

### 3.3 TERRESTRIAL BIOLOGICAL RESOURCES

This section addresses terrestrial biological resources that could be affected by implementation of proposed modifications to the Phase 2 Project. The information presented is based on field surveys and a review of existing documentation, some of which has been updated since certification of the 2007 Landside EIR. Existing information reviewed for preparation of this section includes documents that discuss biological resources in the region, such as the *Natomas Basin Habitat Conservation Plan* (NBHCP) (City of Sacramento, Sutter County, and The Natomas Basin Conservancy 2003) and annual monitoring reports of The Natomas Basin Conservancy (TNBC).

This section also updates impact analyses based on ongoing negotiations with the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (DFG) for special-status species (giant garter snake and Swainson's hawk). The Section 7 consultation with USFWS resulted in issuance of a programmatic biological opinion (BO) in October 2008 for the Phase 2, Phase 3, and Phase 4 Projects of the NLIP, with incidental take authorization for the Phase 2 Project only. The BO analyzed both program-level and project-level impacts and mitigation based on available information, some of which has changed since certification of the 2007 Landside EIR. In addition, ongoing coordination with DFG has resulted in an overall program-level plan to mitigate impacts on Swainson's hawk nesting and foraging habitat for the Phase 2, Phase 3, and Phase 4 Projects. Finally, the proposed modifications to the Phase 2 Project related to special-species habitat would change acreage calculations for the entire program, including habitat that would compensate for impacts of both the Phase 3 and Phase 4 Projects. Therefore, this section provides both project-level and program-level impact analysis for special-status species.

#### 3.3.1 REGULATORY SETTING

The "Regulatory Setting" in the 2007 Landside EIR has remained unchanged and is hereby incorporated by reference. The 2007 Landside EIR addressed the federal, state, regional, and local regulations, laws, and ordinances listed below.

##### Federal

- ▶ Federal Endangered Species Act
- ▶ Clean Water Act (CWA)
- ▶ Migratory Bird Treaty Act

##### State

- ▶ California Endangered Species Act
- ▶ California Fish and Game Code Sections 3503 and 3503.5—Protection of Bird Nests and Raptors
- ▶ California Fish and Game Code—Fully Protected Species
- ▶ California Fish and Game Code Section 1602—Streambed Alteration
- ▶ Porter-Cologne Water Quality Control Act—California Water Code Section 13000 et seq.

##### Local

- ▶ Natomas Basin Habitat Conservation Plan
- ▶ County and City Policies and Ordinances

#### 3.3.2 ENVIRONMENTAL SETTING

With the exception of Sensitive Habitats, the "Environmental Setting" in the 2007 Landside EIR has remained unchanged for the topics listed below and is hereby incorporated by reference. The 2007 Landside EIR described

land use and vegetation, wildlife, sensitive biological resources, and special-status species. The environmental setting associated with the project modifications is briefly described below under each impact statement.

- ▶ Land Use and Vegetation
- ▶ Wildlife
- ▶ Sensitive Biological Resources
- ▶ Special-Status Species

## Sensitive Habitats

Sensitive habitats are habitats that are of special concern to resource agencies or that are afforded specific consideration through CEQA, Section 1602 of the California Fish and Game Code, and/or Section 404 of the Clean Water Act, as discussed above in Section 3.7.1, “Regulatory Setting,” of the 2007 Landside EIR.

Irrigation/drainage canals and ditches in the project area are anticipated to be considered waters of the United States and subject to regulation under CWA Section 404. Other permanently and/or seasonally wet habitats, such as freshwater marsh and seasonal wetland, could qualify as wetlands subject to Section 404 regulation if they are adjacent or connected to waters of the United States. Wetland delineations have been completed and verified for the Natomas Cross Canal (NCC) portion of the project area (verified by the U.S. Army Corps of Engineers [USACE] on November 7, 2006), the Sacramento River east levee portion of the project area, and the Airport north bufferlands and Brookfield borrow sites (verified by USACE on July 24, 2008). The NCC delineation concluded that the NCC and irrigation/drainage ditches and seasonal wetlands south of the levee are under USACE jurisdiction; this delineation was verified by USACE on November 7, 2006. The verified delineation report covering the anticipated Sacramento River east levee, Airport north bufferlands, and Brookfield borrow site footprint for Phase 2 Project elements (levee improvements and canal relocations, including borrow operations at the Airport north bufferlands and Brookfield sites) identifies the following features as potentially jurisdictional: irrigation and drainage ditches and canals along the toe of the levee, lateral ditches that connect with these, seasonal wetlands and irrigated wetlands within the Airport north bufferlands and the rice fields of the Brookfield borrow areas, and patches of freshwater marsh and slough north of the Teal Bend Golf Club. In addition, some of the discharge pipes conveying filtered stormwater drainage from the east levee to the east bank of the Sacramento River might extend to areas within CWA and/or Rivers and Harbors Act jurisdiction.

All of these aquatic habitats are also anticipated to qualify as waters of the state and regulation under the Porter-Cologne Water Quality Control Act. In addition, waterways and associated riparian habitats are likely subject to regulation under Section 1600 et seq. of the California Fish and Game Code.

The functional quality and value of an aquatic resource is considered by USACE as part of the CWA Section 404 regulatory process. Functions may be generally categorized as low, moderate, or high, defined for the purposes of this SEIR as follows:

- ▶ **High:** Natural structure and function of biotic community exists, with minimal changes in structure or function evident—i.e., zero to low levels of human disturbance (e.g., natural plant communities intact, no artificial structures present, sensitive plant and/or wildlife species utilization);
- ▶ **Moderate:** Moderate levels of disturbance (e.g., natural plant communities intact with some evidence of nonnative vegetation, low-intensity developments such as trails, selective vegetation management for flood control purposes); or
- ▶ **Low:** High levels of disturbance (e.g., vegetation disking for fire clearance purposes, dominance of monotypic stands of nonnative vegetation, presence of human-made structures).

The Phase 2 Project features with one or more of the functional qualities identified above are generally irrigation canals and irrigation/drainage ditches (low); seasonal wetlands near the toe of the NCC south levee and in the

Airport north bufferlands area (moderate); and slough, freshwater marsh, NCC, and Sacramento River bank (moderate to high).

Other habitats considered sensitive by DFG include those identified as “rare and worthy of consideration” in natural communities recognized by the California Natural Diversity Database (CNDDDB). These sensitive communities provide essential habitat to special-status species that are often restricted in distribution or decreasing throughout their range. Some woodland patches within the project area could be categorized as Great Valley cottonwood riparian forest, which is a natural community documented in the CNDDDB.

The existing conditions at the Airport north bufferlands borrow sites changed from “active rice cultivation,” which existed on June 4, 2007, the time of publication of the notice of preparation (NOP) for the 2007 Landside EIR, to “idle” because the agricultural leases for these lands expired on December 31, 2007. The Sacramento County Airport System has indicated that it will not be bringing these lands back into rice production. These lands are no longer considered giant garter snake aquatic habitat, and SAFCA has revised its reclamation plan to convert all of the sites used for borrow sites to managed grassland. Previously, the site now called Grassland 4 was to be converted into a managed marsh after excavation of borrow material.

### **3.3.3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

#### **3.3.3.1 SIGNIFICANCE CRITERIA**

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines. The proposed project modifications were determined to result in a significant effect related to terrestrial biological resources if they would:

- ▶ have a substantial adverse effect, either directly or through habitat modifications, 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 any riparian habitat or other sensitive natural community identified in any local or regional plans, policies, or regulations, or by DFG or USFWS;
- ▶ have a substantial adverse effect on federally protected waters of the United States, including wetlands, as defined by Section 404 of the CWA (including but not limited to marshes, vernal pools, rivers) through direct removal, filling, hydrological interruption, or other means;
- ▶ interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- ▶ 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, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

The 2007 Landside EIR addressed the impacts caused by the disturbance and loss of special-status plant habitat, loss of potential habitat for valley elderberry longhorn beetle (VELB), disturbance and loss of northwestern pond turtle habitat, loss and disturbance of habitat for other special-status birds, loss and/or disturbance of wildlife corridors, and consistency with the NBHCP. No significant changes in the project description have occurred that would affect the severity of the above-mentioned impacts or mitigation for those impacts and that analysis is hereby incorporated by reference. Impacts that have been affected by the proposed Phase 2 Project modifications are discussed below.

### 3.3.4 IMPACT ANALYSIS

Consistent with the overall approach to this document and for purposes of CEQA compliance, the analysis presented below addresses effects from the proposed project modifications.

**IMPACT 3.3-a** **Loss of Sensitive Habitats.** *The proposed modifications to the Phase 2 Project include construction of new drainage outfalls in Reaches 1–4B of the Sacramento River east levee. Placement of these outfalls would result in fill of waters of the United States and potential removal of some riparian vegetation. This impact would be significant.*

In Reaches 1 through 4B of the Sacramento River east levee, where the adjacent levee would be constructed and would be higher than the existing levee, runoff filtered through a grass-lined swale would be conveyed in pipes from the swale between the existing levee and the new adjacent levee in approximately 23 new drainage outfalls in the berm along the east bank of the Sacramento River. Although most of the outfalls would be placed above the ordinary high-water mark and are not expected to result in filling of waters of the United States, some of the outfalls are anticipated to result in filling of 0.02 acre of waters of the United States. In addition, construction of these outfalls could result in removal of some minor amounts of riparian vegetation. This impact would be significant.

**Mitigation Measure 3.3-a: Minimize Effects on Sensitive Habitats; Develop and Implement a Habitat Management Plan to Ensure Compensation for Unavoidable Adverse Effects; Comply with Section 404, Section 401, and Section 1602 Permit Processes; and Implement all Permit Conditions.**

Mitigation Measure 3.7-a from the 2007 Landside EIR, which remains unchanged, is copied below.

SAFCA and its primary contractors for engineering design and construction shall ensure that the following measures are implemented to avoid, minimize, and compensate for potential project effects on sensitive habitats.

Areas of sensitive habitat shall be identified and the primary engineering and construction contractors shall ensure, through coordination with a qualified biologist retained by SAFCA, that staging areas and access routes are designed to minimize disturbance of canals and ditches, seasonal wetlands, and woodland patches. Trees within the Sacramento County portion of the project area that qualify as Native Oaks or Heritage Trees under Sacramento County's tree preservation ordinance shall be identified. All sensitive habitats and protected trees that are located adjacent to construction areas, but can be avoided, shall be protected by temporary fencing during construction.

SAFCA shall develop and implement a habitat management plan to address establishment and management of aquatic (i.e., GGS/Drainage Canal and marsh/seasonal wetland habitat) and woodland habitats that are created as part of the proposed project in order to ensure that the performance standard of no net loss of sensitive habitat is met. The plan shall, at a minimum, establish specific requirements for habitat creation (e.g., acreage of specific habitats to be created and number and species of trees to be planted), success criteria for habitat creation (e.g., tree survival requirements), specify remedial measures to be undertaken if success criteria are not met (e.g., supplementary plantings and additional monitoring), and describe short- and long-term maintenance and management of the features. Long-term protection of the created features, and funding for their management, shall be provided through appropriate mechanisms to be determined by SAFCA, in consultation with the regulatory agencies and other entities cooperating in implementation of the proposed project. The management plan for the habitat creation components of the proposed project shall be reviewed and approved by the appropriate resource agencies before project implementation.

Applicable permits, including a Section 404 permit from the USACE, Section 401 certification from the Central Valley RWQCB, and a Section 1602 streambed alteration agreement from DFG, shall be obtained before any

impact on the relevant resources occurs. All measures adopted through these permitting processes shall be implemented.

Implementation of the project modifications and the measures contained in previously adopted Mitigation Measure 3.7-a of the 2007 Landside EIR would ensure that adverse effects on sensitive habitats are minimized and an overall performance criterion of no net loss in acreage, function, and value of sensitive habitats is met. This would reduce the impact on sensitive habitats to a **less-than-significant** level.

**IMPACT 3.3-b** **Disturbance and Loss of Giant Garter Snake Habitat.** *Implementation of the Phase 2 Project with proposed modifications would result in disturbance and loss of aquatic and upland habitat for giant garter snake. The project would also result in creation of habitat for the snake, but specific requirements have not been established to ensure that appropriate habitat conditions are provided to adequately replace the habitat values that would be lost. Project construction also has the potential to result in direct take of giant garter snake individuals. This impact would be **significant**.*

Ongoing formal consultation and coordination with USFWS, DFG, and USACE have resulted in a change in the environmental baseline for giant garter snake aquatic and upland habitat values. Since certification of the 2007 Landside EIR, the Sacramento County Airport System (Airport) has allowed the agricultural leases for rice cultivation to expire on all the Airport bufferlands, including the Airport north bufferland sites to be used for borrow material for work on the Sacramento River east levee. Because the Airport north bufferlands will no longer be cultivated for rice, these are no longer considered giant garter snake aquatic habitat. To account for this change, the analysis of impacts on giant garter snake aquatic habitat (and associated compensation through Section 7 of the ESA) has been modified as follows.

Irrigation and drainage ditches, rice fields, managed marsh, and remnant marsh within the Natomas Basin provide critically important aquatic habitat for the basin's giant garter snake population. Suitable upland adjacent to these aquatic habitats is very limited and, in some areas, is provided almost exclusively by agricultural field boundaries and levee slopes and maintenance corridors. In general, recent occurrences of giant garter snake have been concentrated in the central and northern portions of the basin and opportunities for exchange of individuals between key populations in the northern concentration of TNBC reserves and the population at Fisherman's Lake in the south are limited (TNBC 2007). The project area provides habitat of varying quality for giant garter snake, depending on the location. In general, irrigation ditches on the far western side of the Natomas Basin, along the toe of the Sacramento River east levee, are of poor habitat quality. Sections of these ditches are concrete lined, and in the southern portion of the basin they are bordered by development. In contrast, rice fields, canals, and TNBC lands within and adjacent to the northern portion of the project area provide high-quality habitat and support a known population.

The proposed project would result in permanent loss and disturbance of potential giant garter snake habitat. However, it also includes components that would result in creation, enhancement, and preservation of habitat, including the Giant Garter Snake (GGS)/Drainage Canal (created in previously unsuitable habitat), managed marsh (created on certain rice and other agricultural fields that are used for borrow), and rice land preserved in rice production. Table 3.3-1 summarizes the changes in giant garter snake habitat that would result from the proposed project, including habitat loss, creation, enhancement, and preservation. This table provides data for the Phase 2, Phase 3, and Phase 4 Projects, and has been updated since certification of the 2007 Landside EIR.

Habitat loss and disturbance could adversely affect giant garter snake populations in the Natomas Basin if the snakes rely on the affected areas. This is unlikely to be the case for irrigation ditches along the toe of the Sacramento River east levee, but snakes are likely to use rice fields in the northern portion of the basin that would be used for borrow. Fill, temporary dewatering, and other construction disturbances would adversely affect snakes using the affected habitats. Project construction activities in areas of potentially suitable habitat could also result in direct disturbance and loss of individual giant garter snakes. Despite the habitat creation components of the

**Table 3.3-1  
Permanent Effects of the NLIP on Giant Garter Snake Habitat**

Location	Effects
<b>Phase 2 Project Habitat Effects</b>	
Canal Habitat Near Natomas Cross Canal (NCC) South Levee	0.7 acre
Rice Near NCC South Levee and Sacramento River East Levee	25 acres
Canal/Ditch Habitat Near Sacramento River East Levee	1.1 acres
<b>Phase 3 and Phase 4 Habitat Effects</b>	
Canal/Ditch and Elkhorn Reservoir Habitat Near Sacramento River East Levee	15 acres
Canal Habitat Near the Airport West Ditch	5 acres
Canal Habitat Near Pleasant Grove Creek Canal (PGCC) West Levee	0.5 acre
Rice Near PGCC West Levee	45 acres
Rice in Riverside Canal footprint	2.73 acres
Rice in Reclamation District 1000 Pumping Plant No. 2 footprint	0.25 acre
Rice in Fisherman's Lake Area (conversion to managed marsh)	55 acres
<b>Total of Permanent Effects</b>	<b>22.3 acres canal/ditch 127.98 acres rice</b>
<b>Habitat Creation in Project Design</b>	
Canal Habitat	105 acres
Marsh Habitat	72.98 acres
Preserved Rice	175 acres
Source: Data compiled by EDAW in 2008	

project, there would be some temporal loss in potential habitat while the created habitat develops into a suitable state. This temporal loss would be minimized by constructing the replacement irrigation and GGS/Drainage Canal before most of the fill of existing ditches and canals occurs, providing some time for habitat development before the loss. In addition, marsh habitat creation would occur as soon after borrow extraction as possible.

Adverse effects on giant garter snake habitat within the Phase 2 Project footprint would occur along the NCC south levee and Reaches 1 and 4B of the Sacramento River east levee. Most of the work along the NCC south levee would occur within 200 feet of suitable aquatic habitat for giant garter snake provided by irrigation/drainage canals near the landside toe of the levee. Therefore, potentially suitable uplands adjacent to this aquatic habitat would be disturbed during construction. The limited amount of waterside levee expansion in Reaches 6 and 7 would not result in loss of aquatic habitat typically present during the snake's active season. In addition, the NCC provides poor-quality habitat for giant garter snake and there is little evidence to suggest the species regularly occurs in the NCC. On the land side of the NCC south levee, less than 1 acre of irrigation/drainage canal (where the ends of the canals approach the levee toe) would be filled or realigned to eliminate excavated areas near the levee. This is anticipated to result in permanent loss of less than 0.7 acre of canal habitat.

Approximately 25 acres of rice field in Reach 1 of the NCC south levee and Reach 1 of the Sacramento River east levee, and 0.5 acre of a minor irrigation ditch in Reach 1 and 0.5 acre of irrigation canal in Reach 4B of the Sacramento River east levee, would be filled to accommodate levee expansion and construction of the adjacent levee. Temporary disturbance of approximately 0.5 acre of aquatic habitat would occur where the Elkhorn Main Irrigation Canal (Elkhorn Canal) and the GGS/Drainage Canal connect to existing lateral canals. Borrow material

for construction is anticipated to come from a combination of the Brookfield borrow site (up to 190 acres assumed for the Phase 2 Project) and the Airport north bufferlands (up to 225 acres assumed for the Phase 2 Project). The Brookfield borrow area would be returned to rice production after borrow extraction, and the Airport borrow area would be reclaimed as grassland. (The Sacramento County Airport System has chosen not to renew agricultural leases, which expired December 31, 2007, on its lands north of the Airport, and has allowed these lands to become idle.) The RD 1001 borrow site (120 acres) north of the Natomas Basin also could be used during Phase 2 Project construction, in place of the Brookfield site.

The nature of adverse effects on giant garter snakes and their habitat in the Phase 3 and Phase 4 Projects would be similar to those described for the Phase 2 Project, but the acreages of impact would be greater. Sacramento River east levee improvements in the Phase 3 Project would result in permanent fill of approximately 12 acres of irrigation canal and 1 acre of Elkhorn Reservoir along the landside toe of the levee. The existing irrigation canals along the levee toe generally provide poor-quality habitat, and no giant garter snakes have been documented in them. However, the canals represent potential habitat for giant garter snake and are a component of the overall area of habitat available in the Natomas Basin and addressed in the NBHCP. Approximately 2 additional acres of lateral irrigation/drainage ditch segments within the levee improvement footprint, and between the new levee features and replacement irrigation canals and the GGS/Drainage Canal, would be filled. The Airport West Ditch, which supports approximately 6.5 acres of potential giant garter snake aquatic habitat, would be dewatered as part of the irrigation and drainage infrastructure reconfiguration. Finally, approximately 2 acres of irrigation/drainage canal along the toe of the Pleasant Grove Creek Canal (PGCC) levee would require relocation to accommodate the levee raise and seepage remediation in 2010, and portions of rice fields adjacent to the levee could be lost if seepage berms are constructed. Based on a 100-foot-wide seepage berm that could be required in portions of these reaches, approximately 23 acres of rice fields could be lost. Borrow material for the Phase 3 and Phase 4 Projects is anticipated to come from a combination of the Brookfield, Krumenacher, Pacific Terrace, Bianchi, and South Sutter (Thornton) properties, private property in Sacramento River east levee reaches 7–9B, and/or agricultural fields in the vicinity of Fisherman’s Lake. Approximately 160 acres of land which would potentially include rice fields would be used for the PGCC work, and approximately 500 acres of mixed agricultural land (rice and/or field/row crops/fallow crop) would be used for the Sacramento River east levee improvements.

The loss and disturbance of giant garter snake habitat would be offset by the habitat creation and preservation components of the project. In the Phase 2 Project, giant garter snake habitat creation would include approximately 33 acres of aquatic habitat in the new GGS/Drainage Canal and new Elkhorn Canal. Up to 175 acres of existing privately owned rice fields in the northern portion of the basin would also be acquired and preserved either in public ownership or under the control of the TNBC. In the Phase 3 and Phase 4 Projects, an additional 72 acres of aquatic and associated upland habitat would be created in the new GGS/Drainage Canal, enhancement of the existing Western Drainage Canal, and the new Elkhorn and Riverside canals. An additional approximately 73 acres of managed marsh habitat would be created in the vicinity of Fisherman’s Lake.

The habitat quality of the GGS/Drainage Canal and West Drainage Canal is anticipated to eventually be substantially higher than the canal habitat that would be lost. Creation and enhancement of these canals would include a number of features designed to maximize the amount and quality of habitat, as well as minimize the need for maintenance activities that temporarily reduce habitat quality and can result in injury and mortality of giant garter snakes. In addition, the configuration and design of the GGS/Drainage Canal and West Drainage Canal enhancement were specifically formulated based on the goal of providing a functional travel corridor between giant garter snake populations in the northern and southern portions of the Natomas Basin. Loss and deterioration in the quality of existing travel corridors has been identified as a primary concern in maintaining a genetic connection between these two snake populations. Although the primary function of the replacement Elkhorn and Riverside Canals would be irrigation supply, they are anticipated to provide habitat comparable to that of the irrigation canals that would be filled as a result of the proposed project. They have also been designed to minimize maintenance and resulting habitat degradation and snake injury and mortality.

Although rice fields are an important component of giant garter snake habitat, the habitat value and quality of the created marsh habitat is anticipated to be of higher than that of the rice it would replace. The marsh areas would include uplands, which are a very important component of snake habitat that is nearly lacking in rice fields. Managed marsh also would provide habitat consistently from one year to the next, while rice fields can periodically sit fallow and fail to provide aquatic habitat during key periods. The marsh areas would also be managed in a manner that minimizes potential for snake injury and mortality that can result from typical farming practices. In addition, the preserved rice fields would be cultivated in a manner that maximizes habitat suitability and minimizes potential for injury and mortality.

Although the habitat loss would be compensated for by habitat creation and preservation, a plan has not yet been prepared specifying how canals and marsh that are designed to provide giant garter snake habitat would be managed to ensure that the appropriate habitat conditions are provided. Creation of replacement habitat that does not provide the essential components, and is not managed in a way that maximizes habitat quality and minimizes potential adverse effects on giant garter snake, could also result in a substantial adverse effect on the species. In addition, loss of individual giant garter snakes during construction could result in a substantial adverse effect on the species. These potential impacts would be significant.

**Mitigation Measure 3.3-b: Minimize the Potential for Direct Loss of Giant Garter Snake Individuals, Develop and Implement a Management Plan in Consultation with USFWS and DFG, and Obtain Incidental Take Authorization.**

Mitigation Measure 3.7-d from the 2007 Landside EIR, which remains unchanged, is copied below.

SAFCA and its primary contractors for engineering design and construction shall ensure that the following measures are implemented to avoid, minimize, and compensate for potential project effects on giant garter snakes.

The primary engineering and construction contractors shall ensure, through coordination with a qualified biologist retained by SAFCA, that staging areas and access routes are designed to minimize disturbance of giant garter snake habitat. All aquatic and adjacent upland habitat that is located adjacent to construction areas, but which can be avoided, shall be protected by temporary fencing during construction.

Additional measures consistent with the goals and objectives of the NBHCP shall be implemented to minimize the potential for direct injury or mortality of individual giant garter snakes during project construction. Such measures shall be finalized in consultation with DFG and USFWS, and are likely to include conducting worker awareness training, timing initial ground disturbance to correspond with the snake's active season (as feasible in combination with minimizing disturbance of nesting Swainson's hawks), dewatering aquatic habitat before fill, conducting preconstruction surveys, and conducting biological monitoring during construction.

SAFCA shall develop and implement a plan to address management of aquatic (i.e., GGS/Drainage Canal and marsh/seasonal wetland habitat) and adjacent upland habitats that are created and rice fields that are preserved as part of the project in order to ensure that the performance standard of no net loss in function and value of giant garter snake habitat is met. The management plan shall, at a minimum, establish specific success criteria for habitat creation, specify remedial measures to be undertaken if success criteria are not met (e.g., adaptive management, physical adjustments to created habitat, additional monitoring), and describe short- and long-term maintenance and management of the features. Long-term protection of the created features and funding for their management shall be provided through appropriate mechanisms to be determined by SAFCA, the regulatory agencies, and other entities cooperating in implementation of the proposed project.

The management plan for the giant garter snake habitat creation and preservation components of the project shall be reviewed and approved by USFWS and DFG before project implementation. Authorization for take of giant garter snake under ESA and CESA shall be obtained. All measures subsequently adopted through the permitting process shall be implemented.

Implementation of previously adopted Mitigation Measure 3.7-d from the 2007 Landside EIR would ensure that adverse effects from proposed modifications to giant garter snake are minimized and an overall performance criterion of no net loss in function and value of giant garter snake habitat is met. This would reduce the impact on giant garter snake to a **less-than-significant** level.

**IMPACT 3.3-c** **Loss of Swainson’s Hawk Habitat and Potential Disturbance of Nests.** *Implementation of the proposed project, including proposed modifications, would result in loss of suitable foraging and potential nesting habitat. Creation of suitable foraging and nesting habitat would also occur, but specific requirements have not been established to ensure that appropriate habitat conditions are provided to adequately replace the habitat values that would be lost. Project construction could also result in disturbance and potential failure of active nests for Swainson’s hawk. This impact would be significant.*

Ongoing coordination with DFG since certification of the 2007 Landside EIR has resulted in a reanalysis of effects and impacts on Swainson’s hawk foraging habitat as a result of changes in land cover types. The impact discussion of foraging habitat quality and quantity has been modified to reflect those changes and potential impacts associated with those changes. As described in Section 2.2.2 of the SEIR, additional agricultural land to mitigate impacts on high-quality foraging habitat has been identified as part of the project and is included in the analysis below.

The project area is within a densely populated and critical component of the Central Valley Swainson’s hawk population. Nesting pairs in the Natomas Basin may represent as much as 10% of the Swainson’s hawks that are found in the Central Valley. Most nest sites are located in trees along the western portion of the basin along the waterside slopes of the Sacramento River; several nests are also typically scattered along the NCC and PGCC. Nesting habitat includes riparian and non-riparian woodlands. In addition to these nest sites adjacent to the project area, there are agricultural fields and grassland habitats (including levee and canal maintenance zones) throughout the project area that provide suitable foraging habitat for Swainson’s hawk.

The proposed project would result in permanent loss and disturbance of Swainson’s hawk foraging and nesting habitat. However, it also includes components that would result in creation and/or preservation of native perennial and annual grasslands and woodlands anticipated to provide suitable foraging and nesting habitat. Tables 3.3-2 and 3.3-3 provide a summary of changes in Swainson’s hawk habitat that would result from the proposed project.

**Table 3.3-2  
Permanent Effects of the Project on Swainson’s Hawk Foraging Habitat (in acres)**

	Affected Cropland	Created/ Preserved Cropland*	Net Cropland	Impacted Grassland	Created Grassland	Net Grassland	Total Loss	Total Increase	Total Net
Phase 2	-236	152	-84	-152	316	164	-388	468	80
Phase 3	-139	60	-79	-71	235	163	-210	295	85
Phase 4	-177	0	-177	-45	290	245	-222	290	68
	<b>-552</b>	<b>212</b>	<b>-340</b>	<b>-267</b>	<b>840</b>	<b>573</b>	<b>-819</b>	<b>1,052</b>	<b>233</b>

Source: Data compiled by EDAW in 2008  
 \* This includes 62 acres of croplands in two parcels that will become fallow due to their proximity to Phase 2 Project elements (the new GGS/Drainage Canal and relocated Elkhorn Canal). These parcels may be used for borrow in the Phase 3 Project and then reclaimed.

The conversion of foraging and nesting habitat for Swainson’s hawk would occur from construction of levees, berms, and operation, maintenance, and utility corridors along the Sacramento River, PGCC, NCC, and Natomas East Main Drainage Canal; the construction of the new GGS/Drainage and realigned Elkhorn Canals; and the creation of woodland corridors. These activities would also impact some land types that do not support foraging

or nesting habitat for Swainson’s hawks, including developed areas, orchards, rice crops, and irrigation canals and ditches. However, the majority of the land conversion is from field crops into grasslands. The plan to offset impacts on foraging and nesting habitat includes preserving approximately 150 acres of high quality foraging habitat (field crops which include an alfalfa crop rotation) and 62 acres of fallow agricultural land, creating 840 acres of native perennial and annual grasslands, and creating 125 acres and preserving 10–20 acres of woodland corridors along the landside of the Sacramento River east levee.

**Table 3.3-3  
Permanent Effects of the Project on Swainson’s Hawk Nesting Habitat (in acres)**

	Affected Woodlands	Created/Preserved Woodlands	Net Woodlands
Phase 2	-17	63	<b>46</b>
Phase 3	-25	32	<b>7</b>
Phase 4	-40	45	<b>5</b>
	<b>-82</b>	<b>140</b>	<b>58</b>

Source: Data compiled by EDAW in 2008

Alfalfa and other irrigated field crops can generally provide higher quality foraging habitat than uncultivated annual grasslands and ruderal areas due to prey abundance and availability. The crops can provide abundant cover and food for prey populations. Further, periodic disturbances, such as harvesting, tilling, and flooding, can increase prey availability. Certain crops provide better foraging than others due to crop height and disturbance regime. Generally, alfalfa crops are considered the highest value foraging habitat for Swainson’s hawk. Next, in order of preference, is grass hay, fallow crops, row and grain crops, and finally grasslands (Estep 2007, Woodbridge 1998). Alfalfa crops are typically managed by rotating in other crops such as tomatoes or beets or allowing the field to fallow in some years. These alfalfa croplands will be referred to as high-quality foraging habitat for this section of this SEIR. Although agricultural crops provide higher-quality foraging habitat for Swainson’s hawks at particular times in the cultivation cycle, grassland habitat also provides valuable foraging habitat because its availability is consistent throughout the period when Swainson’s hawks are present in the Natomas Basin. However, the value of common annual grassland may be less than that of the high-quality agricultural crops, such as alfalfa, at their peak of foraging quality (i.e., during irrigation and harvest).

**SUMMARY OF EFFECTS ON SWAINSON’S HAWK HABITAT**

The total amount of foraging habitat that would be lost (819 acres) is less than the amount that would be created (1052 acres). However, the habitat types and foraging values involved vary substantially. Approximately 74% of the croplands and grasslands being affected would be converted or reclaimed into native perennial grasslands and the remainder would be converted into woodlands and aquatic habitat. Of the 552 acres of croplands being affected, about 32% (approximately 174 acres) are high quality foraging habitat. The other crop types being affected, in order of foraging value, include grass hay (18%), fallow crops (20%), and row and grain crops (30%).

In total, SAFCA would create and preserve in perpetuity approximately 150 acres of high quality foraging habitat (field crops which include an alfalfa crop rotation) to mitigate the permanent loss of this habitat. This would be achieved primarily by acquiring, reclaiming, and preserving land used for borrow material from a combination of the following sites: the South Sutter (Thornton), Bianchi, and Novak borrow sites (which would be used for the Phase 3 and 4 projects), and approximately 14 acres of private land acquired along Reach 2 of the Sacramento River east levee. In addition 62 acres of croplands will become fallow due to their proximity to Phase 2 Project activities and will be maintained as foraging habitat. The borrow sites would be temporarily affected by project activities and then returned to their prior conditions within approximately 2 years. The estimated acres of foraging habitat temporarily affected in these borrow sites for the Phases 2, 3, and 4 Projects are 320, 672, and 286 acres,

respectively. The majority of these affected acres are fallow crops (51%), with croplands accounting for 35% and grasslands for 14% of the acreage.

The majority of grasslands being affected are nonnative annual grasslands and ruderal areas, which are generally the least preferred foraging habitat for Swainson's hawks. Grasslands would be created along new or realigned levee slopes and canal berms by drill seeding with native perennial grasses. They would be managed by mowing or grazing with an emphasis on creating appropriate stubble height to optimize the value of these areas for foraging hawks to the extent possible. These perennial grasslands would provide moderately suitable foraging habitat. The primary purpose of levee maintenance is to maintain effective flood control, which may constrain managing grasslands on levee slopes to optimize foraging habitat.

To mitigate the loss of potential nesting habitat in landside woodlands, the proposed project includes planting a series of woodland corridors and larger woodland nodes alongside existing woodland habitats that would be preserved as potential nesting habitat. In areas where trees would be removed under the Sacramento River east levee footprint, a number of existing trees, especially valley oaks under 8–10 inches diameter at breast height, would be transplanted into the new woodland corridors or nodes.

## **Phase 2 Project**

The Phase 2 Project would result in the net loss of 84 acres of croplands and a net increase of 164 acres of native perennial and annual grasslands, which would increase the amount of foraging habitat in the project area by 80 acres. However, the composition of this habitat would shift from 61% croplands to 67% grasslands, which may result in a decrease in the quality of foraging habitat for the Swainson's hawk. Approximately 90 acres (40%) of the croplands being affected are high quality foraging habitat (field crops which include alfalfa in the crop rotation). To offset this impact to high quality foraging habitat, SAFCA would preserve approximately 90 acres of high quality foraging habitat within reclaimed borrow sites (on properties that SAFCA would acquire in Phase 2 that could be used for borrow operations as part of the Phase 3 and/or 4 projects). This would reduce the impact on foraging habitat by ensuring the preservation of field crops with high foraging value. In addition the 62 acres of fallow crops on the two potential borrow sites will continue to provide foraging habitat. The total amount of croplands being affected in the Phase 2 Project is only 1% of the estimated agricultural lands in the basin and, therefore, is not a substantial reduction of foraging habitat in the basin overall.

The vast majority of Swainson's hawk nests in the basin are within the mature riparian forest along the waterside of the Sacramento River's levees. The adjacent setback levee design of the Sacramento River east levee avoids the need to remove waterside forest, which would otherwise be required if the Garden Highway levee were being rebuilt and upgraded in place. The 17 acres of woodlands that would be affected in the Phase 2 Project are along the landside of the Sacramento River east levee where no nests have been documented since 2001. Nests that have been documented on the landside of the east levee are within substantial riparian corridors along ditches, sloughs, and canals toward the interior of the basin. Approximately 63 acres of woodlands would be created or preserved during the Phase 2 Project, resulting in a net increase of 46 acres of potential nesting habitat.

The woodland mitigation plan would include transplanting suitable trees from the flood control footprint, where feasible, as well as planting a variety of native tree species that could become suitable nesting habitat for Swainson's hawks. There would be a temporal loss of 17 acres of woodlands in the project area as these plantings mature and provide potential nesting habitat within 10 to 15 years. This temporal loss represents a small proportion (<3%) of the available nesting habitat in the basin. Ultimately, the planting of woodland corridors in the Phase 2 Project would increase potential nesting habitat by 8% in the basin. The temporal loss of potential nesting trees would affect a small proportion of the available trees in the basin, and there would be an increase in potential nesting habitat following mitigation associated with the Phase 2 Project. Therefore, the Phase 2 Project would not have a substantial adverse effect on the ability of Swainson's hawks to nest in the basin.

Project construction during the proposed project would occur during the Swainson's hawk nesting season and could result in disruption of nesting behavior. If project construction is already underway when pairs return to their nesting territories, project activity could render previously occupied territories unsuitable. If active nests are present near construction areas when construction begins, the nesting pairs could be disturbed, potentially resulting in nest abandonment and loss of eggs or young.

These potential impacts on foraging habitat and nesting pairs occurring in the Phase 2 Project would be significant.

### **Phase 2, Phase 3, and Phase 4 Projects**

Land conversion due to all remaining phases of the NLIP Landside Project would result in a net loss of 340 acres of croplands and a net increase of 573 acres of native perennial and annual grasslands. This would increase the amount of foraging habitat in the project area by 233 acres. However, the composition of foraging habitat across the entire project footprint would shift from 69% croplands to 82% grasslands, leading to a potential decrease in the quality of foraging habitat for Swainson's hawks. The majority of the high-quality foraging habitat converted (174 acres of alfalfa) would be partially offset by preserving 150 acres of high quality foraging habitat (field crops which include an alfalfa crop rotation) within sites (already acquired by SAFCA) which may be used for borrow material extraction. Therefore, the net loss of alfalfa crops in the basin would be reduced to 24 acres or only 2 % of the estimated alfalfa in the basin. The amount of all crops converted by the Phase 2, Phase 3, and Phase 4 Projects would be a small portion (4%) of the total croplands within the basin, and the majority of these are not considered high-quality foraging habitat for Swainson's hawk. Project activities would also result in the reduction of 82 acres of nesting habitat and the creation and preservation of 140 acres of nesting habitat, resulting in an increase of 58 acres of potential nesting habitat for Swainson's hawks.

The main impact on foraging habitat from the proposed project is a conversion from higher quality croplands to somewhat lower quality grasslands. This replacement of croplands with grasslands would decrease the quality of foraging habitat for the Swainson's hawk. This could force hawks to forage farther from the nest or increase competition for prey with other hawks in the area. This impact would be offset by a net increase of 233 acres of native perennial and annual grassland foraging habitat, the creation or preservation of high-quality foraging habitat by preserving specific crop types (crop rotations including alfalfa) in reclaimed borrow areas, and the small percentage (4%) of cropland foraging habitat being affected in the basin overall. A plan is being prepared to specify how the grasslands would be managed to ensure the appropriate habitat conditions.

While there would be a temporal loss of 82 acres of nesting habitat until the created woodland corridors mature, these woodlands planted in the project area would ultimately increase potential nesting habitat in the basin by 10%.

Project construction could result in potential displacement from nesting territories and disturbance and failure of active nests, which would represent substantial adverse effects on Swainson's hawks.

Creation of replacement habitat that does not provide the essential components (e.g., an adequate prey base or adequate nesting habitat) and is not managed in a way that maximizes habitat quality could result in a substantial adverse effect on the species, which would be a significant impact.

These potential impacts on foraging habitat and nesting pairs occurring through the Phase 2, 3, and 4 Projects would be significant.

**Mitigation Measure 3.3-c: Minimize Potential Impacts on Swainson's Hawk, Monitor Active Nests during Construction, Develop and Implement a Management Plan in Consultation with DFG, and Obtain Incidental Take Authorization.**

Mitigation Measure 3.7-f from the 2007 Landside EIR, which remains unchanged, is copied below.

SAFCA and its primary contractors for engineering design and construction shall ensure that the following measures are implemented to avoid, minimize, and compensate for potential project effects on Swainson's hawks.

The primary engineering and construction contractors shall ensure, through coordination with a qualified biologist retained by SAFCA, that staging areas and access routes are designed to minimize disturbance of known Swainson's hawk nesting territories. The biologist shall conduct preconstruction surveys to identify active nests within 0.25 mile of construction areas, in accordance with DFG guidelines. Surveys shall be conducted in accordance with NBHCP requirements and *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000). If an active nest is found, an appropriate buffer that minimizes the potential for disturbance of the nest shall be determined by the biologist, in coordination with DFG. No project activities shall commence within the buffer area until a qualified biologist confirms that the nest is no longer active or the birds are not dependent on it. Monitoring shall be conducted by a qualified biologist to determine whether project activity results in detectable adverse effects on the nesting pair or their young. The size of the buffer may vary, depending on the nest location, nest stage, construction activity, and monitoring results. If implementation of the buffer becomes infeasible or construction activities result in an unanticipated nest disturbance, DFG shall be consulted to determine the appropriate course of action.

SAFCA shall develop and implement a plan to address management of grassland habitats that are created as part of the proposed project in order to ensure that the performance standard of no net loss of sensitive habitat is met. The management plan shall, at a minimum, establish specific success criteria for habitat creation, specify remedial measures to be undertaken if success criteria are not met (e.g., supplementary plantings and additional monitoring), and describe short- and long-term maintenance and management of the features. Long-term protection of the created features and funding for their management shall be provided through appropriate mechanisms to be determined by SAFCA, DFG, and other entities cooperating in implementation of the proposed project.

The management plan for the grassland habitat creation components of the project shall be reviewed and approved by USFWS and DFG before project implementation. Authorization for take of Swainson's hawk under CESA shall be obtained. All measures subsequently adopted through the permitting process shall be implemented.

Implementation of Mitigation Measure 3.7-f from the 2007 Landside EIR and the project as modified would ensure that adverse effects on Swainson's hawk are minimized and an overall performance criterion of no net loss in acreage, function, and value of Swainson's hawk foraging habitat is met. This would reduce the impact on Swainson's hawk to a **less-than-significant** level.