

Introduction

This section describes recent changes to the existing environmental conditions and regulatory setting of the Project area, summarizes the unchanged affected environment, and describes changed environmental effects related to vegetation and wetlands for the Project. This section contains a review and update of the 1995 DEIR/EIS vegetation and wetlands impact assessment, incorporated by reference in the 2001 FEIR. The vegetation and wetlands impacts of the Project were analyzed most recently in the 2001 FEIS, which also served as a basis for this analysis.

The 2001 FEIR and 2001 FEIS concluded that implementing Alternative 1 or 2 would result in losses of riparian and permanent pond habitats and of upland and agricultural habitats. Losses in acreages of these jurisdictional wetland habitat types on the Reservoir Islands would be offset by creation of similar vegetation types on the Habitat Islands as described in the Draft Habitat Management Plan (HMP); therefore, these losses were considered less than significant.

The HMP was developed to describe how the Habitat Islands will be managed to offset Project impacts on state-listed Threatened species, wintering waterfowl, and jurisdictional wetlands. Land management practices to benefit other wildlife species were also incorporated into the plan. The HMP was developed by DFG and Jones & Stokes, in consultation with the State Water Board and the Project applicant. Representatives from the California Waterfowl Association, Ducks Unlimited, and the Contra Costa County Fish and Wildlife Committee were also consulted to resolve technical issues. As outlined in the HMP, the HMP team designed island habitats, habitat juxtaposition, and habitat management criteria to achieve the following goal, which are listed and described below, in order of descending priority:

- **Compensation goals.** Compensate for Project impacts on species listed as Threatened or Endangered under the California Endangered Species Act; wintering waterfowl habitat; and jurisdictional wetlands, including riparian habitats. Compensation goals must be achieved to offset significant Project impacts.
- **Species goals.** Without compromising compensation goals, implement land management practices to provide the greatest benefit to upland wildlife species; enhance breeding habitat for waterfowl; roosting habitat for Greater

Sandhill Crane; nesting habitat for Swainson's hawk; and provide potential habitats for other special-status species. Species goals should be implemented to enhance overall wildlife values associated with compensation habitats.

- **Other important goals.** Implement best land management practices that do not detract from compensation and priority species goals to enhance habitat conditions for other important species or species groups; such as migratory shorebirds; nongame water birds; and species associated with riparian habitats.

Implementing the HMP under Alternative 1 or 2 would result in a beneficial increase in freshwater marsh and exotic marsh habitats and the beneficial cumulative impact of an increase in wetland and riparian habitats in the Delta.

Under Alternative 1, 2, or 3, construction of Project facilities (e.g., siphon and pump stations or recreation facilities) and levee improvements on sites occupied by special-status plants could result in the loss of special-status plants; this was considered a significant impact. Avoidance measures were recommended to reduce this impact to a less-than-significant level.

Under Alternative 3, the loss of jurisdictional wetlands on Reservoir Islands, including riparian, marsh, and pond habitats, were considered a significant impact. Although a limited amount of habitat would be created in the NBHA to partially offset this impact, the Project applicant would need to develop and implement an offsite mitigation plan to reduce this impact to a less-than-significant level.

Under the No- Project Alternative, impacts would result primarily from conversion of fallow, herbaceous upland, riparian, and wetland habitats to agricultural use. In contrast to implementing any of the Project alternatives, implementing the No-Project Alternative would decrease the diversity of vegetation types on the four Project islands. Implementing the No-Project Alternative would not result in direct disturbance of special-status plants from construction of facilities as described for the Project alternatives. However, as increasing land subsidence rates and flood risks become critical to levee stability over time, improvements to perimeter levees under the No-Project Alternative could adversely affect known populations of plants.

Summary of Impacts

Table 4.6-1 provides a summary and comparison of the impacts and mitigation measures for vegetation and wetlands from the 2001 FEIR, 2001 FEIS, and this Place of Use EIR.

Table 4.6-1. Comparison between Delta Wetlands Project 2010 Place of Use EIR and 2001 FEIR and 2001 FEIS Impacts and Mitigation Measures for Vegetation and Wetlands

2001 FEIS and 2001 FEIR Impacts and Mitigation Measures	Differences between 2010 Place of Use EIR and 2001 FEIR and 2001 FEIS Impacts and Mitigation Measures
ALTERNATIVES 1 AND 2	
<p>Impact G-1: Increase in Freshwater Marsh and Exotic Marsh Habitats (B) Mitigation: No mitigation is required.</p>	<p>Impact VEG-1: Increase in Freshwater Marsh and Exotic Marsh Habitats (B and LTS) Mitigation: No mitigation is required.</p>
<p>Impact G-2: Loss of Riparian and Permanent Pond Habitats (LTS) Mitigation: No mitigation is required.</p>	<p>Impact VEG-2: Loss of Riparian and Permanent Pond Habitats (LTS) Mitigation: No mitigation is required.</p>
<p>Impact G-3: Loss of Upland and Agricultural Habitats (LTS) Mitigation: No mitigation is required.</p>	<p>Impact VEG-3: Loss of Upland and Agricultural Habitats (LTS) Mitigation: No mitigation is required.</p>
	<p>Impact VEG-4: Consistency with Local Policies or Ordinances Protecting Biological Resources (NI) Mitigation: No mitigation is required.</p>
	<p>Impact VEG-5: Conflict with Provisions of an Adopted HCP/NCCP (NI) Mitigation: No mitigation is required.</p>
	<p>Impact VEG-6: Introduction and Spread of Invasive Plants (LTS) Mitigation: No mitigation is required.</p>
<p>Impact G-4: Loss of Special-Status Plants (LTS-M) Mitigation Measure G-1: Site Project Facilities to Avoid Special-Status Plant Populations Mitigation Measure G-2: Protect Special- Status Plant Populations from Construction and Recreational Activities Mitigation Measure G-3: Develop and Implement a Special-Status Plant Species Mitigation Plan</p>	<p>Impact VEG-7: Loss of Special-Status Plants (LTS-M) Mitigation Measure VEG-MM-1: Site Project Facilities to Avoid Special-Status Plant Populations Mitigation Measure VEG-MM-2: Protect Special-Status Plant Populations from Construction and Recreation Activities Mitigation Measure VEG-MM-3: Develop and Implement a Special-Status Plant Species Monitoring and Mitigation Plan</p>
ALTERNATIVE 3	
<p>Impact G-1: Increase in Freshwater Marsh and Exotic Marsh Habitats (B) Mitigation: No mitigation is required.</p>	<p>Impact VEG-1: Increase in Freshwater Marsh and Exotic Marsh Habitats (B and LTS) Mitigation: No mitigation is required.</p>
<p>Impact G-2: Loss of Riparian and Permanent Pond Habitats (LTS) Mitigation: No mitigation is required.</p>	<p>Impact VEG-2: Loss of Riparian and Permanent Pond Habitats (LTS) Mitigation: No mitigation is required.</p>
<p>Impact G-3: Loss of Upland and Agricultural Habitats (LTS) Mitigation: No mitigation is required.</p>	<p>Impact VEG-3: Loss of Upland and Agricultural Habitats (LTS) Mitigation: No mitigation is required.</p>
	<p>Impact VEG-4: Consistency with Local Policies or Ordinances Protecting Biological Resources (NI) Mitigation: No mitigation is required.</p>
<p>Impact G-5: Loss of Jurisdictional Wetlands on Reservoir Islands (LTS-M) Mitigation Measure G-4: Develop and Implement an Offsite Mitigation Plan</p>	<p>Impact VEG-8: Loss of Jurisdictional Wetlands on Reservoir Islands (LTS-M) Mitigation Measure VEG-MM-4: Develop and Implement an Off-Site Mitigation Plan</p>

2001 FEIS and 2001 FEIR Impacts and Mitigation Measures	Differences between 2010 Place of Use EIR and 2001 FEIR and 2001 FEIS Impacts and Mitigation Measures
<p>Impact G-6: Loss of Special-Status Plants (LTS-M)</p> <p>Mitigation Measure G-1: Site Project Facilities to Avoid Special-Status Plant Populations</p> <p>Mitigation Measure G-2: Protect Special- Status Plant Populations from Construction and Recreational Activities</p> <p>Mitigation Measure G-3: Develop and Implement a Special-Status Plant Species Mitigation Plan</p>	<p>Impact VEG-7: Loss of Special-Status Plants (LTS-M)</p> <p>Mitigation Measure VEG-MM-1: Site Project Facilities to Avoid Special-Status Plant Populations</p> <p>Mitigation Measure VEG-MM-2: Protect Special-Status Plant Populations from Construction and Recreation Activities</p> <p>Mitigation Measure VEG-MM-3: Develop and Implement a Special-Status Plant Species Monitoring and Mitigation Plan</p>
<p>Note: SU = Significant and unavoidable; LTS = Less than significant; LTS-M = Less than significant with mitigation; B = Beneficial; NI = No impact.</p>	

Summary of Changes, New Circumstances, and New Information

There have been a variety of changes and new information, but this has not resulted in a substantial increase in the severity of previously identified effects on vegetation and wetlands. Specifically these changes include:

- An increase in the amount of emergent marsh habitat that is used as grazed land on Holland Tract due to temporary fallowing;
- New information on special-status plants in the Delta; and
- New information on invasive species and their control.

A new impact has been identified for invasive species and their control to ensure this resource topic is addressed during Project implementation. A substantial increase in the severity of impacts is not anticipated because an updated final HMP is still expected to mitigate Project effects.

Substantial Changes

Since the 2001 FEIR and 2001 FEIS were completed, there have been no substantial changes in the Project resulting in new significant effects or substantial increase in the severity of effects on vegetation and wetlands. The environmental setting remains nearly identical to the previous document though there has been an increase in the amount of emergent marsh habitat that is used as grazed land on Holland Tract due to temporary fallowing. This is described within this chapter.

New Circumstances

Since the 2001 FEIR and 2001 FEIS were completed, there have been no substantial new circumstances resulting in new significant effects or substantial increase in the severity of effects on vegetation and wetlands. The circumstances surrounding the Project are similar to the previous document, though there have been some regulatory changes, a new tree ordinance and the development of several nearby Habitat Conservation Plans.

New Information

Changes to the existing conditions have occurred since the 2001 FEIR and 2001 FEIS. While information in the 2001 FEIR and 2001 FEIS was current at that time, several changes in agricultural land use and corresponding vegetation conditions have occurred in the years since. Subsequent field survey efforts were completed in 2001, 2002, and 2008 for jurisdictional wetlands, special-status plants, and invasive species. The type and amounts of jurisdictional wetlands have been delineated and verified by the Corps on all the islands since the 2001 FEIR and 2001 FEIS.

Additionally, special-status plant occurrences have been identified on the water side of island levees, and on the interior of Webb Tract. The types and distribution of crops and distribution of wetlands on the islands have changed, with the largest change occurring on Holland Tract.

New information available since the 2001 FEIR and 2001 FEIS includes changes to the land use on Holland Tract and a subsequent increase in the amount of emergent marsh habitat that is used as grazed land; new information on special status plants in the Delta, and new information on invasive species and their control.

Affected Environment

This section discusses changes in the existing conditions or regulatory setting since the 2001 FEIR and 2001 FEIS and describes the vegetation and wetland resources on the four Project islands. This section is based on information gathered for the 1995 DEIR/EIS, the 2001 FEIR and 2001 FEIS, and supplemental survey efforts completed since 2001. Several changes in agricultural land use and vegetation conditions on the islands have occurred as a result of land management decisions (primarily decisions made in anticipation of Project implementation) since 2001. A detailed description of the methods used to identify baseline conditions and the results of vegetation and wetland studies were presented in the 2001 FEIR and 2001 FEIS in the “Vegetation and Wetlands” analysis, and Appendices G1–G5 of the 2001 FEIS. This section summarizes previous methods and provides a summary of updated methods, where relevant, for vegetation and wetland resources.

Sources of Information

Information regarding vegetation types (hereafter referred to as habitat types for the purposes of this section) on the Project islands was collected in 1988 using a combination of aerial photograph interpretation and verification of mapped habitat types during field surveys (see Chapter 3G and Table 3G-3 in the 2001 FEIS). Additional field surveys were completed by Jones & Stokes in 2001 and 2008, and updated habitat mapping was completed in 2008. Special-status plant populations on the Project islands were documented during botanical surveys conducted in April and August–September 1988 and in August 1994 (see Chapter 3G and Table 3G-2 in the 2001 FEIS). Additional surveys for special-status plants were completed in 2002 by DWR (California Department of Water Resources 2003). Information pertaining to wetlands on the Project islands initially was collected during the 1994 wetland delineation conducted by the Natural Resources Conservation Service (NRCS), Corps, EPA, and USFWS (see Chapter 3G and Appendix G5 in the 2001 FEIS) and later was updated by Jones & Stokes (Jones & Stokes 2001) and verified by the Corps in 2002. Jones & Stokes completed additional wetland mapping in 2008 using a combination of aerial photograph interpretation and field survey.

The key sources of data and information used to assess changes in the environmental setting following the publication of the 2001 FEIR and 2001 FEIS that pertain to vegetation and wetlands are listed below.

- A California Natural Diversity Database (CNDDDB) records search for the Jersey Island, Bouldin Island, Birds Landing, Rio Vista, Isleton, Thornton, Antioch North, Antioch South, Terminous, Brentwood, Woodward Island, and Holt U.S. Geological Survey (USGS) 7.5-minute quadrangles (California Natural Diversity Database 2008).
- The California Native Plant Society (CNPS) 2008 online *Inventory of Rare and Endangered Plants of California* (California Native Plant Society 2008).
- A USFWS list (dated July 15, 2008) of Endangered, Threatened, and candidate plant species for the Jersey Island and Bouldin Island USGS 7.5-minute quadrangles and San Joaquin and Contra Costa Counties (U.S. Fish and Wildlife Service 2008).
- Preliminary Delineation of Waters of the United States for the Delta Wetlands Project (Jones & Stokes 2001: 27–30).
- U.S. Army Corps of Engineers Verification Letter 190109804 issuing a jurisdictional determination for the Delta Wetlands Project (U.S. Army Corps of Engineers 2002)
- The San Joaquin County Multi Species Habitat Conservation and Open Space Plan (SJMSCP) (San Joaquin Council of Governments 2000: 2-16–2-32).
- The Contra Costa County General Plan (Contra Costa County 2005: 8-12–8-16).

- The Sacramento/San Joaquin Delta Wildlife Habitat Protection & Restoration Plan (Madrone & Associates 1980: 8-23–8-31)
- Jones & Stokes file information.

Regulatory Setting

The following section describes the regulations affecting vegetation and wetlands relative to the Project.

Federal

Endangered Species Act

The federal Endangered Species Act (ESA) protects fish and wildlife species, and their habitats identified by the USFWS and NMFS as Threatened or Endangered. *Endangered* refers to species, subspecies, or distinct population segments that are in danger of extinction through all or a significant portion of their range; *Threatened* refers to species, subspecies, or distinct population segments are likely to become endangered in the near future. The ESA is administered by the USFWS and NMFS. In general, NMFS is responsible for protection of ESA-listed marine species and anadromous fishes, whereas other listed species are under USFWS jurisdiction.

Endangered Species Act Prohibitions (Section 9)

Section 9 of ESA prohibits the take of any fish or wildlife species listed under ESA as endangered. Take of Threatened species is also prohibited under Section 9, unless otherwise authorized by federal regulations. *Take*, as defined by ESA, means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” (Section 3 of the ESA; 16 USC Section 1532(19)). *Harm* is defined by regulation as “any act that kills or injures the species, including significant habitat modification.” (50 CFR Sections 17.3; 222.102). In addition, Section 9 prohibits removing, digging up, cutting, and maliciously damaging or destroying federally listed plants on sites under federal jurisdiction. Section 9 does not prohibit take of federally listed plants on sites not under federal jurisdiction. If the Project may result in take prohibited by Section 9, this take would need to be authorized through ESA Sections 7 or 10 (providing for the issuance of “incidental take” permits).

For plants listed as endangered under the ESA, Section 9(a)(2) prohibits their import or export from the United States. Section 9(a)(2) also prohibits acts to remove, cut, dig up, damage, or destroy an endangered plant species in nonfederal areas in knowing violation of any state law or in the course of criminal trespass. Candidate species and species that are proposed, or under petition for listing, receive no protection under Section 9.

Endangered Species Act Consultation Process (Section 7)

Section 7 of the ESA mandates that all federal agencies consult with USFWS, and NMFS if they determine that a proposed project may affect a listed species or its habitat. The purpose of consultation with USFWS and NMFS is to ensure that the federal agencies' actions do not jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat for listed species.

If a proposed project “may affect” a listed species or designated critical habitat, the lead agency is required to prepare a BA evaluating the nature and severity of the expected effect. The BA is prepared for the proposed action, and is submitted to USFWS and/or NMFS to initiate consultation. In response to a BA, USFWS and/or NMFS issues a BO, with a determination that the proposed action either:

- may jeopardize the continued existence of one or more listed species (jeopardy finding) or result in the destruction or adverse modification of critical habitat (adverse modification finding) or
- will not jeopardize the continued existence of any listed species (no jeopardy finding) or result in adverse modification of critical habitat (no adverse modification finding).

The BO issued by USFWS and/or NMFS may stipulate discretionary “reasonable and prudent” conservation measures. If the proposed action would not jeopardize a listed species, USFWS and/or NMFS may issue an incidental take statement to authorize the proposed activity and may include appropriate measures to offset the impacts of take.

Past Project ESA Compliance

In 1997, the USFWS and NMFS issued no-jeopardy BOs regarding effects of the Project on federally listed fish and wildlife species. No federally listed plants were addressed in the BO because none were present.

Clean Water Act

The CWA was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. The CWA serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands.

The CWA empowers the EPA to set national water quality standards and effluent limitations and includes programs addressing both *point-source* and *nonpoint-source* pollution. Point-source pollution is pollution that originates or enters surface waters at a single, discrete location, such as an outfall structure or an excavation or construction site. Nonpoint-source pollution originates over a broader area and includes urban contaminants in stormwater runoff and sediment loading from upstream areas. The CWA operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by

a permit; permit review is the CWA's primary regulatory tool. The following sections provide details on specific sections of the CWA.

Permits for Fill Placement in Waters and Wetlands (Section 404)

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the United States. *Waters of the United States* refers to oceans, bays, rivers, streams, lakes, ponds, and wetlands, including any or all of the following:

- areas within the ordinary high water mark of a stream, including nonperennial streams with a defined bed and bank and any stream channel that conveys natural runoff, even if it has been realigned; and
- seasonal and perennial wetlands, including coastal wetlands.

On January 9, 2001, the U.S. Supreme Court ruled in *Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers* (SWANCC) (121 S.Ct. 675, 2001) that the Corps no longer has jurisdiction or regulates isolated wetlands (i.e., wetlands that have no hydrologic connection with waters of the United States).

Applicants must obtain a permit from the Corps for all discharges of dredged or fill material into waters of the United States, including adjacent wetlands, before proceeding with a proposed activity. The Corps may issue either an individual permit evaluated on a case-by-case basis or a general permit evaluated at a program level for a series of related activities.

Compliance with CWA Section 404 requires compliance with several other environmental laws and regulations. The Corps cannot issue an individual permit or verify the use of a general permit until the requirements of NEPA, the ESA, and the NHPA have been met. In addition, the Corps cannot issue or verify any permit until a water quality certification or a waiver of certification has been issued by the state pursuant to CWA Section 401.

Wetland Delineations on Agricultural Lands

In 1994, the Departments of Agriculture, Interior and Army and the EPA entered into a Memorandum of Agreement (MOA) to streamline the wetland delineation process on agricultural lands, to promote consistency between the CWA and the Food Security Act (FSA), and to provide predictability and simplification for U.S. Department of Agriculture (USDA) program participants. The 1994 MOA determined that the NRCS would be the lead agency for wetland delineations on agricultural lands and that delineations made by NRCS would be accepted for CWA purposes.

In January 2005, the NRCS and Corps withdrew from the 1994 MOA. It was replaced by the "Joint Guidance on Conducting Wetland Delineations for the Food Security Act of 1985 and Section 404 of the Clean Water Act," issued February 25, 2005 (2005 MOA). Under the 2005 MOA, NRCS is responsible for wetland determinations for participants in USDA programs, and the Corps is responsible for wetland determinations for CWA purposes, and both will inform landowners that their determinations are not necessarily valid for both purposes.

Permits for Stormwater Discharge (Section 402)

CWA Section 402 regulates construction-related stormwater discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program, administered by EPA. In California, the State Water Board is authorized by EPA to oversee the NPDES program through the RWQCBs (see the related discussion under “Porter-Cologne Water Quality Control Act” below). The Project area is under the jurisdiction of the Central Valley RWQCB.

NPDES permits are required for projects that disturb more than 1 acre of land. The NPDES permitting process requires the applicant to file a public notice of intent (NOI) to discharge stormwater and to prepare and implement a stormwater pollution prevention plan (SWPPP). The SWPPP includes a site map and a description of proposed construction activities. In addition, it describes the best management practices (BMPs) that would be implemented to prevent soil erosion and discharge of other construction-related pollutants (e.g., petroleum products, solvents, paints, cement) that could contaminate nearby water resources. Permittees are required to conduct annual monitoring and reporting to ensure that BMPs are implemented correctly and effective in controlling the discharge of stormwater-related pollutants.

Water Quality Certification (Section 401)

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401.

Rivers and Harbors Act Section 10

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Corps for the construction of any structure in or over any navigable waters of the United States. Tidal waterways in the Delta are considered navigable waters. The law applies to any dredging, excavation, filling, or any other modification of a navigable water of the United States, as well as to all structures, including bank protection (e.g., riprap) and mooring structures, such as those in a marina. Structures or work outside the limits defined for navigable waters of the United States require a Section 10 permit if the structure or work affects the course, location, or condition of the water body.

Executive Order 11990: Protection of Wetlands

EO 11990, signed May 24, 1977, directs all federal agencies to refrain from assisting in or giving financial support to projects that encroach on publicly or privately owned wetlands. It further requires that federal agencies support a

policy to minimize the destruction, loss, or degradation of wetlands. Such a project (that encroaches on wetlands) may not be undertaken unless the agency has determined that: (1) there are no practicable alternatives to such construction, (2) the project includes all practicable measures to minimize harm to wetlands that would be affected by the project, and (3) the impact will be minor.

Executive Order 13112: Prevention and Control of Invasive Species

EO 13112, signed February 3, 1999, directs all federal agencies to prevent and control introduction of invasive species in a cost-effective and environmentally sound manner. The EO established the National Invasive Species Council (NISC), which is composed of federal agencies and departments and a supporting Invasive Species Advisory Committee (ISAC) composed of state, local, and private entities. The NISC and ISAC prepared a national invasive species management plan (National Invasive Species Council 2001) that recommends objectives and measures to implement the EO and to prevent the introduction and spread of invasive species. The EO requires consideration of invasive species in NEPA analyses, including their identification and distribution, their potential impacts, and measures to prevent or eradicate them.

State

California Endangered Species Act

The California Endangered Species Act (CESA) prohibits the take of Endangered and Threatened species; however, habitat destruction is not included in the state's definition of *take* (CA Fish & Game Code Section 86; 2080). Section 2090 of CESA requires state agencies to comply with endangered species protection and recovery and to promote conservation of these species. DFG administers CESA and authorizes take (except for species designated as fully protected) through a variety of sections in the CA Fish & Game Code. Section 2080 of the act prohibits the take of Endangered and Threatened species, except as otherwise provided under Fish and Game Code Sections 2080.1 (if the species is listed under both ESA and CESA and take authorization has already been provided through the ESA, DFG can write a consistency determination where it determines that the avoidance, minimization, and compensation measures are consistent with the provisions of CESA), 2081(b) (where DFG makes findings that, among other things, the impacts of take are minimized and fully mitigated and that the take would not lead to jeopardy) and 2835 (as part of a Natural Communities Conservation Planning Act (NCCPA), where it has been covered under an approved Natural Communities Conservation Plan). Unlike its Federal counterpart, CESA also applies the take prohibitions to species petitioned for listing (state candidates). DFG can adopt a federal biological opinion as a state biological opinion under California Fish and Game Code, Section 2095. In the case of rare plant species, CESA defers to the California Native Plant Protection Act of 1977 (discussed below).

Past Project California Endangered Species Act Compliance

DFG issued a no-jeopardy opinion in 1998 on Project effects on state-listed fish and wildlife species. No state listed plant species were included in the permit because none were present; however, the permit did include measures to survey for special-status plants and avoid, minimize and mitigate effects should they occur.

California Native Plant Protection Act

California Fish and Game Code Sections 1900–1913, also known as the California Native Plant Protection Act (CNPPA) prohibits importation of rare and endangered plants into California, take of rare and endangered plants, and sale of rare and endangered plants. The CESA defers to the CNPPA, which ensures that state-listed plant species are protected when state agencies are involved in projects subject to CEQA. In this case, plants listed as rare under the California Native Plant Protection Act are not protected under CESA but rather under CEQA.

California Fish and Game Code

Under the California Fish and Game Code, the DFG provides protection from take for a variety of species. The DFG also protects streams, water bodies, and riparian corridors through the Streambed Alteration Agreement process under Sections 1601 to 1606 of the California Fish and Game Code. The Fish and Game Code states that it is “unlawful to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake” without notifying the DFG, incorporating necessary mitigation, and obtaining a Streambed Alteration Agreement. DFG’s jurisdiction extends to the top of banks and often includes the outer edge of riparian vegetation canopy cover.

Porter-Cologne Water Quality Control Act

Water Code Section 13260 requires “any person discharging waste, or proposing to discharge waste, in any region that could affect the waters of the state to file a report of discharge (an application for waste discharge requirements).” Under the Porter-Cologne definition, the term *waters of the state* is defined as “any surface water or groundwater, including saline waters, within the boundaries of the state.” Although all waters of the United States that are within the borders of California are also waters of the state, the converse is not true (i.e., in California, waters of the United States represent a subset of waters of the state). Thus, California retains authority to regulate discharges of waste into any waters of the state, regardless of whether the Corps has concurrent jurisdiction under Section 404.

Local

Bacon and Bouldin islands are located within San Joaquin County and Webb and Holland Tracts are located in Contra Costa County. The local regulations established by San Joaquin and Contra Costa Counties that pertain to the islands that fall within their respective boundaries are described below.

San Joaquin County Multi-Species Habitat and Open Space Conservation Plan

The SJMSCP was adopted in 2001 and covers all of San Joaquin County (available: www.sjco.org). Permit holders under the SJMSCP include the county; the cities of Escalon, Lodi, Manteca, Stockton, Lathrop, Ripon, and Tracy; the SJCOG; and others. The SJMSCP is designed to provide a regional approach to mitigating development impacts on the 97 listed and non-listed plant, fish, and wildlife species covered by the SJMSCP and compensating for the conversion of open space to non-open space uses. The plan provides compensation for habitat losses through collection of fees that are used to preserve habitats elsewhere. However, the Project is not a covered activity and is not subject to the SJMSCP.

San Joaquin County Tree Ordinance

San Joaquin County's natural resources regulations contain provisions to preserve county tree resources (San Joaquin County 2008). The removal of a native oak, heritage oak tree, or historical tree requires an approved improvement plan application (Chapter 9-1505.3), which requires replacement of the tree subject to requirements described in Chapter 9-1505.4. These provisions do not cover horticultural or orchard trees proposed for removal. Native oaks are defined as valley oaks with stem diameters of 15.2–81.3 centimeters (6–32 inches) for single-trunk trees and a minimum combined trunk diameter of 20.3 centimeters (8 inches) for multi-trunk trees and interior live oaks or blue oaks with stem diameters of 10.2–81.3 centimeters (4–32 inches) for single-trunk trees and a minimum combined diameter of 15.2 centimeters (6 inches) for multi-trunk trees. Heritage oaks are defined as native oaks with a single-trunk diameter of 81.3 centimeters (32 inches) or more (all stem diameters are measured 1.4 meters [4.5 feet] above the average ground elevation of the tree). Historical trees are defined as any trees or groups of trees given special recognition by the San Joaquin County Planning Commission because of size, age, location, or history. The Project is subject to the ordinance.

East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan

The East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (ECCCHCP/NCCP) was adopted in January 2008. Permit

holders under the ECCCHCP/NCCP include the County; the cities of Brentwood, Clayton, Oakley, and Pittsburg; and Contra Costa County Flood Control and Water Conservation District and the East Bay Regional Park District. The ECCCHCP/NCCP is designed to provide a regional approach to mitigating housing, transportation, and growth impacts on the 28 covered species. The plan provides compensation for habitat losses through collection of fees that are used to preserve and restore habitats and natural communities in the County as well as a framework to pursue other conservation efforts in the County. It does not include Delta lands and therefore does not affect the Project.

Contra Costa General Plan

The policies of the Contra Costa County General Plan most relevant to vegetation and wetlands on the Project islands are summarized below (Contra Costa County 2005: 8-15–16).

- Significant trees and natural vegetation shall generally be preserved.
- Areas determined to contain significant ecological resources, particularly those containing endangered species, shall be maintained in their natural state and carefully regulated to the maximum legal extent.
- Any development located or proposed within significant ecological resource area shall ensure the resource is protected.
- The county shall utilize performance criteria and standards which seek to regulate uses in and adjacent to significant ecological resources.
- Natural woodlands shall be preserved to the maximum extent possible in the course of land development.
- The critical ecological and scenic characteristics of rangelands, woodlands, and wildlands shall be recognized and protected.
- Existing vegetation, both native and nonnative, and wildlife habitat areas shall be maintained in the major open space areas sufficient for the maintenance of a healthy balance of wildlife populations.
- The ecological value of wetlands areas, especially the salt marshes and tidelands of the bay and delta, shall be recognized. Existing wetlands in the county shall be identified and regulated. Restoration of degraded wetland areas shall be encouraged and supported whenever possible.
- The planting of native trees and shrubs shall be encouraged in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native wildlife, and ensure that a maximum number and variety of well-adapted plants are sustained in urban areas.
- The county shall strive to identify and conserve remaining upland habitat areas that are adjacent to wetlands and are critical to the survival and nesting of wetland species.
- The county shall protect marshes, wetlands, and riparian corridors from the effects of potential industrial spills.

- Efforts shall be made to identify and protect the county’s mature native oak, bay, and buckeye trees.

Contra Costa County Tree Protection and Preservation Ordinance

The main components of the Contra Costa County Tree Protection and Preservation Ordinance are summarized below (Contra Costa County 2008).

- A tree permit is required for the removal of 6.5-inch diameter at breast height (dbh) oak trees in or adjacent to riparian, foothill woodland, or oak savanna areas or those that form part of a stand of four or more trees.
- A tree permit is required to trench, grade, fill within the dripline of protected oak trees, or use fencing. Accidental destruction of the tree mandates replacement with an equivalent tree.
- Trees designated as heritage trees may not be removed without a permit issued if the tree is a nuisance. Special construction techniques are required within 12 feet of the trunk or within the dripline.

Environmental Setting

Nineteen habitat types in seven major categories were designated in a classification scheme designed specifically for the Project islands (Table 4.6-2). Habitat types as described in the 2001 FEIR and 2001 FEIS were mapped on the Project islands in December 1987. These same habitat types were used in the 2008 habitat update.

Table 4.6-2. Classification of Habitat Types on the Project Islands

Habitat Group	Code	Habitat Type	Comments	Dominant or Typical Plant Species
Riparian	R1	Cottonwood-willow woodland	Cottonwood and willow trees	Fremont cottonwood, red willow, yellow willow
	R2	Great Valley willow scrub	Willow shrubs and trees	Red willow, yellow willow, sandbar willow, Goodding’s willow
Marsh	M1	Freshwater marsh	Inside islands	Cattail, bulrush, yellow nutsedge, pondweed, buttonbush
	M3	Exotic marsh ^a	Dense upland and wetland weeds (sometimes dry in summer)	Annual smartweed, peppergrass, amaranth, wild radish, nettles, cocklebur, watergrass
Herbaceous Upland	H1	Annual grassland	True uplands and sand hill	Wild oats, barley, rip-gut brome, Italian rye-grass, legumes
	H2	Exotic perennial grassland ^a	Mixed weeds in fields and on levee slope	Bermuda grass, perennial ryegrass, Johnson grass

Habitat Group	Code	Habitat Type	Comments	Dominant or Typical Plant Species
Agriculture	A1	Grain and seed crops		Corn, wheat, sunflowers, potatoes
	A2	Perennial crops		Asparagus, vineyards
	A3	Pasture	Permanently grazed	Tall fescue, orchard grass, canary grass, ryegrass, legumes
	A4	Waterfowl food crops	Managed wetlands	Smartweed, watergrass, bulrush
	A5	Fallow	Short-term fallow fields	Yellow star-thistle, Russian thistle, houseweed, lamb's quarter, telegraph weed
Open Water	O1	Canals and ditches	Permanent water	Dallis grass, knot grass, Himalayan blackberry, smartweed
	O2	Permanent ponds	Still water	Water hyacinth, water primrose, azolla
Developed	D1	Structures	Buildings and marinas	Largely unvegetated
	D2	Paving and exposed earth	Roads, landfills, and unvegetated exposed areas	Largely unvegetated

^a Exotic habitats are dominated by weedy plant species that are not native to the Delta. On Holland Tract these areas are sometimes synonymous with the agricultural category pasture.

Table 4.6-3. Special-Status Plants Identified as Potentially Occurring on the Project Islands

Common and Scientific Name ^a	Legal Status ^b Federal/State/ CNPS	Geographic Distribution/Floristic Province	Habitat Requirements	Blooming Period	Likelihood of Occurrence
Bristly sedge <i>Carex comosa</i>	-/-/2.1	Inner North Coast Ranges, High Cascade Range, Central Valley, northern Central Coast, San Francisco Bay, San Bernardino mountains, Modoc Plateau	Coastal prairie, marshes and swamps (lake margins), valley and foothill grassland; below 625 meters (2,050 feet)	May–Sep	Known to occur in the blowout ponds on the northern side of Webb Tract.
Brown fox sedge <i>Carex vulpinoidea</i>	-/-/2.2	Scattered occurrences from Siskiyou to Los Angeles Counties.	Freshwater marshes and swamps, riparian woodland; 30–1,200 meters (98–3,937 feet)	May–Jun	Known to occur on the western shore of Bacon Island.
Slough thistle <i>Cirsium crassicaule</i>	-/-/1B.1	Known from the Delta and San Joaquin Valley in Kings, Kern, San Joaquin Counties	Shallow water or saturated soils in chenopod scrub, marshes, swamps, and riparian scrub; 3–100 meters`	May–Aug	Not known to occur in the Project area
Hoover’s Cryptantha <i>Cryptantha hooveri</i>	-/-/1A	Known historically from Alameda, Contra Costa, Madera, Merced, San Joaquin, and Stanislaus Counties	Inland dunes, sandy soils in valley and foothill grassland; 9–150 meters (29–492 feet)	Apr–May	Not known to occur in the Project area
Contra Costa wallflower <i>Erysimum capitatum</i> var. <i>angustatum</i>	E/E/1B.1	Known only from Contra Costa County	Inland dunes; 3–20 meters (10–66 feet)	Mar–Jul	Not known to occur in the Project area.
Delta button-celery <i>Eryngium racemosum</i>	-/E/1B.1	Northern San Joaquin Valley, adjacent Sierra Nevada foothills	Riparian scrub in vernal mesic clay depressions; 3–30 meters	Jun–Sep	Not known to occur in the Project area.
Bogg’s Lake hedge-hyssop <i>Gratiola heterosepala</i>	-/-/1B.1	Inner North Coast Ranges, central Sierra Nevada foothills, Sacramento Valley, Modoc Plateau, and elsewhere.	Shallow water along the margins of lakes, marshes, swamps, and vernal pools; 10–2,375 meters	Apr–Aug	Not known to occur in the Project area
Rose mallow <i>Hibiscus lasiocarpus</i>	-/-/2.2	Central and southern Sacramento Valley, deltaic Central Valley, and elsewhere in the U.S.	Freshwater marshes and swamps; below 120 meters (394 feet)	Jun–Sep	Known to occur on the shores of all Project islands
Delta tule pea <i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	-/-/1B.2	Central Valley, San Francisco Bay	Freshwater and brackish marshes and swamps; below 4 meters (13 feet)	May–Jul (uncommo nly Sep)	Known to occur near Webb and Holland Tracts

Common and Scientific Name ^a	Legal Status ^b Federal/State/ CNPS	Geographic Distribution/Floristic Province	Habitat Requirements	Blooming Period	Likelihood of Occurrence
Marsh pea <i>Lathyrus palustris</i>	-/-/2.2	Scant within widespread range throughout lowland and montane California	Freshwater marsh		Not known to occur in the Project area.
Mason's lilaeopsis <i>Lilaeopsis masonii</i>	-/R/1B.1	Southern Sacramento Valley, northeastern San Francisco Bay	Riparian scrub, brackish or freshwater marshes and swamps; below 10 meters (33 feet)	Apr–Nov	Known to occur on the shores of all Project islands
Delta mudwort <i>Limosella subulata</i>	-/-/2.1	Deltaic Central Valley with occurrences in Contra Costa, Sacramento, San Joaquin, and Solano Counties; Oregon	Marshes and swamps; below 3 meters (10 feet)	May–Aug	Known to occur on the shores of all Project islands
Antioch Dunes evening-primrose <i>Oenothera deltooides</i> ssp. <i>howellii</i>	E/E/1B.1	Known from three native occurrences in northeastern San Francisco Bay	Inland dunes; below 30 meters (98 feet)	Mar–Sep	Not known to occur in the Project area.
Eel-grass pondweed <i>Potamogeton zosteriformis</i>	-/-/2.2	Southern Inner North Coast Ranges, Central Valley, Modoc Plateau; Idaho, Oregon, Utah, Washington	Assorted freshwater marshes and swamps; below 1,860 meters (6,102 feet)	Jun–Jul	Known to occur in the vicinity of Webb Tract.
Tall woolly marbles <i>Psilocarphus brevissimus</i> var. <i>globiferus</i> (also known as <i>Psilocarphus tenellus</i> var. <i>globiferus</i>)	-/-/-	In San Francisco Bay and the Sacramento–San Joaquin Delta	Vernal pools and other seasonal wetlands 0–100 meters	Apr–May	No longer listed as a special-status plant.
Sanford's arrowhead <i>Sagittaria sanfordii</i>	-/-/1B.2	Scattered locations in Central Valley and Coast Ranges	Freshwater marshes, sloughs, canals, and other slow-moving water habitats; below 650 meters (2,132 feet)	May–Oct	Not known to occur in the Project area.
Marsh skullcap <i>Scutellaria galericulata</i>	-/-/2.2	Northern High Sierra Nevada, Modoc Plateau; Oregon	Lower montane coniferous forest, mesic meadows and seeps, marshes and swamps; below 2,100 meters (6,890 feet)	Jun–Sep	Not known to occur in the Project area.

Common and Scientific Name ^a	Legal Status ^b Federal/State/ CNPS	Geographic Distribution/Floristic Province	Habitat Requirements	Blooming Period	Likelihood of Occurrence
Side-flowering skullcap <i>Scutellaria lateriflora</i>	-/-/2.2	Northern San Joaquin Valley, east of Sierra Nevada; New Mexico, Oregon	Mesic meadows and seeps, marshes and swamps; below 500 meters (1,640 feet)	Jul-Sep	Known to occur in the vicinity of Bouldin Island
Suisun Marsh aster <i>Symphotrichum lentum</i> (formerly <i>Aster lentus</i>)	-/-/1B.2	Sacramento Valley, Central Coast, San Francisco Bay	Brackish and freshwater marshes and swamps; below 3 meters (10 feet)	May-Nov	Known to occur on the shores of all Project islands.

Notes:

^a Species indicated in bold were identified in the 2001 FEIS Table 3G-1 as having the potential to occur on the Project islands.

^b Status explanations:

Federal

E = listed as endangered under the federal Endangered Species Act.

- = no listing.

State

E = listed as endangered under the California Endangered Species Act.

R = listed as rare under the California Native Plant Protection Act (this category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation)

- = no listing.

California Native Plant Society (CNPS)

1A = List 1A species; presumed extinct in California

1B = List 1B species; Rare, Threatened, or Endangered in California and elsewhere.

2 = List 2 species; Rare, Threatened, or Endangered in California but more common elsewhere.

0.1 = seriously endangered in California.

0.2 = fairly endangered in California.

0.3 = not very endangered in California.

* = known populations believed extirpated from that County

- = no listing.

Table 4.6-4. Comparison of Waters of the United States, Including Wetlands, Identified for the 1994 and 2001 Delineations and Preliminary 2008 Delineation

Island Name	Habitat Classification	Delineated Acreage (1994)	Delineated Acreage (2001)	Preliminary Delineated Acreage ¹ (2008)	Change Since 2001 FEIS
Bacon Island	Freshwater marsh	1.0	22.37	41.37	19
	Exotic marsh	2.0	42.64	10.94	-31.70
	Cottonwood-willow woodland	0.0	5.06	5.26	0.20
	Great Valley willow scrub	2.4	1.39	0.3	-1.09
	Tidal marsh	0.0	0.76	0.76	0.00
	Total wetlands	5.4	72.22	58.63	-13.59
	Canals and ditches	17.8	23.42	42.37	18.95
	Permanent ponds	0.8	0.21	0	-0.21
	Delta channel	0.0	3.14	3.14	0
	Total other waters	18.6	26.77	45.51	18.74
Bouldin Island	Freshwater marsh	16.5	70.45	74.25	3.80
	Exotic marsh	65.3	38.25	46.81	8.56
	Cottonwood-willow woodland	6.9	2.01	2.27	0.26
	Great Valley willow scrub	7.9	7.46	8.26	0.80
	Tidal marsh	0.0	0.01	0.01	0
	Total wetlands	96.6	118.18	131.6	13.42
	Canals and ditches	35.3	30.18	38.94	8.76
	Permanent ponds	0.0	1.01	10.25	9.24
	Delta channel	0.0	0.07	0.07	0
	Total other waters	35.3	31.26	49.26	18.00
Holland Tract	Freshwater marsh	13.9	58.97	84.11	25.14
	Exotic marsh (i.e., pasture)	12.9	60.47	1,506.81	1,446.34
	Cottonwood-willow woodland	67.7	75.03	107.67	32.64
	Great Valley willow scrub	14.3	7.76	16.03	8.27
	Tidal marsh	0.0	0.01	0.01	0
	Total wetlands	108.8	202.24	1,714.63	1,512.39
	Canals and ditches	21.8	15.29	21.16	5.87
	Permanent ponds	13.2	9.81	14.87	5.06
	Delta channel	0.0	0.05	0.05	0
	Total other waters	35.0	25.15	36.08	10.93
Webb Tract	Freshwater marsh	24.7	47.90	51.37	3.47
	Exotic marsh	66.9	59.60	55.29	-4.31
	Cottonwood-willow woodland	47.5	95.25	106.63	11.38
	Great Valley willow scrub	56.2	64.58	68.81	4.23
	Tidal marsh	0.0	0.15	0.15	0
	Total wetlands	195.3	267.48	105.8	-11.37
	Canals and ditches	19.7	29.44	27.21	-2.23

Island Name	Habitat Classification	Delineated Acreage (1994)	Delineated Acreage (2001)	Preliminary Delineated Acreage ¹ (2008)	Change Since 2001 FEIS
	Permanent ponds	97.1	84.49	75.35	-9.14
	Delta channel	0.0	3.24	3.24	0
	Total other waters	116.8	117.17	105.8	-11.37
All Islands	Freshwater marsh	56.1	199.69	251.1	51.41
	Exotic marsh	147.1	200.96	1,619.85	1,418.89
	Cottonwood-willow woodland	122.1	177.35	221.83	44.48
	Great Valley willow scrub	80.8	81.19	93.4	12.21
	Tidal marsh	0.0	0.93	0.93	0
	Total wetlands	406.1	660.12	2,187.11	1,526.99
	Canals and ditches	94.6	98.33	129.68	31.35
	Permanent ponds	111.1	95.52	100.47	4.95
	Delta channel	0.0	6.50	6.50	0
	Total other waters	205.7	200.35	236.65	36.30
Total Waters of the United States		762.7	860.47		

¹ Acreages have not been verified by the U.S. Army Corps of Engineers.

Changes since the 2001 FEIR and 2001 FEIS

Changes have occurred on the Project islands, and several new sources of information have become available since the publication of the 2001 FEIR and 2001 FEIS.

Changes that pertain to vegetation and wetlands on the Project islands since the publication of the 2001 FEIR and 2001 FEIS can be summarized as:

- changes in habitat types associated with agriculture;
- updates to the list of special-status species with the potential to occur or known to occur on and near the Project islands;
- updates to wetland types and acreages on the Project islands;
- publication of a national invasive species management plan; and
- adoption of local regulations (e.g., general plans, tree ordinances, habitat conservation plans).

DWR completed surveys for special-status plants on all the islands in 2002, and Jones & Stokes completed a wetland delineation that was verified by the Corps in 2002 and additional wetland and habitat mapping in 2008.

Habitat Types

Although overall land use on most of the Project islands has not changed dramatically since the 2001 FEIR and 2001 FEIS, annual fluctuations in agricultural market conditions as well as land management decisions made in anticipation of Project implementation have resulted in changes to the composition of crop types on each of the Project islands. The crop history of the Project islands from 2002 to 2008 is provided in Table 4.6-5 (Delta Wetlands Properties 2008a, 2008b, 2008c, 2008d). Changes in the composition of agricultural lands attributable to fluctuations in market conditions also have resulted in changes to specific habitat types. The current (2008) habitat types on each of the islands, including the current agricultural crop types, are provided in Table 4.6-5. Generally, this information indicates that there has been a significant shift to corn as the primary agricultural crop on three of the islands, and the fourth island (Holland Tract) has been managed as grazing land since 2002. Wetland habitat types and acreages also have changed on each of the islands, with intensively cultivated lands now being used as grazing lands, a change in management that resulted in portions of the area becoming exotic marsh habitat on Holland Tract.

Table 4.6-5. Crop History for Bouldin Island, Webb Tract, Holland Tract, and Bacon Island (Acres)

Crop	2008	2007	2006	2005	2004	2003	2002
Bouldin Island							
Corn	4,002.0	4,063.0	3,264.0	3,041.0	3,036.0	3,010.0	3,531.0
Wheat	–	–	1,013.0	1,251.0	1,239.0	1,488.0	1,048.0
Rice	623.0	620.0	488.0	488.0	488.0	285.0	235.0
Tomatoes	308.0	250.0	168.0	150.0	170.0	150.0	119.0
Fallow	–	–	–	–	–	–	–
Subtotal	4,933.0	4,933.0	4,933.0	4,930.0	4,933.0	4,933.0	4,933.0
Webb Tract							
Corn	4,000.0	4,000.0	3,163.0	3,282.0	3,135.0	3,282.0	3,135.0
Wheat	–	–	924.0	807.0	955.0	807.0	955.0
Fallow	87.0	87.0	–	–	–	–	–
Subtotal	4,087.0	4,087.0	4,087.0	4,089.0	4,090.0	4,089.0	4,090.0
Holland Tract							
Pasture	2,884.0	2,884.0	2,884.0	2,884.0	2,884.0	2,884.0	2,884.0
Fallow	–	–	–	–	–	–	–
Subtotal	2,884.0	2,884.0	2,884.0	2,884.0	2,884.0	2,884.0	2,884.0
Bacon Island							
Corn	1,913.8	3,040.0	607.0	2,008.0	2,758.0	1,720.0	1,788.0
Wheat	577.5	–	–	–	865.0	69.0	308.0
Sunflowers	373.6	–	1,413.0	1,798.0	911.0	1,115.0	1,373.0
Safflower	–	–	935.0	–	–	1,014.0	450.0
Garbanzos	–	–	–	–	–	–	93.0
Alfalfa	1,786.7	1,807.0	1,892.0	1,054.0	237.0	154.0	60.0
Oats	207.4	–	–	–	–	–	–
Milo	–	–	–	–	79.0	–	–
Potatoes	–	–	–	–	–	570.0	570.0
Asparagus	–	–	–	–	–	218.0	218.0
Fallow	14.0	26.0	26.0	13.0	23.0	13.0	13.0
Subtotal	4,873.0	4,873.0	4,873.0	4,873.0	4,873.0	4,873.0	4,873.0
Total	16,777.0	16,777.0	16,777.0	16,776.0	16,780.0	16,779.0	16,780.0

Special-Status Species

Special-status plant species are those that are legally protected under the CESA, ESA, or other regulations, as well as species considered sufficiently rare by the scientific community to qualify for such listing. For the purposes of this EIR, special-status plant species include:

- species listed or proposed for listing as Threatened or Endangered under the ESA (Title 50 CFR §17.12 for listed plants and various notices in the *Federal Register* [FR] for proposed species);
- species that are candidates for possible future listing as Threatened or Endangered under ESA (72 FR 69034, December 6, 2007);
- species that are listed or proposed for listing by the State of California as Threatened or Endangered under the CESA (Title 14, *California Code of Regulations* [CCR], Section 670.5);
- plants listed as Rare under the California Native Plant Protection Act of 1977 (California Fish and Game Code [CFGF], Section 1900 et seq.);
- plants considered by CNPS to be “rare, threatened, or endangered in California” (Lists 1B and 2, CNPS 2008); and
- species that meet the definitions of Rare or Endangered under the State CEQA Guidelines, Section 15380.

Fourteen special-status plant species were identified in the 2001 FEIR and 2001 FEIS as having the potential to occur on the Project islands. The list of 14 potentially occurring species was developed using information from the CNDDDB, CNPS, and correspondence with regulatory agencies. As summarized in the 2001 FEIR and 2001 FEIS, botanical surveys were conducted in September 1988 and in August 1994. Five special-status plant species were observed on the Project islands (only on the water side of levees) during botanical surveys conducted in April and August–September 1988 and in August 1994: Suisun Marsh aster (*Symphyotrichum lentum*), Mason’s lilaeopsis (*Lilaeopsis masonii*), rose mallow (*Hibiscus lasiocarpus*), Delta tulle pea (*Lathyrus jepsonii* var. *jepsonii*), and Delta mudwort (*Limosella subulata*). This list was updated in 2008 based on previous consultation with the USFWS and DFG to remove several species that are unlikely to occur and to add several species with the potential to occur (Table 4.6-3).

The number of special-status plant species identified as having the potential to occur on the Project islands has changed since the 2001 FEIR and 2001 FEIS. Of the original 14 special-status species identified in the 2001 FEIR and 2001 FEIS, three are no longer identified by DFG as having the potential to occur on the Project islands or are no longer listed as special status: slough thistle (*Cirsium crassicaule*), marsh pea (*Lathyrus palustris*), and tall woolly marbles (*Psilocarphus brevissimus* var. *globiferus*; correctly known as *Psilocarphus tenellus* var. *globiferus*) (see Table 4.6-3) (Hickman 1993: 329; CNDDDB 2008; CNPS 2008). Additionally, the federal Category 2 (C2) listing status indicated in the 2001 FEIS has been discontinued. A search of the 2008 CNDDDB records, CNPS online *Inventory of Rare & Endangered Plants*, and USFWS lists, identified five additional special-status plant species that are known to occur or that potentially could occur on the Project islands, which were not identified in the 2001 FEIS (CNDDDB 2008; CNPS 2008; USFWS 2008) (Table 4.6-3).

The geographic distribution, habitat requirements, blooming period, and local occurrence information for all special-status plant species potentially occurring on the Project islands are provided in Table 4.6-3.

The number of special-status plant occurrences located on or close to the Project islands has increased since the 2001 FEIS (CNDDDB 2008; California Department of Water Resources 2003) (Table 4.6-3). In addition to the five special-status plant species observed during the botanical surveys conducted in 1988 and 1994, occurrences of the following species have been reported on or near the Project islands: bristly sedge (*Carex comosa*), brown fox sedge (*Carex vulpinoidea*), eel-grass pondweed (*Potamogeton zosteriformis*), and side-flowering skullcap (*Scutellaria lateriflora*) (CNDDDB 2008). The CNDDDB occurrence of bristly sedge is located in the blowout ponds on the northern side of Webb Tract (CNDDDB 2008). Bristly sedge could not be located on Webb Tract during surveys conducted by DWR (California Department of Water Resources 2003) but is assumed still to be present. Brown fox sedge is documented on the western shore of Bacon Island (CNDDDB 2008). The occurrence was located by DWR in 2002 and represents the first record of the species in the Delta. The exact location of eel-grass pondweed is unknown; however, it was mapped in the vicinity of Webb Tract (CNDDDB 2008). Similarly, the exact location of side-flowering skullcap also is unknown, but it was mapped in the vicinity of Bouldin Island (CNDDDB 2008).

Wetlands

Approximately 763 acres of riparian woodland, riparian scrub, freshwater marsh, exotic marsh, canal and ditch, permanent pond, herbaceous upland, and seed and grain crop habitats were delineated by the NRCS, Corps, EPA, and USFWS as jurisdictional wetlands under Section 404 of the CWA, and were reported in the 2001 FEIS (Table 4.6-4). The Corps and the NRCS verified the wetland delineation in December 1994 and January 1995, respectively; however, the verification of the previous delineation expired after 5 years. At the time of publication of the 2001 FEIR and 2001 FEIS, the Project proponent was working to update the 1994 delineation to reflect current (2001) conditions on the Project islands. The 2001 FEIR and 2001 FEIS assumed that because farming conditions were basically unchanged since the 1994 delineation, the acreage of wetlands on the islands also would remain unchanged after the update.

After the verification of the 1994 wetland delineation expired in 2000, the Project applicant requested that the Corps renew the verification of wetlands on the Project islands. In July 2001, Corps staff confirmed that additional field work and reporting would be required to update the wetland delineation to current (2001) conditions. Jones & Stokes conducted a new wetland delineation in June and September 2001 using the methods described in the 1987 *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987: 42–95). The delineation study area encompassed the four Project islands—Bacon Island (5,500 acres), Bouldin Island (5,960 acres), Webb Tract (5,450 acres), and a portion of Holland Tract (2,875 acres). The delineation study area also included areas in the Delta channels surrounding the Project islands (i.e., outside the

levees) that may be affected by construction and modification of siphons and pumps. Following the verification and review process, the Corps verified 860.47 acres of wetlands and other waters in the delineation study area (U.S. Army Corps of Engineers 2002). The 2001 wetland delineation verification expired in 2007. The Project applicant currently is consulting with the Corps regarding necessary updates to the wetland delineation and plans to conduct any field studies necessary to re-verify the wetland delineation. Preliminary wetland mapping was completed by Jones & Stokes in 2008 to determine the magnitude of wetland changes that might have occurred since the 2001 wetland delineation. The current (2008) estimated wetland types and acreages are provided in Table 4.6-4. In general, the type and extent of wetlands on the Project islands have not changed significantly overall since 2001. The type and extent of wetlands on individual islands have changed, with the most substantial change occurring on Holland Tract.

Invasive Plant Species

The status of invasive plant species (also known as “noxious weeds”) on the Project islands was not evaluated in the 2001 FEIR and 2001 FEIS, and new information pertaining to invasive species has become available since the 2001 FEIR and 2001 FEIS. DWR conducted surveys on the Project islands in 2002 and identified 28 invasive plant species occurring or potentially occurring on each of the islands (Table 4.6-6). The type and distribution of invasive species in a particular area or region can change relatively quickly as control methods and priorities evolve, and as new weeds are introduced. Seven species were identified by DWR as “weed species of concern” for the Project islands because they have a high potential to affect and displace wetlands and riparian areas on the islands:

- Giant reed (*Arundo donax*),
- Water hyacinth (*Eichhornia crassipes*),
- Perennial pepperweed (*Lepidium latifolium*),
- Cape ivy (*Delairea odorata* [*Senecio mikanioides*]),
- Pampas grass (*Cortaderia jubata*),
- Purple loosestrife (*Lythrum salicaria*), and
- Himalayan blackberry (*Rubus discolor*).

The Project islands are actively managed for agricultural crops, and various management techniques are implemented to control weeds. Disking and flooding, along with the application of herbicides, are currently the primary methods of weed control on the islands.

Table 4.6-6. Invasive Plant Species Identified as Occurring on the Project Islands or Listed by Weed Management Areas in the Project Vicinity

Common Name	Scientific Name	Known on Project Islands ^a	Listed by Weed Management Areas in Project Vicinity ^b		
			Cal-IPC Status ^c	CDFA Status ^d	
Kangaroo thorn	<i>Acacia paradoxa</i>				B
Puna grass	<i>Achnatherum brachychaetum</i>				A
Russian knapweed	<i>Acroptilon repens</i>	X	X	Moderate	B
Barbed goatgrass	<i>Aegilops triuncialis</i>		X	High	B
Tree of heaven	<i>Ailanthus altissima</i>	X		Moderate	C
Giant reed	<i>Arundo donax</i>	X	X	High	B
Black mustard	<i>Brassica nigra</i>	X		Moderate	
Red brome	<i>Bromus madritensis ssp. rubens</i>	X		High	
Thoroughwax	<i>Bupleurum lancifolium</i>		X		
Hoary cress	<i>Cardaria draba</i>		X	Moderate	B
Globe-podded hoary cress	<i>Cardaria pubescens</i>		X	Limited	B
Plumeless thistle	<i>Carduus acanthoides</i>		X	Limited	A
Italian thistle	<i>Carduus pycnocephalus</i>	X	X	Moderate	C
Smooth distaff thistle	<i>Carthamus baeticus</i>		X		B
Purple star-thistle	<i>Centaurea calcitrapa</i>		X	Moderate	B
Iberian star-thistle	<i>Centaurea iberica</i>		X		A
Yellow star-thistle	<i>Centaurea solstitialis</i>	X	X	High	C
Canada thistle	<i>Cirsium arvense</i>		X	Moderate	B
Bull thistle	<i>Cirsium vulgare</i>	X	X	Moderate	C
Poison hemlock	<i>Conium maculatum</i>	X		Moderate	
Jubata grass	<i>Cortaderia jubata</i>		X	High	B
Pampas grass	<i>Cortaderia selloana</i>	X		High	
Monterey cypress	<i>Cupressus macrocarpa</i>		X		
Japanese dodder	<i>Cuscuta japonica</i>		X		A
Artichoke thistle	<i>Cynara cardunculus</i>		X	Moderate	B
Nutsedge	<i>Cyperus spp.</i>		X		
Cape ivy	<i>Delairea odorata</i>			High	
Brazilian egeria	<i>Egeria densa</i>	X	X	High	C
Veldt grass	<i>Ehrharta calycina</i>			Moderate	
Water hyacinth	<i>Eichhornia crassipes</i>	X	X	High	C
Blue gum	<i>Eucalyptus globulus</i>	X		Moderate	
Oblong spurge	<i>Euphorbia oblongata</i>		X	Limited	B
Edible fig	<i>Ficus carica</i>	X		Moderate	
Fennel	<i>Foeniculum vulgare</i>	X		High	
Wavy-leaved gaura	<i>Gaura sinuata</i>		X		B
Velvet grass	<i>Holcus lanatus</i>	X		Moderate	
Hydrilla	<i>Hydrilla verticillata</i>			High	A
Yellow water iris	<i>Iris pseudacorus</i>	X		Limited	Q
Perennial pepperweed	<i>Lepidium latifolium</i>	X	X	High	B

Common Name	Scientific Name	Known on Project Islands ^a	Listed by Weed Management		Cal-IPC Status ^c	CDFA Status ^d
			Areas in Project Vicinity ^b			
Dalmatian toadflax	<i>Linaria dalmatica</i> ssp. <i>dalmatica</i> (formerly <i>L. genistifolia</i> ssp. <i>dalmatica</i>) <i>genistifolia</i>		X		Moderate	A
Purple loosestrife	<i>Lythrum salicaria</i>	X	X		High	B
Parrot's feather	<i>Myriophyllum aquaticum</i>	X			High	
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>	X			High	C
Crispate-leaved pondweed	<i>Potamogeton crispus</i>	X			Moderate	
Himalayan blackberry	<i>Rubus armeniacus</i> (<i>R. discolor</i>)	X	X		High	
Russian thistle	<i>Salsola</i> spp.		X			
Golden thistle	<i>Scolymus hispanicus</i>		X			A
Red sesbania	<i>Sesbania punicea</i>		X		High	Q
Milk thistle	<i>Silybum marianum</i>		X		Limited	
Silverleaf nightshade	<i>Solanum elaeagnifolium</i>	X	X		Evaluated but not listed	B
Johnson grass	<i>Sorghum halepense</i>	X	X			C
Medusahead	<i>Taeniatherum caput-medusae</i>	X	X		High	C
Tamarisk	<i>Tamarisk</i> spp.	X	X			
Puncture vine	<i>Tribulus terrestris</i>		X			C
Spiny cocklebur	<i>Xanthium spinosum</i>		X			

^a As reported in California Department of Water Resources 2003.

^b Weed Management Areas (WMAs) in the Project Vicinity are the Alameda-Contra Costa WMA and the Central Valley WMA.

^c According to California Invasive Plant Council 2006. Cal-IPC Status Explanations:

High: Species that have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. These species have moderate to high rates of dispersal and establishment based on their reproductive biology and other characteristics and have a wide ecological distribution.

Moderate: Species that have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. These species have moderate to high rates of dispersal based on their reproductive biology and other characteristics; however, establishment is generally dependent upon ecological disturbance. The ecological amplitude and distribution of these species varies from widespread to limited.

Limited: Species that are invasive but have ecological impacts are relatively minor on a statewide level or adequate data was not available to justify a higher score. These species have low to moderate rates of invasiveness based on their reproductive biology and other characteristics. Although these species may be locally persistent and problematic, their ecological amplitude and distribution are generally limited.

^d According to California Department of Food and Agriculture 2008. CDFCA Status Explanations:

A = Eradication, containment, rejection, or other holding action at the state-county level. Quarantine interceptions to be rejected or treated at any point in the state.

B = Eradication, containment, control or other holding action at the discretion of the agricultural commissioner.

C = State endorsed holding action and eradication only when found in a nursery; action to retard spread outside of nurseries at the discretion of the commissioner; reject only when found in a cropseed for planting or at the discretion of the agricultural commissioner.

Q = Temporary "A" action outside of nurseries at the state-county level pending determination of a permanent rating.

CDFCA = California Department of Food and Agriculture.

Cal-IPC = California Invasive Plant Council.

Local Regulations

As described above under Regulatory Setting, San Joaquin and Contra Costa Counties have adopted local regulations since the 2001 FEIR and 2001 FEIS that have implications for vegetation and wetlands on the Project islands located within their respective counties. Contra Costa County's General Plan includes policies applicable to vegetation and wetlands on the Project islands. Furthermore, Contra Costa County and San Joaquin County have enacted tree protection ordinances. Trees that would be protected under the applicable county tree ordinance may be present on the Project islands.

Environmental Commitments

Several changes in Project design and many prior agreements with Delta water rights holders or agencies have resulted in the Project environmental commitments. These commitments would reduce or eliminate impacts on particular resources or would minimize the impacts of the original Project design and operation.

Environmental commitments specific to vegetation and wetlands, which will be included in the Final HMP, include the following:

- Compensate for the loss of riparian and pond habitats by preserving or creating a minimum of 339 acres (3:1 ratio of acres impacted to acres preserved) of riparian woodland habitat, a minimum of 150 acres (2:1 ratio of acres impacted to acres preserved) of riparian scrub habitat, and 76 acres of permanent pond habitat (1:1 ratio of acres impacted to acres preserved) on the Habitat Islands.
- Inclusion of invasive plant management goals and measures in the final HMP with an emphasis on an adaptive management approach and a focus on prevention and early detection of new invasive plant infestations, as well as physical, chemical, and biological control measures.

Environmental Effects

Methods

In the 2001 FEIR and 2001 FEIS, impacts on vegetation on the Project islands were evaluated through comparison of predictions of future habitat types and acreages under the Project alternatives with existing vegetation conditions. Changes in vegetation types would result from the construction of facilities, upgrading of levees, inundation of Reservoir Islands during water storage and seasonal wetland periods, and implementation of the HMP (Jones & Stokes Associates Inc. 1995).

The 2001 FEIR and 2001 FEIS conservatively assumed that because future habitat conditions on Reservoir Islands are unpredictable and cannot be quantified, Reservoir Islands would provide no vegetation or wetland values that would offset Project impacts.

Overall, the methods and assumptions used below to evaluate impacts on vegetation and wetlands are the same as the methods used in the 2001 FEIR and 2001 FEIS.

Alternatives 1, 2, and 3

In the 2001 FEIR and 2001 FEIS, analysis of future vegetation conditions on the Habitat Islands under Alternatives 1 and 2 was based on habitat types and acreages described in the HMP (Table 4.6-7). These estimates are still valid though the location and mix of habitats may change slightly in the final HMP.

Table 4.6-7. Acreages of Habitats to Be Developed on the Habitat Islands

Habitat Type	Bouldin Island		Holland Tract		Habitat Islands Combined	
	Total Acres	Percentage of Total Acres	Total Acres	Percentage of Total Acres	Total Acres	Percentage of Total Acres
Corn/wheat	1,629	27	955	31	2,584	29
Small grains	106	2	152	5	258	3
Mixed agriculture/seasonal wetland	1,014	17	631	21	1,645	18
Seasonal managed wetland	1,723	29	393	13	2,116	23
Seasonal pond	66	1	68	2	134	1
Pasture/hay	132	2	72	2	204	2
Emergent marsh*	208	3	194	6	402	4
Riparian*	170	3	217	7	387	4
Lake*	111	2	33	1	144	2
Herbaceous upland*	479	8	253	8	732	8
Developed	177	3	58	2	235	3
Canal*	70	1	10	0	80	1
Borrow pond	89	1	0	0	89	1
Total	5,974	100	3,036	100	9,010	100

Note: Minor discrepancies in totals are the result of rounding.

* Includes existing acres of habitat unaffected by the Project.

No-Project Alternative

Estimates of island conditions under the No-Project Alternative are based on a feasibility study prepared by the McCarty Company, Diversified Agricultural Services (McCarty pers. comm.). The general recommendation for all islands is

to increase cultivated acreage and crop diversification, with a greater emphasis on perennial crops such as asparagus and vineyards.

Significance Criteria

The vegetation and wetlands impact analysis considered several criteria for determining the significance of impacts related to this resource. The analysis took into account both relevant criteria contained in Appendix G of the State CEQA Guidelines (Association of Environmental Professionals 2009) and Project-specific criteria developed by the lead agency to address potential impacts unique to the Project's location and elements.

Based on these guidelines, the Project would cause a significant impact if it would:

- have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by DFG or USFWS;
- have a substantial adverse effect on federally protected wetlands, as defined by CWA Section 404 (including, but not limited to, marsh, vernal pool, and coastal wetlands) through direct removal, filling, hydrological interruption, or other means;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- conflict with the provisions of an adopted habitat conservation plan, such as the SJMSCP, natural communities conservation plan, or other approved local, regional, or state habitat conservation plan.

Alternatives were considered to have beneficial effects if they would result in increases in the quality or extent of riparian or wetland habitats.

Impacts and Mitigation Measures

Changes in the type and extent of wetlands and habitats have occurred on the islands since the 2001 FEIR and 2001 FEIS, and the magnitude of wetland and habitat impacts is different from the magnitude described in the 2001 FEIR and 2001 FEIS; however, the change is attributable to the type and extent of wetlands on the islands, not differences in the Project description or the impact methods.

The HMP incorporated into the Project description as an Environmental Commitment for Alternatives 1 and 2 provides for compensation habitat to be established on the Habitat Islands to offset the effects of Reservoir Island operations on vegetation and wetlands. The impact assessment for Alternatives 1 and 2 therefore is based on the assumption that Project implementation would include the establishment of compensation as specified in the draft HMP. A

summary of Project impacts and compensation requirements for vegetation communities, using the ratios specified in the HMP and current (2008) habitat acreages, is provided in Table 4.6-8. Under Alternative 3, all four Project islands would be used as reservoirs, and the North Bouldin Habitat Area (NBHA) on Bouldin Island would be used to provide limited compensation habitat. This information forms the basis for the Project impacts described below.

Table 4.6-8. Changes in Habitat Acreages from Existing Conditions to Conditions under Alternatives 1 and 2

Affected Habitat Type	Corresponding Habitat Island Habitat Type	Existing Conditions		Alternatives 1 and 2 ^a		Change under Alternatives 1 and 2 (acres)
		Reservoir Islands (acres)	Habitat Islands (acres)	Reservoir Islands (acres)	Habitat Islands (acres)	
Riparian woodland	Riparian woodland	113.24	109.94	0	275 ^b	51.82
Riparian scrub	Riparian scrub	75.36	27.6	0	112 ^b	9.04
Freshwater marsh	Emergent marsh	92.74	156.36	0	402	152.90
Exotic marsh	Mixed agriculture/seasonal wetland, seasonal managed wetland, seasonal pond	66.23	1,553.62 ^c	0	3,895	2,275.15
Herbaceous upland	Herbaceous upland	1,201.67	856.08	0	732	(1,325.75)
Corn, wheat, and milo	Corn rotated with wheat, small grains	6,679.83	4,148.73	0	2,842	(7,986.56)
Pasture	Pasture/hay	0	0 ^c	0	204	204.00
Other crops and fallow fields	None	2,484.64	2,070.41	0	0	(4,555.05)
Canals and ditches	Canal	69.59	60.11	0	80	(49.70)
Permanent pond	Permanent lake and borrow areas	76.22	25.12	0	233	131.66
Developed	Developed	193.21	79.71	0	235	(37.92)
Total		11,052.73	9,087.68^d	0	9,010^d	

^a As reported in Table 3 of the HMP.

^b The HMP reported a total of 387 acres of riparian habitat to be created/managed on the Habitat Islands however, the HMP did not split the total into riparian woodland versus riparian scrub habitats. These numbers assume the intent of the HMP was to maintain the approximate ratio of woodland/scrub on the islands as was present in 1988, an approximate 1.4:1 ratio.

^c Holland island is currently used as pasture but was classified from a natural community perspective as exotic marsh.

^d Minor discrepancies in numbers are the result of rounding and conversion of 1995 data to a Geographic Information System.

Proposed Project (Alternative 2)

Vegetation Communities and Wetlands

The 2001 FEIR and 2001 FEIS identified impacts on vegetation communities and wetlands from Alternative 2, the Proposed Project, based on habitat mapping conducted in 1987. Each impact on vegetation communities is described below with updated acreages to reflect current conditions. Additionally, invasive species were not discussed in the 2001 FEIR and 2001 FEIS, but they are now known to present a new impact on vegetation communities and special-status species as described below.

Impact VEG-1: Increase in Freshwater Marsh and Exotic Marsh Habitats

Implementing Alternative 2 would result in the loss of approximately 93 acres of freshwater marsh and 66 acres of exotic marsh (Table 4.6-8). The HMP team, in consultation with the Corps, established a mitigation ratio requirement of 2:1 for both of these habitats; however, implementation of the HMP on the Habitat Islands would exceed this requirement. Approximately 353 acres of tule-dominated emergent marsh will be used to replace affected freshwater marsh. Affected exotic marsh will be replaced with approximately 3,761 acres of out-of-kind seasonal managed wetland and mixed agriculture/seasonal wetland that will provide higher wildlife values than the existing exotic marsh habitat. Therefore, this impact is considered beneficial and less than significant.

Mitigation

No mitigation is required.

Impact VEG-2: Loss of Riparian and Permanent Pond Habitats

Implementation of Alternative 2 would result in the loss of approximately 113 acres of riparian woodland, 75 acres of riparian scrub, and 76 acres of permanent pond habitat. The HMP identifies the appropriate mitigation ratio for each habitat type and the amount of each habitat type provided on the Habitat Islands. Under the HMP, riparian woodland would be replaced at a 3:1 mitigation ratio, riparian scrub would be replaced at a ratio of 2:1, and permanent ponds would be replaced at a ratio of 1:1 (Table 4.6-8).

As outlined in the Environmental Commitments for the Project, the Project applicant will revise the management goals for the Habitat Islands in the final HMP to meet or exceed the mitigation established in the draft HMP for riparian woodland, riparian scrub, and permanent pond habitats. With implementation of the Environmental Commitments, this impact is considered less than significant.

Mitigation

No mitigation is required.

Impact VEG-3: Loss of Upland and Agricultural Habitats

Implementation of Alternative 2 would result in the loss of canals and ditches, grain and seed crops, annual grassland, exotic perennial grassland, and

unvegetated disturbed habitats. The Project applicant will manage 7,335 acres of similar habitats on the Habitat Islands that will provide greater wildlife values than are associated with affected habitats. These mitigation habitats would consist of corn/wheat fields, seasonal managed wetlands, mixed agriculture/seasonal wetlands, small grain fields, herbaceous uplands, and canals and ditches necessary to maintain the aforementioned habitats. Upland and agricultural habitats are not considered wetlands or unique habitats and they are not considered unique or unusual habitats in the region. Because they are not considered unique or unusual, impacts are considered less than significant.

Mitigation

No mitigation is required.

Impact VEG-4: Consistency with Local Policies or Ordinances Protecting Biological Resources

Implementing Alternative 2 could result in the loss of native oak trees from the flooding of the Reservoir Islands and levee improvements on the Habitat Islands. Depending on the diameter of the trees, these losses could trigger compliance with the tree ordinance. However, the final HMP will require the creation and restoration of riparian habitats and this will meet or exceed the County's ordinance. Because the Project applicant will comply with this local ordinance and ensure that these standards are met or exceeded, there is no impact.

Mitigation

No mitigation is required.

Impact VEG-5: Conflict with Provisions of an Adopted HCP/NCCP

Implementation of Alternative 2 would result in the loss of agricultural habitats. However, the Project applicant will manage 7,335 acres of similar habitats on the Habitat Islands that will provide greater wildlife values than are associated with affected habitats. These mitigation habitats will consist of corn/wheat fields, seasonal managed wetlands, mixed agriculture/seasonal wetlands, small grain fields, herbaceous uplands, and canals and ditches necessary to maintain the aforementioned habitats. The Project was not considered a covered activity by the SJMSCP or the East Contra Costa County HCP/NCCP and the conservation efforts proposed by the Project would not conflict with the establishment of conservation areas in either County; therefore the Project does not conflict with an established HCP or NCCP. This is not considered an impact.

Mitigation

No mitigation is required.

Impact VEG-6: Introduction and Spread of Invasive Plants

Implementation of Alternative 2 has the potential to spread existing invasive plants and to introduce new invasive plants to previously uninfested areas. Flooding and earth moving during Project construction are potential mechanisms for the introduction of invasive plants. Invasive plants are known to disrupt natural ecosystems, obstruct navigation and recreation, and reduce the suitability of habitats for special-status species. The introduction and spread of invasive plants may result in a substantial adverse effect on federally protected wetlands

as defined by CWA Section 404 through the removal of native species and hydrological changes. As outlined in the Environmental Commitments for the Project, the Project applicant will revise the management goals in the final HMP to address invasive plants on both the Habitat and Reservoir Islands. The measures adopted in the final HMP will have an emphasis on an adaptive management approach but will focus on prevention and early detection of new infestations, as well as physical, chemical, and biological control measures. With implementation of the Environmental Commitments, this impact is considered less than significant.

Mitigation

No mitigation is required.

Special-Status Plants

The 2001 FEIR and 2001 FEIS concluded that construction and operation of recreation facilities on the exterior of levees could result in potentially significant impacts; however, implementation of appropriate mitigation measures would reduce the level of impact to less-than-significant. While the number of species known from the area has increased, the potential impact (i.e., loss of special-status plants from facilities) has not changed. The potential loss of special-status species on the interior of Webb Tract is a new impact not previously identified for the Project.

Impact VEG-7: Loss of Special-Status Plants

Under Alternative 2, the siting of a pump station, siphon station, recreation facility, or other Project facility on a site occupied by special-status plants could result in the loss of individual special-status plants or populations. This impact would be considered significant, but the implementation of Mitigation Measures VEG-MM-1, VEG-MM-2, and VEG-MM-3 (Mitigation Measures VEG-MM-1, VEG-MM-2, and VEG-MM-3 from the 2001 FEIR and 2001 FEIS) as described below would reduce the level of impact to less than significant.

The conversion of Webb Tract to a Reservoir Island could result in the direct loss of bristly sedge, a CNPS List 2.1 special-status species, if present. Bristly sedge is a species adapted to wetland conditions, but the duration and depth of flooding on the Reservoir Islands are unpredictable, and it is unknown whether the species can persist during operation of the Project. The impact is considered significant because it may completely remove the species from the island. Implementation of Mitigation Measure VEG-MM-3 would reduce the level of impact to less than significant.

Mitigation Measure VEG-MM-1: Site Project Facilities to Avoid Special-Status Plant Populations

The Project applicant will conduct special-status plant surveys before construction of Project facilities and will site facilities to avoid special-status plant populations. If special-status plant species are discovered, Mitigation Measures VEG-MM-2 and VEG-MM-3 will be required.

Mitigation Measure VEG-MM-2: Protect Special-Status Plant Populations from Construction and Recreation Activities

To mitigate potential indirect impacts of construction, the Project will use several measures to protect special-status plants that are within 200 feet of Project facility sites. First, the boundaries of each population will be determined and marked with surveyor's flagging. Second, special-status plants within 100 feet of Project facility sites will be protected by temporary barricades erected 50 feet from the edge of the population nearest the facility site. Plants 100–200 feet from the construction sites will be identified with brightly colored flagging on vegetation and/or surveyor's stakes that are plainly visible to construction personnel approaching the area occupied by the plants. Flagging will not be obscured by vegetation. Construction crews and Project maintenance personnel will be informed of the presence of the plants, the function of the barricades and flagging, and the strict avoidance requirements. If special-status plant populations are inadvertently affected by construction, the Project applicant will contact DFG and discuss appropriate mitigation to offset impacts, including development of a mitigation monitoring program and performance standards.

Areas that support special-status plant populations will be posted as sensitive and public access limited. If special-status plant populations are inadvertently affected by recreational uses, per Mitigation Measure VEG-MM-3 the Project will contact DFG and discuss appropriate mitigation to offset impacts, including development of a mitigation monitoring program and performance standards.

Mitigation Measure VEG-MM-3: Develop and Implement a Special-Status Plant Species Monitoring and Mitigation Plan

The Project applicant, in consultation with DFG and USFWS, will develop and implement a plan for mitigating unavoidable impacts on special-status plant populations. At a minimum, this plan will include:

- guidelines for conducting preconstruction surveys,
- avoidance and protection guidelines for individual species, and
- measures that promote the protection and enhancement of existing populations.

Although the protection and enhancement of existing habitat will be the primary focus of the plan, it may also include the transplantation of individuals or colonies, collection and planting of seeds or nursery grown plants, and creation of new habitat, provided such mitigation has a high potential for success.

Additionally, the plan will include monitoring guidelines to ensure the successful protection, avoidance, and/or establishment of special-status plants.

Alternative 1

Vegetation and Wetlands

The impacts and mitigation measures of Alternative 1 are identical to those of Alternative 2.

Special-Status Plants

The impact and mitigation measures of Alternative 1 are identical to those of Alternative 2.

Alternative 3

Vegetation and Wetlands

Changes in the habitat types on the Reservoir Islands under Alternative 3 would be similar to those described under Alternative 2. Therefore, Impacts VEG-1 through VEG-4 also would result from the implementation of Alternative 3. Additionally, water storage activities under Alternative 3 would cause the loss of an additional 1,113 acres of riparian, exotic marsh, herbaceous upland, agricultural, open water, and developed habitats in the southwestern quarter of the Holland Tract. Lastly, agricultural habitats would be substantially reduced in the NBHA as the result of conversion to perennial pond, seasonal managed wetland, riparian woodland, and herbaceous upland habitats.

Impact VEG-8: Loss of Jurisdictional Wetlands on Reservoir Islands

Implementing Alternative 3 would result in the loss from the Reservoir Islands of the following wetlands subject to Section 404 jurisdiction: approximately 203 acres of riparian woodland and riparian scrub, 56 acres of freshwater marsh, 147 acres of exotic marsh, 111 acres of perennial ponds, and 188 acres of upland and agricultural habitats. These losses would be partially offset with development of Section 404 wetland habitats on the NBHA. Substantial losses of jurisdictional wetland acreage, however, still would occur because of inundation of the Reservoir Islands (Table 4.6-8). Therefore, this impact is considered significant. Implementation of Mitigation Measure VEG-MM-4 (Mitigation Measure VEG-MM-4 from the 2001 FEIR and 2001 FEIS) would reduce the level of impact to less-than-significant.

Mitigation Measure VEG-MM-4: Develop and Implement an Off-Site Mitigation Plan

The Project applicant, in consultation with the Corps, DFG, and USFWS, will implement an off-site mitigation plan for mitigating impacts on Section 404 jurisdictional wetlands that would result from implementation of Alternative 3. Once the Project applicant has identified off-site mitigation areas, an HMP team will be established to develop the off-site mitigation plan. No diversions will be

allowed until a feasible compensation plan that guarantees compensation acreage has been developed by the Project applicant and approved by the Corps.

Special-Status Plants

The impact and mitigation measures of Alternative 3 pertaining to special-status plants are the same as those described for Alternative 2.

No-Project Alternative

Vegetation Communities, Wetlands, and Special-Status Plants

Implementation of the No-Project Alternative would have an impact on existing habitat types, primarily as the result of conversion of fallow, herbaceous upland, riparian, and wetland habitats to agricultural use. The increase in agricultural land use would result in the loss of existing habitat types. The 2001 FEIR and 2001 FEIS indicated that the changes in vegetation types under the No-Project Alternative would result in a 50% decrease in riparian woodland and riparian scrub as well as a decrease in freshwater marsh of more than 80%. Under current conditions, these totals would increase to approximately 60% and 85% respectively. Implementation of the No-Project Alternative potentially could result in the loss of special-status plants. Although increasing agricultural production under the No-Project Alternative would not result in direct impacts on special-status plants, future levee maintenance required as the result of increased rates of subsidence could potentially eliminate special-status plants. Over the long term as agricultural production declines or levees fail, natural land-cover types could reestablish as plants colonize uncultivated areas, canals, and levee margins.