitting their proposed Final Monitoring Report or earlier if the Floating Checkpoint Monitoring is warranted. The USFWS will be released of their respective monitoring requirements only upon receipt of written notice from the regulatory and resource agencies.

6.0 REFERENCES

McMillen, LLC. 2011. Alviso Pond A16-A17 Restoration Design Modification Implications to Existing Environmental Permits. Submitted to USFWS. Prepared August 18, 2011.

South Bay Salt Pond Consultant Team. 2011. Recommended Approach for NEPA/CEQA Compliance for the Revised Design of Phase 1 Actions at Ponds A16 and A17. Submitted to South Bay Salt Pond Project Management Team. Prepared July 11, 2011.

Trulio, L., D. Clark, S. Ritchie, A. Hutzel and the Science Team. 2007. South Bay Slat Pond Restoration Project Adaptive Management Plan. Science Team Report for the South Bay Salt Pond Restoration Project. November 14, 2007.

United States Army Corps of Engineers. 2004. Mitigation and Monitoring Proposal Guidelines. Special Public Notice. December 30.