Mr. Francis C. Piccola  
Chief, Planning Division  
U.S. Army Corps of Engineers, Sacramento District  
1325 J Street  
Sacramento, California 95814

Subject: Section 7 Programmatic Formal Consultation on the Natomas Levee Improvement Program, Landslide Improvements Project, Sacramento and Sutter Counties, California

Dear Mr. Piccola:

This is in response to your March 31, 2009, request to amend the formal consultation with the U.S. Fish and Wildlife Service (Service) on the Natomas Levee Improvement Program, Landslide Improvements Project (proposed project) in Sacramento and Sutter Counties, California, dated October 9, 2008 (File 81420-2008-F-0195-5). Your request was received on April 1, 2009. Your request was received in our office on June 11, 2008. This document represents the Service’s concurrence to amend the programmatic biological opinion on the effects of the action to two federally-listed threatened species: the valley elderberry longhorn beetle (Desmocerus californicus dimorphus) and the giant garter snake (Thamnophis gigas), in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (Act).

The Sacramento Area Flood Control Agency (SAFCA) recently made changes to the conservation strategy of their project. The Service, the U.S. Army Corps of Engineers (Corps), and SAFCA believed the change in the conservation strategy was substantial and re-initiation of consultation was necessary. Given the programmatic nature of this consultation, the Service is amending the project description and effects analysis within this biological opinion. Paragraphs that contain changes from the October 9, 2008, document have been bolded. This programmatic biological opinion supersedes the October 9, 2008, programmatic biological opinion.
This biological opinion is based on information provided in the Corps' letter requesting consultation and their biological assessment. A complete administrative record is on file at the Sacramento Fish and Wildlife Office.

CONSULTATION HISTORY

September 25, 2006. SAFCA had a meeting with the Service to briefly describe the conceptual Natomas Levee Improvement Project.

May 10, 2007. SAFCA made a presentation of their Natomas Levee Improvement Program Conceptual Plan to the Natomas Joint Vision, which included staff from the Service, California Department of Fish and Game (CDFG), the City of Sacramento, the Sacramento International Airport (Airport), and the Corps. This presentation included additional details and conceptual project designs.


January 11, 2008. SAFCA, the Corps, the Service, and CDFG began holding coordination meetings on the Natomas Levee Improvement Project to discuss project description and schedule.

January 24, 2008. SAFCA, the Corps, the Service, and CDFG held a coordination meeting, which included John Roberts from the Natomas Basin Conservancy (TNBC) to discuss project effects.

March 28, 2008. The Service met with SAFCA and Congresswoman Doris Matsui to discuss the project and schedule of the project.

June 17, 2008. SAFCA and the Corps held a meeting with CDFG and the Service to discuss work proposed for construction in 2009.

June 25, 2008. The Corps, EDAW, CDFG, and Service held a meeting to go over the effects of the project on specific cover-types.

July 2, 2008. The Service met again with Congresswoman Doris Matsui to discuss the schedule of the biological opinion.

July 9, 2008. The Service met with SAFCA, EDAW, CDFG, and the Corps to discuss endowments and easements for the conservation measures. The Service advised SAFCA that any thing other than a conservation easement for protection of compensation areas would take a great deal of time to work through.
July 10, 2008. The Corps, EDAW, SAFCA, CDFG, and Service held a meeting to discuss effects and schedule of the project.

July 15, 2008. The Service and Corps met with SAFCA to resolve schedule differences for the biological opinion. The Service committed to completing the biological opinion by September 24, 2008.

July 17, 2008. The Service provided a request via e-mail for 39 additional acres of managed marsh creation as part of the compensation strategy. This request was sent to EDAW, SAFCA, Corps, and CDFG.

July 21, 2008. The Service, Corps, EDAW, SAFCA, and CDFG met to discuss project effects and compensation strategy.

September 9, 2008. SAFCA provided an updated compensation strategy based on landuse changes at borrow sites on Sacramento County Airport lands.

September 11, 2008. The Service provided EDAW with comments on the draft language for a drainage easement on the GGS/Drainage Canal.

September 17, 2008. SAFCA, EDAW, and the Service had a meeting in which SAFCA proposed an idea to develop a compensation bank within the Natomas Basin.

September 19, 2008. The Service responded to the proposal submitted by SAFCA for a compensation bank and suggested that in order to provide a biological opinion to the Corps and SAFCA by September 24, 2008, SAFCA not include compensation banking as part of their project description. The Service also suggested that placing a conservation easement on ½ of the area borrowed at Brookfield would help compensate for effects due to the project.

September 21, 2008. SAFCA’s consultant provided an e-mail, which agreed to the Service’s September 19, 2008, e-mail.

September 24, 2008. The Service sent the Corps and SAFCA a draft biological opinion for the Landside Improvement Project.

September 29, 2008. SAFCA’s consultant EDAW provided comments to the Service on the draft biological opinion.

October 9, 2008. The Service sent the final biological opinion to the Corps and SAFCA.

February 5, 2009. The Service, CDFG, SAFCA, EDAW, Sacramento County, John Roberts from the TNBC, and Reclamation District (RD) 1000 met to discuss the GGS/Drainage Canal easement and each agencies roles and responsibilities.
February 11, 2009. The Service provided SAFCA’s attorney Fran Layton with our comments on the GGS/Drainage Canal easement language.

February 12, 2009. SAFCA’s attorney spoke to Lynn Cox, Department of Interior Solicitor, and indicated that as had been previously discussed the TNBC would not be 3rd party beneficiary on the GGS/Drainage Canal easement where the canal crosses airport property because Sacramento County Airport System (SCAS) wanted them removed. Additionally, SCAS also wanted language inserted into the easement, which would give them the ability to modify the GGS/Drainage Canal, should the Federal Aviation Authority request it but that they would consult with the Service and CDFG prior to working within the GGS/Drainage Canal and provide compensation for effects.

February 24, 2009. The Service, CDFG, SAFCA, EDAW, Corps, and Sacramento County met to discuss the language of the easement along the GGS/Drainage Canal. Agreement was reached at this meeting. Because SAFCA would not place the GGS/Drainage Canal under a conservation easement they would provide additional compensation near Fisherman’s Lake, which would have a conservation easement placed on it.

March 4, 2009. The Service, CDFG, and EDAW met to discuss effects acreages for the entire project. EDAW indicated at the meeting that SAFCA may not create aquatic benches on any portion of the GGS/Drainage Canal. The Service indicated that if that was the case than the programmatic biological opinion would have to be amended.

March 31, 2009. The Corps re-initiates consultation on the programmatic biological opinion.

BIOLOGICAL OPINION

Description of Action Area

The proposed project area is located in the Natomas Basin in northern Sacramento and southern Sutter Counties, generally bounded by leveed reaches of the Natomas Cross Canal (NCC) on the north, the Sacramento River on the west, the American River on the south, and the Pleasant Grove Creek Canal (PGCC) and Natomas East Main Drainage Canal (NEMDC)/Steelhead Creek on the east. This project, which is part of the larger Natomas Levee Improvement Program (NLIP) being undertaken by SAFCA, consists of three construction phases, generally occurring between 2008 and 2011. Construction of Phase 2 includes the 5.3-mile NCC south levee, the Sacramento River east levee from the NCC south levee to 2,000 feet south of the North Drainage Canal (Reaches 1-4B), the Elkhorn Main Irrigation Canal (Elkhorn Canal) between the North Drainage Canal and the Elkhorn Reservoir settling basin, the site of RD 1000 Pumping Plant No. 2, and adjacent land. Construction of Phase 3 includes the Sacramento River east levee south of the limits of the Phase 2 improvements to just south of Interstate 5 (I-5) (Reaches 5A–9B), the PGCC west levee, the NEMDC west levee between Elkhorn Boulevard and Northgate
Boulevard, the area between Elkhorn Reservoir and the West Drainage Canal where a new canal designed to provide drainage and associated giant garter snake habitat (referred to in this document as the "GGS/Drainage Canal") would be constructed, the portion of the West Drainage Canal north of I-5, the Elkhorn Canal downstream of Elkhorn Reservoir, and RD 1000 Pumping Plant No. 2. Construction Phase 4, which is still being designed, includes the Sacramento River east levee south of the limits of the Phase 3 improvements to the junction with the American River north levee (Reaches 10–20), the NEMDC west levee between Sankey Road and Elkhorn Boulevard, the Riverside Main Irrigation Canal (Riverside Canal), and the West Drainage Canal south of I-5 to Fisherman's Lake. Phase 1 of the project occurred during the summers of 2007 and 2008 and consisted of placing slurry wall along 9,700 linear feet of the Natomas Cross Canal (Service file number 1-1-07-F-0207).

Because the Corps and SAFCA only have a detailed project description for Phase 2 of the entire Natomas Levee Improvement Project, this biological opinion analyzes the landscape effects of the project for all Phases (2, 3, and 4) but will only analyze and provide incidental take coverage for Phase 2. Each subsequent phase will initiate section 7 consultation with the Service under the umbrella of this programmatic biological opinion.

**Overview of NLIP Landside Improvements Project**

SAFCA is designing the NLIP in coordination with the Federal and state flood control project sponsors, the Corps, and the State of California Central Valley Flood Protection Board (formerly The Reclamation Board), to address the deficiencies in the Natomas levee system with a focus on achieving a 100-year level of flood protection by 2011. This will require improving the following landside conditions along the NCC south levee, the Sacramento River east levee, and the PGCC and NEMDC west levees:

- Inadequate freeboard—The NCC south levee and portions of the Sacramento River east levee are not high enough to provide at least 3 feet of freeboard above the 100-year water surface elevation. Additional reaches do not provide 3 feet of freeboard above the 200-year design water surface elevation.

- Underseepage and through-seepage vulnerability—Most of the levee reaches do not meet recently adopted Federal criteria for safely containing underseepage and through-seepage when the water surface in the adjacent channel reaches the 100-year elevation or, in some cases, the 200-year elevation.

The NLIP Landside Improvements project encompasses addressing freeboard deficiencies through levee raises; addressing seepage potential using a combination of seepage berms, cutoff walls, and relief wells; and acquiring additional right-of-way to construct the improvements and to prevent encroachment into the flood control system. In addition, the project has been designed to include an enlarged levee embankment (adjacent setback levee) along the land side of the existing Sacramento River east levee to minimize the need for substantial removal of vegetation and structural encroachments on the water side of this levee in compliance with Corps guidance.
These improvements would include recontouring the levee slopes where necessary to provide a 3:1 horizontal-to-vertical (3H:1V) waterside slope and a 3H:1V (preferred) or 2H:1V (maximum) landside slope.

The specific goal of the NLIP Landside Improvements Project is to provide at least 100-year flood protection as quickly as possible while laying the groundwork to achieve at least urban-standard (200-year) flood protection over time.

Additional project objectives that influenced SAFCA’s project design were to:

1. use flood control projects in the vicinity of the Sacramento County Airport to facilitate better management of Airport lands to reduce hazards to aviation safety, and
2. use flood control projects to enhance habitat quality and values by increasing the extent of the lands in the Natomas Basin being managed to provide habitat for the giant garter snake, the Swainson’s hawk, and other special-status species.

Recognizing the importance of securing maximum Federal support for the flood control project, SAFCA has explored implementation approaches that also advance the achievement of Federal aviation and wildlife protection objectives where complementary opportunities exist. Accordingly, the proposed project includes the following elements:

- The project would include construction of the GGS/Drainage Canal to provide giant garter snake habitat and some drainage infrastructure west of the Airport. Construction of these facilities would allow for dewatering of the ditch running along the western portion of the Airport runway system, which the airport recognizes as a flight safety hazard, by offsetting the effects on drainage and irrigation needs and giant garter snake habitat.

- The project would combine SAFCA’s need for levee embankment and berm material with the SCAS's need to modify the condition and management of Airport bufferlands so as to reduce wildlife hazards affecting Airport operations in a manner that enhances the connectivity of areas managed specifically for their habitat value.

**Existing Project Facilities and Potential Borrow Sites**

Construction activities for all project phases would take place within the Natomas Basin, except for potential development of a borrow site on RD 1001 land northeast of the basin. The following subsections describe the existing flood control facilities, their general setting, and adjacent irrigation infrastructure and the potential borrow sources for the project as provided by the Corps in their Environmental Impact Statement for the proposed project.
**Flood Control and Irrigation Facilities**

**Natomas Cross Canal South Levee**

The NCC is a 5.3-mile-long channel that carries water from several tributary watersheds in western Placer County and eastern Sutter County to the Sacramento River. The NCC begins at the PGCC and East Side Canal and extends southwest to its confluence with the Sacramento River near the Sankey Road/Garden Highway intersection. During periods of flooding, the Sutter Bypass, Sacramento River, and NCC all contribute to raised water elevations that can affect the NCC levees. For engineering purposes, the south levee is divided into seven reaches. Much of the south levee contains an existing stability berm with an internal drainage system. Levee slopes are approximately 3H:1V on the water side and 2H:1V on the land side.

There is an approximately 80- to 100-foot maintenance access area on the landside of the levee through most of the NCC’s length. Farms and rural residences are located on both sides of the NCC, with rice the primary crop under cultivation. The Lucich North and Frazer Habitat Preserves, maintained by the TNBC, lie south of the NCC south levee from the eastern end of Reach 2 through the western end of Reach 6. A drainage canal, referred to as the Vestal Drain, runs parallel to the NCC south levee through much of Reach 2, approximately 100 feet from the landside levee toe. There is a private irrigation pump and irrigation canal at the landside levee toe in Reach 1. Natomas Central Mutual Water Company’s (NMWC) Bennet Pumping Plant and RD 1000’s Pumping Plant No. 4 are located in Reach 2, and the NMWC Northern Pumping Plant is located in Reach 3. The NMWC North Main Canal runs parallel to the levee through Reaches 4 and 5, approximately 100 feet from the landside levee toe.

**Sacramento River East Levee**

An 18-mile-long section of the east levee of the Sacramento River protects the west side of the Natomas Basin between the NCC and the American River. For planning purposes, the levee is divided into 20 reaches. Garden Highway is located on top of the levee crown within all 20 reaches. A drained, 10-foot-wide stability berm is present on the landside slope of the levee between the NCC and Powerline Road (Reaches 1–11). Cutoff walls to address through-levee seepage remediation were previously constructed through the levee in Reaches 12–20. The land uses along the levee vary from north to south. Along the landside, Reaches 1–13 are bordered mainly by private agricultural lands containing a few rural residences, Airport bufferlands, and two farmed the TNBC parcels. Teal Bend Golf Club is west of the Airport, adjacent to the levee along Reach 6. The parcels bordering Reaches 14–18 contain more residences, several rural estates, and three TNBC parcels. The landside of Reaches 19 and 20 are bordered by residential subdivisions, a business park, the City of Sacramento’s Natomas Oaks Park, undeveloped Costa Park site, and Shorebird Park.

Several irrigation canals, pipelines, wells, and pump stations exist along the Sacramento River east levee. The Elkhorn Canal and the Riverside Canal are key agricultural irrigation canals in the NMWC system. The Elkhorn Canal runs parallel to the Sacramento River east levee from the
North Drainage Canal in Reach 4B through Reach 8 and into the start of Reach 9 (1,250 feet south of Elkhorn Boulevard); this canal is supplied by the Prichard and Elk horn Pumping Plants on the Sacramento River. The Riverside Canal extends from just north of Reach 13 to the middle of Reach 19 and is supplied by the Riverside Pumping Plant, on the Sacramento River just north of Radio Road. Several lateral canals connect to the Elk horn and Riverside Canals. The existing Elk horn and Riverside Canals are highline canals that use gravity flow to deliver water for irrigation by maintaining water levels above the surrounding ground levels. These canals have earthen embankments with side slopes that are nearly vertical, requiring regular maintenance. Approximately 1 mile of the existing Elk horn Canal is concrete lined and the entire Riverside Canal is concrete lined.

In addition to the NMWC irrigation systems, there are several landowner-operated systems along the levee. These facilities are located primarily in Reaches 1–4A and 9–12, in areas not currently served by the NMWC systems. The areas are serviced by either well pumps on the landside or river pumps, which discharge into buried pipelines, small irrigation ditches, or directly onto fields. The distribution systems run along the landside toe of the levee to supply fields that slope away from the levee. There are approximately nine small pumping plants that provide water from the river and approximately 10 groundwater well pumps.

Several drainage pumping plants are operated by RD 1000 along the Sacramento River east levee. These facilities pump drain water from the main drainage canal system into the river. They include Pumping Plant No. 2, located in Reach 4B; Pumping Plant No. 5, located in Reach 10; Pumping Plant No. 3, located in Reach 13; and Pumping Plant No. 1, located in Reach 20A. Pumping Plant No. 2 was temporarily removed as part of an emergency levee repair in 2006 and would be replaced as an element of the proposed project in the 2009–2010 construction phases. In addition to these RD 1000 pumping stations, the City of Sacramento operates the Willow Creek drainage pumping station, which is located in Reach 19B.

**Pleasant Grove Creek Canal West Levee**

The PGCC west levee extends southerly from the east end of the NCC south levee to the north end of the NEMDC/Steelhead Creek levee near the Sankey Road crossing. The PGCC west levee protects the Natomas Basin from flood flows from Pleasant Grove Creek and other creeks in western Placer County, as well as from water that backs up in the NCC during high river stages in the Sacramento River. Levee slopes are generally 2H:1V on both the water side and land side of the levee. Natomas Road is located on top of the levee crown. No berms support this levee. A private canal extends parallel to the PGCC west levee for about 1,500 feet at the landside levee toe. Farms and scattered rural residences are located on the landside of the PGCC west levee, and a manufacturing facility and a railroad siding are located within several hundred feet of the levee, just south of Sankey Road.
Natomas East Main Drainage Canal

The 13.3-mile NEMDC/Steelhead Creek west levee extends southerly from the south end of the PGCC west levee near the Sankey Road crossing to Northgate Boulevard. The NEMDC west levee protects the Natomas Basin from flood flows from Arcade and Dry Creeks, as well as from water during high river stages in the American River. Natomas and East Levee Roads are located on top of the levee crown. Private canals extend parallel to portions of the NEMDC west levee landside levee toe. Farms and scattered rural residences are located on the land side of the northern portion of the NEMDC west levee (between Sankey Road and Elkhorn Boulevard), while the southern portion (generally south of Del Paso Road to Northgate Boulevard) is bordered by urban and commercial/industrial development.

SAFCA’s NEMDC stormwater pumping station, a facility that is connected to the NEMDC/Steelhead Creek west levee and the Dry Creek north levee, is situated between Del Paso Road and Elkhorn Boulevard. Other pumping stations occur along the NEMDC west levee, including NMWC Pumping Plant Nos. 6 and 8, which pump water out of the Natomas Basin for in-basin drainage and flood control. The RD 1000 operates Pumping Plant Nos. 6 and 8 and City of Sacramento operates Pump Station No. 102 on the NEMDC west levee.

Borrow Sites

Borrow sites are areas from which earthen materials would be removed for use in construction. Where borrow sites would be used over more than one construction season, the work would progress in cells that would be incrementally developed as habitat or returned to agricultural use as the borrow activities are completed. Several properties have been identified as likely sources of soil borrow, mainly for use in the improvements to the Sacramento River east levee. SAFCA has identified the following preferred borrow sources for the construction of the flood control and irrigation infrastructure improvements for construction Phases 2, 3, and 4, and a redundant source that may be pursued if negotiations regarding the preferred sources are unsuccessful or additional quantities are found to be needed during construction:

- Brookfield property (Phases 2, and 3 preferred): Private property west of the PGCC at Fifield Road, which was in rice cultivation in 2008. Material from this property could be used along the NCC south levee and the upper reaches of the Sacramento River east levee in construction Phase 2 and on the PGCC west levee in construction Phases 3. While the overall property may be used as borrow during multiple years, no area of the property would be used for consecutive years. After the removal of borrow material, the land would be returned to rice cultivation in the same season or if too late to plant, then in the following season.

- Airport bufferlands north of the Airport complex (Phases 2 and 3 preferred, Phase 4 potential): Sacramento County property north of Elverta Road and west of Powerline Road. These lands could provide soil for use along the middle reaches of the Sacramento River east levee in construction Phases 2 and 3. They could also provide material for
construction in the lower reaches of the levee in construction Phase 4, if needed. While the overall property may be used as borrow during multiple years, no area of the property would be used for consecutive years. After the removal of borrow material, the borrow areas, which are currently either fallow agricultural lands or ruderal grassland, would be returned to fallow agricultural fields.

- Fisherman’s Lake area (Phase 4 preferred): Privately owned parcels between TNBC-managed habitat areas. Several parcels, which are currently planted in rice, orchards, or field crops, may be suitable sources of borrow material for use in the lower reaches of the Sacramento River east levee and are strategically situated for creation of habitat that would link existing TNBC parcels.

- Krumenacher property (Phase 3 preferred): Private parcel at the intersection of East Levee Road and Elkhorn Boulevard. This parcel is a component of the Natomas Panhandle, identified in the Natomas Basin Habitat Conservation Plan (NBHCP) and development of this parcel is already covered by a July 25, 2007, biological opinion (1-1-06-P-0294). This land, which is primarily grassland, could provide a borrow source for the levee widening improvements to the NEMDC.

- Twin Rivers Unified School District (Phase 3 preferred): Material stockpiled on property owned by Twin Rivers Unified School District, immediately south of Krumenacher. This parcel is a component of the Natomas Panhandle, identified in the NBHCP, and development of this parcel is already covered by a July 25, 2007, biological opinion (1-1-06-P-0294). This material could provide a borrow source for the levee widening improvements to the NEMDC.

- Horangic/Private Property Northwest of Garden Highway and Reservoir Road (Phase 3 preferred): Private parcel located in Reach 6A along the Sacramento River east levee. The portion of this site that would not be in the levee footprint could provide borrow material for seepage berms in Reaches 5A–5B. The site would be shallow-graded for borrow material and returned to field crops.

- Binford deYoung/Private Property Southwest of Garden Highway and Elverta Road (Phase 3 preferred): Private parcel located in Reach 5B along the Sacramento River east levee. The portion of this site that would not be in the levee footprint could provide borrow material for seepage berms in Reaches 5A–5B. The site would be shallow-graded for borrow material and returned to field crops.

- Bianchi/Private Property Northwest of Garden Highway and Reservoir Road (Phase 3 potential): Private parcel located in Reach 7 along the Sacramento River east levee. This property could borrow material for levee construction south of the Teal Bend Golf Club. The site would be shallow graded for borrow material and returned to field crops.
Novak property (Phase 3 preferred, Phase 4 potential): A SAFCA-owned, 94-acre property located south of Del Paso Road and east of Powerline Road in Reach 12A along the Sacramento River east levee. The site could be used for levee construction south of the Teal Bend Golf Course. The site would be shallow graded for borrow material and returned to grassland or field crops.

Additional borrow sites may be needed in the event that the currently identified sites are not able to supply all of the required fill material. In order to ensure that adequate fill material is available for the project, the Elkhorn Borrow Area has been identified as an area where additional borrow sites may be created. Borrow in this area would be reclaimed in the same manner as the other borrow sites already identified, as would conservation measures.

Overview of the Project Elements

The elements of the proposed project are categorized into five broad, overlapping categories:

- levee raising and seepage remediation,
- improvements to major irrigation and drainage infrastructure,
- acquisition of right-of-way within the footprint of the proposed features, at borrow sites, and to prevent encroachment and provide for maintenance access along the land side of the flood control facilities,
- habitat development and management for giant garter snakes and Swainson’s hawks, and
- additional actions to meet Federal Emergency Management Agency requirements: encroachment management and bridge crossing modifications.

Levee Raising and Seepage Remediation

General Methods - The following subsections provide an overview of the approaches to addressing freeboard deficiencies and seepage potential that would be used in various combinations on the NCC south levee and Sacramento River east levee, and the PGCC and NEMDC west levees.

Raising, Widening and Flattening Levees (Phases 2, 3, 4)

The entire NCC south levee, much of the Sacramento River east levee and a portion of the PGCC west levee at Sankey Road lack the required 3 feet of freeboard above the 100-year water surface profile. To meet overall NLIP goals, SAFCA would increase the levee freeboard sufficiently in freeboard-deficient areas to meet the desired minimum of 3 feet of freeboard above the 200-year water surface profile. The levee height increases would be accomplished through raises of the existing NCC south levee or through construction of the raised adjacent setback levee adjacent to the existing Sacramento River east levee:

- Raise of existing levee (NCC south levee). For a minor raise of the levee crown elevation (typically 6 inches or less), the raise may be limited to the levee crown area, provided that
there is enough existing crown width to accommodate the raise without narrowing the crown to a width that is less than the minimum requirement. For most of the NLIP levee raises, however, a greater crown raise is required and/or the levee slopes must be flattened. The required crown elevation would be met through a full levee raise. Full levee raises consist of an embankment raise from the landside or waterside toe (or both) upward to the increased crown elevation. This requires partially excavating the levee slope to provide a working platform for equipment, typically 10 feet wide, and rebuilding the levee to the appropriate elevation by benching the new embankment material into the existing embankment material.

Adjacent setback levee (Sacramento River east levee). The proposed adjacent setback levee adjoining the Sacramento River east levee would be constructed with a crown elevation 3 feet above the 200-year water surface profile. In the upper reaches, where the existing levee has freeboard deficiencies of as much as 3 feet, the crown of the adjacent setback levee would be higher than the existing levee and Garden Highway roadway. In the lower reaches, where the existing levee has sufficient freeboard, the adjacent setback levee would be the same height as the existing levee.

The only levee segment that lacks adequate levee height that would be maintained at its current elevation is the PGCC west levee at Sankey Road because the flows through this levee segment into the interior of the Natomas Basin during a Federal Emergency Management Agency (FEMA) 100-year or “200-year” design event are not damaging and are subject to management as part of the basin’s interior drainage system. Along the NEMDC west levee between Northgate Boulevard and Elkhorn Boulevard, the levee currently meets FEMA 100-year levee height requirements and also meets the “200-year” plus 3 feet of levee height design for the top of the levee profile.

The final levee configuration must meet the Corps criteria of a 20-foot-wide minimum crown, a 3H:1V waterside slope, and a 3H:1V (preferred) or 2H:1V (maximum) landside slope. Because the levees in most of the project reaches currently have landside slopes of 2H:1V, the proposed project includes flattening these slopes to at least a 3H:1V profile, and preferably 5H:1V. The PGCC west levee would be expanded on the landside to provide a levee width to encompass, at a minimum, a theoretical 3H:1V waterside slope, a crown width of at least 20 feet, and a landside slope of at least 3H:1V. The intent of the landside expansion is to preserve the existing Natomas Road and East Levee Road, which are County/City-maintained roads located on top of the existing PGCC and NEMDC west levees. Levee widening and slope flattening would also occur along the NEMDC west levee between Elkhorn Boulevard and the NEMDC stormwater pumping station.

**Seepage Remediation**

Underseepage problems can occur where levees are constructed on low-permeability foundation soil (silt and clay) underlain by a layer of higher permeability (sand and gravel). Excessive underseepage makes the levee susceptible to failure during periods of high river stage. Under these conditions, seepage travels horizontally under the levee and then is forced vertically
upward through the low-permeability foundation layer, often referred to as a “blanket.” Failure of the blanket can occur either by uplift, a condition in which the blanket does not have enough weight to resist the confined pressure acting on the bottom of the blanket, or by piping (internal erosion) caused by water flowing under high vertical gradients through the erodible blanket and carrying fine soil particles out of the foundation materials. Through-seepage is seepage through a levee embankment that can occur during periods of high river stage. Depending on the duration of high water and the permeability of embankment soil, seepage may exit the landside face of the levee. Seepage can also pass directly through pervious layers in the levee if such layers are present. Under these conditions, the stability of the landside levee slope may be reduced.

During Phases 2–4, along the Sacramento River east levee, cutoff walls would be constructed through the adjacent levee in some reaches, and 100-foot-wide earthen seepage berms would be constructed in others for seepage remediation. Although portions of this reach of the Natomas perimeter levee system are considered susceptible to seismically induced ground shaking, such a condition would likely not cause deformation of the soil-bentonite (SB) walls in the adjacent levee because of its malleability and location farther away from the river channel, where levee failure is more likely to occur in association with seismically induced collapse of the river bank. Additionally, because an SB seepage cutoff well is constructed lower in the levee section, it is not likely to be significantly affected by failure of the levee itself if the levee were to collapse. Relief wells cause the least amount of construction disturbance but require routine maintenance of the wells themselves and the drainage and pumping facilities necessary to support them. Seepage berms are feasible where there is sufficient room for construction.

Phase 2 includes the construction of a seepage cutoff wall through the levee crown of the NCC within Reaches 3–7. In Phase 3, a SB or soil-cement-bentonite cutoff wall will be constructed along the NEMDC west levee between Elkhorn Boulevard and Northgate Boulevard. The SB cutoff walls will also be constructed within the PGCC west levee where required to provide seepage remediation. In Phase 4, a cutoff wall will be constructed in the American River north levee between Gateway Oaks Drive and Northgate Boulevard (Reaches 1–4) to reduce seepage potential where required.

Major Irrigation and Drainage Infrastructure Modifications

There are two major canal systems in the Natomas Basin: an irrigation system owned and operated by NMWC and a drainage system owned and operated by RD 1900. The NMWC pumps water into the basin to provide irrigation water to its shareholders for agricultural use within the basin. During winter (October–April), drainage is primarily rainfall runoff; during summer (May–September), drainage water from agricultural fields is typically recirculated for irrigation. Because the basin is surrounded by levees, all excess drainage within the basin must be pumped out. In general, irrigation water is pumped into the basin from the Sacramento River and NCC and returned to the perimeter rivers and canals via RD 1000’s drainage system. In the southern part of the Natomas Basin, the City of Sacramento also operates several drainage pump stations that serve residential areas.
As a result of the planned levee improvements in the Natomas Basin, the irrigation canals currently at the toe of the Sacramento River east levee (the Elkhorn Canal and the Riverside Canal) would be replaced by new irrigation canals set back from the existing levee farther to the east. Where constraints exist, certain portions of the canals would be piped. The existing and proposed irrigation canals are highline canals, which means that the bottom of the canal is roughly equal to the surrounding ground elevation. Irrigation canals would be constructed high enough to raise water levels above the levels of the adjacent fields to allow for gravity flow into the fields.

A new drainage canal would be constructed to provide aquatic connectivity of giant garter snake habitat between the North Drainage Canal and West Drainage Canal. The proposed GGS/Drainage Canal would be constructed with the top of bank roughly at existing ground level to facilitate drainage. Material excavated to construct the GGS/Drainage Canal would generally be used to construct the embankments of the adjacent highline irrigation canals. Some import and export of soil materials for levee construction would be required to accommodate the phasing of the activities. The following subsections provide an overview of these irrigation and drainage infrastructure modifications.

Relocation of the Elkhorn and Riverside Canals

General Construction Plan for Relocated Canals - The Elkhorn and Riverside Canals would be constructed with sufficient height to raise water levels above the levels of adjacent fields. Design water levels would be based on existing levels at service points along the alignments and the tops of embankments would provide for 1 foot of freeboard. To provide for stable banks, side slopes of 3H:1V would be used. The invert of canals would be lined with concrete to control vegetation and to allow for maintenance with minimal disturbance of aquatic habitat along the water’s edge.

To avoid interruptions in service along the existing irrigation canals, the relocated canals would be constructed and operational before construction of planned levee improvements that would conflict with the existing irrigation canals. Thus, in any particular reach, the new canal would be constructed before the levee improvements in that same reach. Approximately half of the new Elkhorn Canal (North Drainage Canal to Elkhorn Reservoir) is planned for construction in Phase 2. The GGS/Drainage Canal from the North Drainage Canal to Elkhorn Reservoir also would be constructed in Phase 2, because this section would run parallel to and within the same right-of-way as the proposed Elkhorn Canal in this area. Concurrent construction of these new irrigation and drainage facilities would facilitate the use of excavated material from the GGS/Drainage Canal excavation for use as embankment material along the Elkhorn Canal. The remainder of the Elkhorn Canal and GGS/Drainage Canal would be constructed in Phase 3, and the new Riverside Canal would be constructed during the Phase 4.

Elkhorn Canal - Approximately 22,300 feet of the Elkhorn Canal would be relocated to accommodate the levee construction. This facility is a main irrigation canal that services NMWC Central and Elkhorn systems from the Prichard and Elkhorn Pumping Plants on the Sacramento River. Approximately 1 mile of the existing Elkhorn Canal is concrete lined, including segments
between Elverta Road and the Elkhorn Pumping Plant and also just north and south of Elkhorn Road; the remainder is earth lined.

The proposed alignment of the new Elkhorn Canal is based primarily on the extent of the planned levee improvements. The canal was sited as close as possible to the projected toe of the new levee (with allowance made for a 5H:1V landside levee slope). After this initial alignment was determined, a number of site-specific factors were considered and used to refine the alignment. The resulting alignment minimizes conflicts with known cultural resources sites and existing trees and is roughly parallel to the projected levee toe.

North of Elkhorn Reservoir, the maximum bottom width of the new canal would be 12 feet. The canal embankments would be approximately 7 feet tall with 15-foot-wide patrol roads along the top of the embankments with a two percent grade sloped down towards the canal. The vegetated side slopes would be 3H:1V to provide for stable banks. Overall, the width of the canal would be approximately 140 feet, with additional width required for a buffer and maintenance area for the canal construction north of Elkhorn Reservoir.

To minimize project impacts on the existing Teal Bend Golf Club, the alignment of the Elkhorn Canal through the golf course would be piped (approximately 3,200 feet). Two 36-inch pipes would be aligned parallel to the levee toe land side of the flood control facility corridor. This alignment would avoid existing golf course infrastructure to the extent possible.

South of Teal Bend, the Elkhorn Canal would return to an open channel parallel to the toe of the new levee. The majority of this reach of earthen canal has a design bottom width of 5 feet, with a minimum of 1 foot of levee height and 3H:1V side slopes. A 15-foot-wide patrol road would be located on the top of the field side of the canal; the other embankment would be 8 feet wide on the crown. The only portion of the new canal that would have a concrete-lined invert would be the 4,100-foot section where the existing canal is lined. The remaining 2,900 feet of new canal would be earthen-lined. To avoid impacts on existing residences, a second section (approximately 950 feet through the Mortenson and Breese properties) of the Elkhorn Canal may be piped using a single 36-inch pipe. The materials to construct the Elkhorn Canal would come primarily from the construction of the GOS/Drainage canal north of I-5. However, a small amount of import from the Airport north borrow sites is expected to be used to support construction of a portion of Phase 2 improvements.

**Riverside Canal** - Approximately 18,600 feet of the Riverside Canal would be relocated to accommodate the levee construction. This facility is a main irrigation canal that services NMWC Riverside system. The supply for this canal is the Riverside Pumping Plant. The canal flows south along the landside toe of the levee to approximately Bryte Bend Road. The canal south of Bryte Bend Road has not been used in recent years. The canal north of the Riverside Pumping Plant is supplied by reified water at RD 1000's Pumping Plant No. 3. From Pumping Plant No. 3, the canal flows north approximately 950 feet and turns away from the levee. The entire existing Riverside Canal is concrete lined, although much of the concrete lining is broken and in
poor condition. **To control vegetation and to allow for canal maintenance with minimal disturbance of aquatic habitat along the water’s edge, the invert of the new canal may be concrete lined.**

Like the Elkhorn Canal alignment, the alignment of the Riverside Canal would be based primarily on the extent of the planned levee improvements. The canal would be sited as close as possible to the projected toe of the new levee (allowing for a 5H:1V landside levee slope). After this initial alignment is determined, a number of other factors would be considered and used to refine the alignment. One-half to three-quarters of a mile south of San Juan Road southward to I-80, there are a number of residences along the landside toe of the levee. To avoid bisecting these private properties, it is likely that the Riverside Canal alignment would follow the eastern property line of these parcels. The final alignment would also aim to minimize conflicts with existing trees and other site-specific constraints that are identified during design. Based on these site-specific factors and the variation of the proposed seepage remediation methods in different reaches, the alignment would be only roughly parallel to the projected levee toe. The proposed bottom width of the relocated Riverside Canal would be determined during final design to meet existing capacity needs.

**Construction of the New GGS/Drainage Canal -** The GGS/Drainage Canal would maintain existing aquatic connectivity and compensate for the permanent loss of giant garter snake habitat due to the filling of the Airport West Ditch. In addition to providing giant garter snake habitat, the GGS/Drainage Canal would intercept flows from non-Airport property sources. Irrigation and drainage water currently flowing into the Airport West Ditch from non-Airport property would be incorporated into the GGS/Drainage Canal.

The GGS/Drainage Canal would generally extend parallel to the Sacramento River east levee, extending from the North Drainage Canal at the RD 1000 Pumping Plant No. 2 in the north to the West Drainage Canal in the south, approximately 1,000 feet south of Elkhorn Boulevard. South of I-5, the existing RD 1000 West Drainage Canal may be modified to provide improved snake habitat value in the reach between I-5 and Fisherman’s Lake. This reach of the GGS/Drainage Canal has yet to be designed but could include improvements that benefit the giant garter snake, including improved bank slopes and enhanced aquatic habitat and vegetative cover. The length of the entire GGS/Drainage Canal, including the reconstruction, would be approximately 43,800 linear feet. The GGS/Drainage Canal would have a series of check structures along its length to maintain consistent water levels in the low-flow channel of the canal during the snake’s active season (April–October). Supplemental water would be provided from NMWC irrigation system. The low-flow channel would have a top width of approximately 50 feet and an average depth of approximately 6 feet. Vegetation would be managed within the canal excavation and on the banks by mowing.

The portion of the GGS/Drainage Canal that would be constructed in Phase 2 is north of Elkhorn Reservoir would be parallel and approximately 30 feet west of the edge of the Elkhorn Canal. Thus, the alignment was based on the same factors as discussed above for the Elkhorn Canal.
North of Reservoir Road the canal would be set back a minimum of 200 feet from the projected levee toe to minimize concerns of excessive seepage exit gradients in the bottom of the canal. The canal in this location would have a 10-foot bottom width and vegetated 3H:1V side slopes. The canal would be approximately five feet deep with two percent grade sloped down towards the canal from the edge of the Elkhorn Canal embankment and the adjacent ground for a distance of 12 feet to allow for a patrol road. The depth would be sufficient to provide a minimum water depth of 4.5 feet with allowance for 1 foot of water level variance and a minimum of 1 foot of freeboard. The footprint of the GGS/Drainage Canal is approximately 50 feet wide. A 30-foot right-of-way would separate the proposed GGS/Drainage Canal from the proposed relocated Elkhorn Canal. South of Elkhorn Reservoir, the new canal would be constructed with roughly the same proportions as the segment north of Elkhorn Reservoir.

The GGS/Drainage Canal north of Teal Bend Golf Club would be managed as a linear high-quality giant garter snake habitat, with stormwater drainage a secondary function during major storm events, which typically occur in the snake’s inactive season. South of Teal Bend Golf Club, the canal would also serve as giant garter snake habitat area, but the volume of stormwater drainage would increase in a southerly direction as the canal collects additional runoff as a result of the natural slope of the basin. Winter storm-related runoff exceeding the capacity of the West Drainage Canal south of I-5 would be pumped into the Sacramento River using RD 1000’s Pumping Plant No. 3, consistent with existing stormwater management practice.

The shoreline and lower bank of the GGS/Drainage Canal (including the improved West Drainage Canal) would be planted or managed to promote tule/cattail (Typha latifolia) vegetation as suitable cover and foraging habitat for giant garter snake. However, management of the canal would also require removal of noxious aquatic weeds that obstruct the flow of water. A secure water supply would ensure that water of a suitable quality is present and flowing at low velocity in the canal during the active season of the giant garter snake, and that the water surface would be managed within a range of approximately 1 foot to provide consistent cover from predators along the tule fringe of canal banks. Input of supplemental canal water would begin at a diversion point on the North Drainage Canal at the north end of the new GGS/Drainage Canal. Other points of inflow may occur at downstream locations.

Reconfiguration of Airport West Ditch

To take advantage of common construction practices and to maximize the use of common facilities, the rearrangement of irrigation and drainage facilities required to provide for rerouting of flows that contribute to the Airport West Ditch would be undertaken in conjunction with these proposed NLIP improvements in construction Phase 3. This work would include modifications and extension of existing irrigation infrastructure and modification of some local drainage conveyance facilities.
Removal of Culvert and Reconstruction at Pumping Plant No. 2

The project would include the removal of a deep culvert beneath the levee section at the RD 1000 Pumping Plant No. 2 location and the replacement of a relocated RD 1000 Pumping Plant No. 2, which was removed from the western end of the North Drainage Canal in response to underseepage observed during extended winter storms in January 2006.

Modifications to Pumping Plants (Phases 3 and 4)

The NCMWC pumping facilities that provide water to the Elkhorn and Central Main Canals (Prichard and Elkhorn Pumping Plants) would need to be modified to accommodate the new height of the Sacramento River east levee during Phase 3. The discharge piping would be raised above the “200-year” flood level to maintain the design level of flood risk reduction and would be extended to the relocated irrigation canals. Some replacement of pumping equipment and earthen intake channel reconstruction would be required to improve the system.

Land Acquisition

Several of the measures described above would increase the footprint of the flood control system: levees would be widened on the land side as a result of raising, constructing an adjacent setback levee, and flattening the waterside and/or landside slopes. In addition, a 50- to 100-foot-wide access and maintenance corridor would be established at the landside toes of the levees. The proposed improvements also include woodland corridors and groves to replace trees that are removed from within the levee footprint and maintenance access areas, and canal construction east of the flood control features. SAFCA also would acquire adjacent land for relocation of infrastructure from the flood control corridor and planned improvements outside the flood control corridor (e.g., the GGS/Drainage Canal), with appropriate easements provided to utility owners upon completion of the work. To meet its project footprint needs, SAFCA would acquire private lands in fee and would acquire an easement interest where the project features would be on Airport land (owned by Sacramento County). Where the project footprint would overlie land owned and managed by TNBC, SAFCA may either purchase the land in fee or obtain easements.

Additional Actions to Meet FEMA Requirements

Encroachment Management (Phases 3 and 4)

Corps levee guidance requires the removal of vegetation greater than 2 inches in diameter on the levee slopes and within 15 feet of the waterside and landside levee toes. The Corps levee guidance also requires an assessment of encroachments on the levee slopes, including utilities, fences, structures, retaining walls, driveways, and other features that penetrate the levee prism. Substantial encroachments are present on the Sacramento River east levee. One of the objectives of constructing an adjacent setback levee along the Sacramento River east levee is to facilitate acceptable management of existing vegetation and structural encroachments along the water side
of this levee. By moving the hypothetical waterside slope of the levee (the “levee template”) landward, the adjacent levee would significantly reduce most of the conflicts between these encroachments and applicable Corps levee operation and maintenance requirements. Should any of these existing encroachments be determined to reduce the integrity of the levee, increase flood risk unacceptably, or impede visibility or access to the waterside levee slope, the encroachments would need to be removed. Removal of some waterside slope encroachments may be required by the end of 2011 to ensure that the levee system meets Federal criteria for the 100-year level of protection. Along the land side of the proposed adjacent setback levee, encroachment removal would typically be accomplished as part of the landside levee improvements. This activity would include the relocation of utility poles that are on the existing landside slope of the levee.

Bridge Crossings (Phase 4)

Under applicable Federal requirements, the plane of the northbound and southbound bridge crossings of SR 99/70 over the NCC must be 4 feet above the 100-year water surface elevation in the NCC. The 100-year water surface elevation is 44.4 NAVD 88. The soffit (underside) elevation of the northbound crossing is 44.9 NAVD 88, and the soffit elevation of the southbound crossing is 42.9 NAVD 88. Accordingly, during construction of Phase 4 the following options must be considered for implementation in conjunction with the California Department of Transportation:

1. Raise both bridge crossings as necessary to meet minimum FEMA clearance requirements.
2. Provide for installation of a closure structure across the southbound crossing in the event of a 100-year or greater flood.
3. Replace the bridge rail structures on the east and west sides of the bridge crossings and modify the levees connecting to these structures to provide at least 4 feet of levee height above the 100-year water surface elevation. Under any of these options, at least the northbound crossing could remain open for use during a 100-year flood event.

Investigations to Aid Project Planning and Design

Geo-technical Investigations

Additional exploration of geotechnical conditions is anticipated to be required in Phases 2–4 along the NCC south levee, Sacramento River east levee, PGCC west levee, NEMDC/Steelhead Creek west levee, and American River north levee to facilitate refinement of design for flood facility improvements. Exploration of subsurface conditions would primarily be conducted by drilling borings. Borings along the levees would generally be drilled to depths of 60-120 feet below the ground surface using either a rubber-tire truck-mounted drill rig or an all-terrain drill rig equipped with an 8-inch-diameter hollow-stem auger and a 4-inch-diameter rotary wash drill bit. Hollow-stem augers would generally be used to drill through the levee fill and would be left in place to act as temporary casing and protection against hydraulic fracturing of the levee.
Rotary wash drilling methods would be used below the augers. Borings located at and landward of the levee toe would be drilled using rotary wash drilling methods.

Exploration of potential borrow sites will also be required to assess suitability of the material. Such exploration could include boring methods similar to those described above, but to shallower depths (10–12 feet below grade). Test pit excavation would be conducted using a tire-mounted backhoe to depths of 10–12 feet below grade. The test pits would likely be 1–3 feet wide along dirt roadways and 3–6 feet wide in agricultural fields by about 10 feet long. Samples would be obtained by hand with shovels from the excavated materials. When the bottom depth has been reached, the test pits would be loosely backfilled with the spoils with minor compaction effort. In the dirt roadways, the backfilled materials would be compacted with more effort to maintain drivability and safety.

**Cultural Resources Investigations**

Archeological surveys within potential flood control facility improvement footprints and potential borrow sites are required to facilitate project planning in Phases 2–4 and satisfy requirements under Section 106 of the National Historic Preservation Act. The surveys would include up to three stages of work. All excavation work in Stages 1 and 2 would be conducted with hand tools, such as shovels and trowels. Stage 1 entails digging shovel test pits 15 inches in diameter and up to 3 feet deep to evaluate the characteristics of subsurface material; these test pits would be backfilled immediately. Depending on archeological evidence found within the shovel test pits, Stage 2 work may be initiated to allow for a more thorough site investigation. This Phase would include excavation of 1-meter-square and 5-foot-deep test units. These test units may need to remain open for several days until examination can be completed. Any sites requiring deeper excavation to further investigate subsurface features identified in the first two stages would be included in Stage 3. This stage would require the use of machinery, such as a backhoe.

**Conservation Strategy Overview**

The project conservation strategy would contribute toward the establishment of a habitat reserve in the increasingly urbanized landscape of the Natoma Basin. The refuge is projected to occupy approximately 15,000 acres once the NBHCP objectives and other proposed conservation programs are completed. Through habitat creation, restoration, and preservation, SAFCA will increase the amount of protected habitat available for NBHCP-covered species above the project amount from the HCPs. Further, SAFCA’s proposed plan will consolidate large areas of habitat, assisting in the expansion of TNBC reserve blocks in the northwestern and southwestern regions of the Basin. Finally, establishment of woodland corridors will greatly improve the connectivity between core habitat reserves that are distributed throughout the Basin, and substantially increase acreage and patch size of these critical habitats.

Overall, the proposed project is an opportunity to employ a landscape-scale vision, helping to advance the goals and objectives of the NBHCP and assist the Federal Aviation Administration
(FAA), Corps, and the local Reclamation Districts in achieving their goals. SAFCA’s Natomas Landside Improvements Project presents a unique, one-time opportunity to reconfigure habitat and connective corridors in the Basin at a landscape scale.

Rather than a piecemeal approach to habitat protection, SAFCA’s proposed project secures and expands the amount of habitat protected in the Basin, establishes the components that tie the preserves and disparate mitigation sites together in perpetuity under public ownership, and increases the quality and viability of this emerging urban reserve. Refer to the March 13, 2009, Draft (and subsequent revisions) Programmatic Long-Term Management Plan document (prepared by EDAW for SAFCA) for a more complete summary of the conceptual strategy for creating/enhancing/preserving, protecting, and managing habitats in the Natomas Basin in perpetuity. The following subsections provide an overview of the primary goals and landscape-level benefits of this habitat conservation strategy.

Increase Amount of Protected Habitat

While the project will result in loss and reconfiguration of landside habitats adjacent to the widened levees in the Natomas Basin, the proposed project has been specifically designed to minimize impacts to these landside habitats, and to avoid impacts to riparian habitats along the Sacramento River and NCC. The construction of an adjacent setback levee and installation of seepage cutoff walls enable SAFCA to retain the mature riparian tree corridor and numerous Swainson’s hawk nests that are located along the waterside of the Natomas Basin levees. The project’s conservation strategy includes the preservation, enhancement, and creation of almost 1,500 acres of compensatory habitats in the Natomas Basin, including:

- 100 acres of created, managed marsh,
- 850 acres of created, managed grasslands,
- 60 acres of canals and 80 acres of associated uplands,
- 140 acres of preserved and created landside valley oak woodlands,
- 175 acres of preserved rice fields, and
- 150 acres of agricultural field crops.

The project will result in the creation of a larger contiguous area protected and managed for the giant garter snake, valley elderberry longhorn beetle, Swainson’s hawk, and other NBHCP-covered species than currently exists.

Expansion and Consolidation of Protected Habitat in the Natomas Basin

The project will consolidate large areas of habitat, assisting in the expansion and infill of TNBC reserve blocks in the northwestern and southwestern regions of the Basin. SAFCA will acquire several properties to provide compensatory habitat, either in the form of preserved rice and agricultural crop fields or created managed marsh, managed grasslands, or landside woodlands. Many of these properties are contiguous with existing TNBC reserves or other completed or planned mitigation habitats. Protecting habitat adjacent to existing TNBC reserves and other
mitigation sites creates a larger contiguous area managed for giant garter snake and Swainson’s hawk than currently exists. This increases the habitat value, sustainability, and functions that these individual properties would otherwise provide in isolation, contributing to giant garter snake and Swainson’s hawk recovery in the Basin.

**Strengthen Connectivity between the TNBC Reserves**

The proposed enhancements of existing Basin landscapes are important to the successful implementation of the NBHCP, along with the acquisition and permanent protection of mitigation land. The connective woodland corridors that SAFCA proposes to establish and/or improve are enhancements that will aid in NBHCP implementation, providing TNBC with an opportunity to improve its overall performance towards the goals of the NBHCP in regards to woodlands. The establishment of a landside woodland corridor would provide more nesting and perching habitat for Swainson’s hawks in the basin than currently exists, and bring potential nesting and perching sites in closer proximity to areas that are managed as foraging habitat for this species in the basin.

**Mitigation, Management, and Monitoring Plan**

Mitigation and monitoring plan (MMP) and a programmatic long-term management plan (LTMP) for the compensatory habitat components are being prepared to guide SAFCA and its partners as they manage the compensatory land components in perpetuity. The MMPs would address the habitat creation and preservation components of the NLIP Landside Improvements project. The MMPs and LTMP would establish specific success criteria for the habitat components, specify remedial measures to be undertaken if success criteria are not met (e.g., adaptive management, physical adjustments, additional monitoring), and describe short- and long-term management and maintenance of the habitat lands. The MMPs and LTMP would also describe the strategies for the long-term protection of these habitats and funding for the management as provided through appropriate mechanisms, which would be determined by SAFCA, the regulatory agencies, and other entities cooperating in the implementation of the project.

The goal of the MMPs and LTMP is to ensure that the conservation values of the preserved, restored, and created habitats are maintained in good condition in perpetuity. The MMPs and LTMP would discuss specific management strategies designed to maintain the conservation values for each of the habitat mitigation components and identify performance criteria used to determine the success of the mitigation habitats. The biological goals include: (1) the preservation of the abundance and diversity of native species, and particularly special-status species, in the mitigation habitats; (2) the protection of the habitat features from the effects of indiscriminate land uses that may adversely impact mitigation habitats; and (3) the restoration of any adverse condition within the mitigation habitat areas that may affect or potentially affect these areas.
Implementing Mechanisms for Long-Term Protection and Management

The MMPs and LTMP would describe the framework for the protection and management of the mitigation habitat components of the NLIP Landside Improvements project. The actual implementation of this framework would be enacted through easements, stakeholder-specific management agreements or memoranda of understandings, and contractual agreements. These contractual agreements would focus on the management obligations specific to each management entity, and describe the demonstrated financial and legal assurances necessary to implement the MMPs and LTMP to protect and manage the habitat mitigation components in perpetuity. These contractual agreements would be subject to review and approval by the Service, Corps, and CDFG, and enforced by SAFCA, in perpetuity, and by Corps through permit issuance.

Management Entities for Project Features

Agencies and organizations anticipated to have management responsibility for proposed project features are SAFCA, RD 1000, NMWC, and TNBC.

Sacramento Area Flood Control Agency
SAFCA would be responsible for the design and construction of all project components, including compensatory habitat. Once the project features are completed, most of the land or land management responsibility would be conferred by SAFCA to the other management entities. Memoranda of understanding, land ownership transfers, or management endowments and contracts would be used by SAFCA to transfer land management responsibility to the appropriate public agency or nonprofit land management organization.

Reclamation District 1000
The mission and purpose of RD 1000 is to operate and maintain the flood protection levees surrounding the Natomas Basin and to operate and maintain the internal drainage system to evacuate agricultural and urban stormwater and incidental runoff. The RD 1000 would be responsible for the management of the proposed levee improvements, reconstructed Pumping Plant No. 2, and drainage features. Typical maintenance activities include mowing grassland along levee slopes, berms, and rights-of-way, removing sediment and noxious aquatic weeds from the canals, and managing bank vegetation.

Natomas Central Mutual Water Company
The NMWC is a nonprofit mutual water company with the primary focus of keeping the water conveyance functioning to serve the company shareholders. The NMWC would be responsible for maintaining and managing the relocated Elkhorn and Riverside Canals. The relocated canals would be maintained and operated in the same manner as the existing canals. Typical maintenance activities include operating and repairing water control structures and barrier gates, periodically removing sediment and noxious aquatic weeds from the canals, repairing canal roads, managing bank vegetation, and mowing grassland along canal and road rights-of-way. However, the relocated Elkhorn and Riverside Canals would have improved levees, better water
control structures, and wider roads and rights-of-way than the existing canals. These improvements are expected to ease annual canal management efforts, allowing for a proportionately greater focus on maintenance and operations and less need for system repair and dredging.

The Natomas Basin Conservancy
The TNBC acquires and manages land for the purpose of meeting the objectives of the NBHCP. The TNBC owns approximately 30 mitigation properties totaling more than 4,500 acres. Private land acquired by SAFCA and converted to managed marsh, preserved in rice, or used for woodland establishment would be conveyed to the TNBC after creation of these habitats. SAFCA may also contract with the TNBC for management elements of some habitat features (e.g., the GGS/Drainage Canal).

Management Agreements
The MMPs will describe the framework for the design and management of the mitigation habitat components of the proposed project. The actual implementation of this framework will be enacted through Management Agreements. These contractual agreements will focus on the management obligations specific to each entity, and describe the demonstrated financial and legal assurances necessary to implement the MMPs and protect and manage the habitat mitigation components in perpetuity. These contractual agreements will be subject to review and approval by the Service, Corps, and CDFG, and enforced by SAFCA, in perpetuity, and by Corps through permit issuance.

Funding Mechanism
Funding for implementation of the MMP and LTMP, including construction, monitoring, and long-term management of the compensatory habitat components, has been incorporated into the overall budget for implementation of the NLIP Landside Improvements project. Funding for the management and administration of the various habitat components will be negotiated through agreements with RD 1000 (GGS/Drainage Canal management, managed grasslands), TNBC (rice fields, field crops, landside woodlands, and GGS/Drainage Canal administration), and NCMWC (water).

SAFCA anticipates funding for the agreements with RD 1000 and NCMWC will be provided on an annual basis from the special assessments collected as part of the Consolidated Capital Assessment District (CCAD). In order to ensure timely payment for the services rendered under these agreements, SAFCA will maintain reserve accounts with balances sufficient to support annual funding for two years for each agreement. Upon termination of the CCAD in 2037, these payments will be covered by assessments collected as part of SAFCA's existing Operation and Maintenance Assessment District. Funding for the agreement with TNBC will be provided through a non-wasting endowment funded by CCAD assessments.
**Project Phasing**

The proposed project is comprised of three phases of construction, spanning approximately 3 years. Phase 2 of the NLIP Landside Improvements project, for which SAFCA is currently requesting a permit, is described and analyzed in detail in this permit application, while Phases 3 and 4, for which subsequent requests for permits will be submitted, are described and analyzed at a more general, program level of detail in this document.

**Phase 2 Work**

Table 1 summarizes the major elements of Phase 2 of the Landside Improvements project (proposed project) and the general timeframes in which the elements are expected to be implemented. Note that although seepage berms are depicted as the primary means of providing underseepage remediation along the Sacramento River east levee, the use of cutoff walls continues to be evaluated, and cutoff walls will likely be implemented instead of berms in several locations. Each of the main project elements are described in more detail below.

**Levee Raising and Seepage Remediation**

**Natomas Cross Canal South Levee**

The proposed project would include raising the entire NCC south levee (Station 0+00 to Station 287+50, Reaches 1 to 7) and would continue the construction of a seepage cutoff wall from the eastern terminus of the NCC South Levee Phase 1 Improvements (NCC Phase 1 Improvements) initiated in 2007 (Station 0+00 to Station 61+00, beginning of Reach 1 to the middle of Reach 2) to the eastern end of the NCC south levee (approximately Station 56+00 to Station 287+50, approximately the middle of Reach 2 to the end of Reach 7). NCC Reaches correspond roughly to the following Stations: Reach 1 (Station 0 to Station 3); Reach 2 (Station 4 to Station 103), Reach 3 (Station 103 to Station 123), Reach 4 (Station 123 to Station 170), Reach 5 (Station 171 to Station 195), Reach 6 (Station 195 to Station 277), and Reach 7 (Station 278 to Station 287). Phase 2 would include the construction of the NCC south levee component, which is anticipated to occur over one construction seasons, beginning in May 2009 and ending in October 2009. The primary construction activities are described below.

Preparation for construction of the cutoff wall would begin with using scrapers (or other suitable equipment, depending on the slope) to clear and grub/strip the surface to a depth of 2 inches to remove low-growing vegetation, loose stone, and surface soils. The aggregate base from the operating road also would be removed and stockpiled for later reuse. Waste material would be hauled to an off-site location.

Construction of the cutoff wall would include degrading the existing levee to a depth equal to one-half its total height (approximately 9 feet). A 70-foot-deep cutoff wall would be constructed for a total length of 23,150 linear feet (2 million square feet), with the method of installation at the contractor’s discretion. Given anticipated schedule constraints, a
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<tr>
<th>Project Element</th>
<th>Proposed Activity and Timing</th>
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<tr>
<td>Levee raising and seepage remediation: NCC south levee</td>
<td>Raise and realign the NCC south levee to provide additional freeboard and more stable waterside and landside slopes and to reduce the need for removal of waterside vegetation. (May–October 2009) Construct a seepage cutoff wall through the levee crown in Reaches 3–7. (May–October 2009)</td>
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<tr>
<td>Levee raising and seepage remediation: Sacramento River east levee (adjacent setback levee)</td>
<td>Construct a raised adjacent setback levee from the NCC to just south of the North Drainage Canal (Reaches 1–4B) with a 100-foot seepage berm in Reach 4A and a 300-foot seepage berm in Reach 4B. (May–October 2009) Relocate utility poles. (November-December 2008)</td>
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<tr>
<td>Improvements to major irrigation and drainage infrastructure</td>
<td>Construct a new canal designed to provide drainage and associated giant garter snake habitat (the GGS/Drainage Canal) between the North Drainage Canal and Elkhorn Reservoir. (May–October 2009) Relocate the Elkhorn Canal (highline irrigation canal) between the North Drainage Canal and Elkhorn Reservoir in anticipation of the filling of the existing Elkhorn Canal at the toe of the Sacramento River east levee. (May–October 2009) Remove a deep culvert at the location of Pumping Plant No. 2. (May–October 2009)</td>
</tr>
<tr>
<td>Habitat enhancement, creation and management</td>
<td>Establish vegetative habitat features in the new GGS/Drainage Canal. (Fall 2009) Recontour and create habitat on lands used as borrow sources. (Fall 2009) Establish grassland on the adjacent setback levee slopes and seepage berms. (Fall 2009) Install woodland plantings to offset the loss of portions of tree groves in the landside levee footprint. (Fall 2008–Fall 2009)</td>
</tr>
<tr>
<td>Right-of-way acquisition</td>
<td>Acquire right-of-way through fee title or easement interest within the footprint of the project features, at the borrow sites and along the flood control system. (Before construction)</td>
</tr>
</tbody>
</table>

Notes: Elkhorn Canal = Elkhorn Main Irrigation Canal; GGS = Giant Garter Snake; NCC = Natomas Cross Canal
three-heading, double-shift work schedule is anticipated. Material degraded to support cutoff wall construction would be compacted at the landside toe of the levee to support the levee raising operation described below. Unsuitable material generated from cutoff wall construction would be disposed of off-site.

Raising of the Natomas Cross Canal South Levee

Levee raising would occur throughout the entire length of the NCC to provide three feet of freeboard over the design water surface profile (this requires raising the levee approximately three feet). Throughout most of the NCC, this would be accomplished by setting the levee back towards the landside, such that there is a theoretical 3H:1V waterside slope extending from the existing waterside toe to the new waterside top. Following degrading of the levee for cutoff wall construction, the new levee crown would be constructed such that the actual waterside slope extends to meet the point of degrade on the waterside slope. This actual slope would be 3H:1V or flatter. The new levee crown would have a width of twenty feet and the new landside slope would be 3H:1V. Where an existing stability berm is present, it would be stripped and incorporated into the new levee prism. Any portion of the berm outside of the limits of new fill would be trimmed back to conform to the new landside 3H:1V slope. Where the berm is fully incorporated, it would be stripped and trimmed as necessary to accommodate placement of new fill material around it. Existing drain pipes exiting the berm would be extended to daylight landward of the new levee landside toe.

Throughout Reaches 6 and 7, Sutter County infrastructure (Howsley Road and related features) and private residences are close to the NCC south levee. To avoid the infrastructure and residences, between Station 215+00 and 245+00 (central portion of Reach 6, from just west of State Route (SR) 70/99 to just east of SR 70/99), the levee would be raised waterward, encroaching on the NCC channel approximately 30 feet. Between Stations 245+00 and 279+50 (remaining portion of Reach 6), the levee would be raised on the landside, similar to Stations 54+00 through 215+00 (approximately the middle of Reach 2 to initial portion of Reach 6). Smooth transition distances of up to 200–500 feet would link the waterward and landward raises.

Vegetation would be removed from the waterside slope in all locations above the elevation corresponding with the projection of the landside levee toe on the waterside slope. Between Station 0+00 and 54+00 (Reach 1 through first half of Reach 2), where there is significant vegetation on the waterside slope above this elevation, the levee would be set back an additional fifteen feet to provide a “root-free” zone on the levee slope, and the vegetation would remain.

Removal of Structures

Relocation of Howsley Road, the Morrison Canal, a roadway drainage pump station, and three residences and outbuildings would be required by landward levee raises in Reaches 6 and 7. If hydraulic modeling indicates that unacceptable hydraulic impacts would not result from waterside levee raising in Reaches 6 and 7, only two structures in Reach 7 (a residence and a semimobile trailer) would require relocation as a result of the proposed levee improvements.
Utility Modifications and Miscellaneous Work

Pipelines penetrate the NCC south levee at four locations: Odysseus Farms (Bolen Ranch); NMWC waterside Bennett Pumping Plant; NMWC Northern Pumping Plant; and RD 1000’s landside Pumping Plant No. 4. None of these penetrations comply with current Corps regulations; therefore, the pipelines would be raised to have their inverts above the 200-year water surface elevation and would be equipped with waterside shutoff valves. If pipes are corroded, they may have to be replaced down the waterside slope of the levee.

As part of raising the pump station discharge pipelines that cross the NCC south levee, canals south of the levee would need to be relocated farther from the levee toe in the following locations: the RD 1000 Vestal Drain and NMWC Bennett Canal between Station 55+50 and Station 61+50 (middle of Reach 2) and the NMWC North Main Canal between Station 120+00 and Station 123+50 (end of Reach 3 to beginning of Reach 4) and between Station 216+00 and 218+00 (Reach 6, just west of SR 70/99). The ditch segments would be moved about 100 feet farther away from the levee toe. Some of this work may be accomplished by NMWC as part of its American Basin Fish Screen Project, but the timing of this NMWC project is uncertain. If the work is not accomplished by NMWC, SAFCA would relocate the canals at the time that the pipelines are raised.

Between Station 0+00 and Station 19+00 (beginning of Reach 1 through first eighth of Reach 2) of the NCC south levee, SAFCA intends to obtain a landside levee maintenance access area to match the 80- to 100-foot wide maintenance access area already established for the levee. This area is currently in active rice fields. Once the maintenance access area is established, this area would be filled to be above the agricultural field grade to prevent encroachment by farming operations into the maintenance access area and to provide an operating road at the levee toe. Between Station 99+00 and Station 124+00 (end of Reach 2 through Reach 3), a low-lying area between the levee’s landside toe and an operating road for the Lucich North Habitat Preserve would be filled to raise the grade of the operating road at the landside toe.

In 1996, as part of SAFCA’s NCC and PGCC Levee Project, 200 feet of floodwall was installed to raise the NCC levee around the State Route (SR) 99/70 bridges over the NCC. The top of wall for this floodwall is at elevation 44.80 feet (National Geodetic Vertical Datum 29). To conform to current levee criteria, the floodwall would need to be raised to elevation 49.3 feet.

Construction Staging Areas and Postconstruction Site Condition

Construction staging would take place in areas adjacent to the NCC south levee, within the maintenance access areas between Stations 0+00 and 56+00, 61+00 and 96+50, 99+00 and 216+00, and 251+00 and 281+00. Cutoff wall construction would require temporary establishment of three on-site slurry batch plants that would occupy about 1–2 acres each. Each batch plant site would likely contain tanks for water storage, a pug mill mixer, bulk bag supplies of bentonite, bentonite and cement storage silos, cyclone mixers, pumps, and generators. The sites would also include slurry tanks to store the blended slurries temporarily until they are
pumped to the work sites. Slurry constituents would be mixed with water at the batch plant and the mixture would be pumped from the tanks through pipes to the cutoff wall construction work sites.

After construction, the levee slopes and any previously vegetated areas disturbed during construction, including staging areas, would be seeded with a grass mix.

**Sacramento River East Levee Reaches 1–4B**

Phase 2 of construction would begin in 2009 for the Sacramento River east levee, which includes an adjacent levee extending from the northern end of Reach 1 at the NCC south levee through Reach 4B (approximately Station 0+00 to Station 226+00). Also included in Phase 2 is: installation of cutoff wall in Reach 2 of the adjacent levee; construction of a 100-foot seepage berm in Reach 4A and 300-foot berm in Reach 4B; planting of woodlands in a corridor and fallow fields extending from the lower end of Reach 1 through portions of Reach 4A; and reconstruction of the intersections of Sankey Road and Riego Road with Garden Highway.

An adjacent setback levee is proposed in lieu of in-place modification of the existing Sacramento River east levee, which has substantial structural and vegetation encroachments along its water side. The adjacent-levee raise would involve the construction of a new embankment adjacent to the existing levee. A minimum 5-foot-wide shoulder would extend from the landside edge of the crown of the existing levee to the water side of the new adjacent setback levee embankment. A 3H:1V slope would extend up to the crown of the adjacent setback levee. The crown would be at least 20 feet wide and would be topped with an aggregate base access road for inspection and maintenance. The adjacent setback levee would have a 5H:1V landside slope, except for approximately 5,000 feet in Reaches 2 and 3, which would be 3H:V1. It would be constructed of compacted random fill material from borrow sources and from the excavation of the existing landside stability berm.

It is assumed that a main construction staging area for this phase would be located on approximately 5 acres near Riego Road. The area would be fenced and would be used for the contractor’s and engineer’s construction trailers, parking for personnel, machine maintenance tools and parts, possibly water trucks, and the storage of fuels and other materials to be used for construction. The project right-of-way along the construction area also would be used for staging of construction materials and equipment. Personnel, equipment, and imported materials would reach the project site via SR 99/70, Sankey Road, Riego Road, and Elverta Road. The primary corridors where construction activity would take place are the adjacent levee alignment and existing dirt roads used for access to the work areas; soil borrow areas; and paved roads, including Powerline, Sankey, and Riego Roads.

Improvements to Reaches 1–4B are anticipated to occur over one construction season, beginning in May 2009 and ending in October 2009. The primary construction activities are described below.
Site Preparation (Tree Removal, Clearing, Grubbing, and Stripping) - Site preparation would entail removing trees and other large vegetation from the construction area and stripping the top 6 inches of material from the landside slope of the existing levee, the footprint of the adjacent setback levee, the seepage berm areas, and the 50-foot-wide permanent maintenance access corridor. Large roots and deleterious material would then be grubbed from the working area. To the extent feasible, trees that must be removed from within the footprint of the adjacent setback levee or berms would be relocated outside of the footprint to new woodland planting areas, where a substantial number of new trees would also be planted. Excess earth materials (organic soils, roots, and grass from borrow areas and the adjacent levee foundation and excavated material that does not meet levee embankment criteria) would be used in the reclamation of borrow areas or hauled off-site to landfills. Cleared vegetation (i.e., trees, brush) would be hauled off-site to landfills.

Relocation of Irrigation Ditch - Odysseus Farms, located at the junction of the NCC south levee and Sacramento River east levee, maintains a private irrigation ditch that is situated within the proposed footprint of the adjacent setback levee. This private irrigation ditch is situated along the top of an existing berm in Reach 1 within the proposed footprint of the adjacent setback levee. Before filling of the existing ditch, a new ditch would be constructed in Reach 1 to serve irrigation needs for agricultural uses of the land along this reach. The new ditch would be constructed from Station 0+00 to Station 25+00 and would be elevated, similar to the existing canal, to allow for gravity flow southward from the NCC. The relocated ditch would cross under Sankey Road through a culvert and meet the existing canal lateral at Station 25+00. The existing ditch would be drained and any unsuitable material from the ditch bottom would be excavated and hauled off-site. To maintain irrigation system continuity, this relocation work would need to be implemented prior to May 1, 2009, as facilities begin operations prior to May and are continually in operation through the end of summer, thus presenting limited opportunities for relocation during the levee construction work window.

Removal of Landside Structures and Other Facilities - Residences and other farm structures that are within the proposed footprint of the adjacent setback levee embankment, berms, and maintenance areas at Station 35+00 in Reach 1 (house, barn, and shed) would have to be removed or relocated farther from the flood control facilities before the start of levee construction. Irrigation facility collection/distribution boxes, wells, and standpipes within the footprint of the flood control features would be demolished and replaced as needed. Debris from structure demolition, power poles, utility lines, piping, and other materials requiring disposal would be hauled off-site to a suitable landfill. As feasible, demolished concrete could be sent to a concrete recycling facility. Wells and septic systems would be abandoned in accordance with the applicable state and county requirements. Some utility poles would be relocated after October 1, 2008, after permit issuance; the removal of other landslide structures and facilities would not occur until May of 2009.

Excavation of Stability Berm and Inspection Trench
The existing stability berm along the levee would be excavated and the soil and drain rock would be stockpiled for use in the construction of the adjacent setback levee. The geotextile fabric from
the drain layer would be discarded. A 3-foot-deep inspection trench would also be excavated along the foundation of the adjacent levee raise area after stripping has occurred. The purpose of this trench is to expose or intercept any undesirable underground features such as old drain tile, water or sewer lines, other debris, animal burrows, buried logs, or pockets of unsuitable material (e.g., sand lenses). After inspection, the trench would be backfilled and compacted as part of the embankment construction.

**Construction of Adjacent Levee Raise and Cutoff Walls**

Borrow material would be excavated from several locations in the project area and would be delivered to the levee construction sites by scrapers or haul trucks where it would be spread by motor graders and compacted by sheepsfoot rollers to build the adjacent levee up to a height equal to about two-thirds of the height of the existing levee. This would create a working platform for cutoff wall installation using an excavator with a long-stick boom capable of digging a trench to a maximum depth of approximately 80 feet. Bentonite slurry would be pumped into the trench during excavation to prevent caving. The soil excavated from the trench would be mixed with bentonite and backfilled into the trench to create the cutoff wall.

**Reconstruction of Garden Highway at Intersections** - The Garden Highway intersections at Sankey and Riego Roads would require reconstruction to accommodate the raised adjacent setback levee. It is anticipated that Garden Highway would be extended up and onto the widened adjacent levee at these locations to meet with the secondary roads. Approach embankments at the intersections would be enlarged and the entire intersections would be repaved. Intersecting roads would be raised at a slope of 15H:1V, extending the approach embankment approximately 350 feet outward from the levee. The side slopes of the raised embankments would be at a 3H:1V slope.

**Installation of Surface Drainage Outlets across Garden Highway** - Between the adjacent setback levee and the Garden Highway pavement, new storm drain facilities would be constructed to convey surface water beneath Garden Highway and toward the Sacramento River. A drainage swale collection system would convey runoff water to drop inlets located approximately 1,000 feet apart along an approximately 22,800-foot-long section of the improved levee, and new 12-inch diameter pipe laterals would convey the water beneath Garden Highway to the waterside slope berm. Excavation of a trench across Garden Highway and down the waterside levee slope would be required; those segments of Garden Highway where excavation occurs would have to be reconstructed. Single-lane traffic controls and through-traffic detours would be required during construction Phase 2. Drainage outlets would be located on the waterside levee berm, above the two-year ordinary high water mark. The construction of the drainage outlets entail the excavation of a 100 square foot area, of which the lower eighteen to twenty-four inches would be filled with a gravel/pebble mix, and the upper six to twelve inches would be an open depression. Water exiting the drainage outlets would settle in the depression, and then flow overland to the Sacramento River.

**Site Restoration and Demobilization** - Following construction, the levee slopes, seepage berms, maintenance access right-of-way, and any previously vegetated areas disturbed during
construction would be seeded with a grass mix. Any construction debris would be hauled to an appropriate waste facility. Equipment and materials would be removed from the site, and staging areas and any temporary access roads would be restored to preproject conditions. Demobilization would likely occur in various locations as construction proceeds along the project alignment.

**Major Irrigation and Drainage Infrastructure Modifications**

*Elkhorn Canal* - The Phase 2 construction plan would include the new Elkhorn Canal from the North Drainage Canal to Elkhorn Reservoir, between Reach 4B and Reach 6B. On the north end, the new canal would be connected with the existing Prichard Pumping Plant outfall and an outlet to the North Drainage Canal would be constructed. An outfall to provide for connection to RD 1000 Pumping Plant No. 2, during its construction in Phase 3, would be incorporated into the Phase 2 canal construction to minimize the need for future canal disturbance. The discharge pipes from the Prichard Pumping Plant would be extended to the relocated canal. The outlet to the North Drainage Canal would be combined with the GGS/Drainage Canal outfall with a gated control structure in the irrigation canal and a piped outlet to the North Drainage Canal.

At the southern end, the relocated Elkhorn Canal would connect into an earthen-lined sediment basin. The sedimentation basin would consist of a number of watered, earthen-bottomed chambers separated by weirs, which may be concrete or rock covered. The basins would have 3H:1V embankments that are 15-foot-wide at the top to provide maintenance equipment access. The total area of basins including the embankments is approximately 9.6 acres, with nearly 3.3 acres of water surface. The proposed sediment basin would be connected to Elkhorn Reservoir with a temporary pipe and outfall structure. During construction Phase 3 (see below), Elkhorn Reservoir would be dewatered and piping from the Elkhorn Pumping Plant would be extended to the new sediment basin, at which time the Elkhorn Reservoir sediment basin would be abandoned and filled.

The GGS/Drainage Canal would be constructed parallel to and within the same right-of-way as the Elkhorn Canal. These features would be constructed concurrently to facilitate the use of excavated material from the GGS/Drainage Canal for use as embankment material along the Elkhorn Canal.

The primary construction stages for Elkhorn Canal are described in the subsections below.

**Clearing and Grubbing/Stripping**

Preparation for canal construction would entail using bulldozers/scrapers to clear and grub/strip the surface to a depth of 4–6 inches and remove low-growing vegetation and loose surface soils. Suitable materials removed during this stage could be stockpiled. Unsuitable material would be wasted and hauled off-site. The right-of-way for the canal that would need to be cleared (including the GGS/Drainage Canal right-of-way) is approximately 225 feet wide. Bulldozers/scrapers and front-end loaders would be used to excavate and move material. Water
trucks would be used to control dust and dump trucks would be used to haul unsuitable materials away.

This phase of construction would commence immediately after mobilization and would most likely occur in multiple sections of the Elkhorn Canal and GGS/Drainage Canal alignments simultaneously.

**Pump Discharge Pipe Extension**
Because the Elkhorn Canal would be relocated farther from NMWC pumping plants than the existing canal, additional pipe would need to be installed to maintain the connections between the pumping plants and the irrigation canals. In particular, discharge pipes would need to be extended at Prichard Pumping Plant and Elkhorn Pumping Plant. Pipes would be transported to the site on flatbed trucks. Excavators and backhoes would be used to dig the pipe trenches and lay the sections of welded steel pipe and backfill the trench. The trench would be deep enough to provide for a minimum of 12 inches of cover. A small compactor would be used to compact the soil over the pipe. The construction of pipelines at the existing Prichard Pumping Plant would occur during Phase 2 of construction, and at the Elkhorn Pumping Plant pipeline construction would occur during Phase 3 of construction.

**Prichard Pumping Plant Connection**
A new concrete transition structure would be constructed at the north end of the existing Elkhorn Canal to connect the existing Prichard outfall box culvert to the new Elkhorn Canal. Three reinforced concrete discharge pipes, two 36-inch and one 30-inch, approximately 600 feet in length, would be constructed in parallel from the new transition structure to the proposed distribution box located approximately 250 feet south of the western end of the North Drainage Canal. These pipes would connect the Prichard Pumping Plant outfall to the distribution box. From the distribution box, two 54-inch reinforced concrete discharge pipes, approximately 30 feet long, would connect the box to the new Elkhorn Canal.

The concrete distribution box footprint would be approximately 25 foot by 30 foot. A 60-inch discharge pipe stub and 48-inch intake pipe stub would be constructed on the north side of the distribution box. These stubs will provide for future connections of the distribution box to the North Drainage Canal and Pumping Plant No. 2.

**Water Control Facility Construction**
New facilities that would be constructed include distribution boxes, gate valves, cast-in-place concrete headwalls and control structures, culverts, and a proposed earthen-lined sediment basin adjacent to Elkhorn Reservoir. Backhoes and excavators would be used to excavate material for the new facilities. Precast distribution boxes, pipes, and other appurtenances would be transported to the site on flatbed trucks. Other concrete facilities would be poured in place and concrete would be transported to the site in ready-mix and boom concrete pumper trucks. Small compactors would be used to compact fill material around the facilities.
**Embankment and Access Road Construction**

The existing Elkhorn Canal is a highline canal, and construction of its replacement would require little or no excavation but a large amount of borrow material. The bottom of the new Elkhorn Canal channel would be approximately at existing ground level. During construction, borrow material would be required to build up the embankments of the new canal, which would be approximately 4 feet above the channel bottom with 3H:1V side slopes. Bulldozers and graders would be used to move and shape the embankment material, sheepfoot and smooth drum rollers would be used to compact the embankment material, and water trucks would be used on-site for dust control and moisture conditioning.

**Irrigation Interconnections**

This phase includes work required to interconnect the relocated Elkhorn Canal with the existing irrigation canals within the Natomas Basin. Excavators and backhoes would be used to trench any connectors and motor graders would be used to shape the embankments. A water truck would be used to control dust and provide moisture conditioning during the excavation and construction of the interconnection facilities. Canal interconnections would be performed before the abandonment of the existing Elkhorn Canal.

**Central Main Flume Connection**

A second concrete distribution box would be constructed to connect the Elkhorn Canal to the Central Main Flume. The box will be located at the intersection of the Elkhorn Canal with the Central Main Flume with a footprint that is approximately 19 feet by 49 feet and will be tied into the existing concrete flume. Three 48-inch slide gates would be constructed on both the north and south ends of the box to connect the box to the Elkhorn Canal both north and south of the flume. A 6 foot by 6 foot reinforced concrete box culvert on the east end of the distribution box would connect to an outfall structure and the end of the flume.

**Erosion Control**

Erosion control measures would be installed before the start of construction and would be maintained throughout the construction period to prevent sedimentation of adjacent waterways. A hydroseeding truck would be used at the end of construction to seed any disturbed area. Water trucks would be used throughout the construction period to control dust in any disturbed areas.

**Irrigation Canal Abandonment**

As the newly constructed canal is completed and operable, the existing Elkhorn Canal would be abandoned. Irrigation flows would be rerouted to the new canal and the existing canal would be dewatered and abandoned. The filling of the abandoned Elkhorn Canal in Reach 4B would take place as part of Phase 2 of levee construction and in Reaches 5A to 6B would take place as part of the Phases 3 and 4 of levee construction. Portions of farm canals and other irrigation canals would be abandoned because of the relocation of the Elkhorn Canal. Such segments that are outside the footprint of the proposed levee improvements would be filled after the relocation of the Elkhorn Canal is completed. Dump trucks would be used to haul fill material to those canals, rollers would be used to compact the fill, and water trucks would be used for dust control.
Demobilization/Cleanup
This phase includes dismantling any temporary facilities, hauling away any leftover construction materials, and cleaning up the site. All disturbed areas would be reseeded and graded to drain. A front-end loader and dump trucks would be used to move materials. This phase of construction would also entail general cleanup and hauling away unused and waste materials. All construction equipment would be removed.

Scheduling for Phase 2 Construction of the Elkhorn Canal
The segment of the Elkhorn Canal from the Prichard Pumping Plant to the Elkhorn sedimentation basin would be constructed between May and October 2009. The segment of the Elkhorn Canal from the Central Main Flume to the Elkhorn sedimentation basin would be constructed between May and October 2009.

Phase 2 Construction on New GGS/Drainage Canal - The Phase 2 construction plan would include the construction of the GGS/Drainage Canal from the North Drainage Canal to the slough east of Elkhorn Reservoir, between Reach 4B and Reach 6B. The GGS/Drainage Canal and Elkhorn Canal would be parallel and separated by a 20-foot right-of-way access. The GGS/Drainage Canal would tie into the North Drainage Canal east of the proposed location of replacement RD 1000 Pumping Plant No. 2. Crossing of the Elkhorn Canal and tie-in to the North Drainage Canal are anticipated to be made via open, arching culverts (e.g., “Con-Arch” culverts) that allow the GGS/Drainage Canal to pass under the Elkhorn Canal and the access road on the south side of the North Drainage Canal without being confined to pipes.

Because portions of the GGS/Drainage Canal and the Elkhorn Canal would be constructed parallel within the same right-of-way, they would be constructed concurrently during Phase 2 construction. This approach would facilitate the use of material from the GGS/Drainage Canal excavation for use as embankment material along the Elkhorn Canal. Construction of the GGS/Drainage Canal would include the same construction phases as described above for the Elkhorn Canal, with a few exceptions. The top of bank for the GGS/Drainage Canal would be approximately at existing ground level. During construction, a trench at least 6 feet deep and an average width of 55 feet would need to be excavated for the construction of the GGS/Drainage Canal. Reclamation would include planting tules on the sloped banks. Backhoes would be used to prepare the planting areas and a water truck would be used to control dust.

Removal of Culvert at Pumping Plant No. 2 Site - SAFCA would undertake a second phase of the levee repairs and facility removal adjacent to the RD 1000 Pumping Plant No. 2 site at the west end of the North Drainage Canal as part of the proposed project. This phase of work would include: (1) excavating and removing approximately 400 feet of the existing levee section adjacent to the Pumping Plant No. 2 site to expose a deep culvert and possible voids under the levee, (2) removing the deep culvert, (3) reconstructing the levee adjacent to the pumping plant sump with levee embankment fill, and (4) demolishing, removing, and relocating the pumping plant remnants within the project footprint. The last activity, reconstruction of the pumping plant, would be conducted in the 2009 construction phase and is described in the next subsection.
The project-related work would be confined to an area of approximately 2.3 acres. A stockpile and staging area of approximately 4.5 acres would be established near the work area.

Excavation limits would be extended to reconstruct the levee section adjacent to the sump and to reach areas where anomalies were identified during a geophysical investigation of the site. An area on the water side of the sheet pile wall would be excavated to lower the ground surface so as to reduce the loading on the sheet pile and excavation shoring system as the excavation takes place on the land side of the sheet piles. Excavated material would be stored on the site along the dewatered section of the North Drainage Canal, east of the abandoned sump, and in an adjacent agricultural field along the canal.

During excavation, the remnants of the pumping plant would be demolished and removed. This work includes relocation of a 36-inch irrigation supply pipe that is within the excavation limits. A temporary plastic fabric-lined ditch at the outfall of this pipe would also be relocated to provide for sufficient staging and stockpile areas. A short irrigation system ‘outage’ would be required to allow for relocation of the pipe and ditch.

Heavy equipment required for construction includes semi flatbed and/or box trucks to deliver equipment and materials; a crane to drive sheet pilings for additional shoring needs; dump trucks to haul debris, stockpile excavated levee material, and import select soil materials for levee reconstruction; two hydraulic excavators; two dozers for stripping and stockpiling material, a grader, water track, and front-end loader for maintenance of haul roads and stockpiles; and a roller compactor for levee construction.

**Habitat Enhancement, Development, and Management**

Habitat enhancements and developments planned for Phase 2 of project construction include: the northern segments of the relocated Elkhorn Canal and the newly constructed GGS/Drainage Canal between the North Drainage Canal and Elkhorn Reservoir; the preservation and establishment of landside woodlands along the Sacramento River east levee; the creation of managed grasslands on the newly constructed levee slopes, seepage berms, access rights-of-ways, and canal embankments; and the preservation of rice land. Please refer to the Phase 2 MMP for a more complete summary of the conceptual strategy for creating/enhancing/preserving, protecting, and managing habitats in the Natomas Basin in perpetuity.

The proposed project would offset temporary and permanent effects to habitat of listed species through the creation, enhancement, and preservation of habitat in the basin. The construction of the Elkhorn Canal and GGS/Drainage Canal, including their management elements, are described above in more detail. Design and management elements for the managed grasslands, landside woodlands, and rice fields are summarized below.

**Managed Grasslands**

*Levee Slopes and Seepage Berms* - Levee improvements would result in landside slopes that are less steep than the existing slopes, and several reaches of the Sacramento River east levee would
have adjoining 80- to 300-foot-wide earthen seepage berms with a nearly flat slope (50H:1V or less). Parallel to the landslide toe of enlarged levees and seepage berms would be maintenance access roads and seepage relief wells in some locations. Additional setback buffer lands would flank some of these features, and property acquisition for the proposed project may leave SAFCA with remnant portions of acquired parcels that are nonessential to flood control uses. With the exception of the crown of the levee, these areas would be managed as grassland. Most grassland would be mowed or grazed throughout the growing season, with an emphasis on mowing procedures and stubble height to optimize these areas for Swainson's hawk foraging habitat. However, the primary purpose and management priority of levees and seepage berms would continue to be flood risk reduction, for which RD 1000 has principal management and maintenance responsibility, and they would be maintained in accordance with Corps and Central Valley Flood Protection Board operations and maintenance requirements.

**Canal Embankments** - The side slopes of the new GGS/Drainage Canal and relocated Elkhorn and Riverside Canals would be flatter than typical canal slopes in the Natomas Basin and consistent (3H:1V), resulting in greatly reduced erosion and sedimentation. Vegetation on the banks could easily be mowed to a specified stubble height using cutter blades instead of the existing, high-disturbance practice of flail mowing or scraping vegetation from the banks and canal with a drag bucket. These improved canal maintenance practices would substantially reduce disturbance and incidental mortality of giant garter snakes that use bank and shoreline vegetation as cover and feeding habitat.

**Landside Woodlands**

Woodlands consisting of native riparian species would be planted east of the maintenance corridor along the Sacramento River east levee improvements. In Phase 2, tree and shrub species, including elderberry shrubs (*Sambucus mexicana*), would be planted on approximately 30 acres of existing cropland or fallow or currently unused sites. Groves would generally be at least 50-100 feet wide and several hundred feet long. Wide woodland corridors would promote successful nesting by a variety of native birds deeper within the grove canopy, where nest parasitism by crows, cowbirds, and starlings is less of a factor in breeding success. At maturity, stand structure would vary from closed canopy woodland to grassland savanna vegetation types.

Planting sites would require suitable soil conditions, water supply during a 3- to 5-year establishment phase, reduced risk of wildfire, and minimal depth to seasonally high groundwater or other natural water sources to sustain trees once irrigation ceases. A mixture of native riparian species would be planted, but predominant species would be Valley oak (*Quercus kelloggii*), the primary tree species that would be affected by the proposed improvements to the Sacramento River east levee, and cottonwood (*Populus fremontii*), which is a preferred nest tree for Swainson's hawks in the basin and is faster growing than Valley oak. Establishment of woody vegetation would likely require more than one technique, including seeding in winter, flood irrigation, drip or agricultural-scale spray heads, cuttings, and acorn planting.

Where trees would be removed from existing groves to make way for the proposed flood control system features, they would be transplanted in new locations, including newly planted groves, to
the extent feasible. The woodland planting areas would provide locations for transplanting any elderberry shrubs that would need to be moved from the proposed footprint of flood risk reduction improvements.

**Rice Fields**

*Brookfield* - The Brookfield property is a 353-acre private property that is located between Howsley Road and Fifield Road, west of the PGCC west levee. As of the summer of 2008, the property is currently in rice cultivation.

Up to 160 acres of the site may be utilized for borrow operations in Phase 2. After the completion of borrow excavation, the 160 acres would be returned to rice and at least ½ of the 353-acre site would be preserved in perpetuity. The removal of borrow material would entail excavating the site to a depth of up to approximately 6 feet, with an approximate net yield of 3.6 million cubic yards of soil from the site. One foot of topsoil would be removed and stockpiled for reuse during reclamation of the site. This borrow material would be used for levee improvements along the NCC south levee (construction Phase 2), PGCC west levee (construction Phase 3), and possibly the NEMDC west levee (construction Phase 4); however, no area of the property would be used in consecutive years. Following the removal of borrow material for the levee construction, the site would be graded and returned to rice cultivation.

Currently, the site is irrigated from on-site wells. To provide irrigation to the site following the excavation of borrow material, the irrigation canal along the south side of the site would be deepened and reconfigured from the Brookfield site westward to the culvert under SR 99/70. Additionally, a field irrigation ditch would be constructed within the Brookfield site to provide irrigation water from the adjacent highline canal to the fields. Grading of the site would be performed at a slope that would allow the water to flow back to the drainage canals running along the west and south side of the property. The water from the eastern fields would be drained into a canal along the west side of the pasture land and into the southern drainage canal. The drainage channel along the west and south side of the property would be modified to allow the site to drain following borrow excavation.

Modifications include widening all canals to an 8-foot bottom width with 3H:1V side slopes. Specific canal improvements could include modification of approximately 4,480 feet of the RD 1000 canal that borders the south end of the site, modification of 3,670 feet of the private north-south drainage ditch along the west edge of the property, creation of a 900-foot long drainage ditch along the west edge of the pasture lands, and modification of a 6,350 foot long section of the drainage canal along SR 99/70 from the RD 1000 canal south. Improvements of the drainage canal along SR 99/70 may require land acquisition of up to 25 acres to account for the additional width of the channel and flatter side slopes.
Reclamation of Other Borrow Sites

Borrow sites would provide material for Phase 2 flood control and irrigation infrastructure modifications. Following excavation of the borrow material, these sites would be reclaimed for postconstruction uses.

Airport North Borrow Sites - The Airport's north bufferlands have been historically farmed as rice fields and field crops. However, based on FAA requirements to reduce hazardous wildlife attractants near runways, the Airport has opted to not renew rice leases on its bufferlands. Thus, these lands are currently either fallow agricultural fields or ruderal grassland. After borrow activities, these sites would be returned to their current condition.

Cut depths for all the borrow sites would be approximately 4–6 feet. Following the excavation of the borrow sites, disturbed areas would be finish graded to standard irrigation slopes so that the sites would drain and not have any standing water in less than 10-year storm events. Excavated soils not used for borrow material, such as the organic surface layer or soils considered unsuitable for levee construction, would be stockpiled and respread on-site following excavation. Any unsuitable borrow material would be stockpiled on-site and graded back into the restoration of the site. Revegetation activities would include erosion control on excavated slopes (i.e., hydroseeding) and application of fertilizers.

Overview of Construction Phases 3 and 4

Table 2 summarizes the major elements of Phases 3 and 4 of the proposed project and the anticipated general timeframes in which the elements are expected to be implemented. Note that although seepage berms are depicted as the primary means of providing underseepage remediation along the Sacramento River east levee, the use of cutoff walls continues to be evaluated, and cutoff walls will likely be implemented instead of berms in several locations.

Levee Raising and Seepage Remediation

Sacramento River East Levee Reaches 5A–20A

Improvements to the Sacramento River east levee would continue in construction Phases 3 and 4, and would extend from Reach 5A (below Station 226+00) through Reach 20A (Station 925+50). It is anticipated that construction of improvements to the Sacramento River east levee would encompass Reaches 5A-9B in construction Phase 3 and Reaches 10-20A in construction Phase 4. The construction season is assumed to be mid-April – November for both construction phases. The following descriptions of design and construction of the improvements to the Sacramento River east levee proposed for construction Phases 3 and 4 are described in less detail than construction Phase 2 (improvements to the NCC south levee and Sacramento River east levee Reaches 1–4B) because they are not as far along in the project design process.
<table>
<thead>
<tr>
<th>Project Element</th>
<th>Proposed Activity and Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levee raising and seepage remediation: Sacramento River east levee (adjacent setback levee)</td>
<td>Construct an adjacent setback levee along Stations 55+00 to 68+00 in Reach 2 and from just south of the North Drainage Canal to the American River north levee (Reaches 5A–20B), raised where needed to provide adequate freeboard, with seepage berms, relief wells, and cutoff walls for seepage remediation as required (specific seepage remediation measures are still under study). (May 1, 2009–November 1, 2010)</td>
</tr>
<tr>
<td>Levee widening and flattening and seepage remediation: PGCC west levee</td>
<td>Widen the levee between Howsley Road and Sankey Road to allow for seepage remediation and flatten the levee on the water side to meet Corps criteria. Construct cutoff walls or seepage berms where required. (April–November 2009)</td>
</tr>
<tr>
<td>Levee widening and flattening and seepage remediation: NEMDC west levee</td>
<td>Widen levee and flatten slope between Elkhorn Blvd and NEMDC stormwater pumping station. (April–November 2009) Construct a seepage cutoff wall from NEMDC stormwater pumping station to Northgate Blvd where required. (April–November 2009)</td>
</tr>
<tr>
<td>Improvements to major irrigation and drainage infrastructure</td>
<td>Construct the new GGS/Drainage Canal between Elkhorn Reservoir and the West Drainage Canal, and improve the West Drainage Canal to provide enhanced giant garter snake habitat. (May 1–November 1, 2009) Implement Airport West Ditch improvements in connection with construction of the GGS/Drainage Canal to allow the Airport to decommission the agricultural irrigation function of this facility and eliminate the hazards currently associated with it. The Airport stormwater detention function provided by this ditch would continue. The ditch would therefore be recontoured as a gently sloping swale to facilitate periodic maintenance such as mowing. (May 1–November 1, 2009) Relocate the Riverside Canal and the Elkhorn Canal downstream of Elkhorn Reservoir (specific alignments to be determined) and fill the existing canals, (May 1–November 1, 2009, and May 1–November 1, 2010) Construct RD 1000 Pumping Plant No. 2. (April 1, 2009–September 1, 2010)</td>
</tr>
<tr>
<td>Habitat enhancement, creation and management</td>
<td>Establish habitat enhancements in the new GGS/Drainage Canal and improved West Drainage Canal. (Fall 2009) Recontour and create marsh and managed grassland on lands used as borrow sources. (Fall or spring after borrow excavation in 2009 and 2010) Establish grassland on the adjacent setback levee slopes and seepage berms. (Fall after construction in 2009 and 2010) Install woodland plantings to offset the loss of portions of tree groves in the landside levee footprint (locations to be determined). (Fall 2009 and 2010)</td>
</tr>
<tr>
<td>Additional actions to meet FEMA requirements: encroachment management on the Sacramento River east levee, and bridge crossing modifications at the NCC</td>
<td>Remove encroachments from a portion of the water side and land side of the Sacramento River east levee as needed to ensure that the levee can be certified as meeting the minimum requirements of the NFIP and Corps design criteria (specific criteria still under discussion). (Timing to be determined) Modify the SR 99/70 crossing of the NCC as needed to meet FEMA requirements. (Timing to be determined)</td>
</tr>
<tr>
<td>Right-of-way acquisition</td>
<td>Acquire right-of-way through fee title or easement interest within the footprint of the project features, at the borrow sites and along the flood control system. (Before construction)</td>
</tr>
</tbody>
</table>

Notes: Airport = Sacramento International Airport; Elkhorn Canal = Elkhorn Main Irrigation Canal; FEMA = Federal Emergency Management Agency; GGS = Giant Garter Snake; NCC = Natomas Cross Canal; NFIP = National Flood Insurance Program; PGCC = Pleasant Grove Creek Canal; RD = Reclamation District; Riverside Canal = Riverside Main Irrigation Canal; SR = State Route; USACE = U.S. Army Corps of Engineers
**Required Freeboard Increases and Proposed Underseepage Remediation** - Levee crown raises are required to provide adequate freeboard above the 100-year design water surface elevation in Reaches 5A–10 and above the 200-year design water surface elevation in Reaches 11A and 11B. Downstream of Reach 11B (Powerline Road), there is adequate freeboard above the 200-year design water surface elevation, and levee crown raises are not required. Substantial structural encroachments and large amounts of woody vegetation are present on the waterside slope of the existing levee, and the adjacent setback levee is proposed to extend through Reaches 5A–19A to avoid the need for extensive removal of the existing vegetation and encroachments on the waterside slope to meet Corps criteria. The existing levee in Reaches 19B–20B already has a wide crown, and extensive residential development is located along the landside levee toe; therefore, construction of the adjacent setback levee is not proposed for these reaches. The adjacent setback levee would extend outward at least 11 feet from the landside edge of the existing levee crown and would have a 3H:1V landside slope.

Underseepage remediation is required in many of the reaches from 5A through 20A. Reach 20B has sufficient freeboard for the 200-year water surface elevation and a cutoff wall (constructed by Corps in 2000) that meets current design criteria. Because this wall was constructed to an adequate depth, this reach does not need additional seepage remediation. Based on the results of geotechnical investigations, engineering and cost considerations, and land use constraints, cutoff walls are proposed for Reaches 5A–20A.

**Removal of Landside Structures and Vegetation** - Removal of some residences, other structures, and woodland vegetation, including mature trees, would be required to create ample space for the adjacent setback levee, berms, and maintenance access corridor. It is anticipated that residences would be removed at Station 62+00 in Reach 2, Station 245+00 in Reach 5A, Station 368+00 in Reach 8, Station 436+50 in Reach 9A, Station 468+00 in Reach 10, and at several locations along Reaches 15 through 18.

**Miscellaneous Construction Elements and Postconstruction Site Condition** - Modifications of roadway intersections with Garden Highway, utility relocations, removal of pumps and wells, and relocation of private canals would be similar to these activities as described for the improvements to Sacramento River east levee Reaches 1–4B. As described for Reaches 1–4B, after construction, the levee slopes, seepage berms, maintenance access right-of-way, and any previously vegetated areas disturbed during construction would be seeded with a grass mix.

**Pleasant Grove Creek Canal West Levee**

The PGCC west levee is vulnerable to seepage and has stability concerns. The proposed project includes improvements to 17,400 feet of the PGCC west levee, beginning at the east end of the NCC improvements at Howsley Road and extending southerly to Sankey Road. Construction is anticipated to proceed in Phases 3 and 4 on this component of the NLIP. Details of the proposed improvements will be developed based on additional geotechnical studies and cost analysis. The improvements are expected to consist of the following:
widenning of the levee to provide a minimum top width of 20 feet to accommodate safe lane
widths for Natomas Road;
• flattening the water side of the levee to a 3H:1V slope;
• reconstructing the landside levee slope with new, select material to create a 3H:1V slope (the
existing slope ranges from 2:1 to 2.5:1);
• from its intersection with Howsley Road and continuing one quarter mile south, raising the
widened levee one to two-tenths of a foot to provide 3 feet of levee height on the 100-year
design water surface profile; and
• constructing a SB cutoff wall through three separate reaches, totaling approximately 5,000
lineal feet, to coincide with areas where streams historically flowed east to west through the
current PGCC alignment.

Irrigation and drainage canals at the landside toe of the existing levee would need to be relocated
to the west to accommodate the berm construction. Several structures associated with the
industrial facility near the southern end of the PGCC would need to be relocated.

The postproject site condition (grass-covered levee slopes and berms) and long-term maintenance
practices would be as described above for the NCC south levee and Sacramento River east levee.

**Natomas East Main Drainage Canal West Levee**

The NEMDC west levee is vulnerable to seepage and has stability concerns. The proposed
project includes improvements to the NEMDC west levee, beginning from Sankey Road south to
Northgate Boulevard. Construction is anticipated to proceed in Phases 3 and 4 on this
component of the NLIP. Details of the proposed improvements will be developed based on
additional geotechnical studies and cost analysis. The improvements are expected to consist of
the following:

- From the NEMDC pump station (between Elkhorn Boulevard and Del Paso Road) south to
Northgate Boulevard, approximately 25,000 linear feet of cutoff wall is to be constructed to a
depth of up to 80 feet from the levee crown. The existing maintenance easement on this
stretch of the NEMDC will not accommodate levee reshaping or levee degrading beyond
what is necessary to provide a minimum working platform for cutoff wall installation.
Additionally, structures in close proximity of the landside levee toe may make additional
maintenance easement acquisition impractical. Where asphalt-concrete surfacing is present
at the levee crown, it would be removed and disposed of off site. Following completion of the
cutoff wall, the levee crown would be reconstructed and the operating road surface restored.

- North of the NEMDC pump station, to Elkhorn Boulevard, levee widening and slope
flattening will occur similar to what is described for the PGCC west levee. These project
components include:
  - widening of the levee to provide a minimum top width at least 20 feet to accommodate
    safe lane widths for Natomas and East Levee Roads;
  - flattening the water side of the levee to a 3H:1V slope; and
  - reconstructing the landside levee slope with new, select material to create a 3H:1V slope.
The postproject site condition and long-term maintenance practices would be as described above for the NCC south levee and Sacramento River east levee.

**Major Irrigation and Drainage Infrastructure Modifications**

**Elkhorn and Riverside Canals**

Construction Phases 3 and 4 would include the relocation of the remainder of the Elkhorn Canal (south of Elkhorn Reservoir) and the relocation of the Riverside Canal and would include the same construction phases as described for Phase 2. Timing of the new canal construction would be critical to avoid interruptions in irrigation service. The remainder of the relocated Elkhorn Canal, from Elkhorn Reservoir south, and the relocated Riverside Canal would be constructed before existing canals are filled in as part of the levee improvements in Reaches 6B–9A scheduled for construction Phase 3 and 12–20B scheduled for construction in Phase 4.

In addition to the general canal construction activities described for construction Phase 2, Elkhorn Reservoir would be dewatered and piping from the Elkhorn Pumping Plant would be extended to the new settling basin, at which time Elkhorn Reservoir would be abandoned and filled. The pipelines from the Elkhorn and Riverside Pumping Plants to the relocated irrigation canals would be constructed.

**Phase 3 Construction of the New GGS/Drainage Canal**

Phase 3 construction phase would include the construction of the GGS/Drainage Canal from north of Teal Bend Golf Course to the West Drainage Canal and improvements to the West Drainage Canal to enhance habitat value for giant garter snake. Because the GGS/Drainage Canal would be approximately 3.5–5.5 feet lower in elevation than the Elkhorn Canal, it would cross underneath the Elkhorn Canal, approximately 350 feet north of Elkhorn Reservoir, likely through a structure similar to that described above for the northern crossing. Reclamation would include planting tules on the sloped banks. In the portion of the canal below T-5, tules would be planted above the canal bench. Backhoes would be used to prepare the planting areas and a water truck would be used to control dust. A 2,850-foot-long section of the existing West Drainage Canal would include a 15-foot-wide managed tule bench, which would typically be inundated with water and drain into the main channel.

**Removal of Airport West Ditch**

As part of a safety survey conducted by the FAA for the Airport, the FAA expressed concern that the Airport West Ditch provides habitat for wildlife that potentially create a hazard to aircraft. The FAA recommended relocation of the ditch to alleviate the hazard. Additionally, a longstanding problem has existed with leakage from a 24-inch pipeline, resulting in marshy conditions along its route, approximately 11,000 feet between the intake structure and delivery point at the Airport pumps. During the past year the Airport began receiving all of its domestic (drinking) water supply from the City of Sacramento via a pipeline and storage tank project. Two of the on-Airport water wells previously used to provide domestic water were connected to the Airport's landscape irrigation piping system, and the water supply to the "leaky underground
pipe” was deactivated. All of the Airport’s landscape irrigation needs are now provided on-site, and there is no need for the leaky pipe to remain in place. Irrigation water provided by NMWC still flows south through the Airport West Ditch, however, whereupon it is pumped to privately owned farms west of the Airport. The proposed project would include the construction of canal improvements to allow for decommissioning of the agricultural irrigation function of the ditch.

During storms, the Airport West Ditch receives stormwater runoff from a portion of the impervious surfaces on the west side of the Airport. Depending on the water volume, some of the stormwater is retained in the ditch until it can drain off-site to the Sacramento River. Therefore, the stormwater detention function of the Airport West Ditch must continue. In addition to the habitat-related safety issues, the ditch presents a physical obstruction hazard to plans that may leave the runway during adverse takeoff or landing situations. Therefore, the final stage of this project component would consist of regrading the Airport West Ditch to a gently sloping swale that can be easily maintained through mowing or other means. The more gradual gradient would also pose a lower threat to aircraft that may unexpectedly exit the runway.

To take advantage of common construction practices and to maximize the use of common facilities, the rearrangement of irrigation and drainage facilities required to provide for rerouting of flows that contribute to the Airport West Ditch would be accomplished along with the proposed NLIP improvements. The proposed GGS/Drainage Canal would intercept many of the Airport West Ditch’s off-site irrigation and drainage sources and reroute flows outside of the Airport Operations Area. The intent is to reroute year-round flows through the GGS/Drainage Canal. Additional irrigation infrastructure improvements required to reroute these flows would be implemented along with the GGS/Drainage Canal construction. Equipment that would be utilized in this reconfiguration includes excavators, loaders, compactors, dump trucks, water trucks, hydroseeding trucks, and generators.

**Pumping Plant No. 2 Reconstruction and Relocation**

Pumping Plant No. 2 would be reconstructed and relocated as part of the proposed project at the western end of the North Drainage Canal, approximately 900 feet east of the centerline of the levee in the vicinity of the intersection with the P6 Drain. Long discharge pipes would extend over the levee to the Sacramento River. The work is expected to take place in construction Phase 3. Two 42-inch steel discharge pipes, approximately 850 feet long, would connect the two 300-horsepower pumps from the pump station to a new concrete outfall structure in the Sacramento River. The new outfall structure would be constructed close to the location of the original Pumping Plant No. 2 outfall structure. Equipment required for construction of Pumping Plant No. 2 include an excavator, dozer, loader, crane, boom truck, pile driver, concrete pump, generator, and water truck.

**Habitat Enhancement, Development, and Management**

Habitat enhancements and developments planned for Phases 3 and 4 of project construction include: the southern segments of the relocated Elkhorn Canal and the newly constructed GGS/Drainage Canal between the Elkhorn Reservoir and the West Drainage Canal and the relocated Riverside Canal; additional establishment of landside woodlands along the Sacramento
River east levee; continued creation of managed grasslands on the newly constructed levee slopes, seepage berms, access rights-of-ways, and canal embankments; the creation of managed marsh in the southern areas of the basin; and preservation of additional rice and agricultural upland cropland. Similar to Phase 2, temporary and permanent effects to habitats of listed species that result from the implementation of Phases 3 and 4 would be offset through the creation, enhancement, and preservation of habitat in the basin.

**Programmatic Biological Opinion Implementing Procedure**

Because the Corps and SAFCA only have a detailed project description for Phase 2 of the entire Natomas Levee Improvement Project, this biological opinion analyzes the landscape effects of the project for all Phases (2, 3, and 4) but will only analyze and provide incidental take coverage for Phase 2. For each subsequent phase, the Corps will initiate section 7 consultation with the Service under the umbrella of this programmatic biological opinion. The following process will be used when implementing projects under this programmatic biological opinion:

1. The Corps will submit a letter requesting that the proposed phase be tiered to this programmatic biological opinion and provide the Service the following:
   a. Project maps, which includes reaches under construction, cover types within the construction/maintenance boundary.
   b. Project schedule.
   c. An inventory of any elderberry stems >1 inch diameter that are within 100 feet of project actions and the number of shrubs and stems that would be transplanted and when and where they would be transplanted.
   d. A description of how compensation measures from the preceding phase are being implemented and the schedule for completion of those measures.

2. The Service will review new information that may reveal effects not considered previously and review the information provided to determine whether the activities described under future Phases were programatically analyzed in this document.

3. The Corps and SAFCA should involve the Service on Phase 3 and Phase 4 early in the process to allow the Service an opportunity to comment on project descriptions and expedite the completion of biological opinions for those phases.

Please refer to the October 9, 2008, biological opinion for the giant garter snake and valley elderberry longhorn beetle Status of the Species and Baseline.
Effects of the Proposed Action

Giant garter snake

Direct Effects

Overall Project

Land use changes due to SAFCA’s project include the permanent loss of up to 395.75 acres of row and field crop including fallow fields (some of which was previously active rice), 65.52 acres of orchard, and 113.75 acres of rice. The project includes an increase of 46.42 acres of woodland, 521.79 acres of grassland, 93.71 acres of managed marsh, and 31.38 acres of canals.

Depending on how the grasslands are managed, the conversion of row crop and fallow agricultural fields to grassland could be beneficial to giant garter snakes. Agricultural areas typically have high levels of disturbance due to crop maintenance and harvesting activities. Mortality of snakes by farm equipment would be highly likely. Fallow agricultural fields may lack adequate cover for snakes and increase the risk of predation. Some of the grassland would be created on the slopes of the new levees and berms. While these grasslands would be subject to greater human disturbance than non-levee grasslands, due to maintenance requirements from the Corps, they would still suffer less disturbance than an active agricultural field. Flood control structures need to allow easy visual inspection from the top of the levee during the spring and fall. While RDs have varying ways of complying with this requirement, SAFCA is proposing to have RD 1000 mow levee slopes to a height which would allow for visual inspection but also be high enough to reduce the chance of coming into contact with a snake. The Corps also requires that the levee slopes receive rodent control measures to keep ground burrowing mammals from burrowing into the sides of the levee. This could include grouting ground squirrel holes closed, which would remove potential hibernacula for giant garter snakes in the winter months to using a rodenticide which would lessen the number of ground squirrels in the area.

Giant garter snakes are not typically found in orchards because of the high amount of overstory cover, therefore there would be a benefit to giant garter snake due to the loss of 65.52 acres of orchard habitat. However, SAFCA proposes to create an additional 46.42 acres of woodland to compensate for effects to Swainson’s hawk nesting trees. It is unlikely that giant garter snakes will use dense woodland areas. Therefore, this represents a net loss of 19.10 acres of habitat that is unlikely to be used by giant garter snakes.

Because of the project, 65.50 acres of rice would be permanently converted to an upland habitat type. SAFCA has proposed to compensate for the loss of rice by creating 65.50 acres of managed marsh on 48 acres of existing rice fields and 18 acres of annual grassland/fallow crops/row and field crop near Fisherman’s Lake. Overall, there would be a loss of 113.50 acres of rice from the Natomas Basin. Additionally, there will be a temporary loss of rice within the Natomas Basin due to borrow excavation from the Brookfield site. The Brookfield site would be used over two seasons with no one area being
out of production for more than one season. About 160 acres would be out of production and unavailable to giant garter snake during Phase 2 and a separate 190 acres would be out of production and unavailable to giant garter snake the next year during Phase 3. The loss of rice reduces the amount and availability of habitat, including summer water, for the snake. Due to the large amount of rice that has been fallowed in the Natomas Basin (37 percent loss of active rice between 2004 and 2007), any additional loss of rice, even for 1 season, has a direct effect on giant garter snakes. Flooded rice fields act as seasonal marshes and produce high numbers of prey species such as tadpoles, frogs and mosquito fish. Effects associated with reduced available summer water in the form of rice field habitat also include displacement of individual giant garter snakes from familiar habitat areas and result in giant garter snakes foraging over a wider area. Giant garter snakes may move to other areas of suitable habitat, but will encounter increased mortality from vehicles, exposure to temperature extremes, predation, and human disturbance while migrating to new areas. Migrating snakes or snakes using a larger foraging area may displace resident snakes or compete for food and shelter resources with resident snakes, resulting in reduced survivorship and fecundity of both resident and immigrant snakes.

Adverse effects from the reduction of rice fields may be greatest for gravid females, juveniles, and neonate snakes. Gravid females spend significant time basking in mid to late summer while incubating young, and thus may have reduced survivorship or fecundity if displaced from familiar retreats and basking sites (giant garter snakes are live bearers and contribute significant resources to brooding offspring). Abundant food resources are essential for females to both recover body mass after giving birth and to survive the overwintering period when the snakes do not forage and to the survival of juveniles and neonates. Giant garter snakes typically double their weight in the first year, with rapid growth likely necessary to reach a size class no longer susceptible to predation by non-native predatory fish and bullfrogs. The reduced availability of rice fields will result in less small prey for young snakes, which would inhibit growth, result in delayed sexual maturation and decreased births and recruitment of individuals into the population. This could potentially skew the age structure of the population to older giant garter snakes. Juveniles and neonates also rely on developing sufficient body mass prior to overwintering in order to survive long periods without foraging. Temporary or permanent loss of rice fields will not only remove habitat, but will also have adverse effects on reproduction, recruitment, and survival of the snake that will continue to affect giant garter snake populations well beyond the project time frame.

To offset the effects of the permanent loss of 113.50 acres of rice and the temporary effects to 350 acres of rice in the basin, SAFCA proposes to create 65.5 acres of managed marsh and permanently protect 175 acres of rice. Managed marsh has the capability to provide higher quality habitat for giant garter snakes because the habitat is available for the snake year round, will be subject to less human disturbance from farming activities, protected in perpetuity with a Conservation Easement, and will hold water for longer periods of time than a rice field typically does. Providing protection in perpetuity in the form of a Conservation Easement on 175 acres of rice fields would also benefit the snake because the
rice farming at this site would be managed by the TNBC and would assure more "snake-friendly" rice habitat than a typical rice field.

SAFCA proposes to affect 29.42 acres of irrigation and drainage canals that are vitally important for giant garter snakes both for foraging and movement within the basin. The loss of a canal within the basin even for a single season could have a large detrimental effect to giant garter snakes and their ability to access areas within the Natomas Basin for foraging and cover. The Elkhorn and Riverside Canals would be relocated away from the toe of the existing levee and moved between 400 to 800 feet away from their current location. To minimize any temporal loss of canal habitat for the giant garter snake, SAFCA has proposed to construct the replacement canal a year prior to filling the existing irrigation canals. This serves two purposes; to prevent an interruption in irrigation service and to allow vegetation to develop along the canal banks, which will provide cover for the giant garter snakes. About 54.94 acres of upland habitat is currently available to giant garter snakes along the Elkhorn and Riverside Canals. This area includes annual grassland/ruderal areas and excludes active row and field crops within 200 feet of the canals. While giant garter snakes can and do utilize upland habitat farther than 200 feet from aquatic habitat SAFCA will only be temporarily affecting habitat outside of this area through borrow excavation. Borrow activities near the irrigation canal relocations would be conducted primarily on active alfalfa fields. A small amount of orchard and fallow agricultural lands would also be excavated for borrow. Giant garter snakes do not typically use alfalfa as upland habitat due to the high amount of disturbance through mowing and harvesting, though they may travel through them to reach aquatic habitat. Borrowing activities on the active and fallow agricultural fields would temporarily affect the snakes by causing them to potentially have to travel longer distances to reach aquatic habitat; however this would only occur for one season and landuse on the borrow sites would return to current conditions. About 49.36 acres of upland habitat would be created adjacent to the relocated Elkhorn and Riverside Canals. Uplands along the Elkhorn and Riverside Canals would be vegetated with native perennial grasses.

Two sections of the Elkhorn Canal would be piped to avoid infrastructure. About 3,200 feet of canal would be piped near Teal Bend Golf Club and another 1,000 feet would be piped south of the golf club to avoid existing residences. Piping the irrigation canals for such long lengths would adversely affect connectivity. Given the lack of light, vegetation, and prey species that would be found within the pipes, giant garter snakes would most likely avoid using the pipes to reach up- or downstream aquatic habitat. Snakes, which may be using the newly constructed canals, may then have to travel over land to reach other aquatic habitat and will encounter increased mortality from vehicles, exposure to temperature extremes, predation, and human disturbance while migrating to new areas. To compensate for reducing connectivity by piping a large segment of the Elkhorn Canal, SAFCA is constructing the GGS/Drainage Canal, which will have a reliable source of water and run parallel to the Elkhorn Canal, though about 4,500 feet to the east.
SAFCA will be filling 19.27 acres of drainage ditches and marsh habitat. The majority of the acreage is due to the filling of the Airport West Drain. To compensate for the loss of habitat SAFCA has proposed to build the GGS/Drainage Canal and to compensate with 19.27 acres of managed marsh with a conservation easement near Fisherman's Lake. There are about 8.94 acres of upland habitat that is associated with the ditches and marsh. Because the aquatic features are going to be filled, this area will no longer serve the same function of adjacent upland habitat for the giant garter snake. SAFCA will be creating and preserving a small amount of upland habitat adjacent to the GGS/Drainage Canal and also creating 8.94 acres of managed marsh with a conservation easement near Fisherman’s Lake. The GGS/Drainage Canal will be sloped to minimize maintenance and will have the side slopes planted with perennial grasses along the upper slope and rushes and sedges along the water’s edge. The segment of the GGS/Drainage Canal, which would be built parallel to the Airport West Ditch, would be constructed in the same season as the Airport West Ditch will be filled. Unfortunately, this will not allow time for vegetation to become established on the banks and any snakes using the newly constructed GGS/Drainage canal would be subject to higher predation due to the lack of cover. SAFCA has proposed to create better aquatic canal habitat for giant garter snakes by assuring that the new GGS/Drainage Canal would have a minimum water depth of 4.5 feet between April and October, which is the active season for the giant garter snake.

SAFCA proposes to purchase long-term water contracts from NCMWC to provide water for both the managed marsh and GGS/Drainage Canal. While the Service expects the GGS/Drainage Canal to provide benefits to giant garter snakes in the Natomas Basin by offsetting the effects of their project, there is some concern regarding the long term protection of the canal because the project description does not provide a Conservation Easement on this feature. SAFCA has negotiated with the SCAS on an easement for the GGS/Drainage Canal where it crosses their property. The SCAS reserves the right to make changes to the canal should the Federal Aviation Administration require them to do so for purposes of aircraft safety. These changes to the canal could result in take of the giant garter snake. Should the SCAS make changes to the canal, they would still have to undergo consultation with the Service to analyze the effects of their project on federally listed species. Upon consulting with the Service and CDFG, the easement includes language that SCAS will compensate for any damages resulting from their actions to federally or state listed species through restoration or replacement of habitat. However, even with these provisions the easement does not provide the protection that is typically placed on compensation lands. SAFCA will be providing additional compensation lands at a 1:1 ratio of upland and aquatic habitat affected due to the filling of the Airport West Ditch in addition to creating the GGS/Drainage Canal. Therefore, SAFCA will create 28.21 acres of managed marsh near Fisherman’s Lake with a conservation easement to compensate for 19.27 acres of aquatic habitat the majority of which is along the Airport West Ditch and 8.94 acres of upland habitat, which is suitable for giant garter snake and is associated with the aquatic features being affected.
Phase 2 Construction

Phase 2 construction includes work along the NCC and reaches 1-4B along the Sacramento River east levee. The Corps and SAFCA have proposed to complete the majority of the work during the active season of the giant garter snake (May 1 to October 1). Construction during this time would occur in 61.1 acres of developed land, 139.6 acres of annual grassland, 645.5 acres of row and field crop and fallow agriculture, 1.5 acres of orchard, 183 acres of rice (25 would be a permanent effect, 160 acres would be a temporary effect), 2 acres of canals and ditches, 22 acres of open water and other non-canal wetlands, and 10.3 acres of woodland. At the end of the construction season the proposed land cover types will be 53.5 acres of developed land, 30 acres of created woodland, 15.85 acres of preserved woodland, 168 acres of levee slope grassland, 123 acres of grassland on seepage berms and canal embankments, 19 acres of irrigation canal, 13.5 acres of GGS/Drainage Canal, and 175 acres of preserved rice. The newly created cover types with the project would protected from future development through either a flood control easement, conservation easement, or drainage easement.

Phase 2 construction would primarily occur between May 1 and October 1. The only components of Phase 2 work which would occur outside of the giant garter snake’s active season would be relocation of power poles, relocation of private irrigation pipelines, canals, and wells, and the removal, transplantation, and/or planting of trees and elderberry shrubs that are located in the Phase 2 footprint. To reduce the likelihood of disturbing or killing a giant garter snake that may be overwintering in uplands that would be affected this winter, SAFCA has proposed to erect exclusionary fencing around the areas where they would be working prior to October 1. This fence would be monitored daily prior to and during construction to ensure that there are no breaches that a snake could get through. This should remove the chance that project construction would kill giant garter snakes when they are working in the winter months.

The remainder of the project would be constructed during the active period (May 1 – October 1) for the snake, resulting in a decreased risk of direct mortality of snakes. However, given the number of acres of aquatic and upland giant garter snake habitat affected within Phase 2, it is highly likely effects to snakes would include removal of cover and basking sites, filling or crushing of burrows or crevices, obstructing snake movement, and decreasing the prey base, and may result in the direct disturbance, displacement, injury, and/or mortality of snakes. Snakes may disperse across or may bask on existing roads, and thus may be killed or injured by construction equipment or other vehicles accessing the project site.

Compensation for the loss of rice in Phase 2 would occur during Phase 4 with the creation of 65.50 acres of managed marsh along the western boundary of Fisherman’s Lake. The creation of managed marsh at this location would connect to existing TNBC Preserve lands which currently are in managed marsh which would enlarge a core area for giant garter snakes in the Natomas Basin. While the Service recognizes the benefit of enlarging managed marsh within the Fisherman's Lake area, there would be a temporal loss of aquatic habitat for giant garter snake between when rice is converted to upland in Phase 2 and when marsh is created in Phase 4. If for some reason the Corps and SAFCA either do not complete all the project phases or do not
provide the 65.50 acres of managed marsh in 2011, then they would have to reinitiate consultation with the Service as outlined on page 79 of this biological opinion.

Within the construction of Phase 2, SAFCA has proposed to create canal habitat in advance of canal that would be filled in Phase 3. This helps to offset effects due to the filling of canal which would be a loss of aquatic habitat for snakes, by allowing the new canals to become established in advance and also allow vegetation to begin to grow along the banks, which would provide cover from predation for the giant garter snake.

**Valley Elderberry Longhorn Beetle**

Effects to the valley elderberry longhorn beetle may occur with the transplantation of elderberry shrubs outside of the footprint of the levee enlargement. Loss of an elderberry shrub or even a stem can result in direct mortality of valley elderberry longhorn beetles or affect valley elderberry longhorn breeding and feeding because adult beetles rely solely on elderberry flowers for food and must lay their eggs on elderberry stems to successfully reproduce.

All three phases of the project have potential to affect about 40 elderberry shrubs through transplantation. This action will adversely affect the valley elderberry longhorn beetle. Any beetle larvae occupying these plants are likely to be killed when the plants are removed. An additional number of elderberry shrubs would remain where they currently are however, construction work would occur within 100 feet but no closer than 20 feet from the dripline of an elderberry shrub.

Temporal loss of habitat will occur. Although mitigation for impacts on the beetle involve creation or restoration of habitat, it generally takes five or more years for elderberry plants to become large enough to support beetles, and it generally takes 25 years or longer for riparian habitats to reach their full value (USFWS 1994). Temporal loss of habitat will temporarily reduce the amount of habitat available to beetles and may cause fragmentation of habitat and isolation of subpopulations. In cases where the proposed project will reduce the canopy closure of riparian forests, an edge effect is created that could result in reduced habitat quality for the beetles. Beetles disperse poorly and the systematic removal of elderberry shrubs from a relatively connected river corridor has adverse effects well outside of the project's footprint.

Proposed avoidance and minimization measures should minimize adverse effects resulting from elderberry stem trimming or elderberry transplantation.

**Effects of Phase 2 Construction to Valley Elderberry Longhorn Beetle**

Table 3 lists the elderberry shrub stem counts and sizes which would be transplanted as part of the Phase 2 construction. Effects to the valley elderberry longhorn beetle due to transplantation of these shrubs are described above. Elderberry shrubs would be transplanted and elderberry seedlings and associated natives would be planted at one of the following properties: Rio Ramaza, Cummings, or Lasuevic.
### Table 3. Elderberry Stem Sizes and Compensation

<table>
<thead>
<tr>
<th>Location</th>
<th>Stems (maximum diameter at ground level)</th>
<th>Exit Hole on Shrub (Yes or No)</th>
<th>Elderberry Seedling Ratio</th>
<th>Associated Native Plant Ratio</th>
<th>Number of Stems Observed</th>
<th>Required Elderberry Plantings</th>
<th>Required Associated Native Plant Plantings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riparian</td>
<td>stems ≥1” &amp; ≤3”</td>
<td>No</td>
<td>2:1</td>
<td>1:1</td>
<td>33</td>
<td>66</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>4:1</td>
<td>2:1</td>
<td>57</td>
<td>228</td>
<td>456</td>
</tr>
<tr>
<td>Riparian</td>
<td>stems &gt; 3” &amp; &lt;5”</td>
<td>No</td>
<td>3:1</td>
<td>1:1</td>
<td>16</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>6:1</td>
<td>2:1</td>
<td>13</td>
<td>78</td>
<td>156</td>
</tr>
<tr>
<td>Riparian</td>
<td>stems &gt; 5”</td>
<td>No</td>
<td>4:1</td>
<td>1:1</td>
<td>16</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>8:1</td>
<td>2:1</td>
<td>16</td>
<td>128</td>
<td>256</td>
</tr>
<tr>
<td>Non-riparian</td>
<td>stems ≥1” &amp; ≤3”</td>
<td>No</td>
<td>1:1</td>
<td>1:1</td>
<td>23</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>2:1</td>
<td>2:1</td>
<td>5</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Non-riparian</td>
<td>stems &gt; 3” &amp; &lt;5”</td>
<td>No</td>
<td>2:1</td>
<td>1:1</td>
<td>8</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>4:1</td>
<td>2:1</td>
<td>2</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Non-riparian</td>
<td>stems &gt; 5”</td>
<td>No</td>
<td>3:1</td>
<td>1:1</td>
<td>2</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>6:1</td>
<td>2:1</td>
<td>1</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Total replacement plantings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>681</td>
<td>1,139</td>
</tr>
<tr>
<td>Total Elderberry shrubs to be transplanted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>1,820 /10 = 182 valley elderberry longhorn beetle credits or 7.52 acres</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local, or private actions affecting listed species that are reasonably certain to occur in the area considered in this biological opinion. Future Federal actions not related to this proposed action are not considered in determining the cumulative effects, but are subject to separate consultation requirements pursuant to section 7 of the Act.

The effectiveness of the NBHCP’s OCS relies on the City of Sacramento and Sutter County limiting development to a combined total of 15,517 acres within their respective permit areas. The proposed project site is located outside the permitted development area, and SAFCA is not a permittee under the NBHCP; however, the plan assumes no significant new development in the basin outside of the City of Sacramento and Sutter County permit areas. The NBHCP outlines a carefully constructed OCS that balances reasonable development in the Basin with conservation of snake habitat in order to maintain a viable population of giant garter snakes in the basin and avoid jeopardy to this threatened species. The NBHCP and MAPHCP allow for urban development of certain areas (totaling up to 17,500 acres) in the Basin in return for the preservation of, and in some cases, restoration and management of 8,725 acres, in an interconnected preserve system, which when added to the baseline of agricultural and undeveloped lands in the basin, will
conserve the Natomas Basin snake population. While the proposed project does not increase the number of developed acres beyond the 17,500 contemplated under the NBHCP and MAPHCP, it does change (in some cases, permanently) habitat types from one type to another. Loss of habitat, which the 22 covered species of the NBHCPs may use, include 395.75 acres of row and field crop, 65.52 acres of orchard, and 113.75 acres of rice. Increases in the following habitat types would occur with the project: 46.42 acres of woodland, 521.79 acres of grassland, 93.71 acres of managed marsh, and 31.38 acres of canal. While there would be a change in habitat types within the basin, the NBHCP covered species would still be able to use the habitats that SAFCA’s project would be creating and development would be precluded from these areas through conservation easements, flood control easements, and drainage easements.

While SAFCA is not a signatory to the NBHCP, the plan sets forth a regional conservation strategy that covers the entire basin. The NBHCP’s efficacy in maintaining a viable population of giant garter snake in the Basin depends, in significant part, on the retention of a sufficient amount of undeveloped acreage throughout the Basin, to support giant garter snake.¹ The NBHCP operates under the assumption that agricultural land in the Basin would continuously rotate between crop types, and therefore all land provides habitat for all 22 of the NBHCP covered species, including the giant garter snake.

SAFCA’s proposed project will directly affect existing land that has been preserved as mitigation for either the NBHCP or MAPHCP. During Phase 2 of the project, 1.63 acres of fallow row and grain crop would be affected at the Atkinson Preserve and 4.09 acres of alfalfa and 5.72 acres of wheat would be affected at the Huffman West Preserve. During Phase 4 of the project, 1.98 acres of alfalfa, 0.05 acre of developed, 0.83 acre of ruder, and 0.48 acre of valley oak woodland would be affected at the Allegheny 50 Preserve and 0.044 acre of valley oak woodland and 0.00034 acre of riparian scrub would be affected at the Cummings Preserve. These areas would be replaced with levee slope covered in grassland. As provided for in the NBHCP (IV.C.2.c.(1)) SAFCA shall “pay for the value of replacing every acre of reserve land impacted.” To accomplish this SAFCA has proposed to acquire existing TNBC land not currently dedicated to mitigation to offset acre-per-acre losses. This existing TNBC land would consist of rice, not the upland habitat types affected. SAFCA will fund the perpetual maintenance, monitoring, and enhancement of these preserves for the benefit of the covered species. Because this land is currently and will be maintained in rice, this will benefit the giant garter snake.

Creating connectivity between the preserve lands is a primary goal of the NBHCP. The NBHCP references the irrigation and drainage canals as a means of connecting preserve lands. SAFCA will be replacing any canals, which they affect during construction on the levees with the exception of the areas which would be piped to avoid the golf course or

¹ In NWF v. Norton, 2005 U.S. Dist LEXIS 33768, Judge Levi upheld the NBHCP and its strategy to protect the GGS in the Natomas Basin. However, in footnote 13 of the opinion, he cautioned that, “the Service and those seeking an ITP in the future will face an uphill battle if they attempt to argue that additional development in the basin beyond the 17,500 acres will not result in jeopardy” to the snake.
residences. Relocated irrigation canals will still be accessible via lateral canals, which run to the surrounding row and field crops, however, it is likely that summer water availability in those areas is not consistent. SAFCA will be building the GGS/Drainage Canal, which will connect the North Drainage Canal to the West Drainage Canal, which eventually empties into Fisherman's Lake. Water will be maintained in the canal during the giant garter snakes' active season (April to October). Unfortunately, the north/south aquatic connection will travel about 8 miles through a landscape of primarily row and field crop and annual grassland with no rice agriculture. While there has not been a study of giant garter snake use of canals with varying surrounding landuses, previous studies have found increased detection of giant garter snakes in canals which are immediately adjacent to rice or managed marsh versus canals which are surrounded by upland habitat (Wylie et al. 2002b, 2004b). While the possibility exists for a random snake to travel up or down the GGS/Drainage Canal between the northern preserves and the Fisherman's Lake preserves, without "way stations" of rice or managed marsh spread out along the aquatic corridor to provide cover and prey items, it is highly unlikely that this corridor would provide genetic exchange between the two preserve areas.

In December 2008, FEMA will issue a new flood map for the Natomas Basin. This would place all of Natomas into the AE zone, which would require that builders place the bottom floor of new construction up to 20 feet above ground level to keep it out of the floodplain. This would effectively stop new construction in Natomas. While not directly growth-facilitating, the proposed project would serve planned and reasonably foreseeable growth by providing flood protection to the Natomas Basin which is currently an impediment to future growth (planned or otherwise) in the Natomas Basin. It is likely that some of the growth (commercial, municipal, and residential) in the Natomas Basin will not require section 7 consultation with the Service for compliance with the Act, and will not obtain take coverage pursuant to section 10 of the Act. Currently, the NBHCP and the East Contra Costa HCP are the only two permitted regional HCPs in the Sacramento area, although Placer, Yolo, South Sacramento, Yuba, and Sutter are all developing regional HCPs. Until these regional HCPs are finalized, there is no mechanism to provide "take" coverage for projects with no Federal nexus besides these projects pursuing their own individual HCPs. Some "take" of listed species is likely to occur for which no minimization, avoidance, and compensation/mitigation measures for federally-listed species are implemented.

SAFCA, the Corps, the city of Sacramento, Sacramento County, and Sutter County should understand that future development within the Natomas Basin could negatively affect the NBHCP and MAPHCP and potentially jeopardize the giant garter snake in the Natomas Basin. Any additional "take" of listed species outside what has been analyzed in this biological opinion or the NBHCP and MAPHCP cannot occur without appropriate permits or consultations with the Service and CDFG.

The cumulative effects of reasonable foreseeable projects in the Natomas Basin may pose a significant threat to the eventual recovery of the giant garter snake. The following proposed
projects could significantly affect the sustainability of giant garter snakes in the Natomas Basin when considered cumulatively with the proposed Natomas Levee Improvement Project:

- The proposed Greenbriar residential development is located on an approximately 577-acre site south of Elkhorn Boulevard and west of State Highway 99. Development on this site could result in the loss of giant garter snake habitat adjacent to Lone Tree Canal, depending on the configuration of houses and infrastructure.
- Natomas Joint Vision, as currently proposed by the City of Sacramento and Sacramento County, is to develop approximately 6,000 acres in the area of the County outside of the City’s permitted area under the NBHCP.
- Sacramento International Airport’s Master Plan would enlarge the airport on land currently owned by the airport and would occur through 2020. Much of the land slated for airport expansion is currently in agricultural production.

Other projects which are reasonably foreseeable and should be considered cumulative with the proposed project, but for which the Service has little to no information about the extent of their effects to giant garter snakes, include:

- Camino Norte
- Downtown Natomas Airport Light Rail
- Pacific Gas & Electric Line 406/407 Pipeline
- Sacramento Municipal Utility District Powerline – Elkhorn Substation
- Sutter Pointe Specific Plan

Conclusion

After reviewing the current status of the giant garter snake and valley elderberry longhorn beetle, the environmental baseline for the species, the effects of the proposed project, and the cumulative effects on this species, it is the Service’s biological opinion that the proposed Natomas Landside Improvements Project, as described herein, is not likely to jeopardize the continued existence of the giant garter snake or valley elderberry longhorn beetle. The project is outside of critical habitat for the valley elderberry longhorn beetle and critical habitat has not been designated for the giant garter snake, therefore there is no affect to critical habitat as a result of this project.

The Corps and SAFCA have proposed to improve flood protection for the Natomas Basin above what currently exists. Two HCPs currently exist within the Natomas Basin and are based on future development occurring within the permit area of the MAPHCP and NBHCP. The baselines and assumptions for which these HCPs were developed were based on no additional development occurring within the basin outside of these permit areas and no change in landuse practices. Sacramento County and the City of Sacramento are already proposing additional development outside of the existing permit areas. Additionally, the Natomas Basin has experienced a large amount of rice fallowing both in land held by private farmers and leases terminated on Sacramento County Airport property. While the Service has concluded that
SAFCA’s project would not jeopardize the giant garter snake or valley elderberry longhorn beetle, it does facilitate growth within the Natomas Basin, which would require additional analysis to determine if this growth could jeopardize any of the 22 species covered by the MAPHCP and NBHCP. If growth outside of the permit areas were to occur within the Natomas Basin, these future projects must have a higher conservation outcome than currently exists in the HCPs and must be closely coordinated with the Service.

INCIDENTAL TAKE STATEMENT FOR PHASE 2 CONSTRUCTION

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act, provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are nondiscretionary for listed species in Phase 2 of this opinion and must be implemented by the Corps in order for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity that is covered by this incidental take statement. If the Federal agency (1) fails to adhere to the terms and conditions of the incidental take statement, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

Giant Garter Snake

The Service anticipates that incidental take of the snake will be difficult to detect or quantify for the following reasons: giant garter snakes are cryptically colored, secretive, and known to be sensitive to human activities. Snakes may avoid detection by retreating to burrows, soil crevices, vegetation, or other cover. Individual snakes are difficult to detect unless they are observed, undisturbed, at a distance. Most close-range observations represent chance encounters that are difficult to predict. It is not possible to make an accurate estimate of the number of snakes that will be harassed, harmed or killed during Phase 2 construction activities (staging areas, work on canal banks, soil borrow areas, and vehicle traffic to and from borrow areas). In instances when take is difficult to detect, the Service may estimate take in numbers of species per acre of habitat
lost or affected as a result of the action. Therefore, the Service anticipates that all giant garter snakes inhabiting 187 acres of aquatic and 818.9 acres of upland habitat may be harassed, harmed, or 2 giant garter snakes killed by loss and destruction of habitat, as a result of the project.

Valley Elderberry Longhorn Beetle

The Service expects that incidental take of the valley elderberry longhorn beetle will be difficult to detect or quantify. The cryptic nature of these species and their relatively small body size make the finding of an injured or dead specimen unlikely. The species occurs in habitats that make them difficult to detect. Due to the difficulty in quantifying the number of beetles that will be taken as a result of the proposed action, the Service is quantifying take incidental to the project as the number of elderberry stems one inch or greater in diameter at ground level (beetle habitat) that will become unsuitable for beetles due to direct or indirect effects as a result of Phase 2 construction. Therefore, the Service estimates take incidental to the project as death, injury, harassment, and harm of all beetles inhabiting the 23 elderberry plants containing stems 1 inch or greater at ground level (118 stems between 1-3 inches, 39 stems between 3 and 5 inches and 35 stems ≥5 inches; see Table 3 in the text).

Effect of the Take

The Service has determined that this level of anticipated take is not likely to result in jeopardy to the giant garter snake, or valley elderberry longhorn beetle, and will not result in the destruction or adverse modification of designated critical habitat because in the case of the giant garter snake critical habitat has not been designated and it is outside of the critical habitat for valley elderberry longhorn beetle.

Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the effect of the proposed project on the giant garter snake and valley elderberry longhorn beetle.

1. The Corps and SAFCA shall implement the project as proposed in the biological assessment and this biological opinion.

2. Effects of harassment of individual giant garter snakes within the proposed project, and of the loss or degradation of the species’ habitat shall be minimized.

3. Effects of harassment of individual valley elderberry longhorn beetle, and of the loss and degradation of the species’ habitat shall be minimized.
Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Corps must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

1. The following terms and conditions implement reasonable and prudent measure one (1):

   a. The Corps and SAFCA shall minimize the potential for incidental take of the giant garter snake and valley elderberry longhorn beetle resulting from the project related activities by implementation of the project description as described in the biological assessment and the project description of this biological opinion.

   b. If requested, before, during, or upon completion of ground-breaking and construction activities, the project proponents shall allow access by Service and/or California Department of Fish and Game personnel to the project site to inspect project effects to the snake and valley elderberry longhorn beetle.

   c. A Service approved Worker Environmental Awareness Training Program for construction personnel shall be conducted by a Service-approved biologist for all construction workers prior to the commencement of construction activities. The program shall provide workers with information on their responsibilities with regard to the giant garter snake and valley elderberry longhorn beetle, an overview of the life-history of the species, information on take prohibitions, and protections afforded the species under the Act. Written documentation of the training must be submitted to the Sacramento Fish and Wildlife Office within 30 days of the completion of training. As needed, training shall be conducted in Spanish for Spanish language speakers and other languages as needed or necessary.

   d. The applicants shall include a copy of this biological opinion within its solicitations for design and construction of the proposed project making the primary contractor responsible for implementing all requirements and obligations included within the biological opinion, and to educate and inform all other contractors involved in the project as to the requirements of the biological opinion.

2. The following terms and conditions implement reasonable and prudent measure two (2):

   a. The project proponents shall minimize the potential for harm or harassment of the snake resulting from project-related activities by implementation of the conservation measures as described in the Corps’ Biological Assessment and appearing in the project description (pages 3-44) of this biological opinion.

   b. At least 30 calendar days prior to initiating construction activities, the project proponents shall submit the names and curriculum vitae of the biological
monitor(s) for the proposed project. Monitors shall have the ability to
differentiate giant garter snakes from other snakes and the authority to stop
classification activities if a snake is encountered during construction until
appropriate corrective measures have been completed or until the snake is
determined to be unharmed.

c. For Phase 2 work which would occur outside of the giant garter snake active
window (power pole relocations and private irrigation canal relocation) exclusion
fencing would be placed around upland areas that giant garter snakes could use to
overwinter. The exclusionary fencing would be monitored everyday prior to and
during construction to ensure that openings do not develop that would allow the
entry of a giant garter snake into the construction area.

d. Construction activity shall be conducted between May 1 and October 1. This is
the active period for the snake and direct mortality is lessened, because snakes are
expected to actively move and avoid danger. If it appears that construction
activity may go beyond October 1, the project proponents shall contact the Service
as soon as possible, but not later than July 15 of the year in question, to determine
if additional measures are necessary to minimize take.

e. The project proponents shall implement Best Management Practices to prevent
sediment from entering areas containing snake habitat, including, but not limited
to, silt fencing, temporary berms, no cleaning of equipment in or near snake
habitat, installation of vegetative strips, and temporary sediment disposal.

f. Runoff from dust control and oil and other chemicals used in other construction
activities shall be retained in the construction site and prevented from flowing into
areas containing snake habitat. The runoff shall be retained in the construction
areas by creating small earthen berms, installing silt fences or hay-bale dikes, or
implementing other measures on the construction site to prevent runoff from
entering the habitat of the snake.

g. Project-related vehicles shall observe a 20-mile-per-hour speed limit within
construction areas, except on County roads and State and Federal highways. This
is particularly important during periods when the snake may be sunning or moving
on roadways.

h. To avoid attracting snake predators, all trash items, such as wrappers, cans,
bottles, and food scraps, must be disposed of in closed containers and removed at
least once a day from the entire project site.

i. Within 24-hours prior to the commencement of construction activities, the site
shall be inspected by a Service-approved biologist. The biologist will provide the
Service with a written report that adequately documents the monitoring efforts.
within 24-hours of commencement of construction activities. Snakes encountered during construction activities shall be allowed to move away from the area on their own volition. The biologist shall notify the Service immediately if any listed species are found on-site, and will submit a report, including date(s), location(s), habitat description, and any corrective measures taken to protect the species found. The biologist shall be required to report any take to the Service immediately by telephone at (916) 414-6600 and by electronic mail or written letter addressed to the Deputy Assistant Field Supervisor, within one (1) working day of the incident. The project area shall be re-inspected by the monitoring biologist whenever a lapse in construction activity of two weeks or greater has occurred.

j. Erosion control structures will be installed concurrently with construction. Erosion control structures will be constructed so runoff will be directed away from sensitive habitats. Tightly woven fiber netting (mesh size less than 0.25 inch) or similar material shall be used for erosion control or other purposes at the project site to ensure giant garter snakes and other reptiles or amphibians are not trapped by the erosion control material. This limitation will be communicated to the contractor through use of Special Provisions included in the bid solicitation package. Coconut coir matting is an acceptable erosion control material. No plastic mono-filament matting shall be used for erosion control. The edge of the material shall be buried in the ground to prevent giant garter snakes and other reptiles and amphibians from crawling underneath the material. Erosion control measures shall direct water flow into existing drainages or disperse water across vegetated areas in order to avoid concentrating water.

k. Movement of heavy equipment to and from the project site shall be restricted to established roadways to minimize habitat disturbance. Stockpiling of construction materials, including portable equipment, vehicles, and supplies, shall be restricted to the designated construction staging area and exclusive of aquatic habitat avoidance areas. Aquatic snake habitat adjacent to the project area shall be flagged and avoided by all construction personnel.

l. To the extent feasible, the project proponents shall confine clearing of vegetation and scraping, or digging, of soil to the minimal area necessary to facilitate construction activities.

m. High visibility fencing shall be placed to prevent encroachment of construction personnel and equipment into areas containing snake habitat. The fencing shall be inspected before the start of each work day and maintained by the project proponents until completion of the project. The fencing may be removed only when the construction of the project is completed.
n. After completion of construction activities, any temporary fill and construction debris shall be removed. As described in the biological assessment and the project description of this biological opinion, the project proponents will restore all snake habitat subject to temporary ground disturbances, including storage and staging areas and temporary roads. These areas shall be re-contoured, if appropriate, and re-vegetated with appropriate locally-collected native plant species to promote restoration of the area to pre-project conditions. All temporary fill and construction debris shall be removed. An area subject to “temporary” disturbance includes any area that is disturbed during the project, but that, after project completion, will not be subject to further disturbance and has the potential to be re-vegetated. Appropriate methods and plant species used to re-vegetate such areas will be determined on a site-specific basis in consultation with the Service and the CDFG. Restoration work may include replanting emergent vegetation. Refer to the Service’s Guidelines for the Restoration and/or Replacement of Giant Garter Snake Habitat. A written report shall be submitted to the Service within ten (10) working days of the completion of construction at the project site.

o. The Corps and SAFCA shall ensure compliance with the reporting requirements.

p. Prior to construction on May 1, 2009, the Corps and SAFCA will have the following documents completed and approved by the Service:

- drainage easement language for the GGS/Drainage Canal;
- Mitigation and Monitoring Plan and Long-Term Management Plan;
- encumbrances on a portion of the District Assessment Fee; and
- contract with NCMWC to provide reliable water for the GGS/Drainage Canal and managed marsh.

3. The following terms and conditions implement reasonable and prudent measure three (3):

a. The procedures outlined in the Service’s Conservation Guidelines for the Valley Elderberry Longhorn Beetle dated July 9, 1999, shall be followed for all actions related to the proposed project.

b. Elderberry shrubs will be fenced with high visibility construction fencing. In areas where the typical 20-foot buffer from the dripline of the elderberry shrub is encroached on, the fencing will be placed as far from the elderberry shrub’s dripline as construction activities will allow.

c. A biological monitor will be present on site when work will encroach on the 20-foot elderberry buffer. The monitor will have the authority to stop
construction within 20 feet of the shrub if unauthorized take of the beetle occurs. The monitor shall contact the Service immediately to determine what corrective measures need to be taken.

d. Compensation plantings shall occur within the same year as the transplantation of the elderberry shrubs. The selection of the final compensation site for elderberry shrubs shall be coordinated with the Service. A Service reviewed plan for the longterm maintenance and monitoring of the elderberry compensation site shall be completed prior to transplantation.

Reporting Requirements

A post-construction compliance report prepared by the monitoring biologists must be submitted to the Chief of the Endangered Species Division (Central Valley) at the Sacramento Fish and Wildlife Office within thirty (30) calendar days of the completion of construction activity or within thirty (30) calendar days of any break in construction activity lasting more than thirty (30) calendar days. This report shall detail: (i) dates that groundbreaking at the project started and the project was completed; (ii) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (iii) an explanation of failure to meet such measures, if any; (iv) known project effects on the giant garter snake, if any; (v) occurrences of incidental take of any these species; and (vi) other pertinent information.

The Corps must require SAFCA to report to the Service immediately any information about take or suspected take of federally-listed species not authorized in this biological opinion. SAFCA must notify the Service within 24 hours of receiving such information. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal. In the case of a dead animal, the individual animal should be preserved, as appropriate, and held in a secure location until instructions are received from the Service regarding the disposition of the specimen or the Service takes custody of the specimen. The Service contact persons are, Chief of the Endangered Species Division (Central Valley) at (916) 414-6600, and the Resident Agent-in-charge of the Service's Law Enforcement Division at (916) 414-6660.

Any contractor or employee who during routine operations and maintenance activities inadvertently kills or injures a listed wildlife species must immediately report the incident to their representative. This representative must contact the CDFG immediately in the case of a dead or injured listed species. The CDFG contact for immediate assistance is State Dispatch at (916) 445-0045.
CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

1. The Corps and SAFCA should assist in the implementation of the draft, and when published, the final Recovery Plan for the giant garter snake.

2. The Corps and SAFCA should provide funding to researchers studying topics identified by the Service in the draft, and when published, the final Recovery Plan for the giant garter snake.

3. The Corps should use environmental restoration authorities to acquire and restore garter snake habitat from willing sellers.

To be kept informed of actions minimizing or avoiding adverse effects or benefiting listed and proposed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation with the Corps on the Natomas Levee Improvement Project. As provided in 50 CFR 402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the proposed action may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in this opinion; or (4) a new species or critical habitat is designated that may be affected by the proposed action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.
If you have any questions regarding this biological opinion on the Natomas Landslide Improvements Project, please contact Jennifer Hobbs at (916) 414-6541 or Jana Milliken, Chief, Sacramento Valley Branch at (916) 414-6645.

Sincerely,

[Signature]

Susan K. Moore
Field Supervisor

cc: Elizabeth Holland, Corps, Sacramento, CA
    Todd Gardner, CDFG, Sacramento, CA
    Peter Buck, SAFCA, Sacramento, CA
    Kelly Holland, EDAW, Sacramento, CA
D2  USACE Jurisdictional Determinations
July 24, 2008

Regulatory Division (SPK-2007-00211)

Sarah Bennett
EDAW, Inc.
2022 J Street
Sacramento, California 95811

Dear Ms. Bennett:

We are responding to your request, on behalf of the Sacramento Area Flood Control Agency, for an approved jurisdictional determination for a portion of the Natomas Levee Improvement Program Landside Improvements Project (NLIP) site. This approximately 5,283-acre site is located in the Natomas Basin in Northern Sacramento and Southern Sutter Counties, California.

Based on available information, we concur with the estimate of waters of the United States, as depicted on your June 4, 2008, revised Maps 1-19. Approximately 212.3 acres of waters of the United States, including wetlands, are present within the survey area. These waters are regulated under Section 404 of the Clean Water Act, since they are tributary and adjacent to navigable waters of the United States, in particular the Sacramento River.

The 7.04 acres of features identified as Field Ditches on the above drawings appear to have been constructed wholly in and drain only uplands. As such, we do not consider these to be waters of the United States. This disclaimer of jurisdiction is only for Section 404 of the Federal Clean Water Act. Other Federal, State, and local laws may apply to activities in these features. In particular, authorization from the California State Water Resources Control Board and/or the U.S. Fish and Wildlife Service may be necessary.

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. This letter contains an approved jurisdictional determination for your subject site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331.

A Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form is enclosed. If you request to appeal this determination you must submit a completed RFA form to the South Pacific Division Office at the following address: Administrative Appeal Review Officer, Army Corps of Engineers, South Pacific Division, CESPD-PDS-O, 1455 Market Street, San Francisco, California 94103-1399, Telephone: 415-503-6574, FAX: 415-503-6646.

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been
received by the Division Office within 60 days of the NAP. Should you decide to submit an RFA form, it must be received at the above address by 60 days from the date of this letter. It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this letter.

You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This determination has been conducted to identify the limits of Corps of Engineers' Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

The extent of waters on other portions of the approximately 9,661-acre project site was separately verified under our identification numbers 200300776, 200600332, and 200600795. Based on available information, there are a total of approximately 610 acres of waters of the United States, in the overall NLIP area. This total does not include the Sacramento River itself which is outside of this project site.

We appreciate your feedback. At your earliest convenience, please complete our customer survey at http://www.spk.usace.army.mil/customer_survey.html. Your passcode is "conigliaro".

Please refer to identification number SPK-2007-00211 in any correspondence concerning this project. If you have any questions, please contact Mike Finan at our California North Branch, 1325 J Street, Room 1480, Sacramento California 95814-2922, email michael.c.finan@usace.army.mil, or telephone (916) 557-5324. You may also use our website: www.spk.usace.army.mil/regulatory.html.

Sincerely,

Mike Finan
Project Manager, Wetland Specialist

Enclosure(s)

Copy furnished without enclosure(s):

John Bassett, Sacramento Area Flood Control Agency, 1007 7th Street, 7th Floor, Sacramento, California 95814
William Marshall, Central Valley Regional Water Quality Control Board, 11020 Sun Center Drive, #200, Rancho Cordova, California 95670-6114
Ken Sanchez, U.S. Fish and Wildlife Service, Endangered Species Division, 2800 Cottage Way, W-2605, Sacramento, California 95825
DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO CA 95814-2922

DEPARTMENT OF THE ARMY PERMIT

Permittee: Grant Joint Union High School District
Permit Number: SPK-2005-01087
Issuing Office: U.S. Army Engineer District, Sacramento Corps of Engineers 1325 "J" Street Sacramento, California 95814-2922

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below. A notice of appeal options is enclosed.

Project Description:

To place fill material into 1.8734 acres of waters of the United States, including 0.9 acre of stock pond, 0.22 acre of vernal pools, 0.72 acre of seasonal wetland swales and 0.03 acre of jurisdictional drainage ditch for the construction of a joint middle/high school, and associated infrastructure.

All work is to be completed in accordance with the attached plan(s).

Project Location:

South of Elkhorn Boulevard and north of Del Paso Road in Section 36, Township 10 North, Range 4 East, in Sacramento County, California, USGS Topographic Quadrangle Rio Linda; Latitude 38.6770° North, Longitude 121.4903° West.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on May 23, 2013. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal
and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. To mitigate for the loss of 1.8734 acres of waters of the United States, including 0.9 acre of stock pond, 0.22 acre of vernal pools, 0.72 acre of seasonal wetland swales and 0.03 acre of jurisdictional drainage ditch, you shall purchase 3.9 acre vernal pool creation and 0.2 seasonal wetland creation credits at a Corps approved wetland mitigation bank. Evidence of this purchase shall be provided to this office prior to proceeding with any activity otherwise authorized by this permit. A list of approved mitigation banks has been included for your reference.

2. This Corps permit does not authorize you to take an endangered species, in particular the vernal pool fairy shrimp (Branchinecta lynchii), vernal pool tadpole shrimp (Lepidurus packardi), or designated critical habitat. In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (e.g., an Endangered Species Act Section 10 permit, or a Biological Opinion under Endangered Species Act Section 7, with “incidental take” provisions with which you must comply). The enclosed Fish and Wildlife Service Biological Opinion, (Number 1-1-0-0-01-0-00-F-0294), dated July 25, 2007, and (Number 1-1-0-0-F-0140, dated April 5, 2007, and the December 18, 2007 revision, contains mandatory terms and conditions to implement and reasonable and prudent measures that are associated with “incidental take” that is also specified in the Biological Opinion. Your authorization under this Corps permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the attached Biological Opinion, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with the incidental take statement in the Biological Opinion, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps permit. The Fish and Wildlife Service is the appropriate authority to determine compliance with the terms and conditions of its Biological Opinion, and with the Endangered Species Act. You must comply with all conditions of this Biological Opinion.

3. To document pre and post-project construction conditions, you shall submit pre-construction photos of the project site prior to project implementation and post-construction photos of the project site within 30 days after completion of authorized activities.

4. You must allow representatives from the Corps of Engineers to inspect the authorized activity and any mitigation, preservation, or avoidance areas at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

5. You shall employ construction best management practices (BMPs) onsite to prevent degradation to on-site and off-site waters of the U.S. You shall submit photodocumentation of your BMPs to our office within 30 days of commencement of construction. Photos may be submitted electronically to regulatory-info@usace.army.mil.

6. You shall stabilize and protect against erosion any unstable fills in or adjacent to wetlands and other waters of the U.S. by using appropriate erosion controls such as the use of matting, seeding, or other effective methods. The erosion controls shall remain in place until all exposed areas are permanently stabilized.
7. You shall clearly identify the project limits in the field by using survey markers and/or construction fencing, prior to beginning any construction activities to ensure waters of the United States outside of the project footprint are not impacted. Identification of these areas shall be maintained until construction is complete. No heavy equipment or work is permitted in waters of the United States beyond those authorized through this permit.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
   
   ( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
   
   (X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
   

2. Limits of this authorization.
   
   a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
   
   b. This permit does not grant any property rights or exclusive privileges.
   
   c. This permit does not authorize any injury to the property or rights of others.
   
   d. This permit does not authorize interference with any existing or proposed Federal projects.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:
   
   a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
   
   b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
   
   c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
   
   d. Design or construction deficiencies associated with the permitted work.
   
   e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data. The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant.

    Circumstances that could require a reevaluation include, but are not limited to, the following:
a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.
Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

[Signature]
Permittee

May 23, 2008

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

[Signature]
Kathleen A. Dadey, PhD, Chief, Sacramento Office
(For the District Engineer)

May 23, 2008

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

[Signature]
Transferee

Date
DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO  
CORPS OF ENGINEERS  
1325 J STREET  
SACRAMENTO, CALIFORNIA 95814-2922  
June 29, 2005  

Regulatory Branch (200300776)  

Greg Rowe  
Sacramento County Airport System  
6900 Airport Boulevard  
Sacramento, California 95837-1109

Dear Mr. Rowe:

We are responding to your consultant’s request for an approved jurisdictional determination for the Sacramento Airport Land Management area. This approximately 2,838-acre site is located on or near the Sacramento River, in Sections 19, 30 & 31, Township 10 North, Range 4 East, and Sections 24, 25 & 36, Township 10 North, Range 3 East, M.D.B.&M., approximate Latitude 38° 41' 19.7" & Longitude 121° 35' 56.7", Sacramento County, California.

Based on available information and with the exception of the jurisdictional determinations on the map, we concur with the estimate of waters of the United States, as depicted on the May 5, 2005, SMF LMP Wetland Delineation Maps 1-4 drawings prepared by EDAW, Inc. Approximately 27.86 acres of waters of the United States, including wetlands, are present within the survey area. These waters are regulated under Section 404 of the Clean Water Act since they are tributary, or adjacent to a tributary, to the Sacramento River.

You have determined that hydrology for wetlands FM4 and FM5 are solely supported by a "leaky-pipe" and based on Regulatory Branch Memorandum (RBM) 2004-03 the wetlands are not jurisdictional. Although RBM 2004-03 only addressed "leaky-ditch" wetlands, for this case we believe RBM 2004-03 and RBM 2003-04 ("Irrigated" Wetlands) are applicable to this situation. Based on the available information, including topography, we believe there is uncertainty regarding the source of hydrology for these wetlands. In accordance with the above RBMs, we will assume that these wetlands are supported, at least partially, by natural hydrology, unless clearly demonstrated otherwise. Therefore, at this time, we consider these wetlands jurisdictional. If practical, we recommend you consider closing the valve to this pipe and monitoring the hydrology to clearly demonstrate the source of hydrology. Detailed topography and the exact location of the pipe relative to wetlands may also be helpful in determining the source of hydrology.
The wetlands identified as Swales 4, 5 and 9, acreages 0.04, 0.04 and 0.01 respectively, on the above drawings are intrastate isolated waters with no apparent interstate or foreign commerce connection. As such, these waters are not currently regulated by the Corps of Engineers. This disclaimer of jurisdiction is only for Section 404 of the Federal Clean Water Act. Other Federal, State, and local laws may apply to your activities. In particular, you may need authorization from the California State Water Resources Control Board and/or the U.S. Fish and Wildlife Service.

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. A Notification of Administrative Appeal Options and Process and Request for Appeal form is enclosed. If you wish to appeal this approved jurisdictional determination, please follow the procedures on the form. You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This determination has been conducted to identify the limits of Corps of Engineers’ Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

Please refer to identification number 200300776 in any correspondence concerning this project. If you have any questions, please contact Justin Cutler at our Sacramento Office, 1325 J Street, Room 1480, Sacramento, California 95814-2922, email Justin.Cutler@usace.army.mil, or telephone 916-557-5258. You may also use our website: www.spk.usace.army.mil/regulatory.html.

Sincerely,

[Signature]

Thomas J. Cavanaugh
Acting Chief, Central California/Nevada Section

Enclosure(s)
Copies furnished without enclosure(s):

Anne King, EDAW, Incorporated, 2002 J Street, Sacramento, California 95814
Camille Garibaldi, Federal Aviation Administration, 831 Mitten Road, Suite 210, Burlingame, California 94010
George Day, Storm Water and Water Quality Certification Unit, Central Valley Regional Water Quality Control Board, 11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114
Oscar Balaguer, Chief, Water Quality Certification Unit, California State Water Resources Control Board, 1001 I Street, Sacramento, California 95814
U.S. Fish and Wildlife Service, Endangered Species Division, 2800 Cottage Way, Suite W2605, Sacramento, California 95825-3901
Richard Radmacher, Assistant Planner, Planning and Community Development Department, County of Sacramento, 827 7th Street, Room 230, Sacramento, California 95814-2406
Regulatory Branch (200300776)

Tim Hawkins
Associate Environmental Analyst
Department of Environmental Review and Assessment
827 7th Street, Suite 220
Sacramento, California 95814

Dear Mr. Hawkins:

We are responding to your request for an approved jurisdictional determination for the Sacramento International Airport Parcel South of I-5 site. This approximately 300-acre site is located on or near Section 19, 24, 25, 30, 31, 36, Township 10 North, Range 3, 4 East, MDB&M, Latitude 38° 41' 19.7", Longitude 121° 35' 56.7", Sacramento County, California.

Based on available information, we concur with the estimate of waters of the United States, as depicted on the map included in your February 8, 2006 submittal to Kathleen Dadey of our office. Approximately 3.72 acres of waters of the United States, including wetlands, are present within the survey area. These waters are regulated under Section 404 of the Clean Water Act since they are tributary to the Sacramento River, or adjacent to a tributary of the River.

The water identified as an agricultural ditch in the February 8, 2006 report (shown as a yellow line in the north central portion of the aforementioned map) is an intrastate isolated water with no apparent interstate or foreign commerce connection. As such, this water is not currently regulated by the Corps of Engineers. This disclaimer of jurisdiction is only for Section 404 of the Federal Clean Water Act. Other Federal, State, and local laws may apply to your activities. In particular, you may need authorization from the California State Water Resources Control Board and/or the U.S. Fish and Wildlife Service.

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. This letter contains an approved jurisdictional determination for the airport's potential expansion (parking lot). If you object to this verification, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this verification, you must submit a completed RFA form to the South Pacific Division Office at the following address:
Doug Pomeroy, Administrative Appeal Review Officer  
Army Corps of Engineers, South Pacific Division  
CESPD-PDS-O  
333 Market Street, Room 923  
San Francisco, California  94105-2195  
Telephone: 415-977-8035  
FAX: 415-977-8129

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the NAP. Should you decide to submit an RFA form, it must be received at the above address by May 20, 2006. It is not necessary to submit an RFA form to the Division Office if you do not object to the verification in this letter.

You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This determination has been conducted to identify the limits of Corps of Engineers' Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

Please refer to identification number 200300776 in any correspondence concerning this project. If you have any questions, please contact Ms. Kathleen Dacey at our Sacramento Office, 1325 J Street, Room 1480, Sacramento, California  95814-2922, email kathleen.a.dacey@usace.army.mil, or telephone 916-557-7253. You may also use our website: www.spk.usace.army.mil/regulatory.html.

Sincerely,

ORIGINAL SIGNED
Thomas J. Cavanaugh  
Acting Chief  
Central California/Nevada Section

Enclosure(s)
Copy furnished without enclosure

/ Greg Rowe, Sacramento County Airport System, 6900 Airport Boulevard, Sacramento, California 95837-1109
Camille Garibaldi, Federal Aviation Administration, 831 Mitten Road, Suite 210, Burlingame, California 94010
William Marshall, Storm Water and Water Quality Certification Unit, Central Valley Regional Water Quality Control Board, 11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114
Oscar Balaguer, Chief, Water Quality Certification Unit, California State Water Resources Control Board, 1001 I Street, Sacramento, California 95814
U.S. Fish and Wildlife Service, Endangered Species Division, 2800 Cottage Way, Suite W2605, Sacramento, California 95825-3901
Richard Radmacher, Assistant Planner, Planning and Community Development Department, County of Sacramento, 827 7th Street, Room 230, Sacramento, California 95814-2406
DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

September 29, 2006

Regulatory Branch (200600332)

Greg Rowe
Sacramento County Airport System
6900 Airport Boulevard
Sacramento, California 95837

Dear Mr. Rowe:

We are responding to your consultant’s request for an approved jurisdictional determination for the Sacramento Intl Airport North site. This approximately 900-acre site is located adjacent to the Sacramento River, north of the Sacramento International Airport, in Township 10N, Range 3E, MDB&M, Latitude 38.722, Longitude 121.594, Sacramento County, California.

Based on available information, we concur with the estimate of waters of the United States, as depicted on Exhibit 3, Elverta North Wetland Delineation, dated August 23, 2006 prepared by EDAW, Inc. Approximately 94.57 acres of waters of the United States, including wetlands, are present within the survey area. These waters are regulated under Section 404 of the Clean Water Act since they are adjacent and/or tributary to the Sacramento River or are adjacent to one of a number of ditches which are tributary to the Sacramento River. The Sacramento River is a navigable water of the United States.

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. This letter contains an approved jurisdictional determination for your subject site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the South Pacific Division Office at the following address: Doug Pomeroy, Administrative Appeal Review Officer, Army Corps of Engineers, South Pacific Division, CESPD-PDS-O, 333 Market Street, Room 923, San Francisco, California 94105-2195, Telephone: 415-977-8035  FAX: 415-977-8129.

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the NAP. Should you decide to submit an RFA form, it must be received at the above address by November 28, 2006. It
is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this letter.

You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This determination has been conducted to identify the limits of Corps of Engineers' Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

Please refer to identification number 200600332 in any correspondence concerning this project. If you have any questions, please contact at our Sacramento Valley Office, 1325 J Street, Room 1480, Sacramento, California 95814-2922, email kathleen.a.dadey@usace.army.mil, or telephone 916-557-7253. You may find additional information on our website: www.s peak.usace.army.mil/regulatory.html.

Sincerely,

[Signature]
Kevin J. Roukey
Chief, Central California/Nevada Section

Enclosure(s)

Copy furnished without enclosure(s):

Matt Wacker, EDAW, Inc. 2022 J Street, Sacramento, California 95814
DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

November 7, 2006

Regulatory Branch (200600795)

John Bassett
Sacramento Area Flood Control Agency
1007 7th Street 7th Floor
Sacramento, California 95814

Dear Mr.:

We are responding to your consultant’s request for an approved jurisdictional determination for the Natomas Cross Canal site. This approximately 340.0-acre site is located on or near Sacramento River in Section 7, Township 11 North, Range 4 East, MDB&M, Latitude 38° 48′ 25.4″, Longitude 121° 33′ 59.4″, Sutter County, California.

Based on available information, we concur with the estimate of waters of the United States, as depicted on the October 18, 2006, Natomas Cross Canal drawing prepared by EDAW. Approximately 271.22 acres of waters of the United States, including wetlands, are present within the survey area. These waters are regulated under Section 404 of the Clean Water Act since they are a broad continuum of wetland features adjacent to the Natomas Cross Canal, which is a tributary to the Sacramento River.

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. This letter contains an approved jurisdictional determination for your subject site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the South Pacific Division Office at the following address: Doug Pomeroy, Administrative Appeal Review Officer, Army Corps of Engineers, South Pacific Division, CESP-D-PDS-D, 333 Market Street, Room 923, San Francisco, California 94105-2195, Telephone: 415-977-8035 FAX: 415-977-8129.

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the NAP. Should you decide to submit an RFA form, it must be received at the above address by January 7, 2007. It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this letter.
You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This determination has been conducted to identify the limits of Corps of Engineers' Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

Please refer to identification number 200600795 in any correspondence concerning this project. If you have any questions, please contact Tom Cavanaugh at our Sacramento Valley Office, 1325 J Street, Room 1480, Sacramento, California 95814-2922, email Brian.E.Vierra@usace.army.mil, or telephone 916-557-7728. You may also use our website: www.spk.usace.army.mil/regulatory.html.

Sincerely,

ORIGIINAL SIGNED

Thomas J. Cavanaugh
Chief, Sacramento Valley Office

Enclosure(s)

Copy furnished without enclosure(s):

Ann King, Edaw, 2022 J Street, Sacramento, California 95814
July 24, 2008

Regulatory Division (SPK-2007-00211)

Sarah Bennett
EDAW, Inc.
2022 J Street
Sacramento, California 95811

Dear Ms. Bennett:

We are responding to your request, on behalf of the Sacramento Area Flood Control Agency, for an approved jurisdictional determination for a portion of the Natomas Levee Improvement Program Landside Improvements Project (NLIP) site. This approximately 5,283-acre site is located in the Natomas Basin in Northern Sacramento and Southern Sutter Counties, California.

Based on available information, we concur with the estimate of waters of the United States, as depicted on your June 4, 2008, revised Maps 1-19. Approximately 212.3 acres of waters of the United States, including wetlands, are present within the survey area. These waters are regulated under Section 404 of the Clean Water Act, since they are tributary and adjacent to navigable waters of the United States, in particular the Sacramento River.

The 7.04 acres of features identified as Field Ditches on the above drawings appear to have been constructed wholly in and drain only uplands. As such, we do not consider these to be waters of the United States. This disclaimer of jurisdiction is only for Section 404 of the Federal Clean Water Act. Other Federal, State, and local laws may apply to activities in these features. In particular, authorization from the California State Water Resources Control Board and/or the U.S. Fish and Wildlife Service may be necessary.

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. This letter contains an approved jurisdictional determination for your subject site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331.

A Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form is enclosed. If you request to appeal this determination you must submit a completed RFA form to the South Pacific Division Office at the following address: Administrative Appeal Review Officer, Army Corps of Engineers, South Pacific Division, CESPD-PDS-O, 1455 Market Street, San Francisco, California 94103-1399, Telephone: 415-503-6574, FAX: 415-503-6646.

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been
received by the Division Office within 60 days of the NAP. Should you decide to submit an RFA form, it must be received at the above address by 60 days from the date of this letter. It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this letter.

You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This determination has been conducted to identify the limits of Corps of Engineers' Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

The extent of waters on other portions of the approximately 9,661-acre project site was separately verified under our identification numbers 200300776, 200600332, and 200600795. Based on available information, there are a total of approximately 610 acres of waters of the United States, in the overall NLIP area. This total does not include the Sacramento River itself which is outside of this project site.

We appreciate your feedback. At your earliest convenience, please complete our customer survey at http://www.spk.usace.army.mil/customer_survey.html. Your passcode is "conigliaro".

Please refer to identification number SPK-2007-00211 in any correspondence concerning this project. If you have any questions, please contact Mike Finan at our California North Branch, 1325 J Street, Room 1480, Sacramento California 95814-2922, email michael.c.finan@usace.army.mil, or telephone (916) 557-5324. You may also use our website: www.spk.usace.army.mil/regulatory.html.

Sincerely,

[Signature]

Mike Finan
Project Manager, Wetland Specialist

Enclosure(s)

Copy furnished without enclosure(s):

John Bassett, Sacramento Area Flood Control Agency, 1007 7th Street, 7th Floor, Sacramento, California 95814
William Marshall, Central Valley Regional Water Quality Control Board, 11020 Sun Center Drive, #200, Rancho Cordova, California 95670-6114
Ken Sanchez, U.S. Fish and Wildlife Service, Endangered Species Division, 2800 Cottage Way, W-2605, Sacramento, California 95825
DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO CA. 95814-2922

DEPARTMENT OF THE ARMY PERMIT

Permittee: Grant Joint Union High School District
Permit Number: SPK-2005-01087
Issuing Office: U.S. Army Engineer District, Sacramento
Corps of Engineers
1325 "J" Street
Sacramento, California 95814-2922

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below. A notice of appeal options is enclosed.

Project Description:

To place fill material into 1.8734 acres of waters of the United States, including 0.9 acre of stock pond, 0.22 acre of vernal pools, 0.72 acre of seasonal wetland swales and 0.03 acre of jurisdictional drainage ditch for the construction of a joint middle/high school, and associated infrastructure.

All work is to be completed in accordance with the attached plan(s).

Project Location:

South of Elkhorn Boulevard and north of Del Paso Road in Section 36, Township 10 North, Range 4 East, in Sacramento County, California, USGS Topographic Quadrangle Rio Linda; Latitude 38.6770° North, Longitude 121.4903° West.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on May 23, 2013. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal
and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. To mitigate for the loss of 1.8734 acres of waters of the United States, including 0.9 acre of stock pond, 0.22 acre of vernal pools, 0.72 acre of seasonal wetland swales and 0.03 acre of jurisdictional drainage ditch, you shall purchase 3.9 acre vernal pool creation and 0.2 seasonal wetland creation credits at a Corps approved wetland mitigation bank. Evidence of this purchase shall be provided to this office prior to proceeding with any activity otherwise authorized by this permit. A list of approved mitigation banks has been included for your reference.

2. This Corps permit does not authorize you to take an endangered species, in particular the vernal pool fairy shrimp (Branchinecta lynchii), vernal pool tadpole shrimp (Lepidurus packardi), or designated critical habitat. In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (e.g., an Endangered Species Act Section 10 permit, or a Biological Opinion under Endangered Species Act Section 7, with “incidental take” provisions with which you must comply). The enclosed Fish and Wildlife Service Biological Opinion, (Number 1-1-07-F-0294), dated July 25, 2007, and (Number 1-1-07-F-0140, dated April 5, 2007, and the December 18, 2007 revision, contains mandatory terms and conditions to implement and reasonable and prudent measures that are associated with “incidental take” that is also specified in the Biological Opinion. Your authorization under this Corps permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the attached Biological Opinion, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with the incidental take statement in the Biological Opinion, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps permit. The Fish and Wildlife Service is the appropriate authority to determine compliance with the terms and conditions of its Biological Opinion, and with the Endangered Species Act. You must comply with all conditions of this Biological Opinion.

3. To document pre- and post-project construction conditions, you shall submit pre-construction photos of the project site prior to project implementation and post-construction photos of the project site within 30 days after completion of authorized activities.

4. You must allow representatives from the Corps of Engineers to inspect the authorized activity and any mitigation, preservation, or avoidance area at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

5. You shall employ construction best management practices (BMPs) onsite to prevent degradation to on-site and off-site waters of the U.S. You shall submit photodocumentation of your BMPs to our office within 30 days of commencement of construction. Photos may be submitted electronically to regulatory-info@usace.army.mil.

6. You shall stabilize and protect against erosion any unstable fills in or adjacent to wetlands and other waters of the U.S. by using appropriate erosion controls such as the use of matting, seeding, or other effective methods. The erosion controls shall remain in place until all exposed areas are permanently stabilized.
7. You shall clearly identify the project limits in the field by using survey markers and/or construction fencing, prior to beginning any construction activities to ensure waters of the United States outside of the project footprint are not impacted. Identification of these areas shall be maintained until construction is complete. No heavy equipment or work is permitted in waters of the United States beyond those authorized through this permit.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
   
   
   (X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
   

2. Limits of this authorization.
   
   a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
   
   b. This permit does not grant any property rights or exclusive privileges.
   
   c. This permit does not authorize any injury to the property or rights of others.
   
   d. This permit does not authorize interference with any existing or proposed Federal projects.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:
   
   a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
   
   b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
   
   c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
   
   d. Design or construction deficiencies associated with the permitted work.
   
   e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant’s Data. The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant.

   Circumstances that could require a reevaluation include, but are not limited to, the following:
a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.
Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

[Signature]
Permittee

Date

May 23, 2008

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

[Signature]
Kathleen A. Dadey, PhD, Chief,
Sacramento Office
(For the District Engineer)

Date

May 23, 2008

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

Transferee

Date
Regulatory Branch (2003000776)

Greg Rowe  
Sacramento County Airport System  
6900 Airport Boulevard  
Sacramento, California 95837-1109

Dear Mr. Rowe:

We are responding to your consultant’s request for an approved jurisdictional determination for the Sacramento Airport Land Management area. This approximately 2,838-acre site is located on or near the Sacramento River, in Sections 19, 30 & 31, Township 10 North, Range 4 East, and Sections 24, 25 & 36, Township 10 North, Range 3 East, M.D.B.&M., approximate Latitude 38° 41’ 19.7” & Longitude 121° 35’ 56.7”, Sacramento County, California.

Based on available information and with the exception of the jurisdictional determinations on the map, we concur with the estimate of waters of the United States, as depicted on the May 5, 2005, SMF LMP Wetland Delineation Maps 1-4 drawings prepared by EDAW, Inc. Approximately 27.86 acres of waters of the United States, including wetlands, are present within the survey area. These waters are regulated under Section 404 of the Clean Water Act since they are tributary, or adjacent to a tributary, to the Sacramento River.

You have determined that hydrology for wetlands FM4 and FM5 are solely supported by a "leaky-pipe" and based on Regulatory Branch Memorandum (RBM) 2004-03 the wetlands are not jurisdictional. Although RBM 2004-03 only addressed "leaky-ditch" wetlands, for this case we believe RBM 2004-03 and RBM 2003-04 ("Irrigated" Wetlands) are applicable to this situation. Based on the available information, including topography, we believe there is uncertainty regarding the source of hydrology for these wetlands. In accordance with the above RBMs, we will assume that these wetlands are supported, at least partially, by natural hydrology, unless clearly demonstrated otherwise. Therefore, at this time, we consider these wetlands jurisdictional. If practical, we recommend you consider closing the valve to this pipe and monitoring the hydrology to clearly demonstrate the source of hydrology. Detailed topography and the exact location of the pipe relative to wetlands may also be helpful in determining the source of hydrology.
The wetlands identified as Swales 4, 5 and 9, acreages 0.04, 0.04 and 0.01 respectively, on the above drawings are intrastate isolated waters with no apparent interstate or foreign commerce connection. As such, these waters are not currently regulated by the Corps of Engineers. This disclaimer of jurisdiction is only for Section 404 of the Federal Clean Water Act. Other Federal, State, and local laws may apply to your activities. In particular, you may need authorization from the California State Water Resources Control Board and/or the U.S. Fish and Wildlife Service.

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. A Notification of Administrative Appeal Options and Process and Request for Appeal form is enclosed. If you wish to appeal this approved jurisdictional determination, please follow the procedures on the form. You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This determination has been conducted to identify the limits of Corps of Engineers’ Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

Please refer to identification number 200300776 in any correspondence concerning this project. If you have any questions, please contact Justin Cutler at our Sacramento Office, 1325 J Street, Room 1480, Sacramento, California 95814-2922, email Justin.Cutler@usace.army.mil, or telephone 916-557-5258. You may also use our website: www.spk.usace.army.mil/regulatory.html.

Sincerely,

[Signature]

Thomas J. Cavanaugh
Acting Chief, Central California/Nevada Section

Enclosure(s)
Copies furnished without enclosure(s):

Anne King, EDAW, Incorporated, 2002 J Street, Sacramento, California 95814
Camille Garibaldi, Federal Aviation Administration, 831 Mitten Road, Suite 210, Burlingame, California 94010
George Day, Storm Water and Water Quality Certification Unit, Central Valley Regional Water Quality Control Board, 11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114
Oscar Balaguer, Chief, Water Quality Certification Unit, California State Water Resources Control Board, 1001 I Street, Sacramento, California 95814
U.S. Fish and Wildlife Service, Endangered Species Division, 2800 Cottage Way, Suite W2605, Sacramento, California 95825-3901
Richard Radmacher, Assistant Planner, Planning and Community Development Department, County of Sacramento, 827 7th Street, Room 230, Sacramento, California 95814-2406
Regulatory Branch (200300776)

Tim Hawkins
Associate Environmental Analyst
Department of Environmental Review and Assessment
827 7th Street, Suite 220
Sacramento, California 95814

March 21, 2006

Dear Mr. Hawkins:

We are responding to your request for an approved jurisdictional determination for the Sacramento International Airport Parcel South of I-5 site. This approximately 300-acre site is located on or near Section 19, 24, 25, 30, 31, 36, Township 10 North, Range 3, 4 East, MDB&M, Latitude 38° 41’ 19.7”, Longitude 121° 35’ 56.7”, Sacramento County, California.

Based on available information, we concur with the estimate of waters of the United States, as depicted on the map included in your February 8, 2006 submittal to Kathleen Dadey of our office. Approximately 3.72 acres of waters of the United States, including wetlands, are present within the survey area. These waters are regulated under Section 404 of the Clean Water Act since they are tributary to the Sacramento River, or adjacent to a tributary of the River.

The water identified as an agricultural ditch in the February 8, 2006 report (shown as a yellow line in the north central portion of the aforementioned map) is an intrastate isolated water with no apparent interstate or foreign commerce connection. As such, this water is not currently regulated by the Corps of Engineers. This disclaimer of jurisdiction is only for Section 404 of the Federal Clean Water Act. Other Federal, State, and local laws may apply to your activities. In particular, you may need authorization from the California State Water Resources Control Board and/or the U.S. Fish and Wildlife Service.

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. This letter contains an approved jurisdictional determination for the airport’s potential expansion (parking lot). If you object to this verification, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this verification, you must submit a completed RFA form to the South Pacific Division Office at the following address:
Doug Pomeroy, Administrative Appeal Review Officer
Army Corps of Engineers, South Pacific Division
CESPD-PDS-O
333 Market Street, Room 923
San Francisco, California 94105-2195
Telephone: 415-977-8035
FAX: 415-977-8129

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the NAP. Should you decide to submit an RFA form, it must be received at the above address by May 20, 2006. It is not necessary to submit an RFA form to the Division Office if you do not object to the verification in this letter.

You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This determination has been conducted to identify the limits of Corps of Engineers’ Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

Please refer to identification number 200300776 in any correspondence concerning this project. If you have any questions, please contact Ms. Kathleen Dacey at our Sacramento Office, 1325 J Street, Room 1480, Sacramento, California 95814-2922, email kathleen.a.dacey@usace.army.mil, or telephone 916-557-7253. You may also use our website: www.spk.usace.army.mil/regulatory.html.

Sincerely,

ORIGINALLY SIGNED
Thomas J. Cavanaugh
Acting Chief
Central California/Nevada Section

Enclosure(s)
Copy furnished without enclosure

/ Greg Rowe, Sacramento County Airport System, 6900 Airport Boulevard, Sacramento, California 95837-1109
Camille Garibaldi, Federal Aviation Administration, 831 Mitten Road, Suite 210, Burlingame, California 94010
William Marshall, Storm Water and Water Quality Certification Unit, Central Valley Regional Water Quality Control Board, 11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114
Oscar Balaguer, Chief, Water Quality Certification Unit, California State Water Resources Control Board, 1001 I Street, Sacramento, California 95814
U.S. Fish and Wildlife Service, Endangered Species Division, 2800 Cottage Way, Suite W2605, Sacramento, California 95825-3901
Richard Radmacher, Assistant Planner, Planning and Community Development Department, County of Sacramento, 827 7th Street, Room 230, Sacramento, California 95814-2406
Greg Rowe  
Sacramento County Airport System  
6900 Airport Boulevard  
Sacramento, California  95837  

Dear Mr. Rowe:  

We are responding to your consultant’s request for an approved jurisdictional determination for the Sacramento Intl Airport North site. This approximately 900-acre site is located adjacent to the Sacramento River, north of the Sacramento International Airport, in Township 10N, Range 3E, MDB&M, Latitude 38.722, Longitude 121.594, Sacramento County, California.  

Based on available information, we concur with the estimate of waters of the United States, as depicted on Exhibit 3, Elverta North Wetland Delineation, dated August 23, 2006 prepared by EDAW, Inc. Approximately 94.57 acres of waters of the United States, including wetlands, are present within the survey area. These waters are regulated under Section 404 of the Clean Water Act since they are adjacent and/or tributary to the Sacramento River or are adjacent to one of a number of ditches which are tributary to the Sacramento River. The Sacramento River is a navigable water of the United States.  

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. This letter contains an approved jurisdictional determination for your subject site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the South Pacific Division Office at the following address: Doug Pomeroy, Administrative Appeal Review Officer, Army Corps of Engineers, South Pacific Division, CESPD-PDS-O, 333 Market Street, Room 923, San Francisco, California 94105-2195, Telephone: 415-977-8035 FAX: 415-977-8129.  

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the NAP. Should you decide to submit an RFA form, it must be received at the above address by November 28, 2006. It
is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this letter.

You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This determination has been conducted to identify the limits of Corps of Engineers’ Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

Please refer to identification number 200600332 in any correspondence concerning this project. If you have any questions, please contact at our Sacramento Valley Office, 1325 J Street, Room 1480, Sacramento, California 95814-2922, email kathleen.a.dadey@usace.army.mil, or telephone 916-557-7253. You may find additional information on our website: www.spk.usace.army.mil/regulatory.html.

Sincerely,

ORIGINAl SIGNED
Kevin J. Roukey
Chief, Central California/Nevada Section

Enclosure(s)

Copy furnished without enclosure(s):

Matt Wacker, EDAW, Inc. 2022 J Street, Sacramento, California 95814
Regulatory Branch (200600795)

John Bassett
Sacramento Area Flood Control Agency
1007 7th Street 7th Floor
Sacramento, California 95814

Dear Mr.:

We are responding to your consultant's request for an approved jurisdictional determination for the Natomas Cross Canal site. This approximately 340.0-acre site is located on or near Sacramento River in Section , Township 11 North, Range 4 East, MDB&M, Latitude 038° 48' 25.4", Longitude 121° 33' 59.4", Sutter County, California.

Based on available information, we concur with the estimate of waters of the United States, as depicted on the October 18, 2006, Natomas Cross Canal drawing prepared by EDAW. Approximately 271.22 acres of waters of the United States, including wetlands, are present within the survey area. These waters are regulated under Section 404 of the Clean Water Act since they are a broad continuum of wetland features adjacent to the Natomas Cross Canal, which is a tributary to the Sacramento River.

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. This letter contains an approved jurisdictional determination for your subject site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the South Pacific Division Office at the following address: Doug Pomeroy, Administrative Appeal Review Officer, Army Corps of Engineers, South Pacific Division, CESP-D-PDS-O, 333 Market Street, Room 923, San Francisco, California 94105-2195, Telephone: 415-977-8035 FAX: 415-977-8129.

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the NAP. Should you decide to submit an RFA form, it must be received at the above address by January 7, 2007. It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this letter.
You should provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

This determination has been conducted to identify the limits of Corps of Engineers' Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

Please refer to identification number 200600795 in any correspondence concerning this project. If you have any questions, please contact Tom Cavanaugh at our Sacramento Valley Office, 1325 J Street, Room 1480, Sacramento, California 95814-2922, email Brian.E.Vierria@usace.army.mil, or telephone 916-557-7728. You may also use our website: www.spk.usace.army.mil/regulatory.html.

Sincerely,

ORIGINAL SIGNED
Thomas J. Cavanaugh
Chief, Sacramento Valley Office

Enclosure(s)

Copy furnished without enclosure(s):

—Ann King, Edaw, 2022 J Street, Sacramento, California 95814