

TECHNICAL REPORT
Federal Aid Project #RPHP21L-0484(001)

**CONCEPTUAL MITIGATION
PLAN**

MERCED CAMPUS PARKWAY



Prepared for
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Roads Division
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and

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This document presents a conceptual mitigation plan for impacts to biological resources identified in the Draft Natural Environment Study/Biological Assessment (NES/BA) for the Campus Parkway Project (URS 2001). The mitigation concepts include measures for avoidance, minimization, and compensation for impacts to special status species, wetlands, and important natural communities.

Some of the impacts identified in the NES/BA are avoidable or can be effectively minimized. Resource specific measures such as pre-construction surveys, construction monitoring, and compensations for habitat loss are described in Section Two. All of the proposed mitigation measures for biological resources are summarized in Table 1-1.

TABLE 1-1
Summary of Proposed Mitigation Measures for Biological Resources

Mitigation Measure	Biological Resource Impact	Conditions of Implementation
Pre-construction Surveys	San Joaquin kit fox (breeding)	Survey 14-30 days prior to start of construction within all areas within a 61 meter- (200 foot) radius outside of the project footprint that could potentially support kit fox. Survey will include walking transects to detect known, natal, and potential kit fox dens.
	western burrowing owl (breeding)	Survey once between April 15 and July 15 and once between December 1 and January 31
	tricolored blackbird (breeding)	During the breeding season (mid-March to late August) surveys will be conducted less than one week prior to the start of any construction activities within 91 meters (300 feet) of riparian habitat or other suitable nesting habitats.
	Swainson's hawk; other raptors (breeding)	All suitable nesting habitat within 0.8 kilometer (0.5 mile) of construction will be surveyed between February 15 and August 15.
	horned lark and other passerines (breeding)	Suitable nesting habitats within 91 meters (300 feet) of the project limits will be surveyed between mid-March and late June (breeding season), and one week prior to initiating construction activities.
Timing of Construction/ Construction Methodology/ Project Design	Swainson's hawk (breeding)	No construction activities will be conducted within 0.8 kilometer (0.5 mile) of an active nest from March 1 to September 15 (March 1 to August 1 with a CDFG management agreement)
	special status fishes (water quality)	Temporary and permanent erosion control measures will be implemented within 91 meters (300 feet) of all stream crossings. No refueling within 91 meters (300 feet) of streams. Vegetated swales, detention basins, or other features will be incorporated into the final roadway design to prevent runoff from the roadway or bridges from flowing directly into creeks.
	invasive species	All equipment will be washed down and free of seeds or other plant material before being brought on site. All fill material and organic material used during project construction will be free of quarantined plants and seeds identified in Appendix F of the NES.

TABLE 1-1
Summary of Proposed Mitigation Measures for Biological Resources

Mitigation Measure	Biological Resource Impact	Conditions of Implementation
Habitat Compensation	San Joaquin kit fox (movement corridors)	Potential linkages between occupied habitat will be maintained by constructing overpasses across Bear Creek and State Route 140. Three 0.6 meter (2 feet) diameter culverts or other means of passage will be located under the parkway in other areas that would serve as logical movement corridors.
	Swainson's hawk (foraging habitat loss)	Habitat acquisition at 1:1 ratio for nest sites within 1.6 kilometer (1 mile); 0.75:1 for nest sites within 8 kilometers (5 miles), 0.5:1 for nest sites within 16 kilometers (10 miles)
	valley elderberry longhorn beetle (habitat loss)	Avoidance using 6 meter (20 foot) buffers and either on-site replacement of habitat or payment of an in-lieu fee as specified by USFWS
	Wetlands and Non-Wetland Waters of the U.S. (habitat loss)	Replacement of lost functions and values at a 1:1 ratio. Create seasonal marsh wetlands within proposed stormwater detention basins. Monitor and maintain wetlands for 5 years.

Temporary fencing will be installed during construction to protect sensitive biological resources. The perimeter of the work area will be fenced at all stream crossings. All sensitive resources or areas likely to contain special status species such as wetlands, elderberry shrubs and concentrations of burrows that can reasonably be avoided during construction will be fenced outside of the work area, or will be clearly marked as environmentally sensitive areas (ESA's), and will be avoided.

2.1 SAN JOAQUIN KIT FOX

Potential impacts to San Joaquin kit fox will be mitigated by a combination of avoidance, and minimization measures. A Biological Opinion from the U.S. Fish and Wildlife Service will be obtained prior to implementation of any preconstruction or construction-related activities. Avoidance and minimization measures will follow the Standard Recommendations for Minimization and Avoidance of Impacts to San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 1997). A summary of the standard recommendations follows.

Pre-construction surveys for kit fox should be conducted not more than 30 and not less than 14 days prior to the beginning of ground disturbance north of Cardella Road, or prior to any activity likely to impact this species. Surveys should be conducted within all areas of the project footprint and within a 61 meter- (200 foot) radius outside of the project footprint, in areas that could potentially support kit fox. A complete survey should include walking transects to detect known, natal, and potential kit fox dens. Surveys should identify kit fox habitat features on the project site and assess potential impacts to kit fox by the proposed activity. The status of all potential kit fox dens should be determined and mapped. Written results of preconstruction surveys must be received by USFWS within five days after survey completion and prior to the start of ground disturbance or construction activities. If potential den sites are identified within the project footprint three days of surveys should be conducted wherein a tracking medium is placed at the entrance of all potential den sites to identify their use by kit foxes. Consultation with USFWS would be necessary and potential project delays would be likely if any kit fox are located within the project footprint.

Unoccupied dens within the project footprint would be either hand excavated or covered, to avoid occupation prior to or during construction. Potential dens outside of the project footprint within the buffer area would need to be marked as environmentally sensitive areas (ESAs) with exclusion fencing 50 feet from the entrance or cluster of entrances.

The proposed project would cross several areas that may provide linkages between potentially suitable habitats beyond the project area. Disruption of potential movement corridors will be avoided by constructing overpasses at Bear Creek and State Route 140. In addition, 0.6 meter (2 foot) diameter culverts or other means of passage will be installed under the parkway in areas that would serve as logical movement corridors such as canals or where the parkway crosses suitable habitat.

2.2 WESTERN BURROWING OWL

Avoidance, minimization, and mitigation measures for impacts to burrowing owls will be implemented in consultation with the California Department of Fish and Game (CDFG) and in accordance with the Staff Report on Burrowing Owl Mitigation (CDFG 1995).

Pre-construction surveys for burrowing owls should be conducted in the project limits and within suitable habitat 150 meters (500 feet) from the project limits. Burrowing owl and burrow surveys should be conducted at least once between April 15 and July 15 and once between December 1 and January 31 (CDFG 1995). The locations of all observed burrowing owls and active burrows should be marked on a map of the project area at a scale sufficient to accurately show the distance of observed owls and active burrows to the limits of construction.

If burrowing owls are detected during the preconstruction surveys, Merced County will submit a mitigation and management plan to CDFG. This plan will describe the number and location of observed owls and active burrows, as well as the dates, times, and weather conditions during the surveys. The plan would also include a description of the project site and its habitat suitability for burrowing owls, photographs and historical information of burrowing owl use, and proposed implementation of the following CDFG (1995) avoidance, minimization, and mitigation measures for impacts to burrowing owls.

- Occupied burrows would not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist approved by CDFG verifies through noninvasive methods that birds have not begun egg-laying or that juveniles are foraging independently and are capable of independent survival.
- Only passive relocation techniques would be used to remove owls from active burrows located within a 75 meter (250 foot) buffer zone from the project footprint during the non-breeding season. Therefore, construction activities within habitats south of Cardella Road would have the potential to impact burrowing owls and may require passive relocation activities. The passive relocation technique consists of placing one-way doors at each burrow entrance for 48 hours to insure that owls have left the burrow before hand excavation of the burrows occurs.
- If destruction of occupied burrows is unavoidable, existing unsuitable burrows would be enhanced (enlarged or cleared of debris) or artificial burrows would be installed at a ratio of 2:1 within suitable habitat adjacent to the buffer zone. Artificial burrows would be monitored daily for one week to confirm owl use of burrows before excavating active burrows. If suitable habitat for burrowing owls is not available in areas adjacent to the buffer zone, alternative mitigation measures would need to be established in consultation with CDFG for impacts to individual burrowing owl pairs.
- To offset the loss of foraging and burrow habitat, a minimum of 2.6 hectares (6.5 acres) of foraging habitat per pair or unpaired resident bird would be acquired and permanently protected. Habitat compensation would include one or more of the following: 1) acquisition of lands adjacent to occupied burrowing owl habitat, or 2) acquisition of burrowing owl mitigation credits from an approved mitigation bank. Habitat compensation would be subject to approval by CDFG. A management and monitoring plan will be prepared for any acquired lands. The monitoring plan would include performance criteria, remedial measures, and provisions for submittal of an annual report to CDFG.

Early mitigation planning and implementation for burrowing owls is recommended because passive trapout can be labor intensive and time consuming in areas of moderate to high density ground squirrel activity. In addition, passive trapout activities are restricted to the non-breeding season. Burrowing owls exhibit a high degree of nest site fidelity; therefore, owls trapped out of their burrows are likely to continuously colonize adjacent ground squirrel burrows within the 75

meter (250 foot) buffer zone until all the burrows have been backfilled. Once trapout activities begin, burrows with or without signs of burrowing owl use cannot be excavated or backfilled until they have been installed with trapdoors for 48 hours which can be very labor intensive. Areas where passive trapout has occurred may require regular disking immediately following trapout activities and until construction activities render those areas unsuitable for ground squirrels and thus owls. These activities will require approval by CDFG prior to implementation.

2.3 SWAINSON'S HAWK

Avoidance and minimization of impacts to Swainson's hawks will be implemented in consultation with CDFG and in accordance with the Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California (CDFG 1994). The CDFG (1994) mitigation measures are intended to reduce a project's impact to Swainson's hawks to less than significant levels. The following mitigation measures recommended in the CDFG Staff Report will be implemented as part of the proposed project.

No construction-related activities will occur between March 1 and September 15 within 0.8 kilometer (0.5 mile) of a nesting Swainson's hawk or until August 15 if a Management Authorization or a Biological Opinion is obtained from CDFG. Removal of trees known to have supported nesting Swainson's hawks within the last five years will be avoided unless a Management Authorization is obtained from CDFG and if the removal is conducted between October 1 and February 1.

If construction activities are planned to begin after March 1, a preconstruction breeding survey for Swainson's hawks will be conducted throughout areas of suitable nesting habitat within 0.8 kilometer (0.5 mile) of construction. If a Swainson's hawk nest is observed within 0.8 kilometer (0.5 mile) of planned construction activities, CDFG will be contacted to determine whether project-related activities are likely to impact the nesting pair and whether avoidance and minimization measures can be established to avoid these impacts.

Mitigation for loss of suitable foraging habitat for Swainson's hawks nesting within 16 kilometers (10 miles) of the project will include the following mitigation measures.

- If an active nest site is identified within 1.6 kilometer (1 mile) of the project, Merced County shall provide off-site habitat management lands. Two options are proposed for implementation. The first option would include fee title acquisition or conservation easement acquisition of suitable foraging habitat at a 1:1 ratio or at a 0.5:1 ratio if the acquired lands can be actively managed for prey production. The second option is acquisition of comparable credits from an approved mitigation bank.
- If an active nest site is identified between 1.6 and 8 kilometers (1 and 5 miles) from the project, Merced County shall provide habitat management lands at a 0.75:1 ratio or shall acquire comparable credits from an approved mitigation bank.
- If an active nest site is identified between 8 and 16 kilometers (5 and 10 miles) from the project, Merced County shall provide habitat management lands at a 0.5:1 ratio or shall acquire comparable credits from an approved mitigation bank.

2.4 OTHER RAPTORS

Preconstruction breeding season surveys for other raptors will be conducted within 0.4 kilometer (0.25 mile) of proposed construction activities between February 15 and August 15. The California Fish and Game Code prohibits destruction of raptor nests or activities that cause reproductive failure of a nesting raptor. Consultation with CDFG will be conducted to determine potential impacts and appropriate mitigation for any raptors nesting within 0.4 kilometer (0.25 mile) of construction activities.

2.5 TRICOLORED BLACKBIRD AND OTHER RIPARIAN NESTING BIRDS

Preconstruction breeding season surveys for tricolored blackbirds and other riparian nesting species will be conducted less than one week prior to initiating construction activities within 91 meters (300 feet) of riparian habitat or other suitable nesting habitats. Surveys should be conducted during the breeding season between mid-March and late August. Crop rotation within agricultural areas may render some areas suitable or unsuitable as nesting habitat for tricolored blackbirds within a given season; therefore, non-wetland nesting habitat for tricolored blackbirds should be determined within the year of planned construction and prior to the preconstruction breeding surveys.

Construction activities within 91 meters (300 feet) of active nests will not begin until all birds have completed breeding activities or until CDFG determines that construction activities will not impact breeding birds or their young.

2.6 HORNED LARK AND OTHER GRASSLAND BIRDS

Two rounds of surveys will be conducted prior to the start of construction to avoid impacts to nesting horned larks and other passerines protected under the Migratory Bird Treaty Act:

- Breeding season surveys; and
- Preconstruction surveys.

Breeding season surveys for horned larks and other passerines will be conducted within suitable nesting habitats between mid-March and late June when passerines are expected to have completed nest construction. The Migratory Bird Treaty Act prohibits any action which causes the direct take or destruction of migratory birds or their nest; therefore, surveyors should document the location of all nesting birds within 91 meters (300 feet) of proposed construction activities. Crop rotation within agricultural areas may render some areas suitable or unsuitable as nesting habitat within a given season; therefore, potential nesting habitat for horned larks and other passerines will be determined within the year of planned construction and prior to the preconstruction breeding surveys.

Preconstruction surveys will be conducted one week prior to initiating construction activities within 91 meters (300 feet) of suitable nesting habitat. Construction activities within this distance to nesting birds should not begin until all birds have completed breeding activities or if CDFG determines that construction activities will not impact breeding birds or their young.

2.7 SPECIAL STATUS FISHES

The following mitigation measures are proposed to avoid impacts to water quality in Bear Creek and Black Rascal Creek to protect special status fish species. Merced County will implement best available management practices during all construction within 91 meters (300 feet) of Bear Creek and Black Rascal Creek. Erosion control measures will include silt fences around all disturbed soil including spoils piles, laydown areas, and bladed access routes. Permanent erosion control measures will be implemented immediately upon completion of construction. These measures will include hydroseeding with appropriate erosion control seed mixes, installation of erosion control blankets on slopes greater than 10%, and removal of all temporary fill material from the banks of channels. All construction equipment will be refueled more than 91 meters (300 feet) from flowing streams. If dewatering is necessary, water will be discharged into vegetated upland areas and adequately filtered before entering a stream channel.

Vegetated swales, detention basins, or other features will be incorporated into the final roadway design to prevent runoff from the roadway or bridges from flowing directly into creeks in the study area.

2.8 VALLEY ELDERBERRY LONGHORN BEETLE

Elderberry beetle mitigation will follow the conservation guidelines recommended by USFWS (1996). Efforts will be made to avoid impacts to as many elderberry shrubs as possible. Avoidable shrubs located in areas that might otherwise be disturbed during construction will be clearly marked as environmentally sensitive areas. Construction personnel will be briefed on the location of the shrubs and the avoidance requirements. Disturbed areas surrounding elderberry shrubs will be restored and revegetated.

Two options are proposed for elderberry shrubs that cannot be avoided by more than 6 meters (20 feet):

- On-site mitigation; or
- In-lieu fee mitigation.

On-site mitigation will include transplanting affected shrubs to suitable locations within, or adjacent to the project area, planting additional elderberry shrubs and planting associated species (USFWS 1996). However, elderberry shrub number one, which would be removed during the construction of the Green Alignment, may be too large to be successfully transplanted. There should be ample room for the relocation of elderberry shrubs in the vicinity of the project area, along Bear Creek. Transplanting will occur when plants are dormant (approximately November through the first two weeks in February), and a qualified biologist (monitor) will be present. Transplanting will be conducted according to the procedure described by USFWS (1996). Any unauthorized take of the elderberry beetle will be reported to USFWS and CDFG immediately.

Each elderberry stem measuring 2.5 centimeters (1 inch) or greater in diameter at ground level that will be adversely affected (including transplanted shrubs) will be replaced with seedlings or cuttings at ratios determined by USFWS (1996). The USFWS also requires that the planting of elderberry be accompanied by the planting of associated native species. The planting ratios are based on the size and number of stems affected, the location of the shrubs within or outside of riparian habitat and the presence or absence of beetle exit holes. For the elderberry shrubs that

would be affected by construction of the Green Alignment (shrubs one and two), the replacement ratios dictate that 138 elderberry seedlings or cuttings and 138 plantings of associated native species must be installed. For the Green Alternate and Yellow alignments, impacts to shrub number nine would require the installation of 34 elderberry cuttings or seedlings and 34 plantings of associated native species. Elderberry cuttings or seed would be obtained from the plants to be affected, and from other nearby plants, if necessary. The associated native tree or shrub plantings may include willow (*Salix* spp.), cottonwood (*Populus fremontii*), Oregon ash (*Fraxinus latifolia*), valley oak (*Quercus lobata*), or other species determined suitable by a qualified biologist. Plantings will be from seed or cuttings taken from local stock.

Approximately 1.4 acres (344 plantings – 1,800 square feet per groups of 10 plantings) would be required to accommodate the plantings. A conservation easement or similar protection in perpetuity would be designated by the County for the selected mitigation site.

The in-lieu fee option would consist of a one-time fee paid to an organization such as the Center for Natural Lands Management to provide for future off-site mitigation. A fee would be negotiated with U.S. Fish and Wildlife Service based on the final impact assessment. This fee would be held by the independent entity until utilized at a later date. This option would be subject to approval by U.S. Fish and Wildlife Service.

2.9 WETLANDS AND NON-WETLAND WATERS OF THE U.S.

Permanent loss of wetlands will be mitigated by creation of replacement wetlands. The mitigation goal will be 1:1 replacement of the functions and values of the affected seasonal marsh wetlands. Replacement wetlands would be created within the proposed stormwater detention basins. These basins would be planted with herbaceous wetlands species such as nutsedge (*Cyperus esculentus*) (FACW), soft rush (*Juncus effusus*) (OBL), creeping wildrye (*Elymus glaucus*) (FAC+), and meadow barley (*Hordeum brachyantherum*) (FACW). These species tolerate disturbance and would be compatible with periodic maintenance activities that may be necessary within the basins. Basins would be designed to provide seasonal inundation and saturation for a minimum of 1-2 months during the wet season. A wetland mitigation implementation, management and monitoring plan will be developed that will include the following components:

- performance criteria for vegetation cover, hydrology, and species composition;
- contingency measures for non-performance;
- schedules for monitoring and maintenance;
- descriptions of required maintenance activities;

This plan will be submitted to the Corps of Engineers and the Regional Water Quality Control Board for review and approval as part of the Clean Water Act Section 404 and Section 401 permitting and certification process.

2.10 INVASIVE SPECIES

To ensure that seeds from invasive species are not transported into the project area by construction equipment, all equipment will be washed down prior to being transported to the

project area. All construction equipment will be clean and free of seeds or other plant material before being brought on site.

The contractor will notify the engineer a minimum of ten days prior to importing material to the project site, of the location of the source of the material. Prior to removal of material or disturbance to the site or stockpile, qualified personnel will inspect the borrow site for the presence of quarantined plants identified in Appendix F of the Natural Environment Study (URS 2001). If quarantined plants are present the contractor will remove 150 millimeters (6 inches) of the surface of the borrow site or stockpile prior to removing and hauling material to the project site. This will minimize the potential for invasive species to colonized areas disturbed during construction.

Any organic material used during project construction for erosion control, or any material used for hydroseeding or revegetating disturbed areas should similarly be free of invasive species. If the provider of the material cannot ensure that it is free of invasive species on the list in Appendix F, then it should also be inspected by qualified personnel prior to being transported into the project area.

- California Department of Fish and Game (CDFG). 1994. Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California. November 8.
- _____. 1995. Staff Report on Burrowing Owl Mitigation. October 17.
- URS. 2001. Natural Environment Study/Biological Assessment. Prepared for Merced County Department of Public Works and Caltrans District 10. April 2001.
- United States Fish and Wildlife Service (USFWS). 1996. Mitigation Guidelines for the Valley Elderberry Longhorn Beetle. Sacramento, CA. April.
- United States Fish and Wildlife Service (USFWS). 1997. U.S. Fish and Wildlife Service Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance. Sacramento, CA. April.