

# San Francisco Bay Conservation and Development Commission

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**TO:** Commissioners and Alternates

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**SUBJECT:** **Staff Recommendation for BCDC Permit Application No. 2016.002.00md for the Tule Red Tidal Restoration Project**  
(For Commission consideration on August 18, 2016)

## Recommendation Summary

The staff recommends that the Commission approve BCDC Permit Application No. 20016.002.00md for the Tule Red Tidal Restoration Project, which as authorize, would result in the conversion of the Tule Red Duck Club from managed wetland into 420 acres of tidal marsh habitat. The restoration would include grading and contouring a portion of the site to regain marsh plain elevation; excavating tidal channels, tidal pannes and ponds, increasing topographic variability and habitat diversity across the site; construction of a transitional habitat berm; and permanently breaching the naturally occurring berm to reintroduce tidal waters to the site. The project would provide in-lieu public access in the form of improved fishing piers; informational signage; a comprehensive Suisun Marsh public access study; and funding for future public access improvements. The recommendation includes conditions that would minimize potential project impacts to water quality and fish and wildlife. Monitoring requirements would allow the Commission to determine: (1) if the project is meeting the project's habitat goals; (2) whether methylmercury accumulation is occurring onsite; and whether adaptive management measures are necessary. Implementation of the project would enhance food web productivity and export of nutrients into Grizzly Bay to support Delta smelt

and longfin smelt recovery, and would provide rearing, breeding and refuge habitats for a broad range of aquatic and wetland dependent species that utilize or depend upon the combination of brackish aquatic-tidal marsh habitat.

### **Staff Recommendation**

The staff recommends that the Commission adopt the following resolution:

#### **I. Authorization**

- A. Subject to the conditions stated below, the permittees, the State and Federal Contractors Water Agency and Westervelt Ecological Services, LLC, are authorized to restore managed wetland to tidal marsh at the Tule Red Managed Wetland, in the Suisun Marsh Primary Management Area, adjacent to Grizzly Bay, Solano County, by performing the following activities:

#### **In the Commission's Managed Wetlands Jurisdiction:**

1. Remove marsh and upland vegetation within the construction footprint;
2. Remove approximately 1,900 cubic yards (cy) (1.2 acres) of solid fill, in the form of existing hunting blinds, foot-bridges, clubhouse, outbuildings, boat docks, and water control structures and dispose of the material at an authorized upland location outside of the Commission's jurisdiction;
3. Establish a temporary 50-foot by 200-foot construction staging and fuel storage area outside of the habitat construction area; and a temporary 200-foot by 200-foot equipment staging areas within the habitat berm construction footprint;
4. Construct 44,925 linear feet of tidal channels (ranging in depth from six inches to four feet from surface elevation), 15 acres of tidal ponds (approximate depth of 4 feet from surface elevation) and five acres of pannes (approximate depth of 1-1.5 feet from surface elevation) throughout the project footprint;
5. Construct and maintain a 12,000-foot long, 50- to 250-foot wide, and 7 feet North American Vertical Datum (NAVD88) high, undulating transitional habitat berm with a slope ranging from 10:1 to 20:1 along the existing perimeter levee using excavated on-site soil;
6. Construct, use and maintain a 1,500-foot long by 15-foot wide and 7 feet NAVD88 high maintenance access levee with a 10:1 slope across the northern edge of the site using excavated on-site soil;
7. Construct, use and maintain a 120-foot long by 24-foot wide and 9 foot NAVD88 high levee and maintenance road with a 3:1 slope, connecting two existing levees to create an oxidation pond and water retention area using excavated on-site soil;

8. Install, use and maintain a 36-inch diameter dual combination tide gate including a 50-foot long by 3-foot wide polyethylene pipe and 210 square foot tide gate access platform in and atop the new levee/maintenance road; 37 cy of riprap will be placed along the face of the levee above and around the polyethylene pipe;
9. Install, use and maintain an aeration nozzle at the end of the existing 18-inch diameter outlet drain pipe;
10. Discharge excess site water from Tule Red during project construction over Noyce Slough Road into drainage ditches on the adjacent California Department of Fish and Wildlife (CDFW) Wildlife Area property;
11. Replant native plants removed during the construction site preparation and reseed disturbed areas with native and naturalized seed mixes;
12. Place approximately 360 cy of crushed road base gravel along the access roads and parking areas to maintain/restore vehicle access to the site; and
13. Install and maintain an approximately 4 x 6 foot, interpretive sign near the restored Tule Red marsh site.

**In the Bay:**

1. Excavate a 150-foot wide by 50 to 70 foot long section of the outer natural berm to a depth of -2.0 feet NAVD88, connecting the constructed main channel to Grizzly Bay;
  2. Dredge 0.17 acres of shallow water habitat in Grizzly Bay to a depth of -2.0 MLLW to create a pilot channel from Grizzly Bay into the Tule Red site;
  3. Place the excavated soil and sediment from the breach on the restoration site for use in constructing habitat features; and
  4. Remove two tide gates and dispose of the deconstructed tide gates at an authorized upland location outside of the Commission's jurisdiction.
- B. This authority is generally pursuant to and limited by the application dated March 29, 2016 including all accompanying and subsequently submitted information and correspondence and exhibits, and subject to the modifications required by conditions herein.
- C. Work authorized in this permit must commence prior to September 2017, or this permit will lapse and become null and void. All work authorized must be diligently pursued to completion and must be completed within four years of commencement or by December 31, 2020, whichever is earlier, unless an extension of time is granted by amendment of the permit.
- D. The proposed project will result in the restoration of 420 acres of managed wetlands into tidal marsh, including 18 acres of transitional upland habitat. Construction on the former managed wetland will include site contouring and the creation of tidal channels,

ponds and pannes, the construction of sloped transition habitat berms and access levees. In total the project will result in the excavation of approximately 300,000 cy of material over a 150-acre area and the placement of 300,000 cy material, the majority of it being the excavated soil used to build the habitat berms, levees and site features. Following construction, revegetation and a stabilization period, a section of the existing natural berm bordering the site will be breached connecting the new tidal channels to Grizzly Bay restoring daily tidal action. The in-lieu public access provided with the project includes the repair and improvement of two public fishing piers, new public signage and the development and implementation of a comprehensive public access study to identify public access opportunities within the Suisun Marsh.

## II. Special Conditions

The authorization made herein shall be subject to the following special conditions, in addition to the standard conditions in Part IV:

### A. Specific Plans and Plan Review

1. **Plan Review.** No work authorized herein shall commence until final site plans, including plans for demolition, staging, excavation, construction, engineering, dredging, revegetation, and signage authorized herein, have been submitted, reviewed, and approved in writing by or on behalf of the Commission. Specific drawings and information required in such plans shall be discussed and determined in coordination with Commission staff prior to submittal. To save time, preliminary drawings should be submitted and reviewed prior to submittal of final drawings.
  - a. **Site Plans.** Site, restoration, grading, excavation, dredging and public access plans shall include and clearly label the shoreline (Mean High Water or, where wetland vegetation is present, +5 feet above Mean Sea Level), property lines, details showing the location, dimensions, and materials to be used for all the elements of the project authorized herein, including the public access improvements. The plans shall be accompanied by a letter requesting plan review and approval. All plan review shall be completed by or on behalf of the Commission within 45 days of staff receipt of plans.
  - b. **Construction Schedule.** A schedule indicating when excavation, fill and/or grading will occur and the time allocated for revegetation and habitat feature stabilization before the site is breached.
2. **Plan Approval.** Plan approval or disapproval shall be based upon: (a) completeness and accuracy of the plans in showing features authorized herein; (b) consistency of the plans with the authorization, terms and conditions of this permit; (c) assurance that fill does not exceed this authorization; (d) the preparation of the plans by professionals and their official stamp or certification of approval; (e) assurance that appropriate provisions have been incorporated for safety in case of a seismic or flooding event; and (f) assurance that all public access improvements authorized or required herein are reflected.

3. **Conformity with Final Approved Plans.** Prior to commencement of any work authorized herein, the appropriate design professional(s) of record shall certify in writing that, through personal knowledge, the work covered by the authorization will be performed in accordance with the approved design criteria and in substantial conformance with the approved plans. All improvements constructed pursuant to this permit shall conform to the final approved plans. No changes shall be made thereafter to any final plans without first obtaining written approval of the change(s) by or on behalf of the Commission.
  4. **Discrepancies Between Approved Plans and Special Conditions.** In case of any discrepancy between final approved plans and special conditions of this authorization, the special condition shall prevail. The permittees are responsible for assuring that all plans accurately and fully reflect the special conditions of this authorization.
  5. **Appeals of Plan Review Decisions.** Any plan approval, conditional plan approval or plan denial may be appealed by the permittees or any other interested party to the Commission's Design Review Board (DRB) or, if necessary, subsequently to the Commission. Such appeals must be submitted to the Commission's Executive Director within 30 days of the plan review action and must include the specific reasons for appeal. The DRB shall hold a public hearing and act on the appeal within 60 days of the receipt of the appeal. If subsequently appealed to the Commission, the Commission shall hold a public hearing and act on the appeal within 90 days of the receipt of the subsequent appeal.
- B. **Public Access.** Prior to completing the work in the Tule Red restoration site or no later than December 31, 2018, unless otherwise noted, the permittees shall conduct the public access improvements (1) through (5) below. In the event that the pier improvements cannot be completed as required below, the permittees shall propose and seek authorization to complete alternative comparable public access improvements. The permittees shall provide plans for review and approval and obtain or facilitate the application for all required permits for the improvements and repairs to the fishing piers and other public access activities.
1. **Island Slough Fishing Pier.** Repair and improve CDFW-owned, Island Slough wooden fishing pier. Work would include restoring the pier to stable and safe condition with additional improvements per American Disability Association (ADA) requirements.
  2. **Montezuma Slough Fishing Pier.** Repair and improve a CDFW-owned Montezuma Slough aluminum fishing pier. Repairs would include raising and stabilizing the pier; levee repair and stabilization; and reconnecting pier with the adjacent walkway, with additional improvements per ADA requirements.
  3. **Tule Red Interpretive Sign.** Near the restored Tule Red site, adjacent existing public access and visible to public, install a 4 foot by 6 foot information sign depicting specifics about the Tule Red restoration project, site features and other public

access opportunities in the vicinity. The design and information contained in the interpretive sign shall be subject to review and approval by or on behalf of the Commission.

4. **Parking Lot Signage.** By December 31, 2016, the permittees shall improve the adjacent public parking lot signage to clarify that the parking lot is available for public use. Sign improvements shall be reviewed and approved by or on behalf of the Commission.
5. **Maintenance.** The public access structures and their improvements required herein shall be permanently maintained by and at the expense of the permittees or its assignees. Such maintenance shall include, but is not limited to, repairs to all paths leading to the piers, pier surfaces, maintenance of the public access amenities such as periodic cleanup of litter and other materials deposited within the access areas, removal of any encroachments into the access areas, and assuring that the public access signs remain in place and visible. Within 30 days after notification by staff, the permittees shall correct any maintenance deficiency noted in a staff inspection of the site and shall obtain approval by or on behalf of the Commission of any maintenance that involves more than in-kind repair and replacement.
6. **Suisun Marsh Comprehensive Public Access Study and Public Access Funding.**
  - a. To better inform public access decisions that will likely arise from future restoration activities in the area, and selection of the public access improvements specified in (b) through (d) below, the permittees shall prepare and submit a public access study to the Commission. The study shall be initiated in the Fall of 2016, and include scope and schedule for review; a draft report will be submitted by September 30, 2017; and a final report submitted by December 31, 2017. The comprehensive study shall include stakeholder involvement; identify current and future public access opportunities within Suisun Marsh; and provide a suite of options that would improve public access as future restoration and development projects are pursued in the Suisun Marsh.
  - b. By December 31, 2017 the permittees shall contribute \$150,000 to the California Coastal Conservancy's Coastal Trust Fund (Public Trust Fund) to be held for future Suisun Marsh public access improvements.
  - c. The funds shall be used to improve public access on Tule Red Restoration site in the form of trail, signage or parking improvements. If the above described study finds that public access at Tule Red is not appropriate, the permittees shall propose additional in lieu public access improvements at another site located within Suisun Marsh for review and approval by or on behalf of the Commission.
  - d. The permittees shall apply for BCDC authorization no later than December 31, 2019 to construct the additional public access improvements through amendment to this permit, or by a separate permit as needed.

### C. Marsh Protection During Construction

1. **Best Management Practices.** The permittees shall employ best management practices related to marsh vegetation, construction materials and debris and hazardous materials handling and storage to assure that any material used or placed for any purposes authorized herein, other than sediment placed to construct site features, will not make its way into Grizzly Bay. In the event that such material escapes or is placed in an area subject to tidal action of Grizzly Bay, the permittees shall immediately retrieve and remove such material at their expense.
  - a. **Plant Protection During Construction.** The work authorized by this permit shall be performed in a manner that will prevent, avoid, or minimize to the extent possible any significant adverse impact on any existing native vegetation outside of the construction zone. The permittees shall also: perform pre-construction surveys for special status plant species; salvage marsh vegetation as feasible during construction for replanting; revegetate the disturbed areas; and minimize all traffic in marsh areas.
  - b. **Use and Storage of Excavated Material.** The permittees shall use all excavated soils and dredged sediments to construct the sloped transitional habitat berms; stabilize the existing levees; and shape the other project features including the tidal ponds and pannes as appropriate per engineering requirements. Excavated soil may be temporarily stockpiled within the construction area, per the construction plans provided measures are employed to assure that soils does not blow, wash or erode into the surrounding marsh, waterways or ponds.
  - c. **Storm Water Pollution Prevention Plan.** The permittees shall develop a Storm Water Pollution Prevention Plan (SWPPP) and Spill Prevention and Control Plan (SPCP) to prevent the transport of sediments and/or construction contaminants from the staging areas into the surrounding areas. SWPPP shall include erosion control measures; best management practices regarding storage of fuels; and equipment maintenance and the SPCP shall include preparation control and clean up of potential spills.
  - d. **Debris Removal.** All construction debris, such as concrete, asphalt, wood, plastics, etc., shall be removed from the project site for proper disposal outside of the Commission's jurisdiction. In the event that any such material is placed in any area within the Commission's jurisdiction for an extended period (i.e. more than 60 days), the permittees, their assigns, or successors in interest, or the owner of the improvements, shall remove such material, at its expense, within ten days it has been notified by the Executive Director of such placement.

- D. **Protection of Special-Status Fish and Wildlife Species.** The permittees shall take all precautions to avoid adverse impacts to special-status species such as the Delta smelt, Ridgway's rail (formerly California clapper rail), salt marsh harvest mouse, and the California least tern and their associated habitats. The permittees shall implement the measures described in the U.S. Fish and Wildlife Service's (USFWS) Biological Opinion for

Tule Red Restoration (2016) and National Marine Fisheries Service (NMFS) Biological Opinion for the Suisun Marsh Habitat Management, Preservation and Restoration Plan (2013) for the project, to ensure that impacts to special-status species are minimized. Such measures shall include:

1. **Delta Smelt and Chinook Salmon.** To minimize the effects on delta smelt and migrating salmon resulting from the loss of habitat and sediment plumes, noise and vibration, the permittees shall conduct the breach of the natural berm only between September 1<sup>st</sup> and November 30<sup>th</sup> of any year. Any future maintenance of the breach and pilot channel must also take place during this work window and be authorized by the Commission prior to maintenance activities;
2. **Ridgway's Rail (formerly California clapper rail).** The permittees shall retain a USFWS-approved biologist to conduct pre-construction surveys for Ridgway's rail following USFWS' *2015 California Clapper Rail Survey Protocol* to ensure that these species are not nesting within or adjacent to the construction site. If Ridgway's rail are present in the immediate construction area the permittees shall apply the following measures:
  - a. no activities in or adjacent Ridgway's rail habitat within two hours before or after an extreme high tide (6.5 feet or above);
  - b. no activities in or adjacent tidal marsh areas during rail breeding season February 1<sup>st</sup> - August 31<sup>st</sup> of each year unless surveys indicate that Ridgway's rail habitat and locations can be avoided; and
  - c. if breeding Ridgway's rail are present, activities will not occur within 200 to 700 feet of rail calling center (described in the protocol) depending on site characteristics during breeding season.

The permittees shall conduct any post-breach monitoring and management activities in a way that minimizes, to the extent feasible, contact with marsh plain vegetation.

3. **Salt Marsh Harvest Mouse.** To avoid potential impacts to salt marsh harvest mice and their habitat during construction the permittees shall implement the terms and conditions, and conservation measures in the USFWS' Programmatic Biological Opinion (2013) and the USFWS' August 1, 2016 Appended Biological Opinion. The permittees shall retain a USFWS approved biologist to conduct pre-construction surveys to ensure that no species is present. If salt marsh harvest mouse is discovered, no construction will take place in its immediate vicinity until USFWS staff is contacted and the mouse has been allowed to leave the construction area. During construction by heavy-equipment a USFWS approved biologist will be present to identify any salt marsh harvest mouse that may stray into construction area.
4. **California Least Tern.** To minimize adverse impact to this species, the permittees shall not conduct any activities within 300 feet of an active California least tern nest from April 15<sup>th</sup> to August 15<sup>th</sup> of any year. Site

inspections, maintenance, research or monitoring activities may be conducted during breeding season in areas in, or near, breeding habitat only with approval of USFWS and CDFW and under the supervision of a qualified biologist. If these activities are approved, the permittees shall provide evidence of such approval to BCDC prior to conducting such activities.

5. **Hunting Limitations.** To protect workers, no hunting shall occur at or adjacent to the site during the construction, monitoring or maintenance periods when workers are present.

#### E. **Water Quality**

1. **Water Quality Certification.** The permittees shall implement activities authorized herein in compliance with the requirements of the San Francisco Bay Regional Water Quality Control Board's (Water Board) Conditional Water Quality Certification (WQC) issued on July 19, 2016 and any future amendments to the WQC, including the post-construction monitoring and reporting as described in the project's *Adaptive Management and Monitoring Plan* (AMMP), to ensure that potential water quality impacts of the project are minimized.
2. **Water Quality Reporting.** The permittees shall provide to the Commission, water quality monitoring summary reports concurrently with the submission to the Water Board.
3. **Drainage and Discharge.** No water shall be drained from the site into Grizzly Bay using the two existing tide gates during the period when construction activities are occurring. Excess site water shall be pumped over Noyce Slough Road into the drainage ditches in the adjacent CDFW refuge.
4. **Turbidity.** To ensure that sediment is not swept into Grizzly Bay the permittees shall provide to the Commission a sediment control plan for review and approval prior to breaching the site. The breach between the Tule Red restoration site and Grizzly Bay shall coincide with a low tide event to prevent or minimize turbidity.
5. **Dissolved Oxygen.** In order to prevent low dissolved oxygen water from being released to the site, the permittees shall maintain the water control structure and drain pipe aerator associated with the CDFW drain water in perpetuity. Monitoring of the drain water for dissolved oxygen levels shall be performed before releasing any water onto the site. The permittees shall also provide to the Commission the monitoring results for the dissolved oxygen quarterly sampling as described in the project's AMMP.
6. **Methylmercury Concerns.** To aid in the understanding of mercury methylation at the site and to inform future adaptive management strategies that may be proposed to remedy excess methylmercury accumulation at the site, if it occurs, the permittees shall do the following:

- a. The permittees will submit the final AMMP to the Commission, including the monitoring plans for methylmercury. The permittees will conduct methylmercury monitoring as presented in the AMMP and make the results available to the Commission as they are produced.
  - b. The permittees shall continue to make the project site available to researchers and scientists and continue to encourage methylmercury research at the site. To this end, the permittees shall report to the Commission annually, beginning December 31<sup>st</sup> of the year following breaching of the natural berm, on the results of methylmercury research at the site and any future research proposals or opportunities, and the status of efforts to obtain the necessary funding for studies on the methylation of mercury in the newly restored tidal marsh.
- F. **Marsh Monitoring Plan.** Prior to construction, the permittees shall submit the final AMMP to the Commission. The AMMP shall address the long-term and short-term biological and physical goals of the marsh restoration; the success criteria for the project; and the monitoring program, as well as provisions for long term maintenance and adaptive management needs. The AMMP shall encompass a ten-year monitoring period. The permittees shall meet with the Commission and other agencies to discuss any potential revisions to the monitoring going forward. The monitoring plan, at a minimum, shall include the following:
1. **Site Conditions and Modifications.** A topographic map of the site at two-foot contour intervals showing the proposed modifications. All elevations shall be relative NAVD88. The map shall include typical cross-sections showing the proposed elevations of the sloped transitional habitat berm, tidal channels, ponds and pannes after excavation and fill placement. The map shall show: (1) figures for the ratios of typical horizontal to vertical slopes for proposed marsh surface, channels, and sloughs, particularly for areas where either grading, excavation, or fill will take place; (2) expected plant species along the cross-sections according to their expected zone of growth; (3) the elevation of adjacent existing levees and transitional habitat berm.
  2. **Sedimentation.** A plan for monitoring the accretion and/or erosion on the site, including the locations and methods of measurement. The plan shall include monitoring of the breach and pilot channel to determine if maintenance dredging would be necessary.
  3. **Water Quality.** A water quality monitoring program that shall, at a minimum, monitor pH, salinity, dissolved oxygen, methylmercury and temperature in the restoration area.
  4. **Vegetation.** Provisions for monitoring vegetation establishment on the habitat berms and in the newly restored tidal wetlands. Vegetation monitoring shall include the method for determining the amount of vegetation establishment at the restoration site, and could include the use of aerial photographs, photo-points, vegetative transects, etc., to estimate vegetation cover, including species present; percentage of the site vegetated; approximate percentage representation of

different plant species; and a qualitative assessment of anticipated plant colonization. Monitoring of non-native invasive plant species and their assessment shall also be conducted to inform their management and control on the site.

5. **Invasive Plant Control.** The permittees shall develop and implement an invasive plant control plan for the identification, eradication and monitoring of undesirable plant species over the 10 year monitoring period that shall be subject to approval by or on behalf of the Commission. The monitoring shall include providing the results of the eradication efforts necessary to keep levels of invasive plants, such as non-native reed (*Phragmites australis*), perennial pepperweed (*Lepidium latifolium*), or other invasives, at 5% or less increase over baseline (aerial coverage) of the project site.
  6. **Reference Site.** Identification and monitoring of a suitable reference site, that shall provide a comparison for evaluating the progress and success of the restoration site.
  7. **Wildlife Surveys.** Provisions for monitoring the use of the site by fish and terrestrial species annually for ten years following the completion of restoration activities.
  8. **Monitoring Reports.** By December 31<sup>st</sup> of each year following the initiation of physical restoration activities, the permittees shall submit monitoring reports describing the data collected pursuant to the approved restoration plan, unless otherwise proposed and approved by or on behalf of the Commission.
- G. **Relevant Monitoring Data.** The permittees shall provide all monitoring information and data from other studies conducted on the site including but not limited to any CDFW, U.S. Army Corps of Engineers (Corps), Ducks Unlimited, Wildlife Conservation Board-funded studies.
- H. **Prevention of Flooding.** The permittees shall assure that the project meets the requirements of the *Suisun Marsh Habitat, Management, Preservation and Restoration Plan* (SMP) and other entities that have jurisdiction over the site and surrounding area and are responsible for assuming adequate flood protection for the surrounding communities. The permittees shall provide a letter to the Commission indicating that the review has been done and that inland areas will not flood as a result of the work shown on the plan. The Commission makes no warrants as to the adequacy of the flood protection provided by the project and is not responsible for any flooding that may result.
- I. **Creosote Treated Wood.** No pilings or other wood structures that have been pressure treated with creosote shall be used in any area subject to tidal action in the Bay and Suisun Marsh within the Commission's jurisdiction as part of the project authorized herein.

- J. **Notice to Contractor.** The permittees shall provide a copy of this document to any contractor or person working in concert with the permittees to carry out the activities authorized herein and shall point out the special conditions contained herein. The permittees shall return the signed contractor acknowledgment form enclosed with this permit to the Commission's office prior to commencing work.
- K. **Recording.** The permittees shall record this amended permit or a notice specifically referring to this amended permit on all parcels affected by this amended permit with Solano County within 30 days after execution of the amended permit issued pursuant to this amended authorization and shall, within 30 days after recordation, provide evidence of recordation to the Commission.

### III. Findings and Declarations

- A. This authorization is given on the basis of the Commission's findings and declarations that the work authorized herein is consistent with the McAteer-Petris Act, the *San Francisco Bay Plan*, the *Suisun Marsh Protection Plan*, Suisun Marsh Preservation Act, and the California Environmental Quality Act, for the following reasons:
  1. **Fill.** The Commission may allow fill only when it meets the requirements identified in Section 66605 of the McAteer-Petris Act, which states, in part, that: fill should be "the minimum amount necessary to achieve the purpose of the fill"; that "the nature, location, and extent of any fill should be such that it will minimize harmful effects to the Bay area, such as, the reduction or impairment of the volume, surface area or circulation of water, water quality, fertility of marshes or fish or wildlife resources, or other conditions impacting the environment..."; and that "fill should be authorized when the applicant has such valid title to the properties in question that he or she may fill them in the manner and for the uses to be approved."

*San Francisco Bay Plan* (Bay Plan) and *Suisun Marsh Protection Plan* (SMPP) policies regarding managed wetlands state that the design and evaluation of "[a]ny project for the restoration, enhancement or conversion of the managed wetlands to subtidal or wetland habitat ... should include an analysis of: ...potential fill activities, including the use of fill material such as sediments dredged from the Bay and rock to assist restoration objectives."

The project permittees propose placement of native, on-site fill material to accomplish tidal wetland restoration. The work includes the excavation and placement of fill associated with the creation of a tidal breach, a network of tidal channels and marsh ponds and pannes, and the filling and raising of low-lying ponded areas to marsh plain elevation to improve drainage. The work also involves the placement of excavated native fill to construct a transitional habitat berm.

The project does not include importation of off site soils. All cut and fill proposed for the project features (approximately 300,000 cubic yards) would occur in the managed wetlands and upland areas of the 150-acre project footprint. The on-site soils would be excavated during the creation of the tidal channels, pannes and ponds within the project area, and used predominately for the construction of the

transitional habitat berm. This berm would be constructed along the Bay side of the existing levees to form sloped transitional habitat. Its long shallow slope is designed to be resilient to sea level rise and provide high-water refuge for salt marsh harvest mouse and Ridgway's rail. The transitional habitat berm is a component required for tidal restoration projects under USFWS 2013 biological opinion for the SMP.

Two additional earthen features would be built on site: a maintenance access berm (below mean higher high water) along the northern edge of the Tule Red property, perpendicular to the main transitional habitat berm to provide access to the breach area; and, a levee connecting the two existing levees in the south-eastern portion of the site would form a containment pond for CDFW site drainage water, would include a new water control structure and create a permanent point of access to the site.

The project would remove approximately 1.2 acres (approximately 1,900 cubic yards) of existing solid and pile-supported fill during site preparation. All built structures will be removed from the project footprint, with the exception of a single boat dock that will remain on the existing tidal slough and will be used for access for future monitoring activities. Upon completion of the project's construction activities, the graveled roadways and parking areas designated for access to the construction site would be repaired with crushed road base, similar to what is currently in place.

The public access features proposed for the project include the installation of an informative sign near the restored Tule Red site and the repair and improvement of two off-site public fishing piers, the Island Slough fishing pier and the westernmost Montezuma Slough fishing pier.

The project has balanced the amount of fill removed and re-used by the project. By applying all of the on-site soils to project elements and removing the numerous man-placed fill items, the project fill calculations result in a negative net fill.

To ensure that the project is consistent with the Bay Plan and SMPP policies on fill as it relates to the restoration of managed wetlands, Special Conditions II-A-1, 2 and 3 have been included in this authorization. These special conditions require the permittees to provide final construction plans to the Commission for review and approval before commencing construction.

- a. **Minimum Amount Necessary.** During the environmental review, the proposed project was determined to be the least environmentally damaging practicable alternative because it minimized fill and had provisions to include adequate transitional and refuge habitat for listed species likely to inhabit the site. The amount of fill required for the transitional habitat berm was determined by its moderate slope of 10:1 to 20:1 with a maximum elevation of 11 feet NAVD88. In addition to providing habitat, this berm would also bolster the existing levee and protect the neighboring properties from flooding as well as from wind and wave action (NHC, 2015).

Although the majority of the proposed construction involves the excavation and placement of fill and the removal of structures, the proposed project also includes placement of new fill. The following activities have fill associated with them:

- (1) The placement of the new water control structure and access platform would result in 660 square feet of appropriately sized fill.
- (2) Upon project completion, the repair of the gravel roads used to access the construction area would require approximately 360 cubic yards of gravel road base. The levee tops would receive a final dressing of on-site soils to return them to pre-project elevations levels and to compensate for any compaction during the construction phase.
- (3) Although located off-site the fill associated with the public access improvement is also included in the fill calculations. The two piers identified as needing repairs, including the placement of riprap will result in 1,436 square feet of fill along 117 feet of shoreline along the Island and Montezuma sloughs. The new information sign would amount to 48 square feet for a total of 1,484 square feet of public access fill.

Because the project includes using on-site soils for the majority of the constructed features; and that the quantity of the fill brought onto the site is minimal and results in a net reduction of fill in the managed wetland, the Commission finds that the fill placed for the project would be the minimum necessary to construct the project.

- b. **Effects on Bay Resources.** The primary purpose of the restoration project is to increase the habitat functions of the project area. In converting the managed wetland to tidal marsh, there is some loss of habitat and resources, particular to waterfowl that use the site to over-winter. In addition, the site includes some seasonal wetlands in the form of water distribution ditches, but these are assessed as having limited habitat value and would be detrimental to water circulation on the site if they persisted. The permittees note that once completed, the project would, “benefit water volume, circulation, fish and wildlife resources and marsh fertility at the site.” The construction of the tidal channels, ponds and pannes and the breach of the natural berm would introduce tides to the site increasing water circulation. The ponds and pannes would retain water between tidal cycles and increase the foodweb productivity of the site. It is likely that for a period of time, while marsh vegetation is establishing, waterfowl and shorebirds will use the site, and it will likely provide rearing habitat for out-migrating juvenile salmonids. The newly constructed transitional habitat would benefit tidal marsh species by providing upland transitional habitat in addition to being resilient to future sea level rise.

- c. **Valid Title.** Westervelt holds title to the 2,000-acre Tule Red property. This restoration site constitutes 354 acres of the overall property owned by Westervelt. CDFW owns approximately sixty-six acres of the project site. Westervelt and SFCWA have a Grant of Easement Agreement allowing SFCWA the right to take any action to restore, create, and/or preserve tidal marsh on the property party. SFCWA and Westervelt have a Site Access Agreement with CDFW allowing them to construct the project on CDFW property as one complete restoration unit with the Westervelt property.
- d. **Safety of Fills / Sea Level Rise.** To be consistent with the Plan requirements, levees located on restoration sites must continue to protect adjacent private properties from flooding. In response to this requirement and the Commission's policies, the restoration project would place the newly excavated soil against the existing levee slope in the form of a transitional habitat berm and buttress the existing levee, thereby maintaining the current level of flood protection for adjacent properties.

To ensure adequate transitional habitat berm structural soundness, technical studies were conducted during the planning and design phase of the project. A geotechnical investigation for levee rehabilitation and grading was performed for the proposed project. The evaluation of the levee's safety and reliability included consideration of over-toppings due to floods, seepage below and through the levee, the stability of the levee slopes, levee settlement and creep, wind waves, erosion and seismic resistance (Hultgren-Tillis Engineers, 2015). Although a detailed analysis of seismic risk for the levees was not done, the preliminary review suggested that most of the levee consists of material that is not expected to liquefy. However, the marsh soils directly beneath the levee may liquefy due to earthquake shaking (Hultgren-Tillis Engineers, 2015). This would be true of the entire marsh, however, and this project is not expected to increase the risk, nor put people in harms way. The study states that the existing levee was not built to a specific design standard and concludes that some rehabilitation of the levee is needed to maintain the existing integrity and reliability of the levee. The project proposes to make those improvements to ensure levee stability when constructing the transitional habitat berm.

The Commission finds that the project is consistent with the McAteer-Petris Act and relevant Bay Plan and SMPP policies regarding fill, safety of fill, and the effects of fill on Bay resources in managed wetlands.

## 2. Public Access

- a. **Maximum Feasible Public Access.** Section 66602 of the McAteer-Petris Act states, in part, that "...existing public access to the shoreline and waters of the...[Bay] is inadequate and that maximum feasible public access, consistent with a proposed project, should be provided." In addition, the Bay Plan policies on public access state, in part, that "a proposed fill project should increase public access to the Bay to the maximum extent feasible..." and that "access to and

along the waterfront should be provided by walkways, trails, or other appropriate means and connect to the nearest public thoroughfare where convenient parking or public transportation may be available.” The SMPP Recreation and Access policies recognize the high demand for recreational uses of the Suisun Marsh. Policy 3 states that “[p]ublic agencies acquiring land in the Marsh for public access and recreational use should provide a balance of recreational needs by expanding and diversifying opportunities for activities such as bird watching, picnicking, hiking and nature study.” Policy 4 addresses the care of public access areas by stating “[a]gencies administering land acquired for public access and recreational use should be responsible for maintaining the areas and controlling their use. Signing on roads leading into the Marsh and maintaining litter receptacles at major public use areas should be provided by the appropriate local or State agency to prevent littering and vandalism to public and private property.”

Bay Plan Public Access policies also include exceptions to on-site public access under certain circumstances. The policies state that, “in cases where public access would be clearly inconsistent with the project because of public safety considerations... in lieu access at another location preferably near the project should be provided.”

Currently, limited public access near the Tule Red site consists of Grizzly Island Road, a county road crossing the Grizzly Island Wildlife Refuge, and a poorly noticed public parking lot known as Lot 1. The adjacent CDFW lands include walking trails for wildlife viewing. Between August and February of each year, the Grizzly Island Wildlife Area is closed to the general public, but open to licensed hunters who have drawn tags or entry permits through a public process. Providing public access within the site and adjacent to neighboring properties where hunting is occurring puts public safety in jeopardy, therefore no on-site trails or access are proposed.

The permittees propose to provide the following public access improvements as part of the restoration project:

- (1) Repair and improvement of two off-site fishing piers in Island Slough and Montezuma Slough. These piers are used year-round and have approximately 10,000 use-days per year. They have fallen into disrepair and need new decking, superstructure improvements and potential retrofitting to render them ADA-compliant. The pier at Montezuma Slough has significant levee slumping issues and requires levee repair to make the pier accessible to users. The piers are owned by CDFW, and the SFWCA would provide the funding to perform the repairs. The repair work would begin in 2017 and be completed by 2018 (Exhibit E);
- (2) The creation and installation of an interpretive sign at the restored Tule Red marsh site, near existing public access. The interpretive sign would have project features and habitat values of the marsh. The sign would be

approximately four feet by six feet in size, be weather resistant and placed in a location that would minimize opportunities for vandalism. The sign would be in place no later than project completion in 2018;

- (3) Improvement of Lot 1 signage, making it legible to Marsh visitors and indicating available parking. The sign would be improved no later than project completion in 2018;
- (4) The development and implementation of a comprehensive Suisun Marsh public access opportunity study. The study would include stakeholder meetings to identify potential public access improvements throughout the Suisun Marsh in preparation of future restoration projects in the area. The SFWCA would initiate the study activities in Fall 2016 and complete the study by the end of 2017. The study would be funded by the Department of Water Resources, which has committed \$150,000 for the study; and
- (5) Once the restoration project and the study are complete, the permittees will contribute \$150,000 to the California Coastal Conservancy's Coastal Trust Fund to be used for future public access improvements within Suisun Marsh.

The permittees have not included on-site public access due to concerns about the site's proximity to private duck hunting clubs; the sensitive aquatic and terrestrial species found on the site; limited public roads and trails leading to the site; and seasonal closures to public use (6 months per year). They believe the in-lieu package adequately represents the maximum feasible public access consistent with the project. Commission staff visited the site and spoke with the permittees on several occasions regarding the proposed public access. Staff believes that public access could be provided along a portion of the levee tops to allow views of the Tule Red site, understanding that the access would be closed to the public during hunting season. Such access would allow closer views of the restoration area, the Bay and of wildlife on or near the site. The entrance to the levee path would be near the Lot 1 parking area and interpretive signage could inform visitors about the site and its restoration. The permittees explained that the levee path was adjacent a privately owned duck club and expressed concerns about members of the public being on/near private lands reserved as a managed marsh. The permittees added that by repairing the two fishing piers they would be improving high use public access sites that would be put to immediate use. The Marsh-wide study and financial contributions for future public access improvements would also support future public access in the Marsh.

Staff acknowledges that the above-mentioned in-lieu public access is an alternative means of encouraging public use of Suisun Marsh. Island Slough fishing pier is well used, the repairs are needed and the new signage informative to visitors. The piers are owned by CDFW, but the permittees would provide funding for repair and rehabilitation. Because the CDFW owns the piers, this permit does not authorize the work. To ensure that the work is completed, and

appropriately authorized by the Commission, Special Condition II-B-1 and 5 are included herein requiring improvements and maintenance of the fishing piers by 2018.

The comprehensive public access study would allow future projects to be consistent with Public Access Policy 13 that states that “[p]ublic access should be integrated early in the planning and design of Bay habitat restoration projects to maximize public access opportunities and avoid significant adverse effects on wildlife.” To ensure that the permittees contribute to the future improvements to public access in the Suisun Marsh, Special Condition II-B-6 has been included in this authorization.

- b. **Barrier Free Access.** Public Access Policy 7 states in part that public access improvements “should be designed and built to encourage diverse Bay-related activities and movement to and along the shoreline, should permit barrier free access for persons with disabilities to the maximum feasible extent, should include an ongoing maintenance program and should be identified with appropriate signs.” The permittees reviewed the 2016 California Access Compliance Advisory Reference Manual and the Access Board’s “accessible fishing piers & platforms” guides for ADA specifications applicable to the two piers. The following ADA considerations could be applied to the improvements of the fishing piers: pier surface and dimensions, roadway and parking lot conditions, and the slope of parking lots, paths and ramps. Special Condition II-B-1 and 2 were included in this authorization to require that both piers be evaluated per the ADA standards to identify the appropriate improvements necessary to bring the piers into compliance.
- c. **Recreational Opportunities.** Bay Plan Recreation policies state in part that “[d]iverse and accessible water-oriented recreational facilities...and fishing piers, should be provided to meet the needs of a growing and diversifying population, and should be ...improved to accommodate a broad range of water oriented recreational activities for people of all races, cultures, ages, and income levels.” The in-lieu public access proposed by the permittees encourages the use of the Suisun Marsh for outdoor recreation, specifically fishing and wildlife viewing from the piers. Repairing the fishing piers ensures their continued existence and use by a variety of visitors. The inclusion of interpretive signage at the restoration site would inform visitors of restoration activities and habitat values of the Marsh. The public access opportunity study and funds would identify and support future public access developments in the Marsh. Lastly, the funds set aside for future public access improvements would provide a modest funding source for future improvements on site, or at other appropriate sites in the Marsh.
- d. **Appearance, Design, and Scenic Views.** Implementation of the project would not adversely impact present or future public access and views to the Bay, as Grizzly Island Wildlife Refuge is open to the public. The restoration work would

remove man-made structures from the Tule Red site, open it to tidal flows and encourage the development of new habitat. The change of use and visual characteristics would potentially allow research and other educational programs access to the site in the future to expand awareness of restoration, ecological values and wildlife habitats.

The Commission finds that the project is consistent with the Bay Plan and the SMPP policies regarding maximum feasible public access consistent with the project, barrier free access, recreational opportunities, and appearance, design and scenic views.

### 3. Natural Resources

- a. **Managed Wetlands Policies.** The SMPP Environment Policy 1 states, “[t]he diversity of habitats in the Suisun Marsh and surrounding upland areas should be preserved and enhanced whenever possible to maintain the unique wildlife resource.” The Bay Plan Managed Wetlands Policy 2 states in part that, “[i]f the owner of any managed wetland withdraws any of the wetlands from their present use, the public should make every effort to buy these lands and restore them to tidal or subtidal habitat, or retain, enhance and manage these areas as diked wetland habitat for the benefit of multiple species.”

Westervelt purchased the Tule Red property, a privately owned duck club, on behalf of State and Federal Contractors Water Agency (SFWCA) (SFCWA owns the Habitat Development Rights) for the sole purpose of restoring it from managed wetlands to tidal marsh and transitional upland habitat for the benefit of protected fish and wildlife species. The permittees would complete the restoration project; conduct the multi-year monitoring; and once the project has met the success criteria, propose to transfer the property holdings to a public entity for future management. The permittees have tentatively identified transferring the site to CDFW’s wildlife refuge holdings. CDFW has not yet agreed to a potential transfer of the property, but discussions are ongoing.

Bay Plan Managed Wetland Policy 3, as well as SMPP Land Use and Marsh Management Policy 14, states that “any project for the restoration, enhancement or conversion of managed wetlands to subtidal or wetland habitat should include clear and specific long-term and short-term biological and physical goals, success criteria, a monitoring program, and provisions for long-term maintenance and management needs.” Both policies also specify key elements and issues to be analyzed over the course of project design. Special Condition II-F requires the permittees to submit the final AMMP addressing the project’s goals and potential adaptive management needs.

As described above, Bay Plan and SMPP policies require site goal and analysis of potential issues. The following information was provided by the permittees:

- (1) **Anticipated Habitat.** Permittees stated that the implementation of the project would result in a change in habitat types from managed wetlands (duck club) habitat to self-sustaining tidal marsh habitat. The current

elements of the duck club, such as the non-tidal marsh, ponds, and internal delivery channels would be replaced with tidal wetlands, channels, ponds and pannes. The existing transitional habitat would be improved and increased creating more diverse habitat for wetland and terrestrial species.

- (2) **Potential Fill Activities.** The project includes excavation of native soil to create a tidal breach, a network of tidal channels, and tidal ponds/pannes, and the placement of excavated native soil materials through out the project site to raise areas to marsh plain elevations and along the eastern border of the site to create the transitional habitat berm. Although no rock will be used during restoration activities, a small amount of riprap will be used in the construction of the new water control structure.
- (3) **Flood Management Measures.** The project design protects adjacent properties from flooding as required by the SMP. The SMP requires restoration projects to maintain and improve the Suisun Marsh levee system integrity to protect property, infrastructure and wildlife habitats from catastrophic flooding. The project includes a habitat berm designed to protect adjacent managed marsh properties from increased risk of flooding and sea level rise by providing wind and wave-action protection.
- (4) **Mosquito Abatement Measures.** The project includes a large network of tidal channels and several tidal ponds designed to increase onsite production of zooplankton and thereby increase foodweb production onsite and within Grizzly Bay. It is possible that these features may host salt marsh mosquito larvae during the warm months of the year. Because they remain ponded during tidal cycles the tidal ponds typically host a variety of insectivorous fish that prey on mosquito larvae. When the tidal ponds are over topped on the spring tides each month, these fish would be distributed throughout the tidal marsh channel complex. The larval stage usually matures during winter and the adult emerge mid-February – May. The project site lies within Solano County Mosquito Abatement District, which provides regular monitoring of wetlands and control of nuisance adult mosquitoes throughout the Marsh.
- (5) **Non-Native Species Control Measures.** After the interior construction of the site is complete, the site would be managed to establish tidal marsh habitat and control invasive vegetation prior to breaching the site. Once the site has been breached a monitoring program of physical processes, vegetation establishment and invasive vegetation on the site will be conducted to determine if restoration objectives are being met. If they are not being met, SFCWA, along with the resources agencies, will analyze ecological and physical processes at work and propose remedial action. The project's final AMMP shall also describe surveys to document location and spread of non-native species and provides measure for control and adaptive management.

- (6) **Opportunities for Public Access and Recreational Activities.** The permittees explained that due to incompatible adjacent land uses (hunting) land access of the shoreline and marsh is not feasible at this time. The permittees have proposed several in-lieu public access solutions as an alternative to on-site public access. Once completed, the project could also potentially provide public access to the site via canoes and kayaks as it will be open to Grizzly Bay and this activity is not prohibited.
- (7) **Water Quality Protection Measures.** The permittees an AMMP has been prepared that includes the timing, methods and criteria for monitoring for constituents of concern, such as methylmercury.

To ensure that appropriate conservation measures are taken during the construction of the tidal marsh Special Conditions II-C were included in this authorization. Because the managed wetland is being converted into a tidal marsh through careful planning and implementation, the Commission finds that the project is consistent with its laws and Bay Plan policies on managed wetlands.

- b. **Restoration of Tidal Marshes.** SMPP Environment Policy 2 states, “[t]he Marsh waterways, managed wetlands, tidal marshes, seasonal marshes, and low-land grasslands are critical habitats for marsh-related wildlife and are essential to the integrity of the Suisun Marsh. Therefore, these habitats deserve special protection.”

The Bay Plan Tidal Marsh and Tidal Flat Policy 4 states that, “[w]here feasible, former tidal marshes and tidal flats that have been diked from the Bay should be restored to tidal action in order to replace lost historic wetlands or should be managed to provide important Bay habitat functions, such as resting, foraging and breeding habitat for fish, other aquatic organisms and wildlife.”

The Bay Plan’s Fish, Other Aquatic Organisms and Wildlife Policy 1 states that “[t]o assure benefits of fish, other aquatic organisms and wildlife for future generations, to the greatest extent feasible, the Bay’s tidal marshes, tidal flats, and subtidal habitat should be conserved, restored and increased. Policy 2 states “[s]pecific habitat that are needed to conserve, increase or prevent the extinction of any native species, species threatened or endangered, ...should be protected.

Tidal Marsh and Tidal Flats Policy 6 indicates that “[a]ny ecosystem project should include clear and specific long-term and short-term biological and physical goals, and success criteria, and a monitoring program to assess the sustainability of the project. Design and evaluation of the project should include and analysis of: how the system’s capacity can be enhanced so that it is resilient to sea level rise and climate change; localized sediment erosion and accretion; the role of tidal flows; rates of colonization by vegetation; the expected use of

the site by fish, other aquatic organisms and wildlife; and site characterization. It further states, if success criteria are not met during the life of the project, appropriate adaptive measures should be taken.

Prior to European settlement of the Delta, Suisun Marsh was a vast, brackish water marsh, providing nationally significant wildlife habitat. Over time, duck hunting clubs were established in the Marsh, diking off the large areas of marsh from tidal action, and creating a tangled network of water control structures that allowed owners to cultivate vegetation specifically to attract waterfowl for hunting purposes. As described above, the project's goal is to reestablish tidal marsh on 420 acres of the site; including; (1) increasing marsh vegetation; (2) creating tidal pannes and ponds; (3) creating channels and transitional habitat that will support the production of nutrients and plankton for export to Grizzly Bay; (4) providing habitat for native and listed species; and (5) being resilient to sea level rise.

Because Suisun Marsh is a brackish marsh, rather than Bay-dominated salt marsh habitat, it has the potential to support native and listed species of plants and animals that have limited habitat in other areas of the Bay and Delta. Restoring Tule Red increases tidal brackish marsh habitat in the region and thereby enhances, restores and protects this limited habitat and the species that inhabit it. Once completed, the transitional habitat berm would provide high tide refugia while the other constructed site features create a mosaic of microhabitats that may transition to new habitat types as sea level rises. Special Condition II-D-2 requires the permittees to protect and provide habitat for three protected species as part of the restoration project.

Per Tidal Marsh Policy 6, the project proponents conducted a number of studies to inform the site design and habitat evolution on the site. With resilience to sea level rise in mind, the geotechnical study characterized the site's soils in order to properly engineer the transitional habitat berm and bolster the existing levee on which it will be placed. The study determined the appropriate compaction level, appropriate berm slopes, and the methods and timing of soil placement along the levee.

The *Hydraulic and Geomorphic Basis of Design Report* (NHC 2015) discusses the analysis of the tidal inundation periods and specified the optimum size and depth necessary for the channels, ponds and pannes to retain water as habitat for zooplankton before being cycled out on higher tides. The tidal channel network would allow flooding and draining with each tide cycle, adding tidal prism volume and tidal flux to provide full tidal exchange across the project site. Similarly, the proposed tidal ponds and pannes were designed to retain tidal waters to allow adequate growth time for zooplankton to reach an optimal size for foodweb production, which according to the work of Dr. Peter Moyle, a recognized expert in Delta fish species, is about 14 days. Without the onsite ponds, the majority of the site would flood and drain diurnally and limit the

mean residence time to about 3-9 hours (NHC, 2015). The tidal pannes would flood only on spring tides and would have a mean residence time of about a month. Their longer duration of inundation, variability in topography, and increased salinity levels, are intended to provide physical habitat and vegetation diversity within the marsh plain (NHC, 2015).

The *Basis of Design Report* (NHC, 2015) also referred to the National Resource Council (NRC, 2012) updated sea level rise estimates for the San Francisco Bay, and concluded that the sediment accretion rate within the marsh and along the sloped berm would be able to keep pace with sea level rise rates in the region through at least 2065 due to the accretive nature of this embayment. It also stated that bioaccretion of decaying marsh vegetation could greatly supplement the sediment accretion rate.

The Tule Red AMMP details the short and long-term physical and biological goals of the project and includes a monitoring program, adaptive management measures and provisions for longer-term maintenance and management needs such as water quality and non-native species control. The monitoring program includes the methods, metrics and frequency of monitoring the physical processes, hydrology, water quality, food web, fish, wetland and vegetation of the site. The results of such surveys would be used to manage, maintain and protect the restored habitat and the species on site. Initially developed to be implemented during project construction and continuing annually for five years once the site is breached and every five years thereafter, the AMMP is a “living” document that will be revised as the restoration project warrants. Special Condition II-F ensures that a monitoring plan will be in place before the restoration project begins, including Special Condition II-F-2 requiring the permittees to provide monitoring reports to the Commission on a regular basis.

The Commission finds that with implementation of the Special Conditions regarding fish and wildlife, their habitat and the marsh restoration goals contained herein, the project is consistent with its Bay Plan and SMPP policies regarding tidal marshes.

- c. **Fish, Other Aquatic Organisms and Wildlife.** Bay Plan Policy 2 regarding Fish, Other Aquatic Organisms and Wildlife, discussed above, also state that listed or candidate species ... under the California Endangered Species Act, or any species that provides substantial public benefits, should be protected, whether in the Bay or behind dikes. Further, Policy 4 (a) in summary directs the Commission to consult with the resource agencies whenever a proposed project may adversely affect an endangered or threatened plant or wildlife species. Policy 4 (b) also states that the Commission should not authorize projects that would result in the "taking" of any listed species unless the project applicant has obtained the appropriate "take" authorization. Finally, Policy 4 (c) directs the Commission to

give appropriate consideration to the recommendations of the resources agencies to avoid possible adverse effects of a proposed project wildlife and its habitat.

Suisun Marsh is home to a number of listed species, and activities within the Marsh, whether restoration, levee maintenance or dredging have the potential to impact these species. Due to concern for the Marsh and the habitat provided for special status species, the regulatory and resource agencies worked together over the past several years to establish avoidance, minimization and mitigation measures for activities that regularly occur there. As a result the agencies developed the Plan, which describes permissible activities and corresponding minimization and mitigation measures. Responding to this plan, in 2013 NMFS and USFWS issued programmatic biological opinions for the Plan. These biological opinions provide incidental take authorization and terms and conditions for activities listed in the Plan. Restoration of tidal marsh is programmatically covered in the biological opinions; however, it required a project level evaluation. In addition, the project proponents are seeking to fulfill mitigation requirements for the State and Federal Water Project's biological opinion with this project.

In an effort to comply with the requirements of the programmatic biological opinions, the permittees selected the Tule Red Duck Club property as the first 420 acres of the required 8,000 acres of restoration. The permittees have designed this project to be consistent with the criteria described in the SMP for tidal wetland restoration projects and to reduce impact to listed species through project design and implementation of avoidance and minimization measures. NMFS determined that the incidental take of salmonids and sturgeon associated with implementation of the project would already be covered in their 2013 Programmatic Biological Opinion for the SMP and concurred that the project would not need further consultation.

At the request of USACE, a new effects analysis was prepared in 2016 because: (1) the restoration project's protective measures for the salt marsh harvest mouse differed from those in the USFWS programmatic biological opinion; and (2) the proposed project requires USFWS authorization for incidental take of listed salt marsh harvest mouse for impacts due to construction and breaching activities; and monitoring of listed fish species and adaptive management activities.

On August 1, 2016, USFWS issued the appended project level biological opinion, adding details on notifying the USFWS should any California Ridgeway's rail (formerly clapper rail), salt marsh harvest mouse, California least tern and Delta smelt be entrapped, injured or killed; education of project personnel on the conservation measures and terms and conditions; and reporting requirements of the biological opinion, to the terms and conditions included in the programmatic review. In this project-level review the USFWS determined that the project as

proposed was not likely to jeopardize the existence of Ridgeway's rail, salt marsh harvest mouse, California least tern or Delta smelt, and authorized incidental take for the above species. By implementing conservation measures such as conducting pre-construction surveys for Ridgeway's rail and salt marsh harvest mouse, and having a biologist on site and avoiding sensitive habitat during construction, the permittees will prevent or minimize impact on protected species. Consequently, CDFW did not find that the project would adversely impact protected species. Special Conditions II-D-1, 2, 3 and 4 of this authorization requires the permittees to incorporate the conservation measures specified in the USFWS and NMFS biological opinions into the tidal marsh restoration plans and construction activities.

The overall project design is consistent with the Plan, the various biological opinions' terms and conditions. The proposed project objectives are species focused and include in part, "[e]nhancing regional food web productivity in support of Delta smelt and longfin smelt recovery; providing rearing, breeding and refuge habitats for aquatic and wetland dependent species that utilize brackish aquatic-tidal marsh habitat; and providing topographic variability for habitat succession and resilience against future climate change and sea level rise." While the project will have temporal impacts to the site, its overall design and habitat features would likely provide improved habitat for listed and native species as the site develops and matures.

The Commission finds that by adhering to the recommendations of the resources agencies regarding the protection of special-status species and their habitat, as well as the precautions detailed in the Special Conditions, the project is consistent with its Bay Plan policies regarding fish, other aquatic organisms and wildlife.

- d. **Water Surface Area and Volume and Water Quality Policies.** The Bay Plan Surface Area and Volume Policy 1 states "the surface area of the Bay and the total volume of water should be kept as large as possible in order to maximize active oxygen interchange, vigorous circulation, and effective tidal action..."

The Bay Plan Water Quality Policy 1 states, in part that "Bay water pollution should be prevented to the greatest extent feasible. The Bay's tidal marshes, tidal flats, and water surface area and volume should be conserved and, whenever possible, restored and increased to protect and improve water quality."

Policy 2 states that "[w]ater quality in all parts of the Bay should be maintained at a level that will support and promote the beneficial uses of the Bay as identified in the San Francisco Bay Regional Water Quality Control Board's (RWQCB) Basin Plan and should be protected from all harmful or potentially harmful pollutants. The policies, recommendations, decisions, advice, and

authority of the State Water Resources Control Board and the Regional Board should be the basis for carrying out the Commission's water quality responsibilities."

The restoration site is currently disconnected from daily tidal influence, and reconnecting it to the Bay would increase the Bay's surface area by 420 acres, and increase tidal exchange of waters, oxygen and nutrients. As a managed wetland, the water levels on site have been managed on a seasonal basis for production of vegetation to attract waterfowl. A water supply and drainage channel runs along the edge of the levee on the eastern edge of the site. This channel has dual combination flap gates on both the northern and southern ends of the site, which connect to the Bay. As a duck club, the site is kept flooded from October to February, drained and reflooded in the spring to leach salts from the soil and drained completely summer through early fall for discing and mowing and maintenance. Restoring tidal action to the site would dilute the leached salts and buffer water quality with the return of brackish water to the site.

At times the water draining onto the site via CDFW's discharge pump and outfall drain has low dissolved oxygen levels, and when concentrated in the channels negatively impact aquatic life. The installation of the new tide gates, diffuser nozzle, and oxidation pond would address the generation and discharge of low dissolved oxygen waters from adjacent properties. To ensure that water with low dissolved oxygen levels is not released into the site, Special Condition II-E-5 requires the permittees to maintain the water control structures and monitor drain water before releasing any of the contained drain water. An increase in tidal prism throughout the site would increase the tidal mixing process. To ensure that dissolved oxygen in the water is properly managed, the proposed AMMP includes monitoring and management measures.

Historically, sediments from the Gold Rush were transported through the Delta into the Bay, leaving a legacy of mercury-laden sediments. Mercury contamination continues today through atmospheric deposition across the Bay Area. Restoring sites to tidal marsh may increase the potential for mercury to methylate, making it bio-available to animals living in that marsh. To address this potential issue, the project proponents have included seasonal monitoring of aqueous methyl mercury in the Adaptive Management and Monitoring Program. Recognizing the importance of SFEI's Regional Monitoring Program for San Francisco Bay and the proposed Delta Regional Monitoring Plan, Special Condition II-E-6-(b) requires the permittees to make the project site available to researchers and scientists and to encourage further methylmercury research on the site.

The permittees state that temporarily increased levels of suspended sediment and turbidity could occur as result from the construction of the channels, ponds and site grading. In order to prevent or minimize the release of sediment, after

completion of the construction all disturbed areas would be revegetated and managed to stabilize the soils before implementing the breach of the natural berm, connecting the site to Grizzly Bay. Special Condition II-E-4 requires the permittees to conduct the breach during a low tide to prevent excavated soils from entering Grizzly Bay and to allow any loose sediment to be pushed into site on following incoming high tide.

To address construction impacts from the project footprint and grading, a SPPP would be prepared for the project and would include best management practices ensuring no sediments or pollution would be released in to Grizzly Bay. Further, the construction drawings and plans submitted to the Commission would include an erosion and sediment control plan.

To further reduce the potential for discharges of pollutants, the project would also comply with minimization/mitigation measures outlined in the Plan's EIS/EIR. These measures include daily inspections of all equipment for oil and fuel leaks; trash and construction debris removal; maintenance of waste facilities; preparation and implementation of erosion and sediment control plan; and developing a hazardous material plan.

The Commission finds that the project is consistent with its laws and policies regarding natural resources and water quality. The Commission finds that by obtaining a Water Quality Certification for the project from the Water Board and adhering to the best management practices detailed in the Special Conditions the project is consistent with its Bay Plan policies regarding water quality.

4. **Mitigation.** The Bay Plan Mitigation Policy 1 states that "projects should be designed to avoid adverse environmental impacts to Bay natural resources...Whenever adverse impacts cannot be avoided, they should be minimized to the greatest extent practicable...measures to compensate for unavoidable adverse... Bay should be required".

The restoration project proposes to convert a current managed marsh into tidal marsh. Currently the site includes approximately 320 acres of managed wetlands in the form of a duck club; 54 acres of tidal wetlands; and 46 acres of upland. As a duck club, the site has limited habitat but seasonally supports overwintering waterfowl. The construction of this project and the introduction of tidal cycles to the site would impact the existing habitat. The restored site would likely provide habitat for foraging waterfowl and shorebirds, but over time would transition into a vegetated site that will support different species of birds and mammals, potential listed species.

The onsite construction will impact existing habitat and would take between two and three years to complete. In recognition of these construction impacts, the permittees have proposed a number of best management practices and minimization measures for the proposed work, including methods and timing of vegetation removal, and the timing of dredging the pilot channel into Grizzly Bay. By

adhering to the conservation measures outlined in the USFWS 2016 Biological Opinion for the project and the NMFS 2013 Biological Opinion for Plan as required by Special Condition II-D-1, 2, 3 and 4 the permittees will further minimize or prevent directly impacting protected species.

The project would result in the creation of 420 acres of new tidal and transitional habitat and water quality improvements. The project would introduce tidal prism to the site and increase its foodweb productivity; the newly constructed transitional habitat berm would also have positive impacts on the species dependent on the tidal marsh and upland transitional ecosystems in addition to being resilient to future sea level rise. The beneficial outcomes of the restoration of 420 acres of tidal marsh, which is limited in this area, outweighs the temporal loss of approximately 54 acres of tidal emergent vegetation on this site. By implementing best management practices, minimization and conservation measures during development; and adhering to its monitoring and management plans, the project reduces and compensates for any adverse impacts and as such is self-mitigating.

The Commission finds that because the benefits associated with the project's restoration of a managed wetland to tidal marsh exceeds any adverse impacts due to the transition to tidal marsh, the proposed project is consistent with the relevant Bay Plan policies regarding mitigation.

5. **Climate Change.** The Commission's Climate Change policies include discussions of habitat restoration projects. Bay Plan Climate Change Policy 7 states that " Until a regional sea level rise adaptation strategy can be completed, the Commission should evaluate each project proposed in vulnerable areas on a case-by-case basis to determine the project's public benefits, resilience to flooding, and capacity to adapt to climate change impacts. The following specific types of projects have regional benefits, advance regional goals, and should be encouraged, if their regional benefits and their advancement of regional goals outweigh the risk from flooding:...d. a natural resource restoration or environmental enhancement project".

As detailed through this summary the Tule Red restoration project has been designed to provide public benefits by increasing Bay surface area and improving water quality in the Suisun Marsh as well as creating tidal habitat conducive to foodweb productivity for protected species. The upland element of the project, the transitional habitat berm was designed to provide terrestrial habitat and to bolster the existing levee and maintain its flood protection capacity. To ensure that the permittees adhere to the design specification of the habitat berm, Special Condition II-A-3 was included in this authorization. Hydrology and geology studies conducted during the project planning concluded that the accretive nature of the site in combination with the berm's slope would render the site resilient to sea level rise. Tule Red is the first restoration project to be implemented under the regional Plan. The Plan describes the region's restoration and managed wetland goals and the actions to be taken in the Marsh in response to the ecological and land use needs over the next 30 years.

The Commission finds that the proposed project addresses the site's resilience to sea level rise through design and engineering and therefore is consistent with the relevant Bay Plan policies regarding climate change.

- B. **Environmental Review.** The Suisun Marsh Habitat, Management, Preservation and Restoration Plan EIR was certified by CDFW in December 2011. The Suisun Marsh Habitat, Management, Preservation and Restoration Plan EIS Record of Decision was signed by the Bureau of Reclamation and the United States Fish and Wildlife Service in April 2014. The Tule Red project is part of the programmatic analysis of the overall Plan, but was not evaluated at the project level. An addendum to the Suisun Marsh Habitat, Management, Preservation and Restoration Plan EIS/EIR was prepared in February 2016 by SFCWA to analyze the implement the proposed Tule Red Tidal Restoration Project under the California Environmental Quality Act.

#### IV. Standard Conditions

- A. **Permit Execution.** This permit shall not take effect unless the permittee(s) execute the original of this permit and return it to the Commission within ten days after the date of the issuance of the permit. No work shall be done until the acknowledgment is duly executed and returned to the Commission.
- B. **Notice of Completion.** The attached Notice of Completion and Declaration of Compliance form shall be returned to the Commission within 30 days following completion of the work.
- C. **Permit Assignment.** The rights, duties, and obligations contained in this permit are assignable. When the permittee(s) transfer any interest in any property either on which the activity is authorized to occur or which is necessary to achieve full compliance of one or more conditions to this permit, the permittee(s)/transferors and the transferees shall execute and submit to the Commission a permit assignment form acceptable to the Executive Director. An assignment shall not be effective until the assignees execute and the Executive Director receives an acknowledgment that the assignees have read and understand the permit and agree to be bound by the terms and conditions of the permit, and the assignees are accepted by the Executive Director as being reasonably capable of complying with the terms and conditions of the permit.
- D. **Permit Runs With the Land.** Unless otherwise provided in this permit, the terms and conditions of this permit shall bind all future owners and future possessors of any legal interest in the land and shall run with the land.
- E. **Other Government Approvals.** All required permissions from governmental bodies must be obtained before the commencement of work; these bodies include, but are not limited to, the U. S. Army Corps of Engineers, the State Lands Commission, the Regional Water Quality Control Board, and the city or county in which the work is to be performed, whenever any of these may be required. This permit does not relieve the permittee(s) of any obligations imposed by State or Federal law, either statutory or otherwise.

- F. **Built Project must be Consistent with Application.** Work must be performed in the precise manner and at the precise locations indicated in your application, as such may have been modified by the terms of the permit and any plans approved in writing by or on behalf of the Commission.
- G. **Life of Authorization.** Unless otherwise provided in this permit, all the terms and conditions of this permit shall remain effective for so long as the permit remains in effect or for so long as any use or construction authorized by this permit exists, whichever is longer.
- H. **Commission Jurisdiction.** Any area subject to the jurisdiction of the San Francisco Bay Conservation and Development Commission under either the McAteer-Petris Act or the Suisun Marsh Preservation Act at the time the permit is granted or thereafter shall remain subject to that jurisdiction notwithstanding the placement of any fill or the implementation of any substantial change in use authorized by this permit. Any area not subject to the jurisdiction of the San Francisco Bay Conservation and Development Commission that becomes, as a result of any work or project authorized in this permit, subject to tidal action shall become subject to the Commission's "bay" jurisdiction.
- I. **Changes to the Commission's Jurisdiction as a Result of Natural Processes.** This permit reflects the location of the shoreline of San Francisco Bay when the permit was issued. Over time, erosion, avulsion, accretion, subsidence, relative sea level change, and other factors may change the location of the shoreline, which may, in turn, change the extent of the Commission's regulatory jurisdiction. Therefore, the issuance of this permit does not guarantee that the Commission's jurisdiction will not change in the future.
- J. **Violation of Permit May Lead to Permit Revocation.** Except as otherwise noted, violation of any of the terms of this permit shall be grounds for revocation. The Commission may revoke any permit for such violation after a public hearing held on reasonable notice to the permittee(s) or their assignees if the permit has been effectively assigned. If the permit is revoked, the Commission may determine, if it deems appropriate, that all or part of any fill or structure placed pursuant to this permit shall be removed by the permittee(s) or their assignees if the permit has been assigned.
- K. **Should Permit Conditions Be Found to be Illegal or Unenforceable.** Unless the Commission directs otherwise, this permit shall become null and void if any term, standard condition, or special condition of this permit shall be found illegal or unenforceable through the application of statute, administrative ruling, or court determination. If this permit becomes null and void, any fill or structures placed in reliance on this permit shall be subject to removal by the permittee(s) or their assignees if the permit has been assigned to the extent that the Commission determines that such removal is appropriate. Any uses authorized shall be terminated to the extent that the Commission determines that such uses should be terminated.
- L. **Permission to Conduct Site Visit.** The permittee(s) shall grant permission to any member of the Commission's staff to conduct a site visit at the subject property during and after construction to verify that the project is being and has been constructed in

compliance with the authorization and conditions contained herein. Site visits may occur during business hours without prior notice and after business hours with 24-hour notice.

- M. **Abandonment.** If, at any time, the Commission determines that the improvements in the Bay authorized herein have been abandoned for a period of two years or more, or have deteriorated to the point that public health, safety or welfare is adversely affected, the Commission may require that the improvements be removed by the permittee(s), its assignees or successors in interest, or by the owner of the improvements, within 60 days or such other reasonable time as the Commission may direct.
- N. **In-Kind Repairs and Maintenance.** Any in-kind repair and maintenance work authorized herein shall not result in an enlargement of the authorized structural footprint and shall only involve construction materials approved for use in San Francisco Bay. Work shall occur during periods designated to avoid impacts to fish and wildlife. The permittee(s) shall contact Commission staff to confirm current restricted periods for construction.