

**DRAFT
ENVIRONMENTAL ASSESSMENT/ INITIAL STUDY
AMERICAN RIVER WATERSHED COMMON FEATURES
LOWER AMERICAN RIVER FEATURES
AS MODIFIED BY WRDA 1999
NATOMAS EAST MAIN DRAIN CANAL
(AMERICAN RIVER NORTH LEVEE, RIVER MILE 2.0 TO 3.6)
SACRAMENTO COUNTY, CALIFORNIA**

JUNE 2012



**US Army Corps
of Engineers**



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

Environmental Resources Branch

**Draft FINDING OF NO SIGNIFICANT IMPACT
American River Watershed Common Features Project
Lower American River Features as Modified by WRDA 1999
Natomas East Main Drain Canal Levee Improvement Project**

I have reviewed and evaluated the information presented in this Environmental Assessment/Initial Study (EA/IS) prepared for the American River Watershed Common Features, Lower American River Features, Natomas East Main Drain Canal Levee Improvement Project. The project would strengthen the flood control levee along the right (north) bank of the lower American River near the downtown area of Sacramento. The downstream end of the project reach terminates at the Natomas East Main Drain Canal (approximately River Mile [RM] 2.0.) and extends 5,500 linear feet upstream to RM 3.6. The repair work would involve installing approximately 4,680 feet of slurry cutoff wall and approximately 120 feet of slope stability corrections to address through-seepage concerns.

During this review, the possible consequences of the work described in the EA/IS have been studied with consideration given to environmental, socioeconomic, cultural, and engineering feasibility. I have also considered the views of other interested agencies, organizations, and individuals. The environmental effects have been coordinated with the U.S. Fish and Wildlife Service (USFWS), the California State Historic Preservation Officer, the California Department of Fish and Game, the California Department of Water Resources, the Central Valley Flood Protection Board, and the Sacramento Area Flood Control Agency.

Compensation to reduce effects on the Federally-listed valley elderberry longhorn beetle would include planting up to 0.89 acre of elderberry shrubs and associated native plants at a USFWS-approved site. This compensation measure would be used to reduce impacts to this sensitive species to less than significant. Mitigation for the removal of two trees would require plantings of native species at an established site within the American River Parkway.

Impacts to recreation and traffic would be minimized through detour routes, public coordination, and best management practices (BMPs). The levee maintenance road would be closed to pedestrians and access would be rerouted onto the bike path. All areas disturbed by construction would be revegetated for erosion control. These compensation measures and BMPs are sufficient to reduce any potential effects to air quality, vegetation, and valley elderberry longhorn beetle habitat to less than significant.

No significant impacts on resources would result from the project. BMPs, avoidance protocols, and minimization and mitigation measures would be used during construction to reduce effects related to sensitive biological resources, air quality, water quality, cultural resources, noise, and utility systems.

Based on my review of the EA/IS and my knowledge of the project area, I have determined that the proposed levee repair work, including access routes and staging areas, would have no significant, long-term effects on environmental or cultural resources. Based on these considerations, I am convinced that there is no need to prepare an environmental impact statement. Therefore, an EA and Finding of No Significant Impact provide adequate environmental documentation for the proposed action.

Date

William J. Leady, P.E.
Colonel, U.S. Army
District Engineer

**PROPOSED MITIGATED NEGATIVE DECLARATION
AMERICAN RIVER WATERSHED COMMON FEATURES PROJECT
CALIFORNIA
LOWER AMERICAN RIVER FEATURES AS MODIFIED BY WATER
RESOURCES DEVELOPMENT ACT OF 1999
NATOMAS EAST MAIN DRAIN CANAL
(AMERICAN RIVER NORTH LEVEE, RIVER MILE 2.0 TO 3.6)
SACRAMENTO COUNTY, CALIFORNIA**

Project Background

The American River Watershed Common Features Project was initially described in the Supplemental Information Report and was first authorized in Water Resources Development Act (WRDA) of 1996 and modified in WRDA 1999. The State authorized the American River Watershed Common Features Project in 1997 under California Water Code Sections 12670.10, 12670.14 and 12670.16

The American River Watershed Common Features as Modified by Water Development Act of 1999, Natomas East Main Drainage Canal (Project) is a cooperative effort among the U.S. Army Corps of Engineers, the Central Valley Flood Protection Board and the Sacramento Area Flood Control Agency. The Project is one of five modifications approved by WRDA 1999.

Project Location

The proposed work is located upstream of the confluence of the Sacramento and American Rivers along the right (north) levee of the lower American River between River Mile (RM) 2.0 and 3.6. The project reach is bisected by Highway 160, the Union Pacific Railroad tracks and Del Paso Boulevard. The downstream end of the reach terminates at the Natomas East Main Drain Canal (NEMDC.) Highway 160 divides the project reach into upstream and downstream segments. The upstream segment (from upstream terminus to approximately Highway 160) is 3,250 linear ft [lf]. The downstream segment of the project is divided into two sections based on the requirements of each section of levee: the section from the UPRR tracks to Del Paso Boulevard is 1,467 lf.

Project Description

The upstream segment (from upstream terminus to approximately Highway 160) would require installation of a 3,250 lf seepage cutoff wall.

The downstream segment of the project would require landside levee slope repairs and slope flattening (approximately 120 lf); the section from Del Paso Boulevard to terminus would require installation of a 1,467 lf seepage cutoff wall.

Potential Impacts

Recreation

The project will temporarily close approximately 2,400 feet of the Sacramento Northern Bike Trail from Del Paso Boulevard to the end of Railroad Drive for three months in 2014.

In order to mitigate for effects to the recreation trail use:

- The public will be informed of the project;
- Warning signs and signs regarding restricted access, trail closures and detours will be posted;
- Detour routes would be clearly marked, and fences erected in order to prevent access to the project area.

In areas where recreational traffic intersects with construction vehicles:

- Traffic control will be utilized in order to maintain public safety;
- Public outreach conducted through mailings, posting signs, coordination with interested groups, and meetings, if necessary, in order to provide information regarding changes to recreational access in and around the Parkway.

Water-filled barriers would be installed as a safety measure to keep equipment, soil or other materials from encroaching on the trail in the upstream and middle sections of the project where the Jedediah Smith Recreational Trail is in close proximity to the waterside levee toe.

Any effects to recreation would be temporary and considered less than significant after mitigation.

Vegetation and Wildlife

It is anticipated that two trees will be removed to accommodate construction activities and meet levee safety requirements.

Removal of these trees may require a permit from the City of Sacramento. The trees are 15" to 29" dbh and the mitigation planting would follow the recommendations proposed by the US Fish and Wildlife Service (USFWS) in the Fish and Wildlife in the Coordination Act Report.

Mitigation will be coordinated with the USFWS as required by the Fish and Wildlife Coordination Act. It is anticipated that USFWS would recommend:

- Replacement of the oak trees removed along the upstream and downstream segments, at an inch for inch ratio; and
- All tree removal activities will be performed by, or under the direct supervision of, a certified arborist.

Impacts related to removal of two oak trees would be less than significant after mitigation.

Special Status Species

Valley Elderberry Longhorn Beetle (VELB)

Construction of the NEMDC levee improvements would result in direct and indirect effects to several elderberry shrubs. Direct effects would include trimming and/or removal of shrubs. Indirect effects would include physical vibration and increase in dust during operation of equipment and trucks during construction activities.

Consultation under Section 7 of the Endangered Species Act will be initiated with the USFWS to assess potential impacts and required compensation. The Corps will request concurrence from USFWS with the determination that potential project impacts may affect, but are not likely to adversely affect, the valley elderberry longhorn beetle. The Corps will also propose compensation for the loss of five elderberry shrubs and the trimming of another. This would require the planting of 36 elderberry seedlings and 36 associated native plantings. To minimize potential take of the valley elderberry longhorn beetle, the following measures taken from the USFWS "Conservation Guidelines for the Valley Elderberry Longhorn Beetle," July 1999 would be incorporated into the project:

- A minimum setback of 100 feet from the dripline of all elderberry shrubs will be established, if possible. If the 100 foot minimum buffer zone is not possible, the next maximum distance allowable will be established. Due to the limited options for locating the staging area, as well as the limited space within the staging area, it would be difficult to observe the required 100-foot radius buffer zone for protection of the elderberry shrubs. The Corps is proposing a 20-foot radius buffer zone, using concrete or water-filled barriers for protection, and limiting construction until after the no-disturbance period (after June 15). These areas would be fenced, flagged and maintained during construction;
- Environmental awareness training would be conducted for all workers before they begin work. The training would include status, the need to avoid adversely affecting the elderberry shrub, avoidance areas and measures taken by the workers during construction, and contact information; and

- Signs would be placed every 50 feet along the edge of the elderberry buffer zones. The signs would include: "This area is the habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be readable from a distance of 20 feet and would be maintained during construction.

Sensitive raptors

Swainson's hawk and White-tailed kite may be present in the area and may nest near the construction site. Construction would be timed to avoid activities near active bird nests or young of birds that breed in the area. The nesting seasons associated with the potential presence of raptors and protected avian species could further reduce the available construction season into September. For this reason, it would be unrealistic to propose no construction would take place during the breeding/nesting seasons of these avian species during the available construction season (June 15 – October 1).

The Corps would however, take steps to avoid and minimize impacts to raptors and other protected avian species. If it is not feasible for construction to occur outside of nesting periods (April-September 15th),, a qualified biologist would survey the project area, and all areas within one-half mile of the project, prior to initiation of construction. If the survey determines that a nesting pair is present, the Corps would coordinate with CDFG and/or USFWS, and the proper avoidance and minimization measures would be implemented. To avoid potential effects to nesting Swainson's hawks, CDFG typically requires the avoidance of nesting sites during construction activities. These measures include avoiding construction during the breeding season and monitoring of the nest site by a qualified biologist. The project is currently scheduled to begin in late summer 2013. It is anticipated that the timing of the project would begin after the young Swainson's hawks and white-tailed kites have fledged which is normally by July-August.

The proposed mitigation measures would reduce the effects on the white-tailed kite and the Swainson's hawk to less than significant.

Air Quality

Emissions would result from the use of construction equipment, truck haul trips to and from the borrow sites, and worker vehicle trips to and from the construction sites. Prior to construction, the contractor would submit a construction equipment list to be used in the project for approval by USACE and SMAQMD. SMAQMD would confirm the fleet emissions and endorse the list only if the total fleet emissions would meet a 20% reduction in NO_x and a 45% reduction in PM₁₀ in

comparison to the state fleet emissions average. The contractor will be required to follow the requirements of SMAQMD's standard mitigation program (Appendix B). Any remaining emissions over the NO_x threshold should be reduced via a mitigation fee payment. The projected (2012) cost of reducing one ton of NO_x is \$16,640 (\$8.32/lb). The contractor will be responsible for payment of any required mitigation and administrative fees.

The standard mitigation measures for the SMAQMD Recommended Mitigation for Reducing Emissions from Heavy-Duty Construction Vehicles are:

- Use diesel-fueled equipment manufactured in 2003 or later, or retrofit equipment manufactured prior to 2003 with diesel oxidation catalysts; use low-emission diesel products, alternative fuels, after-treatment products, and/or other options as they become available;
- Maintain properly functioning emission control devices on all vehicles and equipment;
- The contractor would provide a plan, for approval by the Corps and SMAQMD, demonstrating that the heavy-duty (> 50 horsepower) self-propelled off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project wide fleet-average 20 percent NO_x reduction and 45 percent particulate reduction compared to the most recent CARB fleet average at time of construction;
- The contractor shall submit to the Corps and SMAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of the construction project. The inventory shall include the horsepower rating, engine production year, and projected hours of use for each piece of equipment. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs. At least 48 hours prior to the use of subject heavy-duty off-road equipment, the project representative shall provide SMAQMD with the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman;
- The project shall ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40 percent opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately, and [DERA, City of x, SMAQMD, etc.] shall be notified within 48 hours of identification of non-compliant equipment. A visual survey of all in-operation equipment shall be made at least weekly, and a monthly

summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey. The SMAQMD and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this section shall supersede other SMAQMD or state rules or regulations; and

- If at the time of construction, the SMAQMD has adopted a regulation applicable to construction emissions, compliance with the regulation may completely or partially replace this mitigation. Consultation with SMAQMD prior to construction will be necessary to make this determination.

Implementation of the BMPs listed below would reduce air quality degradation caused by dust and other contaminants:

- During construction, implement all appropriate dust control measures, such as tarps or covers on dirt piles, in a timely and effective manner;
- Periodically water all construction areas having vehicle traffic, including unpaved areas, to reduce generation of dust. Application of water would not be excessive or result in runoff into storm drains;
- Suspend all grading, earth moving, or excavation activities when winds exceed 20 miles per hour;
- Water or cover all material transported offsite to prevent generation of dust;
- Sweep paved streets adjacent to construction sites, as necessary, at the end of each day to remove excessive accumulations of soil or dust;
- Cover all trucks hauling dirt, sand, soil, or other loose material, or maintain at least 2 feet of freeboard (minimum vertical distance between top of the load and top of the trailer) in accordance with the requirements of California Vehicle Code Section 23114. This provision would be enforced by local law enforcement agencies; and
- Re-vegetate or pave areas cleared by construction in a timely manner to control fugitive dust.

Impacts to air quality would be temporary and short-term, and would be less than significant after mitigation.

Climate Change

There would be no increase of long-term emissions (permanent sources) of greenhouse gases from this project. Long-term emissions would be the same with or without the project; maintenance emissions would be the same, and the slurry wall itself has no net long-term emissions. This project does not conflict with any statewide or local goals with regard to reduction of GHG.

BMPs and implementation of the standard construction mitigation measures as recommended by SMAQMD (Appendix B of EA/IS) would reduce greenhouse gas emissions through the same processes that reduce total NO_x and PM₁₀ emissions.

Water Resources and Quality

The project would disturb more than 1 acre of land, the contractor would be required to obtain a National Pollution Discharge Elimination System (NPDES) permit from the Regional Water Quality Control Board (RWQCB), Central Valley Region. As part of the permit, the contractor would be required to prepare a Storm Water Pollution Prevention Plan (SWPPP), identifying best management practices to be used to avoid or minimize any adverse effects during construction to surface waters.

The following best management practices would be incorporated into the project:

- The contractor would prepare a spill control plan and a SWPPP prior to initiation of construction. The SWPPP would be developed in accordance with guidance from the RWQCB, Central Valley Region. These plans would be reviewed and approved by the USACE before construction began;
- Implement appropriate measures to prevent debris, soil, rock, or other material from entering the water. Use a water truck or other appropriate measures to control dust on haul roads, construction areas, and stockpiles;
- Properly dispose of oil or other liquids;
- Fuel and maintain vehicle in a specified area is designed to capture spills. This area cannot be near any ditch, stream, or other body of water or feature that may convey water to a nearby body of water;
- Inspect and maintain vehicles and equipment to prevent dripping of oil or other liquids;

- Schedule construction to avoid the rainy season as much as possible. Ground disturbance activities are scheduled to begin late summer 2013. If rains are forecasted during construction, erosion control measures would be implemented as described in the RWQCB Erosion and Sediment Control Field Manual;
- Maintain sediment and erosion control measures during construction. Inspect the control measures before, during, and after a rain event;
- Train construction workers in stormwater pollution prevention practices; and
- Re-vegetate disturbed areas in a timely manner to control erosion.

Since no significant adverse affects to groundwater or surface water resources are anticipated, no mitigation is required.

Traffic and Circulation

Project would cause an increase in traffic volume, reduction of speeds on local residential streets, and the temporary closure of the Sacramento Northern Bike Trail.

To mitigate for the above impacts, the contractor will be required to develop a Traffic Control Plan that is reviewed and approved by the City of Sacramento prior to construction. The plan will include the following measures:

- Ensure that construction vehicles do not block any roadways or private driveways;
- Provide access for emergency vehicles at all times;
- Select haul routes to avoid schools, parks, and high pedestrian use areas, when possible. Crossing guards would be used when truck trips coincide with schools hours and when haul routes cross student travel path;
- Obey all speed limits, traffic laws, and transportation regulations during construction;
- Use signs and flagmen, as needed, to alert motorists, bicyclists, and pedestrians to avoid conflict with construction vehicles or equipment;
- Flagmen would be used at each roadway that crosses the levee to safely circulate traffic through the construction site;

- Use separate entrances and exits to the construction site;
- Prior to construction, notify local residents, business, schools, and the City of Sacramento if road closures would occur during construction; and
- Contractor would repair roads damaged by construction.

The proposed mitigation measures would reduce the effects on traffic and circulation to less than significant.

Public Utilities and Services

No utilities services would be interrupted during construction. Prior to initiating ground disturbing activities, the contractor will coordinate with Underground Service Alert (USA) to insure all underground utilities are identified and marked. No interruption of utility service would take place as a result of construction. The construction of the slurry cutoff wall in the upstream section of the project has been redesigned to ensure that the 12-inch potable water pipeline would be out of service for less than 4 hours. In order to meet this requirement, the cutoff wall would be constructed in an upstream direction from Highway 160, and in a downstream direction from the upstream terminus to meet at the location of the potable water pipeline. The water supply pipeline relocation would be the last feature of the construction in this section, prior to rebuilding of the levee.

In the downstream section PG&E would oversee all activities associated with the relocation of the 12 inch natural gas pipeline and would complete installation and connections themselves. Impacts to public utilities and services would be less than significant after mitigation.

Noise and Vibration

Construction activities would result in short-term increases in ambient noise. Sensitive receptors that could be affected by this increase include residents, wildlife, recreationists and students.

The following measures would be implemented to reduce the adverse effects on noise as much as possible:

- In accordance with the City Noise Ordinance exemptions for construction (Sacramento County Municipal Code, 6.68.090 Exemptions) the construction activities shall be limited to between 8:00 a.m. and 6:00 p.m. Monday through Friday and 7:00 a.m. and 8:00 p.m. on Saturdays.;

- Minimize construction equipment noise during project construction by muffling and shielding intakes and exhaust on construction equipment (per the manufacturer's specifications) and shroud or shield impact tools;
- Turn off all equipment, haul trucks, and worker vehicles when not in use for more than 30 minutes;
- Notify residences about the type and schedule of construction.

Compliance with the local noise ordinance would minimize the exposure of residents to excessive noise. Construction of the upstream segment is scheduled to be completed within 4 months in 2013; the downstream segment is scheduled to be completed within 3 months in 2014. Therefore, the impact is less than significant after mitigation.

Esthetics/Visual Resources

Construction of the levee raise and widening would temporarily affect the esthetics in the project area. Short-term effects would include the presence and activities of construction equipment and workers in the project area.

There would be no significant long-term effects on esthetics or visual resources in the project area, therefore, no mitigation would be required. All areas impacted by the project would be re-vegetated and restored to remain consistent with preconstruction conditions.

Cultural Resources

No cultural resources are anticipated to be affected by the Project. Should cultural resources be found, the Project will comply with federal law and CEQA Guidelines.

Findings

Based on the information in the Environmental Assessment and Initial Study for the American River Watershed Common Features Project Lower American River Features as Modified by the Water resources Development Act of 1999, Natomas East Main Drain Canal and in the entire record, the Central Valley Flood Protection Board finds that although the Project could have a significant impact on the environment, mitigation measures have been incorporated into the Project that reduce these impacts to less than significant.

By: _____
William Edgar
President

Date: _____

By: _____
Jane Dolan
Secretary

Date: _____

DRAFT

**DRAFT
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AMERICAN RIVER WATERSHED COMMON FEATURES
LOWER AMERICAN RIVER FEATURES
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JUNE 2012

**U.S. ARMY CORPS OF ENGINEERS
SACRAMENTO DISTRICT**

**THE CENTRAL VALLEY FLOOD PROTECTION BOARD
STATE OF CALIFORNIA**

**SACRAMENTO AREA FLOOD CONTROL AGENCY
SACRAMENTO, CALIFORNIA**

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Acronyms and Abbreviations

AAQS	ambient air quality standards
APE	area of potential effects
ARFCD	American River Flood Control District
CAR	Fish and Wildlife Coordination Act Report
CARB	California Air Resources Board
CB	cement and bentonite
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CESA	California Endangered Species Act
cfs	cubic feet per second
CFR	Code of Federal Regulations
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
Corps	United States Army Corps of Engineers
County Parks	Sacramento County Department of Regional Parks
CRWQCB	California Regional Water Quality Control Board
CSU	California State University
cy	cubic yards
CVFPB	Central Valley Flood Protection Board
dB	decibels
dbh	diameter at breast height
DFG	Department of Fish and Game
DOT	Department of Transportation
DWR	Department of Water Resources
EA/IS	Environmental Assessment/Initial Study
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EM	Engineering Manual
EPA	Environmental Protection Agency
°F	degrees Fahrenheit
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FONSI	Finding of No Significant Impact
HTRW	hazardous, toxic, and radioactive waste
Ldn	day-night sound level
lf	linear feet
NEMDC	Natomas East Main Drainage Canal
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOx	nitrogen oxide

NPDES	National Pollution Discharge Elimination System
OSHA	Occupational Safety and Health Administration
PA	programmatic agreement
PG&E	Pacific Gas and Electric Company
PL	public law
PM ₁₀	particulate matter 10 microns or less
RM	river mile
ROG	reactive organic gas
RWQCB	Regional Water Quality Control Board
SAFCA	Sacramento Area Flood Control Agency
SEIS/EIR	Supplemental Environmental Impact Statement/Environmental Impact Report
SFNA	Sacramento Federal Ozone Nonattainment Area
SHPO	State Historic Preservation Officer
SIR	Supplemental Information Report
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMUD	Sacramento Metropolitan Utility District
SO _x	sulfur oxides
SPCP	Spill Prevention and Countermeasure Plan
SRA	shaded riverine aquatic habitat
SRBPP	Sacramento River Bank Protection Project
SRCSD	Sacramento Regional County Sanitation District
SSWD	Sacramento Suburban Water District
SWPPP	Storm Water Pollution Prevention Plan
UPRR	Union Pacific Railroad
USA	Underground Service Alert
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VELB	valley elderberry longhorn beetle
WRDA	Water Resources Development Act

1.0 Purpose and Need for Action

1.1 Proposed Action

The U.S. Army Corps of Engineers (Corps), the State Central Valley Flood Protection Board, (CVFPB), formerly the Reclamation Board, and the Sacramento Area Flood Control Agency (SAFCA) propose to strengthen approximately 4,800 feet of flood control levee within a 5,500 linear foot reach along the lower American River in the American River Parkway (Plate 1). The purpose of the proposed action is to reduce flood damages by improving the levee to meet current Corps standards. This levee work would require implementing seepage remediation to comply with Corps requirements. This construction would reduce flood risk by improving the levee to meet current Corps criteria in Corps Engineer Manual (EM) 1110-2-1913 for withstanding emergency releases from Folsom Dam of 160,000 cubic feet per second (cfs) with 3 feet of freeboard (equivalent to 192,000 cfs).

1.2 Location of the Project Area

The proposed work is located upstream of the confluence of the Sacramento and American Rivers along the right (north) levee of the lower American River between River Mile (RM) 2.0 and 3.6. The levee provides protection for the adjacent neighborhood of North Sacramento (Plate 2). The project reach is bisected by Highway 160, the Union Pacific Railroad tracks, and Del Paso Boulevard. The downstream end of the reach terminates at the Natomas East Main Drain Canal (NEMDC), which also serves as the project's acronym name "NEMDC". Highway 160 divides the project reach into upstream and downstream segments (Plates 3 and 4). The upstream segment (from upstream terminus to approximately Highway 160) would require installation of a seepage cutoff wall (3,300 linear ft [lf]). The downstream segment of the project is divided into two sections based on the requirements of each section of levee: (1) the section from the Union Pacific Railroad (UPRR) tracks to Del Paso Boulevard, which would require landside levee slope repairs and slope flattening (approximately 120 lf) (Plate 5); and (2) the section from Del Paso Boulevard to the terminus, which would require installation of a seepage cutoff wall (1,380 lf) (Plate 6).

1.3 Background and Need for Action

The American River Common Features Project (Common Features Project) is a cooperative effort among local, State of California, and Federal agencies to increase the level of flood protection for the city of Sacramento and surrounding areas. The Common Features Projects encompass several actions under two authorizations (the Water Resources Development Acts [WRDA] of 1996 and 1999) located along both banks within the lower American River Parkway as well as sections along the Sacramento River. Actions taken have been constructed by the Corps and the CVFPB, and are maintained by the American River Flood Control District (ARFCD).

In March 1996, the Corps and the CVFPB completed the Supplemental Information Report (SIR) and Supplemental Environmental Impact Statement/Environmental Impact Report (SEIS/EIR) for the American River Project. The SIR was undertaken to develop supplemental information to the American River Watershed Investigation, April 1991. The SIR evaluated an array of alternatives to provide increased flood control to the Sacramento area. The Chief of Engineers, in his June 27, 1996 report, deferred a decision on a comprehensive flood control plan. However, the Chief recommended the features common to all three proposed plans be authorized as the first component of a comprehensive flood control plan for the Sacramento area. Congress authorized these “common features” in WRDA 96.

Major storms in northern California caused record flood flows in 1986, 1995, 1997, 1998, and 2005 in the American River Basin. Outflows from Folsom Reservoir, together with high flows in the Sacramento River, caused water levels to rise above the safety margin for the levees protecting the Sacramento area. These major storms raised concerns over the adequacy of the existing flood control system, which led to a series of investigations of the need to provide additional protection for Sacramento. Subsequently, further modifications of the American River Common Features Project were authorized in WRDA 99. Under Section 366 of WRDA 1999, numerous specific modifications to the Common Features Project along the lower American River and in the Natomas Basin were authorized. Those modifications along the lower American River included:

- Raising the south (left) non-Federal levee upstream of the Mayhew Drain for a distance of 4,500 feet by an average of 2.5 feet.
- Raising the north (right) levee of the American River from 1,500 feet upstream to 4,000 feet downstream of the Howe Avenue Bridge by an average of 1 foot.
- Installing gates to the existing Mayhew Drain culvert to prevent backup of flood water on the Folsom Boulevard side of the gates.
- Installing a slurry wall in the north levee of the American River from the east levee of the Natomas East Main Drainage Canal upstream for a distance of approximately 1 mile.
- Installing a slurry wall in the north levee of the American River from 300 feet west of Jacob Lane, north for a distance of about 1 mile, to the end of the existing levee.

Both projects at Mayhew (Levee Raise and Drain Closure Structure) and the majority of the work at Jacob Lane have been completed at the time of this writing. The Howe Avenue project will be constructed in 2012. The remaining work at Jacob Lane is planned for construction in 2013 and NEMDC is planned for construction in 2013 and 2014.

The project levees along the American River were originally constructed by the Corps in 1955-56, which coincided with the construction of Folsom Dam. The levees were designed to contain a controlled flow of 115,000 cfs from Folsom Dam. In the early 1950s when these criteria were developed, this dam was expected to provide the

Sacramento area with 250 year level flood protection. Due to new hydrologic data, it has been determined that the dam will not provide that level of protection. Flood control capacity could be increased if releases of greater than 115,000 cfs were allowed, but the levees on the American River are not capable of handling the greater flow for any extended time period. If these deficiencies were not addressed, these releases could result in catastrophic failure of the levee causing widespread flooding. In the case of the project area, this flooding would inundate the neighborhood of Del Paso Heights, the area immediately north and east of the levee. This area contains residential, commercial and industrial buildings, and the floodwaters would not only result in a high number of property losses, but potential loss of life, as well. As a result of continued levee improvements through the American River Common Features projects, the integrity of the levee system is being increased to handle an emergency release from Folsom Dam of 160,000 cfs with 3 feet of freeboard (equivalent to 192,000 cfs). In the case of the NEMDC project levees, through-seepage is the primary concern, combined with slope stability. The slurry cutoff walls would meet both of these objectives in this project action. However, in the section of levee between the UPRR tracks and Del Paso Boulevard, several utilities passing through such a short distance complicate the use of the slurry wall methodology. In this area, slope flattening and a landside berm would address both seepage and slope stability issues.

1.4 Authority

The proposed levee work is part of the ongoing American River Watershed Common Features project. Authorization for the Common Features project is provided by Section 101 of WRDA 1996 (Public Law 104-303) and Section 366 of WRDA 1999 (Public Law 106-53).

1.5 Purpose of the EA/IS

The American River Watershed Common Features Project, California, Lower American River Features as Modified by the Water Resources Development Act of 1999, Environmental Assessment/Initial Study was completed in April 2002. The American River North Levee portion of that document is now being updated in this EA/IS.

This EA/IS: (1) describes the existing environmental resources in the project area; (2) evaluates the environmental effects of the alternatives on these resources; and (3) identifies measures to avoid or reduce any effects to less than significant. This EA/IS has been prepared in accordance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

1.6 Decisions Needed

The District Engineer, commander of the Sacramento District, must decide whether or not the proposed levee work qualifies for a Finding of No Significant Impact (FONSI) under NEPA or whether a supplemental EIS must be prepared. Also, the

CVFPB must decide if the proposed action qualifies for a Mitigated Negative Declaration under CEQA or whether an EIR must be prepared.

2.0 Alternatives

2.1 Alternatives Eliminated from Further Consideration

The topographic and metropolitan features of the project area limit alternative project options. The project area is situated in a narrow corridor between the American River Parkway and Sacramento area industrial businesses, office buildings, transportation features and endangered species critical habitat. Just beyond this corridor is the urban community of Del Paso Heights, with many small businesses and residences. The purpose of the project is to protect these areas from flood damages by improving the levee to reduce flood risk and to meet current Corps standards.

Rather than installing a seepage cutoff wall, other alternatives that could be considered include setting back the levee in order to widen the flood plain to increase channel conveyance and reduce hydrostatic pressure on the levee. This alternative is not a feasible option because of the current proximity of the levee to the areas described, above. There is currently no land available within the project area to allow for setting back of the levee.

Another option includes protecting the various commercial and residential properties themselves to prevent flood damages. Considering the high density of these features within the flood plain, and the number of structures that would need to be flood-proofed, this alternative is considered extremely costly and was eliminated from further consideration.

A more detailed evaluation of alternatives for the American River Watershed Common Features Project can be found in the final EA/IS dated March 2002.

2.2 No Action Alternative

Under this alternative, the Corps would not participate in constructing the levee improvements. Levee conditions would remain the same and the levee would not meet the current standard requirements in EM 1110-2-1913 for Corps levees. The levee would not be in compliance with current Corps requirements to safely pass an emergency release of 160,000 cfs with 3 feet of freeboard. Under this scenario, the seepage deficiencies in this reach could result in catastrophic failure of the levee causing widespread flooding. At a minimum, this flooding would inundate the neighborhood of Del Paso Heights, the area immediately north and east of the levee. This area contains residential, commercial and industrial buildings, and the floodwaters would not only result in a high number of property losses, but potential loss of life, as well. Any floodwaters greater than 2 to 3 feet deep would also release, fuels, petroleum products, household chemicals, industrial chemicals, and potentially, raw sewage. The contaminated floodwaters would saturate the walls of all structures, promoting the growth

of molds. The ensuing hazardous waste cleanup could increase the costs of the flood event by hundreds of millions of dollars, not to mention the cost of repairing the levee(s).

2.3 Proposed Levee Improvements

This section describes the proposed action. This includes a discussion of features, construction details, staging and stockpile areas, borrow and disposal sites, construction workers and schedule, and operation and maintenance for each reach.

Features

The levees are currently designed to hold a flow of 160,000 cfs, however, during a design event the levees in the NEMDC project area do not meet the Corps criteria for seepage and slope stability. Current levee standards require that levees on the American River be capable of safely passing an emergency release of 160,000 cfs, plus three feet of freeboard, for a total flow capacity of 192,000 cfs. Specifically, the deficiency is through-seepage and the work would involve installing a seepage cutoff wall in approximately 4,680 feet of levee at an average depth of 40 feet below the levee crown, over a distance of approximately 5,500 lf by the conventional slot trench construction method. Approximately 120 feet of slope stability (slope flattening) corrections would be incorporated, as well. In order to implement these project features, a total of seven utilities located in the project area or passing through the levee would require relocation or abandonment.

Due to logistical, environmental, and construction constraints, the NEMDC project would be implemented over two construction seasons: the upstream segment is scheduled to be constructed in 2013 and the downstream segment is scheduled to be constructed in 2014.

Construction Details

Access and Staging. A combination of existing ramps and temporary ramps would be used during the construction of the project. An existing access ramp at Lathrop Way, along with three proposed temporary ramps, would be the upstream access for construction. All ramps are located on the landside of the levee. One temporary waterside ramp and three temporary landside ramps are proposed for construction at the downstream segment of the project. Ramps are shown on Plates 7 and 8.

The project would use a total of three staging areas during construction. The primary staging area is proposed to be located at the upstream end of the reach adjacent to the west end of Lathrop Way. It encompasses two parcels directly across from each other on Lathrop Way. Two smaller staging areas are proposed for the downstream segment of the project. One is located in the strip of land between Del Paso Boulevard and Highway 160, just east of the Union Pacific Railroad tracks. The last staging area is proposed for the west side of Railroad Drive from Del Paso Boulevard, north for approximately 500 feet. This staging area would narrow Railroad Drive to one lane in

the area near Del Paso Boulevard and would require a flagger and signage to safely manage traffic entering and exiting Railroad Drive. Staging areas are shown on Plates 9 and 10.

Three haul routes are proposed for the project during construction. The primary function of the haul routes is to concentrate truck movement within close proximity to the construction areas when soil is excavated from the levee and is being transferred to the staging areas. The haul routes would also be used when the construction of the slurry cutoff walls has been completed and the levees are being reconstructed. The haul routes would be used to import suitable material as well as transport spoils for disposition. The upstream haul route would be located along the landside toe of the levee, adjacent to Lathrop Way. Trucks moving material would deposit the excavated soil in the staging area at the west end of Lathrop Way. The trucks would continue in a clockwise direction, north on Lathrop Way to Commerce Circle, east on Commerce Circle to Lathrop Way and return to the levee toe. Construction in this section would work from upstream toward downstream.

The haul route in the downstream end of the upstream segment of the project would also be located along the landside levee toe and would shuttle between the primary upstream staging area and the downstream staging area. The maintenance road along the landside toe would accommodate two-way traffic. Trucks would deposit excavated soil at the upstream staging area and would use the downstream staging area as a turnaround. Construction in this section of the project would work from downstream (Highway 160) to upstream. The upstream haul routes are shown at Plates 11a and 11b.

Due to logistical constraints on both the waterside and landside of the levee, the downstream section haul route would require a loop that would operate on both sides of the levee. A maintenance road along the waterside toe of the levee would allow trucks to be loaded with excavated material and travel in a downstream direction. The trucks would follow the levee and eventually travel up a temporary ramp on top of the levee and exit the construction area where Railroad Drive meets the levee. Trucks would continue down Railroad Drive and turn left (east) to the staging area along Del Paso Boulevard. Once the trucks have left the staging area they would exit via an access road adjacent to the Highway 160 exit ramp. Trucks would exit left (west) onto Del Paso Boulevard and return to the access point on the waterside of the levee. The downstream haul route is shown at Plate 12.

The Jedediah Smith Recreation Trail (bike trail) would remain open during the entire project, but may be used occasionally for movement or repositioning of equipment. This is expected to occur infrequently. The Sacramento Northern Bike Trail would be closed from the existing Del Paso Boulevard access, north to approximately where the end of Railroad Drive meets the levee. This is due to the fact that the bike trail is on top of the levee in this section and this is where the levee repairs would take place. Access to the Sacramento Northern Bike Trail would be detoured east along Del Paso Boulevard to Acoma Street, then north to the bike trail. This closure/detour would be required during the entire time of construction in this section. That construction period is approximately

three months long, and would be the last section to be completed. It is currently scheduled for 2014. Plate 13 shows the Sacramento Northern Bike Trail closure and detour.

Site Preparation. Before the start of construction, all construction areas would be fenced off to limit access, including the staging areas. Construction fencing would be installed on the landside of the project site adjacent to the commercial property lines and along the boundary of the access/haul road at the landside toe for site safety and security. In any areas where the bike trail is in the vicinity of the project footprint, water-filled barriers would be installed along the edge of the trail in order to separate recreationists from the construction area. A 15-20 foot wide corridor for construction equipment would be established along the landside toe of the levee. A significant portion of the upstream segment of the project is adjacent to critical habitat for the valley elderberry longhorn beetle for approximately 1,400 feet on the landside of the levee. The habitat is located on private property, and would be protected from disturbance through protective measures and limiting access to this area. Fencing and/or water-filled barriers would be installed along this section of the project reach. Up to two oak trees may be removed from the landside toe of the levee in this area.

Construction of the slurry wall would require that the levee crown and the levee slopes be cleared and grubbed of all vegetation and surface material. This would total approximately 2,150 cubic yards (cy) of removed material for both segments and would be disposed by the contractor at a State-approved, licensed, and permitted facility. The project construction would require removal of two oak trees and approximately twelve elderberry shrubs.

Preparation of all staging areas would require clearing and grubbing of the top 4 to 6 inches of soil and vegetation (other than Railroad Drive) which would total 810 cy of removed material and would be disposed by the contractor at an approved, licensed, and permitted facility. Slurry batch plants would be located in the upstream staging area on the west side of Lathrop Way and the downstream staging area on Railroad Drive.

There are seven locations where utilities would require relocation in order to implement the project. In five of these locations, the project would relocate the utility during the course of construction. However, two utilities must be relocated prior to construction in order to ensure that utility service is not interrupted and that the utility does not restrict the movement of equipment and the completion of the construction feature. Both of these utilities are located in the downstream section of the project.

In the area delineated by the UPRR tracks, the project levee, and Del Paso Boulevard, an electrical power pole is located within 10 feet of the current location of the levee toe. The seepage and slope stability deficiencies in this section would be corrected by repairs to the landside levee toe and slope flattening, which would also act as a seepage berm. The location of the utility pole is a levee safety concern and would require relocation. However, because the corrections involve earthwork, the utility pole must be relocated a minimum of 15 feet further landward from the levee and all vegetation in this

area must be removed prior to construction. The Corps has coordinated with SMUD, the utility provider, and they will relocate the utility pole. One oak tree and up to twelve elderberry shrubs would require removal in order to construct the slope flattening feature.

Downstream of Del Paso Boulevard there is a 12-inch natural gas pipeline that passes through this levee section. Although some information, based on limited potholing data, indicates that the pipeline passes through the prism of the levee within the depth where the cutoff wall would be installed, this has not yet been confirmed. Some anecdotal information would support the theory that the pipeline follows the prism of the levee within the top 3 to 4 feet of soil on the levee slopes and crown. The Corps has coordinated with Pacific Gas & Electric to relocate the pipeline. Due to the critical nature of the natural gas supplied by this pipeline, it is essential that this utility service must remain uninterrupted.

The pipeline would be replaced during the construction of the slurry cutoff wall. This area would likely be the first to be constructed in this section. During site preparation and degrading, the existing pipeline would be excavated on both the landside and waterside of the levee at the locations where the new connections are to take place. Special precautions would be taken to protect the pipeline in place. Once this section of the slurry wall has cured, and prior to reconstruction of the levee, the new pipeline would be installed outside the prism of the levee and within the upper layer of soil to meet Corps requirements. Once the new section of pipeline and corresponding connections are installed, the gas supply would be temporarily shut off and the remaining gas in the existing pipeline evacuated. When this has been completed, the new connections would be made and tested by PG&E, and the service restored, in accordance with Public Utilities Commission guidelines. This process would require disturbance to portions of Railroad Drive and an area of grassy vegetation on the waterside of the levee. This process is scheduled for summer 2013.

Construction of Slurry Wall. Construction is scheduled to begin in summer 2013, with the upstream segment of the reach. The duration of the construction period for the upstream segment should last approximately four months; construction of the downstream segment should last approximately three months in 2014. The directional flow of the construction activities is varied, depending on the segment. The upstream segment would progress from both ends of the segment toward the potable water pipeline, which must be relocated. The pipeline would be relocated once both of these sections of cutoff wall get to this point. The downstream segment of the project would progress in a downstream direction. As the project would be implemented in two construction years, many activities would be conducted twice: mobilization and demobilization, clearing and grubbing, degrading, excavation, export of spoils, installation of the cutoff wall, import of new material, and site restoration. After each segment of the reach has been cleared and grubbed, the levee would be degraded by 6 feet. The material removed during this process would be off-hauled as spoils. It is estimated that 37,690 cy of material would be removed from the levee through degrading and excavation: 29,030 cy for the upstream segment, and 8,660 cy for the downstream segment. Due to the limited space in the staging areas, and the proposed slurry wall

construction methodology, all soil removed during clearing and grubbing, levee degrade, and excavation would be disposed as spoils. Although the of the slurry wall would be constructed without using any soil, for the purposes of estimating air quality emissions, equal amounts of cy would be assumed to be imported.

Once the levee has been degraded, the slurry cutoff wall would be constructed. The conventional “slot trench” method would be used where a long reach, or “long-stick”, excavator would dig the trench as deep as 45 feet, in order for the wall to tie into an impervious layer of soil. The wall would be constructed of cement and bentonite (CB). The CB method would result in a greater amount of soil to be disposed, and generally takes longer to construct, however this process is less expensive. Slurry batch plants would be located at one of the upstream and downstream staging areas (Plates 9 and 10).

Slope Stability. The section of levee between the UPRR tracks and Del Paso Boulevard would require flattening of the landside levee slope to stabilize the levee and to act as a type of seepage berm. This section, although short (approximately 120 feet), is complicated by several site factors that the “low-tech” earthwork would address: the short length of the reach restricts the use of equipment on top of the levee to install a cutoff wall; the wing walls associated with the Del Paso Boulevard flood gates and the UPRR tracks restrict the ability to degrade the levee crown; several utilities passing through the levee also restrict incursion through the center of the levee; the landside toe of the levee has been severely altered by a long-standing homeless encampment; significant growth of woody vegetation at the landside levee toe and an existing power pole are levee safety concerns that must be addressed. The repairs would first require removal of the vegetation and relocation of the power pole. Once the levee toe is repaired to its designed configuration, the slope would be extended further landward and flattened. This would serve the dual purpose of stabilizing the levee and extending the seepage path to reduce the seepage risk. All earthwork activities would be conducted from the landside of the levee.

Restoration and Cleanup. Once the levee work is completed, all equipment and excess materials would be transported offsite via neighborhood streets and regional highways. The barren earthen and levee slopes would be reseeded with native grasses to promote re-vegetation and minimize soil erosion. The levee crown and access ramps would be restored to pre-project conditions and the staging areas would be reseeded. Any damage to the residential streets and bike trails from construction activities would be repaired. Finally, the work sites and staging areas would be cleaned of all rubbish, and all parts of the work area would be left in a safe and neat condition suitable to the setting of the area.

Borrow and Disposals Sites

The project in this reach would require approximately 43,760 cy of borrow material to build/rebuild the features in the two segments: 32,350 cy in the upstream cutoff wall segment, 650 cy in the downstream slope stability section, and 10,760 cy in

the downstream cutoff wall section. It is reasonable to assume the material would be acquired from sites along the Highway 50 corridor within 10 to 15 miles of the project site. Similarly, it is assumed the disposal sites for excess materials or spoils would be located within 10 to 15 miles of the project site. The contractor is responsible for determining the location of borrow and disposal sites; however, they must be licensed and permitted, and they must be approved by the Corps.

It is assumed that the haul routes used to transport soil and materials to the project site and to transport spoils offsite for disposal would use Highway 50, Interstate 5, Interstate 80, Richards Boulevard, Highway 160, Northgate Boulevard, and Del Paso Boulevard. Once trucks are within the project site, the respective internal project haul routes, described above, would be used.

Construction Workers and Schedule

An estimated 5 to 10 workers would be onsite each day during construction. These workers would access the area via regional and local roadways, and park their vehicles in the primary staging area located at the upstream end of the reach near Lathrop Way. Although the project construction is located within the American River Parkway, managed by the County of Sacramento, the areas surrounding the project area are within the city of Sacramento therefore, the requirements of the City of Sacramento Noise Ordinance would dictate the work hours of the project. Section 8.68.080 of the ordinance states that construction activity between the hours of 7:00 a.m. and 6:00 p.m., Monday through Saturday, and between 9:00 a.m. and 6:00 p.m. on Sunday is exempt from the ordinance. Construction is projected to begin summer 2013 with the upstream segment and last approximately four months. The project would be completed in the summer of 2014 and last approximately three months.

Operation and Maintenance

After construction is completed, responsibility for the project would be turned over to the CVFPB, the non-Federal sponsor for the project. This would include operation, maintenance, repair, rehabilitation, and replacement of all project features. The CVFPB would transfer these responsibilities to SAFCA, who would contract with the American River Flood Control District (ARFCD) to operate and maintain the levee. Regular maintenance activities include mowing and herbicide treatments of the levee slopes, controlling rodents, clearing the maintenance road, and inspecting the levee. All O&M activities would be conducted consistent with Corps guidance and O&M manuals.

3.0 Affected Environment and Environmental Consequences

This section describes the environmental resources in the project area, as well as any effects of the alternatives on those resources. The section is arranged by environmental resources. Each resource section presents existing resource conditions, environmental effects, and when necessary, mitigation measures are also proposed to avoid, reduce, minimize, or compensate for any significant effects. In determining

effects, the consequences of the proposed action are compared to the consequence of taking no action. Impacts are identified as direct, indirect, or cumulative. Cumulative impacts are addressed in Section 5. Effects are assessed for significance based on significance criteria. The significance criteria used in this document are based on the checklist presented in Appendix G of the State CEQA Guidelines; factual or scientific information and data; and regulatory standards of Federal, State, and local agencies.

3.1 Environmental Resources Not Considered in Detail

Initial evaluation of the effects of the project indicated that there would likely be little to no effect on several resources. These resources are discussed below to add to the overall understanding of the project area.

3.1.1 Climate

The climate of the area is characterized by cool, wet winters and hot, dry summers. The average yearly temperature for Sacramento is 61 degrees Fahrenheit (°F) with an average high of 74°F and an average low of 48°F. The hottest months are June through September and the coldest months are November through January (Weatherbase, 2008).

Most of the seasonal rainfall occurs in two or three of the winter months. Precipitation ranges from 16 to 20 inches on the valley floor. Annual precipitation occurs almost entirely during the winter storm season (November to April). The prevailing wind direction in the Lower American River basin is from the south and southeast from April to September and from the north from October to March.

The project would have no effect on the climate in the project area.

3.1.2 Topography, Geology, and Soils

The lower American River area consists of low rolling foothills and flood plain areas near the confluence with the Sacramento River. The floor of the Sacramento Valley is generally flat and open with little natural relief. Flood control levees provide the only significant topographic relief in or near the project area.

Geologic formations underlying the Sacramento Valley include igneous, metamorphic, and sedimentary rock types, which range in age from pre-cretaceous to recent. The valley is situated on vast alluvial deposits which have slowly accumulated over the last 100 million years. The materials have been derived from the surrounding uplands; transported by major streams; and deposited in successive clay, silt, sand, and gravel layers on the valley floor.

The lower American River area is part of the Great Valley Geomorphic province of California. The broad valley was filled with erosion debris that originated in the surrounding mountains. Most soils in the area are recent alluvial flood plain soils

consisting of unconsolidated deposits of clay, silt, and sand that occur as flood plain deposits. Fresh alluvium is deposited with each floodflow.

Sedimentation rates in the American River basin and adjacent river basins are relatively low due to limited development, the general shallowness of soils, a low rate of upstream erosion, and numerous containment basins. Sedimentation in the river is also controlled by Folsom and Nimbus Dams. Estimates of the annual sediment yield range from 0.1 to 0.3 acre-feet per square mile. As a result, the channel is in a state of degradation and sedimentation is not causing a reduction in channel conveyance or levee stability. Since the completion of Folsom Dam in 1955, only about 2 percent of the reserved sediment storage space in the reservoir has been filled.

The work proposed primarily consists of earth work, as the surface of the levee would be cleared and grubbed of the immediate surface material. All suitable excavated soil material would be reused in the project, and any unsuitable material would be disposed offsite at a commercial landfill. Soil material would be brought to the site to widen the levee crown and increase the height of the levee. Areas temporarily disturbed by construction would be returned to pre-project conditions after construction. Barren areas would be seeded with native grasses to reduce the potential for erosion except the levee crown where the aggregate base would be reinstalled.

The change in levee width and levee height is not a significant change to the project area topography. The project would not affect project area geology. The removal or import of soil material for the levee construction would not significantly affect the soil condition in the project area. The project would not alter flows within the channel, nor would it promote sedimentation downstream.

3.1.3 Land Use and Socioeconomics

A detailed discussion of socioeconomics (population, housing, and the economy) and land use are presented in the 1996 SEIS/EIR. The project area is located within the Sacramento metropolitan area. The predominant land use in the area is residential, with some commercial, industrial, and public land also included in the project area. The project would not result in any long-term changes in land use or socioeconomics in the area. The residential development adjacent to the levee in both reaches would remain the same, and the staging areas would be returned to pre-project uses after construction.

As directed in Executive Order 12898, all Federal agencies must identify and address adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. There are no minority or low-income populations that would be disproportionately affected by the proposed action, however a small homeless encampment located on the landside levee toe in the area between the UPRR tracks and Del Paso Boulevard would be permanently displaced. The vegetation located at the landside toe of the levee and within the area where the slope stability would be implemented currently provides cover for this small encampment. That vegetation

would be removed in order to repair the levee toe and construct this feature. All nearby residents would benefit equally from the project.

3.1.4 Fisheries

Fisheries and fish habitat is associated with the American River and vegetation along its shoreline. The Central Valley steelhead distinct population segments (DPS) and its habitat is present on the lower American River adjacent to the project reach. Construction would take place on the levee crown and the approximate 20-foot area adjacent to the waterside toe of the levee. The closest the American River channel gets to the project area is approximately 1,700 feet. There would be no construction in, or near, the American River. A slough, which does not support fish habitat, is adjacent to the Jedediah Smith Recreational Trail on the waterside of the levee and is approximately 100 feet from the slurry wall construction on the upstream, and middle sections of the project.

The contractor would be required to develop and submit a Storm Water Pollution Prevention Plan (SWPPP) to minimize the potential for soil or contaminants to enter the slough. Erosion/sediment controls such as hay bales, straw wattles, and silt fencing at the waterside toe of the levee, along with water-filled barriers, would be utilized to prevent soil from entering the slough. Water trucks would be used for dust suppression along all areas of disturbed soil and along the haul routes on the top of the levee, and at the levee toes. The contractor would not be allowed to store fuels, lubricants, or other potential hazardous substances on site. If equipment is to be refueled on site, the contractor would take measures to avoid and contain any spills. The contractor would be required to develop and submit a Spill Prevention and Countermeasure Plan (SPCP) prior to initiating construction activities. The SWPPP and SPCP must be approved by the Corps. No riparian habitat would be affected by construction. This project would have no effect on fisheries, fish habitat, or shaded riverine aquatic (SRA) habitat.

3.1.5 Hazardous and Toxic Waste

A Phase I environmental site assessment was conducted to identify and evaluate potential hazardous and toxic waste issues in and near the project area. The purpose of the Phase I was to review available documentation regarding past and current land use activities to assess the possible presence of hazardous substances and wastes. The site assessment was completed in December 2011 and concluded that there is no apparent hazardous and toxic waste contamination within the study area. If any evidence of hazardous and toxic waste had been found, then more detailed studies including field sampling and analysis would have been conducted to determine the nature and extent of any hazardous and toxic waste.

3.2 Recreation

Recreation is the first resource considered in detail.

3.2.1 Existing Conditions

The project area is located along the north bank of the lower American River within the American River Parkway. The American River Parkway consists of a 5,000-acre regional park along the riparian corridor stretching from the confluence with the Sacramento River upstream to Folsom Lake. The Parkway is valuable regional resource which attracts bicyclists, runners, walkers, horseback riders, and rafters. The Sacramento County Department of Regional Parks (County Parks) is the agency with primary responsibility over the American River Parkway.

The lower American River is a Federally- and State-designated Wild and Scenic River. The lower American River was included in the Federal and State Wild and Scenic Rivers systems because of some or all of its fisheries, wildlife, scenic, and recreational values, but primarily its recreation and anadromous fishery values

The primary recreational feature within the Parkway which could be affected by the project is the Jedediah Smith Recreation Trail, which provides bicycle, pedestrian, and equestrian trails from Discovery Park to Folsom Lake. The trail also connects with the Sacramento River Trail and Old Sacramento State Historic Park, and many people use it daily to commute to work by bicycle into Downtown Sacramento. The southern terminus of the Sacramento Northern Bike Trail is located at the point where the Jedediah Smith Recreation Trail crosses Del Paso Boulevard headed downstream. The Sacramento Northern Bike Trail transitions to the top of the levee from the Jedediah Smith Recreation Trail at this location and continues north through Sacramento County. The levee crown is covered with a compacted aggregate base material that is also used for pedestrian recreational activities.

Within the project boundary there is no vehicular access for recreationists into the American River Parkway. There are two formal locations where pedestrians and bikers may access the Jedediah Smith Recreation Trail. The upstream access point is at the maintenance ramp at Lathrop Way. The other is at the downstream end of the reach at Del Paso Boulevard.

3.2.2 Environmental Effects

Basis of Significance

Effects to recreational resources are considered significant if construction would result in any of the following:

- Eliminate or severely restrict access to recreational facilities and resources.
- Result in substantial long-term disruption of use of an existing recreation facility.
- Inconsistency with the State or Federal Wild and Scenic Rivers Act.

No Action Alternative

Under this alternative, the levee improvement project would not be constructed; therefore there would be no effects on recreation. The bike trail and levee roads would remain open, and there would be no changes to the project area.

Proposed Levee Improvements

Construction of the levee improvements would have short-term effects on recreational use in the American River Parkway. The road on the top of the levee would be closed to pedestrian access during the six month construction period. There would be no effects on the Jedediah Smith Recreation Trail or the equestrian trails within the American River Parkway. The proximity of trail users and other recreationists to construction equipment and activities (noise, visual effects, and smells) may also degrade recreational experiences.

There are potential impacts to recreation on the Sacramento Northern Bike Trail. Construction of the slurry cutoff wall in the downstream section of the project would temporarily close approximately 2,400 feet of the Sacramento Northern Bike Trail from Del Paso Boulevard to the end of Railroad Drive for three months in 2014 (Plate 13).

The project would neither adversely affect the resources for which the American River was designated under the Wild and Scenic Rivers Act nor adversely affect the river's free-flowing status. All construction activities would be at least 1,700 feet away from the river. Implementation of the project would be consistent with the Wild and Scenic Rivers Act.

3.2.3 Mitigation

In order to mitigate for effects to the recreation trail use, measures would be taken to keep the public informed of the project. To ensure public safety, warning signs and signs regarding restricted access, trail closures and detours would be posted before and during construction, as necessary. Detour routes would be clearly marked, and fences erected in order to prevent access to the project area.

In areas where recreational traffic intersects with construction vehicles, traffic control would be utilized in order to maintain public safety. Public outreach would be conducted through mailings, posting signs, coordination with interested groups, and meetings, if necessary, in order to provide information regarding changes to recreational access in and around the Parkway.

In the upstream and middle sections of the project where the Jedediah Smith Recreational Trail is in close proximity to the waterside levee toe, water-filled barriers would be installed as a safety measure to keep equipment, soil or other materials from encroaching on the trail.

Any effects to recreation would be temporary and considered less than significant. Therefore, no further mitigation would be required.

3.3 Vegetation and Wildlife

3.3.1 Existing Conditions

There are five major plant communities and cover types in the project area: ruderal herbaceous, ornamental landscaping, developed areas, riparian forest and scrub, and open water (American River). A plant community is a natural or human influenced assemblage of plants that have common characteristics and can be easily identified by key species. These communities and associated wildlife are described below. Sensitive native communities are considered native-diverse communities that are regionally uncommon or of special concern to Federal, State, and local resource agencies. The riparian forest and scrub, and open water habitats are considered sensitive native communities. Due to their local significance native oak trees are separately addressed.

Ruderal Herbaceous. Ruderal herbaceous community is a native community that occurs in the project area. This community is located on the levee slopes and landside area between the levee and fences of the nearby buildings and in undeveloped properties. Areas of ruderal herbaceous community also occur in the waterside area between the levee, the slough, and American River.

This community is dominated by annual grasses such as ripgut brome (*Bromus diandrus*), wild oat (*Avena fatua*), and forbs including horsetail (*Equisetum hyemale*). Ruderal herbaceous community provides cover and foraging habitat for resident and migratory songbirds, small mammals, and reptiles.

The ruderal herbaceous community within the project area is predominantly limited to the grasses on the slopes of the levee and in the undeveloped properties on the landside of the levee. The grasses on the levee occur as a result of restoration from previous levee projects and they are mowed as part of the maintenance program by ARFCD to reduce wildfire danger.

Ornamental Landscape. Ornamental landscape community is a nonnative community that occurs within the project area primarily near the landside toe and around office buildings in the upstream section. Most of the vegetation in this community is nonnative vegetation used to landscape the easement between the landside toe of the levee and Lathrop Way. Vegetation type and size are managed by property owners and is usually disturbed by maintenance practices and artificial irrigation. Some of this

vegetation is trimmed by ARFCD while performing maintenance along the landside easement. This community provides nesting, cover, and foraging habitat for resident and migratory songbirds, and other wildlife species that have become adapted to urban areas.

Developed Areas. Nonnative communities occur in areas developed for urban use in the project area. Developed areas include sidewalks, roadways, buildings, railroad tracks, parking lots, and recreation trails. This cover type provides little to no habitat for wildlife, and has little to no vegetation and ground cover.

Riparian Forest and Scrub. Riparian forest and scrub is a native community that occurs in the project area. This community consists of forested areas and underbrush habitat along the American River and adjacent slough. This community includes native and nonnative trees, shrubs, vines, and brush in narrow bands along the river and slough and larger expanses in the area between the two. There is no riparian habitat within the project boundary.

Open Water. The American River is located approximately 1,700 feet west and south of the reach and is well outside the construction footprint. There are no wetlands in the project area.

Native Oak Trees. The City of Sacramento's Heritage Tree Ordinance, Chapter 12.64 Heritage Trees (Oak tree ordinance), regulates the protection of significant specimen trees existing in the city, particularly oak tree species removal or disturbance to all species of heritage trees in the City of Sacramento. The ordinance applies to all trees with a trunk circumference of 100 inches (31 inch diameter at breast height [dbh]), or greater, or any native oak (*Quercus*), buckeye (*Aesculus California*), or sycamore (*Platanus Racemosa*) having a trunk circumference of 36 inches (11.5 inch dbh), or greater. The ordinance applies to any native oak trees immediately within, or adjacent to the project area. Typically, only trees 6 inches dbh, or greater, are protected. In the project area there are 3 Valley Oaks from 15 inches to 29 inches in diameter. Adjacent to the middle section of the project reach is approximately 22 acres of wooded habitat that has many large, mature Valley Oaks and Live Oak trees, however, their number and size are unknown, as the property is privately owned and real estate access has not been obtained. One tree identified for potential removal is located on this property; however, the current lack of real estate access may require relocation/redesign of a proposed temporary ramp.

3.3.2 Environmental Effects

Basis of Significance

A project would significantly affect vegetation and wildlife if it would, in comparison to the no-action baseline: (1) significantly reduce the amount of native vegetation and wildlife habitat in the project area to a point that native wildlife could not live or survive in the project area; or (2) permanently remove or disturb sensitive native communities.

No Action

Under the No Action alternative, the affected levee reach would continue to be maintained by local levee maintenance districts. Maintenance activities typically include mowing and herbicide treatment to the levee slopes to regulate vegetation growth. Under this alternative the proposed project would not be built. There would be no change to the native vegetation or wildlife in the project area; however, emergency actions taken to prevent flooding in the possible event of levee failure may result in loss of vegetation.

Construct Levee Improvements

One tree is anticipated for removal in the upstream section of the project in order to accommodate construction activities and meet levee safety requirements. One tree in the downstream section would be removed to implement the installation of the slope stability/seepage berm, and to meet levee safety requirements. The tree to be removed in the upstream section is adjacent to a special status critical habitat. Removal of these trees may require a permit from the City of Sacramento. The trees are 15" to 23" dbh and the mitigation planting would follow the recommendations proposed by the U.S. Fish and Wildlife Service (USFWS) in their Fish and Wildlife in the Coordination Act Report.

Common wildlife species present within or near the project area may be directly or indirectly affected by the implementation of the proposed project. Direct impacts may include mortality or injury to individuals present within the project area due to vegetation removal, movement of heavy equipment, and construction noise.

Impacts related to removal of two oak trees would be less than significant with mitigation.

3.3.3 Mitigation

Mitigation would be coordinated with the USFWS as required by the Fish and Wildlife Coordination Act. It is anticipated that USFWS would recommend that the project replace the oak trees removed along the upstream and downstream segments, at an inch for inch ratio based on dbh. Typically, tree mitigation is implemented at a one gallon planting per every $\frac{1}{4}$ inch of dbh. In this case, the 38 inches combined dbh would result in 152 plantings. The Corps would work with USFWS, County Parks, and the Department of Water Resources to implement the required mitigation. It is often desirable to install the plantings at established mitigation sites, in order to maximize the use of established irrigation systems and maintenance programs. All tree removal activities would be preformed by, or under the direct supervision of, a certified arborist. With mitigation, impacts related to removal of two oak trees would be less than significant.

3.4 Special Status Species

3.4.1 Existing Conditions

Regulatory Setting

Certain special status species and their habitats are protected by Federal, State, or local laws and agency regulations. The Federal Endangered Species Act (FESA) of 1973 (50 CFR 17) provides legal protection for plant and animal species in danger of extinction. This act is administered by USFWS and the National Marine Fisheries Service (NMFS). The California Endangered Species Act (CESA) of 1977 parallels FESA and is administered by the California Department of Fish and Game (CDFG). Other special status species lack legal protection, but have been characterized as “sensitive” based on policies and expertise of agencies or private organizations, or policies adopted by local government. Special status species are those that meet any of the following criteria:

- Listed or candidate for listing under the Federal Endangered Species Act of 1973 (50 CFR 17).
- Listed or candidate for listing under the California Endangered Species Act of 1977.
- Nesting bird species and active nests of birds listed under the Migratory Bird Treaty Act.
- Species listed in the Bald and Golden Eagle Protection Act.
- Fully protected or protected species under stated CDFG code.
- Wildlife species of special concern listed by the CDFG.
- Plant species listed as Rare under the California Native Plant Protection Act.
- Plant species listed by the California Native Plant Society.
- Species protected by local ordinances such as the Sacramento County Ordinance, Chapter 19.12, Tree Preservation and Protection.
- Species protected by goals and policies of local plans such as the American River Parkway Plan, which includes anadromous and resident fishes, as well as migratory and resident wildlife.
- Essential Fish Habitat listed under the Magnuson-Stevens Act. Essential Fish Habitat is defined in the Magnuson-Stevens Act as “. . . those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The act requires that Federal agencies consult with NMFS when any activity proposed to be permitted, funded, or undertaken by a Federal agency may have adverse effects on designated Essential Fish Habitat.

3.4.2 Special Status Species Evaluation

A list of Federally listed and candidate species, and species of concern that may be affected by projects in USGS quad East Sacramento was obtained on February 27,

2012 via the USFWS website. In addition, a search of the California Natural Diversity Database (CNDDB) conducted on February 28, 2012 indicated several State and Federal listed species have been reported within, or near the project boundaries. The CNDDB showed that only the Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), and the valley elderberry longhorn beetle (*Desmoceros californicus dimorphus*) (VELB) have been reported within one half mile of the project boundary. The USFWS and CNDDB lists are included in Appendix A. Elderberry shrubs (*Sambucus sp.*) were also identified within the project area as elderberry savanna due to the density of shrubs. The shrubs are the sole host plant for the beetle. In this case the site is designated as critical habitat for the VELB. The site is located directly adjacent to a section of the upstream segment of the project on the landside of the levee.

Special status species that were not identified as occurring or having habitat in the project area are not discussed further in this document. The following Federal and State listed terrestrial special status species were identified as having the potential to occur in the vicinity of the project area and be impacted by construction activities:

- Valley elderberry longhorn beetle (Federal Threatened) and Critical Habitat;
- White-tailed kite (CDFG Fully Protected)
- Swainson's hawk (State Threatened);

The green sturgeon (*Acipenser medirostris*), the delta smelt (*Hypomesus transpacificus*) and its critical habitat, the Central Valley steelhead (*Oncorhynchus mykiss*) and its critical habitat, the Central Valley spring-run Chinook salmon (*Oncorhynchus tshawytscha*) and its critical habitat, and the Sacramento River winter-run Chinook salmon are listed by the USFWS as "Federal Threatened or Endangered species that Occur in or may be Affected by Projects in the Sacramento East U.S.G.S. 7 ½ Quad", however, there have been no occurrences reported in the CNDDB. The project area is over 1,700 feet away from the American River and is approximately two miles from the Sacramento River. The Corps has therefore determined that the project would have no effect on these species and they will not be further discussed in this document.

Valley Elderberry Longhorn Beetle

The VELB is endemic to the riparian habitats in the Sacramento and San Joaquin Valleys where it resides on elderberry (*Sambucus spp.*) plants. The beetle's distribution is patchy throughout the remaining riparian forests of the Central Valley from Redding to Bakersfield (USFWS 1984). The beetle is a pith-boring species that depends on elderberry plants during its entire life cycle. The beetle tends to be located in population clusters that are not evenly distributed across the Central Valley (Barr, 1991). In October 2006, the USFWS recommended, based on a review of the species status, it be delisted, however, the USFWS has taken no formal action as yet.

The Parkway, with an abundance of elderberry shrubs in a well-connected corridor, provides high quality habitat for the VELB. As a part of their recovery plan, the

Service has concluded that two areas in Sacramento County should be designated Critical Habitat for VELB based on the densest known population of the beetle. As discussed above, the project area is located adjacent to one critical habitat site. There are also approximately 12 elderberry shrubs adjacent to the levee in the slope stability section. The exact number of shrubs and size of associated stems must be approximated due to the presence of a homeless encampment.

White-tailed Kite

White-tailed kite (*Elanus leucurus*) is a common to uncommon, yearlong resident in coastal and valley lowlands and is rarely found away from agricultural areas. However, it does inhabit herbaceous and open stages of most habitats, mostly in cismontane California. The main prey of white-tailed kite is voles and other small, diurnal mammals, but it occasionally preys on birds, insects, reptiles, and amphibians. White-tailed kite forages in undisturbed, open grasslands, meadows, farmlands and emergent wetlands. Nests are made of loosely piled sticks and twigs and lined with grass, straw, or rootlets and placed near the top of a dense oak, willow, or other tree stand; usually 6-20 meters (20-100 feet) above ground. Nests are located near open foraging areas in lowland grasslands, agricultural areas, wetlands, oak-woodland and savannah habitats, and riparian areas associated with open areas. White-tailed kite are recorded as occurring in several locations along the American River and the riparian habitat in the vicinity of the project area provides suitable nesting habitat for this species. The most recent record of a nesting white-tailed kite in CNDDDB was recorded in August of 2009 and is located over a half mile east of the project area along the American River. Other CNDDDB records (1974 and 1988) indicate observations of nests even further away from the project area.

Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is an uncommon breeding resident and migrant in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen County, and the Mojave Desert. Swainson's hawks breed in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah in the Central Valley and forages in adjacent grasslands or suitable grain or alfalfa fields, or livestock pastures. Swainson's hawks breed in California and over winter in Mexico and South America. Swainson's hawks usually arrive in the Central Valley between March 1 and April 1, and migrate south between September and October. Swainson's hawks nest usually occur in trees near the edges of riparian stands, in lone trees or groves of trees in agricultural fields, and in mature roadside trees. Valley oaks, Fremont cottonwoods, walnuts, and large willows with an average height of about 58 feet, and ranging from 41 to 82 feet, are the most commonly used nest trees in the Central Valley. Suitable foraging areas for Swainson's hawk include native grasslands or lightly grazed pastures, alfalfa and other hay crops, and certain grain and row croplands. Swainson's hawks primarily feed on voles; however, they will feed on a variety of prey including small mammals, birds, and insects. Records in the CNDDDB (2001, 2005, 2006, and 2011) indicate that the Swainson's hawk have

been observed nesting within one half mile of the project area, and as close as the VELB critical habitat.

Raptor surveys would be conducted in the spring prior to each construction season of the project.

3.4.3 Environmental Effects

Basis of Significance

Adverse effects on special status species were considered significant if an alternative would result in any of the following:

- Direct or indirect reduction in the growth, survival, or reproductive success of species listed or proposed for listing as threatened or endangered under the Federal or State Endangered Species Acts.
- Direct mortality, long-term habitat loss, or lowered reproduction success of Federally or State-listed threatened or endangered animal or plant species or candidates for Federal listing.
- Direct or indirect reduction in the growth, survival, or reproductive success of substantial populations of Federal species of concern, State-listed endangered or threatened species, species of special concern, or regionally important commercial or game species.
- An adverse effect on a species' designated critical habitat.

No-Action Alternative

Under the no action alternative, there would be no effects on existing special status species or critical habitat. The types of special status species and their associated habitat would remain the same. Current levee maintenance, recreation, and public activity would not change. The effects of these activities on special status species and their associated habitat would be the same.

Construct Levee Improvements

Construction of the NEMDC would directly and indirectly affect the habitat (elderberry shrubs) of the Federally-listed valley elderberry longhorn beetle. The project could also result in direct and indirect affects to the white-tailed kite and the Swainson's hawk. These effects could be considered significant to these special status species unless mitigated.

Effects to Valley Elderberry Longhorn Beetle. Construction of the NEMDC levee improvements would result in direct and indirect affects to several elderberry shrubs. Direct effects would include trimming and/or removal of shrubs. Indirect effects would

include physical vibration and increase in dust during operation of equipment and trucks during construction activities.

The levee repair work would require an excavator operated from the top of the levee to remove soil to create the trench for the cutoff wall. In the upstream segment of the project the remaining soil would be placed in dump trucks at the landside toe, and the soil would be transported off-site for disposal. The maintenance road along the landside toe is directly adjacent to the VELB critical habitat. The trucks would use this as a two-way haul route between the staging areas. The shrubs are not immediately adjacent to the haul route and would not be directly impacted by the construction work, but water-filled barriers would protect the critical habitat along the haul route. The west staging area in the upstream section is also adjacent to the critical habitat and would be used for the construction trailer(s) and the slurry batch plant. The construction trailer would be positioned between the staging area and the critical habitat to act as a buffer.

In the downstream section of the project, levee repairs/slope stability would require removal of the vegetation in this area including approximately 12 elderberry shrubs with one stem each greater than 5 inches in diameter at ground level, and one oak tree. Estimates related to the elderberry shrubs were necessary due to the presence of a homeless encampment located within the shrubs. The situation was considered unsafe for entry by Corps or USFWS staff. Estimates were based on observations taken on top of the levee and adjacent to the UPRR tracks. This area is considered non-riparian however, as a conservative approach, the shrubs are assumed to have exit holes. Initial formal consultation has been initiated based on this information. When the homeless encampment has been removed prior to construction activities in this section, protocol surveys would be conducted for the elderberry shrubs and consultation would be reinitiated to recalculate compensation requirements. Other shrubs located within this area would not be directly impacted by the construction work, but to avoid damage to the shrubs by the equipment, they would be protected in place with concrete or water-filled barriers. The barriers would be placed as far from the dripline of the shrubs as possible. Due to the limited space within this construction area, it would be difficult to observe the USFWS recommended 100-foot radius buffer zone for protection of the elderberry shrubs. The Corps is proposing a 20-foot radius buffer zone, using barriers for protection, and limiting construction until after the no-disturbance period (after June 15).

3.4.4 Mitigation

Valley Elderberry Longhorn Beetle

Consultation under Section 7 of the Endangered Species Act has been initiated with the USFWS to assess potential impacts and required compensation. The Corps has requested concurrence from USFWS with the determination that potential project impacts may affect, but are not likely to adversely affect the VELB. The Corps also proposed compensation for the loss of twelve elderberry shrubs. This would require the planting of 72 elderberry seedlings and 144 associated native plantings. Transplants and compensation plantings would be proposed at an existing mitigation site, such as Goethe

or Rossmoor. However, if adequate space is not available at existing mitigation site, a mitigation bank would be used. To minimize potential take of the VELB, the following measures taken from the USFWS “Conservation Guidelines for the Valley Elderberry Longhorn Beetle,” July 1999 would be incorporated into the project:

- A minimum setback of 100 feet from the dripline of all elderberry shrubs will be established, if possible. If the 100 foot minimum buffer zone is not possible, the next maximum distance allowable will be established. Due to the limited options for locating the staging area, as well as the limited space within the staging area, it would be difficult to observe the required 100-foot radius buffer zone for protection of the elderberry shrubs. The Corps is proposing a 20-foot radius buffer zone, using concrete or water-filled barriers for protection, and limiting construction until after the no-disturbance period (after June 15). These areas would be fenced, flagged, and maintained during construction.
- Environmental awareness training would be conducted for all workers before they begin work. The training would include status, the need to avoid adversely affecting the elderberry shrub, avoidance areas and measures taken by the workers during construction, and contact information.
- Signs would be placed every 50 feet along the edge of the elderberry buffer zones. The signs would include: “This area is the habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment.” The signs should be readable from a distance of 20 feet and would be maintained during construction.

Impacts would be less than significant with implementation of the USFWS conservation guidelines for the beetle.

Several factors limit the available construction season for Corps projects related to levee repair or improvements. The two most common are the non-flood season established by the State of California (April 15th – October 31st) and the seasonal requirements of sensitive species that may occur in the project area. In this case, the presence of VELB habitat has reduced the construction season by two months by limiting the construction start date to no earlier than June 15th due to protective measures.

White-tailed Kite and Swainson’s Hawk

Whenever possible, construction would be timed to avoid activities near active bird nests or young of birds that breed in the area. The nesting seasons associated with the potential presence of raptors and protected avian species could further reduce the available construction season into September. For this reason, it would be unrealistic to propose no construction would take place during the breeding/nesting seasons of these avian species during the available construction season (June 15 – October 1).

The Corps would however, take steps to avoid and minimize impacts to raptors and other protected avian species. If it is not feasible for construction to occur outside of nesting periods (April-September 15th), a qualified biologist would survey the project area, and all areas within one-half mile of the project, prior to initiation of construction. If the survey determines that a nesting pair is present, the Corps would coordinate with CDFG and/or USFWS, and the proper avoidance and minimization measures would be implemented. To avoid potential effects to nesting Swainson's hawks, CDFG typically requires the avoidance of nesting sites during construction activities. These measures include avoiding construction during the breeding season and monitoring of the nest site by a qualified biologist. The project is currently scheduled to begin in late summer 2013. It is anticipated that the timing of the project would begin after the young Swainson's hawks and white-tailed kites have fledged which is normally by July-August.

The proposed mitigation measures would reduce the effects on the white-tailed kite and the Swainson's hawk to less than significant.

3.5 Air Quality

3.5.1 Existing Conditions

Regulatory Background. The Federal Clean Air Act establishes National Ambient Air Quality Standards (AAQS) and delegates enforcement to the states, with direct oversight by the U.S. Environmental Protection Agency (EPA). In California, the Air Resources Board (CARB) is the responsible agency for air quality regulation.

The California Clean Air Act established California AAQS. These standards are more stringent than Federal standards and include pollutants not listed in Federal standards. All Federal projects in California must comply with the stricter State air quality standards. The Federal standards and local thresholds for Sacramento County are shown in Table 1.

On November 3, 1993, the U.S. EPA issued the General Conformity Rule, stating Federal actions must not cause or contribute to any violation of a National AAQS or delay timely attainment of air quality standards for those areas designated as in nonattainment of Federal standards. A conformity determination is required for each pollutant where the total of direct and indirect emissions caused by a Federal action in a nonattainment area exceeds *de minimus* threshold levels listed in the rule (40 CFR 93.153).

Table 1. Air Emission Thresholds for Federal and Local Criteria Pollutants

Criteria Pollutant	Federal Standard (tons/year)	SMAQMD Threshold (lbs/day)
NO _x	25**	85
CO	100	*
SO	100	*
PM ₁₀	100	*
ROG	25**	*

NO_x = nitrogen oxidesPM₁₀ = particulate matter

CO = carbon monoxide

ROG = reactive organic gases

SO = sulfur oxides

* = default to State standard (see California Ambient Air Quality Standards, Appendix B)

** = rates for “severe” Federal nonattainment areas [Federal Register (40 CFR), 1993]

SMAQMD = Sacramento Metropolitan Air Quality Management District

Source: SMAQMD, 2011

Local Air Quality Management. The Sacramento area is included in the Sacramento Valley Air Basin. The air quality in the area is managed by the Sacramento Metropolitan Air Quality Management District (SMAQMD), which is included in the Sacramento Federal Ozone Nonattainment Area (SFNA) and is also subject to regulations, attainment goals, and standards of the U.S. and California EPAs. The EPA General Conformity Regulation requires that “serious” designated nonattainment areas further reduce nitrogen oxides (NO_x) and reactive organic gases (ROG) thresholds to 50 tons/year rather than 100 tons/year. On February 14, 2008, CARB, on behalf of the air districts in the Sacramento region, submitted a letter to EPA requesting a voluntary reclassification (bump-up) of the Sacramento Federal Nonattainment Area from a “serious” to a “severe” 8-hour ozone nonattainment area with an extended attainment deadline of June 15, 2019, and additional mandatory requirements. On May 5, 2010 EPA approved the request effective June 4, 2010 (SMAQMD, 2011). The SFNA is thus designated a “severe” nonattainment area for the National 8-hour AAQS for ozone.

With respect to the State and Federal 24-hour particulate matter 10 microns or larger (PM₁₀) AAQS, Sacramento County is designated as a nonattainment area. Additionally, on October 16, 2006, the EPA promulgated a new 24-Hour standard for PM_{2.5}. This change lowered the daily standard from 65µg/m³ to 35µg/m³ to protect the general public from short term exposure of the fine particulate matter. Sacramento does not meet the new standards (EPA, 2006). The California Clean Air Act of 1988 requires nonattainment areas to achieve and maintain the State AAQS by the earliest practicable date and local air districts to develop plans for attaining State ozone standards.

Sources of Pollutants/Sensitive Receptors. The main sources of emissions contributing to elevated ozone and PM₁₀ concentrations in this area of the Sacramento Air Basin are vehicular emissions and airborne pollutants from road dust and plowing of fields. Light industry and emissions from recreational boaters and Sacramento Executive

Airport also contribute to reduced air quality in the region. Sensitive receptors in the project area include residents and wildlife.

3.5.2 Environmental Effects

Basis of Significance

A project would significantly affect air quality if it would: (1) violate any ambient air quality standard; (2) contribute on a long-term basis to existing or projected air quality violation; (3) expose sensitive receptors to substantial pollutant concentrations; or (4) not conform to applicable Federal and State standards, and local thresholds on a long-term basis.

No Action

Under the no action alternative, the project would not affect air quality in the project area. Air quality would continue to be influenced by climatic and geographic conditions, and local and regional emissions from vehicles, and local commercial and industrial land uses. However, air quality is expected to improve in the future. The CARB and the SMAQMD will be implementing stricter ozone precursor and PM₁₀ standards.

Construction of Levee Improvements

Emissions associated with the project would be short-term during construction. Combustion emissions would result from the use of construction equipment, truck haul trips to and from commercial sources and disposal sites, and worker vehicle trips to and from the work areas. Exhaust from these sources would contain ROG, carbon monoxide (CO), NO_x, PM₁₀, and carbon dioxide (CO₂). Exhaust emissions would vary depending on the type of equipment, the duration of use, and the number of construction workers and haul trips to and from the construction site. Fugitive dust would also be generated during disturbance of the ground surfaces during construction. Although, much of the material removed during the levee degrading process would likely be suitable for the construction of the slurry wall, as well as reconstruction of the levee, due to staging area limitations, this material would be off-hauled and new material would be imported for levee reconstruction. This will be reflected in the air quality emissions calculations regarding the number of haul trips and round trip distance.

The SMAQMD Road Construction Emissions Model (v. 6.3.2, July 2009) was used to estimate project emission rates for ROG, CO, NO_x, PM₁₀, PM_{2.5}, and CO₂. The estimated equipment to be used, volume of material to be moved, and disturbance acreages were compiled to determine the data to input into the emissions model. The emission calculations are based on standard vehicle emission rates built into the model.

Details and results of the calculations for each reach are provided in Appendix B. The estimated emissions are shown in Tables 2a and 2b.

**Table 2a. Estimated Air Emissions for NEMDC Upstream Segment
(Construction in 2013)**

	ROG	CO	NO_x	PM₁₀	PM_{2.5}	CO₂
Total emissions (lbs/day)	12.1	96.1	88.7	43.9	11.8	12,389.2
SMAQMD thresholds (lbs/day)	N/A	N/A	85	N/A	N/A	N/A
Total (tons/construction project)	0.4	3.3	3.1	1.0	0.3	429.1
Federal standards (tons/year)	25	100	25	100	N/A	N/A

**Table 2b. Estimated Air Emissions for NEMDC Downstream Segment
(Construction in 2014)**

	ROG	CO	NO_x	PM₁₀	PM_{2.5}	CO₂
Total emissions (lbs/day)	8.6	57.5	66.1	23.0	6.9	9,465.7
SMAQMD thresholds (lbs/day)	N/A	N/A	85	N/A	N/A	N/A
Total (tons/construction project)	0.2	1.4	1.6	0.4	0.1	235.6
Federal standards (tons/year)	25	100	25	100	N/A	N/A

Note: Estimates rounded.

Tables 2a and 2b summarize the estimated emissions (in pounds per day and total tons for the project) for the project and compare them to the Federal standards and local thresholds. Based on the air quality analysis performed, the estimated emissions totals for the NEMDC project would be below the Federal conformity *de minimis* thresholds.

The tables also show that construction emissions of PM₁₀ and ROG would each be less than the *de minimis* thresholds established by the U.S. EPA for conformity analyses. In addition, the best management practices (BMPs) listed in Section 3.5.3 would be implemented to reduce the NO_x emissions below the SMAQMD threshold. As a result, the proposed action does not require an in-depth conformity analysis to evaluate ambient air quality concentrations and instead is presumed to conform to the region's ozone and PM₁₀ State implementation plan. Therefore, the Corps has determined the proposed action is exempt from the conformity rule.

The project would not contribute on a long-term basis to existing or projected air quality violations, or expose sensitive receptors to substantial pollutant concentrations. Air quality impacts related to implementation of the project would be less than significant.

3.5.3 Mitigation

Emissions would result from the use of construction equipment, truck haul trips to and from the borrow sites, and worker vehicle trips to and from the construction sites. Prior to construction, the contractor would submit a construction equipment list to be used in the project for approval by the Corps and SMAQMD. SMAQMD would confirm the fleet emissions and endorse the list only if the total fleet emissions would meet a 20% reduction in NO_x and a 45% reduction in PM₁₀ in comparison to the state fleet emissions

average. The contractor would be required to follow the requirements of SMAQMD's standard mitigation program (Appendix B). Any remaining emissions over the NO_x threshold should be reduced via a mitigation fee payment. The current cost of reducing one ton of NO_x is \$16,640 (\$8.32/lb), however, SMAQMD has already approved an increase to the mitigation fee to \$17,080 which will be in place by mid-2012. The contractor would be responsible for payment of any required mitigation and administrative fees.

The standard mitigation measures for the SMAQMD Recommended Mitigation for Reducing Emissions from Heavy-Duty Construction Vehicles are:

- Use diesel-fueled equipment manufactured in 2003 or later, or retrofit equipment manufactured prior to 2003 with diesel oxidation catalysts; use low-emission diesel products, alternative fuels, after-treatment products, and/or other options as they become available.
- Maintain properly functioning emission control devices on all vehicles and equipment.
- The contractor would provide a plan, for approval by the Corps and SMAQMD, demonstrating that the heavy-duty (greater than 50 horsepower) self-propelled off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project wide fleet-average 20% NO_x reduction and 45% particulate reduction compared to the most recent CARB fleet average at time of construction; and
- The contractor shall submit to the Corps and SMAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of the construction project. The inventory shall include the horsepower rating, engine production year, and projected hours of use for each piece of equipment. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs. At least 48 hours prior to the use of subject heavy-duty off-road equipment, the project representative shall provide SMAQMD with the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman.
- The project shall ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40% opacity for more than three minutes in any one hour. Any equipment found to exceed 40% opacity (or Ringelmann 2.0) shall be repaired immediately, and [DERA, City of x, SMAQMD, etc.] shall be notified within 48 hours of identification of non-compliant equipment. A visual survey of all in-operation equipment shall be made at least weekly, and a monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly

summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey. The SMAQMD and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this section shall supersede other SMAQMD or state rules or regulations.

- If at the time of construction, the SMAQMD has adopted a regulation applicable to construction emissions, compliance with the regulation may completely or partially replace this mitigation. Consultation with SMAQMD prior to construction will be necessary to make this determination.

Implementation of the BMPs listed below would reduce air quality degradation caused by dust and other contaminants:

- During construction, implement all appropriate dust control measures, such as tarps or covers on dirt piles, in a timely and effective manner.
- Periodically water all construction areas having vehicle traffic, including unpaved areas, to reduce generation of dust. Application of water would not be excessive or result in runoff into storm drains.
- Suspend all grading, earth moving, or excavation activities when winds exceed 20 miles per hour.
- Water or cover all material transported offsite to prevent generation of dust.
- Sweep paved streets adjacent to construction sites, as necessary, at the end of each day to remove excessive accumulations of soil or dust.
- Cover all trucks hauling dirt, sand, soil, or other loose material, or maintain at least 2 feet of freeboard (minimum vertical distance between top of the load and top of the trailer) in accordance with the requirements of California Vehicle Code Section 23114. This provision would be enforced by local law enforcement agencies.
- Revegetate or pave areas cleared by construction in a timely manner to control fugitive dust.

Impacts to air quality would be temporary and short-term, and would be less than significant with mitigation.

3.6 Climate Change

3.6.1 Environmental Setting

Warming of the climate system is now considered to be unequivocal (IPCC, 2007). Global average surface temperature has increased approximately 1.33 °F over the last one hundred years, with the most severe warming occurring in the most recent decades. In the twelve years between 1995 and 2006, eleven years ranked among the warmest years in the instrumental record of global average surface temperature (going back to 1850). Continued warming is projected to increase global average temperature between 2 and 11 °F over the next 100 years (IPCC, 2007).

The causes of this warming have been identified as both natural processes and as the result of human actions. Increases in greenhouse gas (GHG) concentrations in the Earth's atmosphere are thought to be the main cause of human induced climate change. GHGs naturally trap heat by impeding the exit of solar radiation that has hit the Earth and is reflected back into space. The six principal GHGs of concern are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), hydrofluorocarbons, and perfluorocarbons.

3.6.2 Requirements

CEQA requires that lead agencies consider the reasonably foreseeable adverse environmental effects of projects they are considering for approval. CEQA requires that the cumulative impacts of GHG, even additions that are relatively small on a global basis, need to be considered.

NEPA requires that a “no action” alternative be established. Under the no action alternative, the project would not be constructed, and there would be no construction-related effects on climate change. Locally generated emissions, including levee operations and maintenance, would continue. However, the possible event of levee failure may result in large amounts of GHG emissions during flood-fighting activities, as well as large amounts of emissions resulting from clean-up activities and the repair and/or replacement of flood damaged housing, commercial and industrial properties, and public infrastructure.

3.6.3 Basis of Significance

It is unlikely that any single project by itself could have a significant impact on the environment. However, the cumulative effect of human activities has been linked to quantifiable changes in the composition of the atmosphere, which in turn have been shown to be the main cause of global climate change (IPCC, 2007). The Department of Water Resources has not established a quantitative significance threshold for GHG emissions; instead, each project is evaluated on a case by case basis using the most up to date calculation and analysis methods. The proposed project could result in a significant impact if it would generate GHG emissions:

- Either directly or indirectly, that may have a significant cumulative impact on the environment;
- That would conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs, including the state goal of reducing GHG emissions in California to 1990 levels by 2020, as set forth by the timetable established in AB 32, California Global Warming Solutions Act of 2006.

3.6.4 Greenhouse Gas Emissions

Construction Emissions

Vehicle Emissions. The proposed construction would use large, diesel-fueled construction vehicles during all phases of the project. The partial degrade of the levee crown would result in emissions from bulldozers and graders, as well as emissions from the haul trucks used to dispose of material. The construction of the slurry wall would result in emissions from the jet-grout equipment and haul trucks, as well as the diesel-powered mixers required for the mixing of the cement and bentonite. Diesel-powered cement mixers, pavers, and haul trucks for borrow materials would be used for the reconstruction of the levee crown.

In addition to the construction vehicles, mixers, and haul trucks involved in the actual construction of the project, there would also be GHG emissions from the workforce vehicles. Workers would commute from their homes to the construction site and park in the staging area. Workers are assumed to commute no further than 20 miles from the construction site. During construction, there may be times during which large construction vehicles on the roads slow regular traffic patterns, increasing emissions from vehicles that use the roads on a regular basis. There would also be incidental emissions from the electricity used for lighting.

Operational Emissions. The long-term operations and maintenance of the project sites would remain the same with or without project conditions. Current operations and maintenance involves the periodic mowing and spraying of the levee slopes for fire danger control. While the project does not improve operation maintenance efficiency, the project would also not increase emissions due to operations and maintenance. Additionally, the construction of the project would reduce the possibility of large amounts of GHG emissions from flood-fighting activities in the event of levee failure.

Emissions Models

In response to the concerns regarding GHG emissions, the most recent version of the SMAQMD Road Construction Emissions Model (v. 6.3.2) now generates an output for CO₂. The SMAQMD Road Construction Emissions Model 6.3.2 was based on knowledgeable individuals from SMAQMD, the California Department of

Transportation, CARB, and the U.S. EPA. The emissions model was prepared by Jones & Stokes and Rimpo and Associates, Inc., and used the 26th edition of Walker's Building Estimator's Reference Book (1999).

As discussed in Tables 2a and 2b (Section 3.5.2), estimated CO₂ emissions for the NEMDC upstream segment would total approximately 12,389.2 lbs/day or approximately 429.1 tons of CO₂ for the project; the downstream segment would total approximately 9,465.7 lbs/day or approximately 235.6 tons of CO₂ for the project. It should be noted that although CO₂ emissions can now be calculated, there is no Federal standard, or any State or local threshold to meet, which makes it difficult to fully analyze these impacts.

The CEQA Climate Change Committee has created a guidance document for GHG emissions calculations. This document requires data entry related to construction equipment, workforce transportation, materials transportation, and maintenance and operational emissions. According to this calculator, the total emissions of GHGs for the NEMDC upstream segment project would be approximately 912.0 tons of CO₂ equivalents (CO₂e) and 373.7 tons for the downstream segment. Details and results of the calculations are provided in Appendix B. While the data entered on this form is based on assumptions and estimates, the amounts of CO₂e can be used to determine significance according to CEQA.

3.6.5 Significance Determination

The construction at NEMDC is a relatively small, short-term project and emissions from construction vehicles would occur during a short time period. Using the emissions model and calculations previously discussed in Air Quality (Section 3.5.2), CO₂ emissions are estimated to be less than 2,000 tons per year. Additionally, the CEQA Climate Change Committee GHG emissions calculator estimates total project emissions to be approximately 912.0 tons and 373.7 tons of CO₂e, respectively, for the upstream and downstream segments. No state or Federal agency has yet established significance criteria (thresholds of significance) for GHGs or other impacts to global climate change. However, some statewide standards have been established that provide information about the order of magnitude of emissions that might be considered significant.

Pursuant to AB 32, CARB mandates that only “large” facilities (i.e., stationary, continuous sources of GHG emissions) that generate greater than 25,000 metric tons of CO₂e per year report their GHG emissions. In addition, CARB has released a preliminary draft staff proposal that recommends 7,000 metric tons of CO₂e per year be used as the baseline threshold for impacts. The Council on Environmental Quality (CEQ) has issued draft Federal NEPA guidance that suggests that the effects of projects directly emitting GHGs in excess of 25,000 tons annually be considered in a qualitative and quantitative manner. The CEQ does not propose this reference as a threshold for determining significance, but as “a minimum standard for reporting emissions under the [Clean Air Act]”. It is not the intention of the Corps to adopt a 25,000 or 7,000 metric ton CO₂e threshold of significance; these figures are only listed to provide context to the scale of the emissions from the proposed project.

There would be no increase of long-term emissions (permanent sources) of GHGs from this project. Long-term emissions would be the same with or without the project; maintenance emissions would be the same, and the slurry wall itself has no net long-term emissions. Based on the review discussed above, this project does not conflict with any statewide or local goals with regard to reduction of GHG.

3.6.6 Mitigation Measures

BMPs and implementation of the standard construction mitigation measures as recommended by SMAQMD (Appendix B) would reduce GHG emissions through the same processes that reduce total NO_x and PM₁₀ emissions. These measures are described in Appendix B.

3.7 Water Resources and Quality

3.7.1 Existing Conditions

The Sacramento metropolitan area is situated at the confluence of the American and Sacramento River in a low-lying flood basin. Levees along these rivers provide flood protection and convey water from the Sierra Nevada to the Sacramento-San Joaquin Delta. Winter rains and spring snow melt can cause high flows in the valley's rivers. High water flows stresses levees and berms, weakening them, causing them to erode, and possibly fail. To maintain the flood control system, areas with existing or potential erosion and seepage damage are identified and repaired.

The American River is the major waterway in the project area. The river flow is influenced by upstream dams, local weather, spring snow melt, flood by-passes, and upstream tributaries. Folsom Dam has the greatest effect on water flow in this section of the river. The mean water level for the American River at the confluence of the Sacramento River was 20.44 feet in 2007. The maximum water level of the American River was 33.54 feet and the minimal water level was 16.75 feet at the confluence in 2007 (DWR, 2012a).

The local rivers, lakes, and rainfall recharge the ground water table in the project area. The City of Sacramento utilizes the ground water to supply drinking water to businesses and residential homes. The ground water table is approximately 75 feet below the surface. Average ground water depth can be affected by seasonal changes in water volume in the valley, rivers, and lakes, local rainfall, and urban demand on the ground water (DWR, 2012b).

3.7.2 Environmental Effects

Basis of Significance

A project would significantly affect water resources if it would: (1) result in the loss of a surface or groundwater source; or (2) interfere with existing beneficial uses or water rights.

No Action

Under this alternative, there would be no construction activity to affect water resources or quality in the project area. The surface and groundwater conditions would not change.

Construct Levee Improvements

Levee construction would occur within the levee alignment and landside levee slope. The closest the American River gets to the construction limit is approximately 1,700 feet. The completed levee improvements would not significantly alter the alignment of the current levee nor would they provide for any additional flow capacity beyond the current design requirements. The improvements would stabilize the levees in this section of the levee system to safely convey an emergency release of 160,000 cfs with 3 feet of freeboard to allow for wave or wind action. The improvements would not alter the river hydraulics nor would they alter the downstream capacity of the levee system. The sections of the levee system on the American River upstream and downstream of the project reach are already capable of safely conveying an emergency release of 160,000 cfs with 3 feet of freeboard.

Approximately 10 acres of bare soil would be exposed until construction is completed and the levee slope and staging area would be reseeded. Dust control measures would be implemented on the levee crown, side slopes, maintenance roads and stockpiles to avoid dust and soil from entering the river or other drainages as a result of construction activities. Precautions would be followed to avoid erosion and movement of soils into the drainage system.

In addition, inadvertent spills of oil or fuels from construction equipment could be a source of contamination at work or staging areas. Precautions would be followed to avoid contamination. The contractor would be required to properly store and dispose of any hazardous waste generated at the site. Riparian vegetation and best management practices would prevent sediment and erosion runoff from entering the river.

As the slurry wall would only be deep enough to address through-seepage, there would be no impacts to groundwater. The project would have no impacts to water rights. Water quality impacts related to implementation of the project would be less than significant.

3.7.3 Mitigation

Since the project would disturb more than 1 acre of land, the contractor would be required to obtain a National Pollution Discharge Elimination System (NPDES) permit from the Regional Water Quality Control Board (RWQCB), Central Valley Region. As part of the permit, the contractor would be required to prepare a Storm Water Pollution Prevention Plan (SWPPP), identifying BMPs to be used to avoid or minimize any adverse effects during construction to surface waters.

The following BMPs would be incorporated into the project:

- The contractor would prepare a spill control plan and a SWPPP prior to initiation of construction. The SWPPP would be developed in accordance with guidance from the RWQCB, Central Valley Region. These plans would be reviewed and approved by the Corps before construction began.
- Implement appropriate measures to prevent debris, soil, rock, or other material from entering the water. Use a water truck or other appropriate measures to control dust on haul roads, construction areas, and stockpiles.
- Properly dispose of oil or other liquids.
- Fuel and maintain vehicle in a specified area is designed to capture spills. This area can not be near any ditch, stream, or other body of water or feature that may convey water to a nearby body of water.
- Inspect and maintain vehicles and equipment to prevent dripping of oil or other liquids.
- Schedule construction to avoid the rainy season as much as possible. Ground disturbance activities are scheduled to begin late summer 2013. If rains are forecasted during construction, erosion control measures would be implemented as described in the RWQCB Erosion and Sediment Control Field Manual.
- Maintain sediment and erosion control measures during construction. Inspect the control measures before, during, and after a rain event.
- Train construction workers in stormwater pollution prevention practices.
- Revegetate disturbed areas in a timely manner to control erosion.

Since no significant adverse affects to groundwater or surface water resources are anticipated, no additional mitigation is required.

3.8 Traffic and Circulation

3.8.1 Existing Conditions

Streets in the project area consist of a mix of regional highways, minor traffic arteries and minor industrial/office access streets maintained by the City of Sacramento. Sidewalks are virtually non-existent in the project area and the nearest residences are located approximately 900 feet from the project. The American River Parkway provides recreation trails used for pedestrian traffic (running and walking), horseback riding, and bicycling adjacent to the entire project area.

Roadways adjacent to the reach include: Highway 160, Northgate Boulevard, Del Paso Boulevard, Railroad Drive, and Lathrop Way. With the exception of Highway 160, these roadways are two-lane roadways on both the landside and waterside of the levee. The smaller roads connect industrial area and office complexes to major urban connector roads. Traffic on these streets includes private automobiles, light and heavy (semi-trucks) commercial vehicles, delivery/service vehicles, bicycles and pedestrians. The average daily traffic (ADT) on Del Paso Boulevard at Railroad Drive in 1988 was 9,131 vehicles. The ADT dropped to 4,840 vehicles in 1995. (City of Sacramento, 2012). Traffic volume on these roads peaks during the morning and evening rush hours and reduces in volume during the middle of the day.

The nearest major road to the project area is Highway 160. This highway is a major, four-lane urban roadway that connects residential and commercial areas in downtown Sacramento to the Arden area, the Capitol City Freeway, and other parts of the metropolitan area. Highway 160 is outside of the project area but would be used to access the project area during construction. Types of traffic on Highway 160 include private automobiles, light commercial vehicles, semi-truck trailers, emergency vehicles, public buses, and bicycles. Traffic volume on Highway 160 peaks during the morning and evening rush hour and becomes a steady but lower volume during the day.

Pedestrian traffic is low during the day and peaks in the early evening. Recreation traffic in the American River Parkway and levee bicycle trail is moderate throughout the day. The American River Parkway trail is a paved two-lane bike trail. The levee trail is a gravel road on top of the levee.

The City of Sacramento posts traffic counts on their web site for roadways in the project area. The average daily traffic (ADT) count at Del Paso Boulevard and Railroad Drive was 4,840 cars. This information was from May of 1995 and was the most current information available for this intersection, which is located in the middle of the project reach. It represents the number of vehicles travelling through this intersection during a 24 hour period on an average day, considered to be Tuesday, Wednesday, or Thursday. (City of Sacramento, 2012).

3.8.2 Environmental Effects

Basis of Significance

The project would significantly affect traffic if it would: (1) cause an increase in traffic volume that is substantial in relation to the existing load and capacity of a roadway; (2) cause an increase in safety hazards on an area roadway; or (3) cause substantial deterioration of the physical condition of the nearby roadways.

No Action Alternative

The no action alternative would have no effect on the traffic and circulation in the project area. The existing roadways, bike paths, types of traffic, traffic volume, and circulation patterns would not change.

Construct Levee Improvements

The project would temporarily affect local roads and major urban connector roads used as a haul route during construction. Haul trucks would cause an increase in traffic volume and reduce traffic speeds on local residential roads. Haul trucks would have a minor affect on traffic volume (less than 5%) and traffic speeds on the major urban connector roads.

In the upstream segment, the directional flow of construction is from both ends of the segment toward the center. During construction, the haul trucks would travel between the licensed disposal facility, the commercial borrow pit, and the construction site. Internal haul routes would be located primarily along the landside toe of the levees. External haul routes would require the use of Del Paso Boulevard, Northgate Boulevard, Lathrop Way, Highway 160, Interstate 5, Highway 50, and Interstate 80. Access points for off-hauling or importing material would be at Lathrop Way, Del Paso Boulevard and Railroad Drive. To reduce traffic safety hazards, a flagman at Railroad Drive would direct construction traffic as the haul trucks leave the construction site. During the height of construction it is estimated that trucks conducting approximately 65 haul trips would be accessing the site per day. The type and volume of construction traffic should not cause a substantial deterioration of the physical condition of the nearby roadways, however pre-construction and post-construction conditions would be documented by the contractor. Any deteriorated roadways determined to be caused by the project would be repaired by the contractor.

The closure of the Sacramento Northern Bike Trail would be necessary for safety reasons. Pedestrians and bicyclists would be encouraged through the use of concrete barriers and/or fencing, and detour signs to use the designated detour during the construction period. These effects could be considered significant to traffic and circulation unless mitigated.

3.8.3 Mitigation

The contractor would be required to develop a Traffic Control Plan, which would be reviewed and approved by the City of Sacramento prior to construction. This plan would include the following measures:

- Do not permit construction vehicles to block any roadways or private driveways.
- Provide access for emergency vehicles at all times.
- Select haul routes to avoid schools, parks, and high pedestrian use areas, when possible. Crossing guards would be used when truck trips coincide with schools hours and when haul routes cross student travel path.
- Obey all speed limits, traffic laws, and transportation regulations during construction.
- Use signs and flagmen, as needed, to alert motorists, bicyclists, and pedestrians to avoid conflict with construction vehicles or equipment.
- Provide a safe, clearly-marked detour during the closure of the Sacramento Northern Bike Trail. Erect signs providing information regarding closure and detour, at least two weeks prior to the closure date.
- Flagmen would be used at each roadway that crosses the levee to safely circulate traffic through the construction site.
- Use separate entrances and exits to the construction site.
- Prior to construction, notify local residents, business, schools, and the City of Sacramento if road closures would occur during construction.
- Contractor would repair roads damaged by construction.

The proposed mitigation measures would reduce the effects on traffic and circulation to less than significant.

3.9 Public Utilities and Services

3.9.1 Existing Conditions

The project site is surrounded by the American River Parkway, undeveloped private property, light industrial and office buildings, and is not immediately adjacent to residences. Implementation of the project is not expected to interrupt public services such as mail delivery, trash pickup, street sweeping, etc. However, several utilities are located within the project area and pass through the levee, including: communications,

potable water supply, natural gas, sanitary sewer, and electricity. In order to be in compliance with Corps levee safety policy, several utilities would require relocation outside of the “prism” of the levee. The Corps has coordinated with the utility providers which include Pacific Gas & Electric (PG&E), Sacramento Municipal Utility District (SMUD), the City of Sacramento (City), and the Sacramento Regional County Sanitation District (SRCSD).

3.9.2 Environmental Effects

Basis of Significance

A project would significantly affect public utilities and services if it would: (1) disrupt or significantly diminish the quality of the public utilities and services for an extended period of time; or (2) damage public utility and service facilities, pipelines, conduits, or power lines.

No Action

Under the no action alternative there would be no effects on public utilities and services in the project area. There would be no change in type, quality, or availability of services in the project area.

Construct Levee Improvements

Construction of the project (seepage cutoff wall, slope stability/slope flattening) would encounter seven locations where utilities must be addressed (Plate 5). In the upstream segment (upstream of Highway 160), a 12-inch potable water supply pipeline and a 24-inch sanitary sewer pipeline must be raised. The SRCSD would allow the sanitary sewer line to be inactive during the duration of the construction, however, the City has requested that the water supply be out of service for no longer than 4 hours.

Downstream of Highway 160 a greater number of utilities are located in the project area. Between the UPRR tracks and Del Paso Boulevard a fiber-optic line and a water pipeline pass through the levee and an electrical power pole is located too close to the levee on the landside. The fiber-optic line and water pipeline are among the logistical considerations that limited the repair alternatives in this area. They would not be impacted by the levee repairs, however, the utility pole would be relocated further landward to meet levee safety requirements and allow for the additional area required for the slope flattening.

The section of the project between Del Paso and the downstream terminus has no fewer than 6 utilities passing through the levee, however, a 2-inch water line and a 6-inch gas line would be avoided. Three sanitary sewer pipelines and a natural gas pipeline would be directly impacted by the construction of the seepage cutoff wall. The SRCSD will allow a 12-inch and a 16-inch sanitary sewer line to be removed from within the levee and the remaining sections capped and the pipelines abandoned. A 26-inch sanitary

sewer line would be raised above the prism of the levee and can remain inactive during the construction period. A 12-inch natural gas pipeline would be relocated within the freeboard section of the levee, above and outside the levee prism. The new pipeline would be installed by the Corps during the installation of the cutoff wall. Connections between the existing pipeline and the new section would be completed by PG&E.

These effects to public utilities and services could be considered significant unless mitigated.

3.9.3 Mitigation

No utilities services would be interrupted during construction. Prior to initiating ground disturbing activities, the contractor would coordinate with Underground Service Alert (USA) to insure all underground utilities are identified and marked. No interruption of utility service would take place as a result of construction. The construction of the slurry cutoff wall in the upstream section of the project has been redesigned to ensure that the 12-inch potable water pipeline would be out of service for less than 4 hours. In order to meet this requirement, the cutoff wall would be constructed in an upstream direction from Highway 160, and in a downstream direction from the upstream terminus to meet at the location of the potable water pipeline. The water supply pipeline relocation would be the last feature of the construction in this section, prior to rebuilding of the levee.

In the downstream section PG&E would oversee all activities associated with the relocation of the 12 inch natural gas pipeline and would complete installation and connections themselves. With mitigation, impacts to public utilities and services would be less than significant.

3.10 Noise and Vibration

3.10.1 Existing Conditions

Noise is defined as unwanted sound that evokes a subjective reaction to the physical characteristics of a physical phenomenon. Ambient noise in the project area is generated by the traffic on the adjacent surface streets. Other noise may be generated primarily in the summer by motorized recreation on the American River. Based on experience with similar settings, it is assumed existing noise levels in the project area are in the range of 60 to 70 decibels (dB) day-night sound level (Ldn). Noise-sensitive receptors in the project area include residents, recreational users, and wildlife.

The project area is in a relatively quiet area with single family residential homes. Currently the main source of noise includes motor vehicles, human activity, and natural sounds. Construction noise related to commercial or residential activity varies with the type of equipment and length of activity.

Construction activities associated with the project may result in some minor amount of ground vibration. Vibration from construction activity is typically below the

threshold perception when the activity is more than about 50 feet from the receptor. The closest residences to the construction activities would be approximately 900 feet away, or greater. Due to the transitional nature of the construction activities, exposure at any one location would be intermittent. The most common activity throughout each reach would be truck traffic. Additionally, vibration from these activities would be short term and would end when construction is completed. The construction activities would not involve high-effect activities like pile driving.

Since the reach lies within the city of Sacramento, the City's noise policies and regulations apply to the project. The City has established policies and regulations concerning the generation and control of noise that could adversely affect their citizens and noise-sensitive land uses. The General Plan is a document required by state law that serves as the city's "blueprint" for land use and development. The General Plan provides an overall framework for development in the city and protection of its natural and cultural resources. The Noise Element of the General Plan contains planning guidelines relating to noise.

In addition, the Sacramento Municipal Code, Title 8 (Health and Safety) establishes the enforcement mechanism for controlling noise in the City. Specifically, the Noise Ordinance in the Municipal Code is described under Chapter 8.68 (Noise Control), Article II (Noise Standards). Section 8.68.060 sets the standards, Section 8.68.060B discusses the length of exposure, and Section 8.68.080 details the exemption, including the exemption for construction.

The City's Noise Ordinance establishes 60 A-weighted decibels (dBA) Ldn as the maximum acceptable exterior noise level for schools and single and multi-family residential areas. The City's Noise Ordinance also states any exterior noise limits must not exceed 50 dBA between 10:00 p.m. and 7:00 a.m. and 55 dBA between 7:00 a.m. and 10:00 p.m. for residential and agricultural areas. However, Section 8.68.080 of the Sacramento Municipal Code exempts construction activities between the hours of 7:00 a.m. and 6:00 p.m., Monday through Saturday, and 9:00 a.m. and 6:00 p.m. on Sunday. The ordinance further states internal combustion engines in use on construction sites must be equipped with "suitable exhaust and intake silencers which are in good working order."

The County of Sacramento General Plan Noise Element (1993) has established noise standards for various land use categories. These standards are broken out into Acceptable, Conditionally Acceptable, and Unacceptable noise exposure ranges based on A-weighted decibel (dBA) Ldn, measurements. The project reach would most likely fall into the land use category of Agricultural/Residential 5 to 10 acres. The noise standards for this land use category are: Acceptable – up to 60; Conditionally Acceptable – 65 to 75; Unacceptable – above 75.

Although construction equipment may cause noticeable increase in ambient noise levels near individual levee construction and staging areas any noise increases would be short term and intermittent. Construction noise would fluctuate, depending on

construction phase, equipment type and duration of use, distance between noise source and receptor, and presence or absence of barriers between noise source and receptor. Noise from construction activity generally attenuates at six to nine dBA per doubling of distance. Assuming an attenuation rate of six dBA per doubling of distance, construction equipment noise in the range of 80 to 90 dBA at 50 feet would generate noise levels of 74 to 84 dBA at 100 feet from the source. The residences in this project area are located approximately 900 feet from the construction area. Using the same attenuation rate of 6dBA per doubling of distance, the noise levels would not drop substantially based on the distance from the source. There is also substantial amount of large, mature trees located between the nearest residences and this section of the levee, to include a densely wooded property which adjoins the landside boundary of the project area. This vegetation should provide for considerable attenuation of the noise.

3.10.2 Environmental Effects

Basis of Significance

Adverse effects on noise are considered significant if an alternative would result in any of the following:

- Exposure of persons or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- Substantial short-term or periodic increase in ambient noise levels in the project vicinity above existing levels existing without the project.
- Substantial long-term increase in ambient noise levels in the project vicinity above levels existing without the project.
- Vibration exceeding 0.2 inch per second within 75 feet of existing buildings.

The significance criteria for changes in noise from project operations are listed below. These criteria are based on the City of Sacramento Noise Ordinance.

- A 3-dBA increase in noise if the existing noise level already exceeds the “normally acceptable range” for the land use (60 dBA or less for residential uses).
- A 5-dBA increase in noise if the existing noise level is in the “normally acceptable range” and the resulting level is within the “normally acceptable range” for the land use.
- A resulting offsite exterior noise level that exceeds 55 dBA for a cumulative duration of 30 minutes in an hour (L50) during the daytime (7:00 a.m. to 10:00 p.m.) or 50 dBA L50 during the nighttime (10:00 pm to 7:00 a.m.).

No-Action Alternative

Under the no action alternative, there would be no effects on noise. Sources of noise and noise levels would continue to be determined by local activities, development, and natural sounds.

Construct Levee Improvements

Construction activity noise levels at and near the construction areas would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Construction-related material haul trips would raise ambient noise levels along haul routes, depending on the number of haul trips made and types of vehicles used. In addition, certain types of construction equipment generate impulsive noises (such as pile driving), which can be particularly annoying. Pile driving, however, is not proposed for project development. Table 3 shows typical noise levels during different construction stages. Table 4 shows typical noise levels produced by various types of construction equipment.

Table 3. Typical Construction Noise Levels

Construction Phase	Noise Level (dBA, Leq) ^a
Ground Clearing	84
Excavation	89
Foundations	78
Erection	85
Finishing	89

^a Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase. Source: U.S. Environmental Protection Agency, 1971.

Table 4. Typical Noise Levels From Construction Equipment

Construction Equipment	Noise Level (dBA, Leq at 50 feet)
Dump Truck	88
Portable Air Compressor	81
Concrete Mixer (Truck)	85
Scraper	88
Jack Hammer	88
Dozer	87
Paver	89
Generator	76
Pile Driver	101
Backhoe	85

Source: Cunniff, Environmental Noise Pollution, 1977.

Noise from construction activities generally attenuates at a rate of 6 to 7.5 dBA per doubling of the distance from the reference noise source. Based on the project site layout and terrain, an attenuation of 6 dBA will be assumed. Residences are located approximately 900 feet from the construction activities. During the height of construction, the haul route is expected to have 65 round trips per day. A receptor at 50 feet from a dump truck would experience noise levels up to approximately 88 dBA during a pass by.

Construction noise at these levels would be substantially greater than existing noise levels at nearby sensitive receptor locations. Construction activities associated with the project would be temporary in nature and related noise impacts would be short-term. However, since construction activities could substantially increase ambient noise levels at noise-sensitive locations, especially if they were to occur during the nighttime hours, noise from construction would be potentially significant without mitigation.

Construction activities would result in short-term increases in ambient noise. Sensitive receptors that could be affected by this increase include residents, wildlife and recreationists. Construction of the project would occur between the hours of 7:00 a.m. and 6:00 p.m., Monday through Saturday, and between 9:00 a.m. and 6:00 p.m. on Sunday. The noise associated with the construction activities would typically fall within the City of Sacramento's conditionally acceptable noise exposure category at the point of sensitive receptors. Construction would be short-term, and construction activities would be limited to these times.

Construction activities associated with the project may result in some minor amount of ground vibration. Vibration from construction activity is typically below the threshold perception when the activity is more than about 50 feet from the receptor. The closest residences to the construction activities would be approximately 900 feet away, or greater. Due to the transitional nature of the construction activities, exposure at any one location would be intermittent. The most common activity throughout each reach would be truck traffic. Additionally, vibration from these activities would be short term and would end when construction is completed. The construction activities would not involve high-effect activities like pile driving.

Due to the distance between the nearest residences and the project construction area, impacts related to noise and vibration would be considered less than significant.

3.10.3 Mitigation

The following measures would be implemented to further reduce the adverse effects related to noise and vibration:

- In accordance with the City Noise Ordinance exemptions for construction (Sacramento City Code, 8.68.080 Exemptions) the construction activities shall be limited to between 7:00 a.m. and 6:00 p.m. Monday through Saturday and 9:00 a.m. and 6:00 p.m. on Sundays.
- Construction equipment noise shall be minimized during project construction by muffling and shielding intakes and exhaust on construction equipment (per the manufacturer's specifications) and by shrouding or shielding impact tools.
- Turn off all equipment, haul trucks, and worker vehicles when not in use for more than 30 minutes.
- Notify residences about the type and schedule of construction.

Compliance with the local noise ordinance would minimize the exposure of residents to excessive noise. Construction of the upstream segment is scheduled to be completed within 4 months in 2013; the downstream segment is scheduled to be completed within 3 months in 2014. Therefore, the impact after mitigation is less than significant.

3.11 Esthetics/Visual Resources

3.11.1 Existing Conditions

The lower American River is a component of the National Wild and Scenic Rivers System. Section 7 of the Wild and Scenic Rivers Act prohibits Federal agencies from “assist[ing] by loan grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established.” The lower American River is designated under this act for its recreational values pertaining to fishing and parkway activities.

Esthetic resources must be considered along with other natural resources. Esthetic resources are those natural resources, landforms, vegetation, and manmade structures in the environment that generate one or more sensory reactions and evaluations by the observer, particularly in regard to pleasurable response. These sensory reactions are traditionally categorized as pertaining to sight, sound, and smell. Esthetic quality is the significance given to esthetic resources based on the intrinsic physical attributes of those specific features and recognized by public, technical, and institutional sources. The identification of scenic resources in the landscape requires a process that identifies the relevant visual features and that is derived from established Federal procedures. Visual quality is influenced by many landscape features including geologic, hydrologic, botanical, wildlife, recreational, and urban characteristics.

The area along this stretch of the American River has a moderate esthetic value. The American River is located over 1,700 feet from the project reaches and provides valuable riparian habitat as well as recreational opportunities. Nearer to the project area, the esthetic components include residential development, the project levee, American River Parkway access points, the Jedediah Smith Recreation Trail (bike trail), and small local parks. These components intermix with the parkway at its fringes which also tempers the esthetic value in these areas.

3.11.2 Environmental Effects

Basis of Significance

An alternative would be considered to have a significant effect on esthetics if changes in landform, vegetation, or structural features create substantially increased levels of visual contrast as compared to surrounding conditions.

No Action Alternative

Under the no action alternative, there would be no effect on esthetics. The views and esthetic quality of both reaches would remain the same.

Construct Levee Improvements

Construction of the levee seepage repairs would temporarily affect the esthetics in the project area. Short-term effects would include the presence and activities of construction equipment and workers in the project area.

Short-term activities would include preparing the site, removing vegetation on the waterside slope of the levee, degrading the top of the levee and the staging area, and constructing the levee raise.

After completion of construction the site would be landscaped consistent with the preconstruction conditions. Although the levee would be permanently higher, the overall raise would be minimal (approximately 1 foot) and the viewshed would not be altered. The reconstructed levee would remain consistent with the preconstruction visual resources of the project area.

3.11.3 Mitigation

There would be no significant long-term effects on esthetics or visual resources in the project area, therefore, no mitigation would be required. All areas impacted by the project would be revegetated and restored to remain consistent with preconstruction conditions.

3.12 Cultural Resources

3.12.1 Existing Conditions

Regulatory Setting

Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800) requires Federal agencies, or those they fund or permit, to consider the effects of their actions on the properties that may be eligible for listing or are listed in the National Register of Historic Places. To determine whether an undertaking could affect National Register-eligible properties, cultural resources (including archeological, historical, and traditional cultural properties) must be inventoried and evaluated for listing in the National Register prior to implementation of the undertaking.

CEQA also requires that for public or private projects financed or approved by public agencies, the effects of the projects on historical resources and unique archeological resources must be assessed. Historical resources are defined as buildings, sites, structures, objects, or districts that have been determined to be eligible for listing in

the California Register of Historical Resources. Properties listed in the National Register are automatically eligible for listing in the California Register.

As a component of the American River Watershed Project, the NEMDC project is subject to the stipulations of the 1991 Programmatic Agreement (PA) among the Corps of Engineers, Bureau of Reclamation, California State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Implementation of the American River Watershed Project. The PA requires the Corps to consult with the State Historic Preservation Officer (SHPO) and signatories of the agreement regarding its determinations of eligibility and findings of effect once an alternative has been selected. The American River Parkway Plan also requires preservation and interpretation of archeological and historical resources within the Parkway.

Cultural Setting

The term “cultural resources” is used to describe several different types of properties: prehistoric and historic archeological sites; architectural properties, such as buildings, bridges, and infrastructure; and resources of importance to Native Americans (traditional cultural properties). Artifacts include any objects manufactured or altered by humans.

Prehistoric archeological sites date to the time before recorded history and in this area of the U.S. are primarily sites associated with Native American use before the arrival of Europeans. Archeological sites dating to the time when these initial Native American-European contacts were occurring are referred to as protohistoric. Historic archeological sites can be associated with Native Americans, Europeans, or any other ethnic group. In the study area, these sites include the remains of historic structures and buildings.

Structures and buildings are considered historic when they are more than 50 years old or when they are exceptionally significant. Exceptional significance can be gained if the properties are integral parts of districts meet the criteria for eligibility for listing in the National Register or if they meet special criteria considerations.

A traditional cultural property is defined generally as one that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community’s history, and (b) are important in maintaining the continuing cultural identity of the community (Parker and King, n.d.). Although normally associated with Native Americans, traditional cultural properties can include those that have significance derived from the role the property plays in any cultural group’s or community’s historically rooted beliefs, customs, and practices.

Cultural Resources in the Area of Potential Effects (APE)

Discussion of cultural resources has been provided in the American River Watershed, California Long-Term Study Final Supplemental Plan Formulation

Report/Environmental Impact Statement/Environmental Impact Report, Volume II: Appendix A, Attachment 1, Appendix 1E (Corps, 2002). This study provided a general overview and background research for cultural resources within the entire American River Watershed Project and did not focus on any particular project component area. The study identified no cultural resources that fall within the NEMDC APE.

Records and Literature Search

A records and literature search indicated that the APE has been surveyed a number of times (A. Peak 1973, 1974; Dondero 1978; Nilsson et al 1995; M. Peak 2001). At least six prehistoric archaeological sites exist along the American River within a mile of the proposed work, and three historical resources are located within the APE or in the immediate proximity: the existing Federal levee (CA-SAC-481H), Del Paso Boulevard (CA-SAC-570H), and the Union Pacific Railroad tracks and trestle (CA-SAC-464H).

Field Survey

On October 31, 2011, Corps Archaeologist, Mr. S. Joe Griffin performed a pedestrian survey of the APE, inspecting the ground surface on either side of the levee, road, or rail road grade. After staging areas were defined, Mr. Griffin returned to the area to survey those parcels on March 9, 2012. Mr. Griffin did not identify any cultural resources beyond those known from the record search.

3.12.2 Environmental Effects

Basis of Significance

An alternative would be considered to have a significant adverse effect on cultural resources if it diminishes the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Types of effects include physical destruction, damage, or alteration; isolation or alteration of the character of the setting; introduction of elements that are out of character; neglect; and transfer, lease, or sale.

No Action Alternative

The no-action alternative assumes that no levee improvements would be constructed by the Corps. The cultural resources are expected to remain as described in the existing conditions and there would be no effects to these resources. However, a major flooding event could alter existing conditions by burying, destroying, or revealing cultural resources.

Construct Levee Improvements

The project, as planned, would impact only the Federal levee, site CA-SAC-481H. Herbert and Blosser's (2001) extensive site record form concluded that CA-SAC-481H was not eligible for listing in the National Register of Historic Places (NRHP). The

Corps formally evaluated the levee for the 2008 Jacob Lane project which was part of the WRDA 99 Remaining Sites Study. In a letter dated July 7, 2009 the State Historic Preservation Officer concurred with Corps, and Herbert and Blosser, that CA-SAC-481H is not eligible for listing in the NRHP.

On March 29, 2012, letters were sent to potentially interested Native American individuals and groups identified by the Native American Heritage Commission. No responses have been received to date.

3.12.3 Mitigation

Inasmuch as there are no cultural resources that would be recommended as eligible for listing in the National Register of Historic Places, no mitigation measures are warranted. The project would have no effect on historic properties pursuant to 36 CFR 800.4(d)(1).

The possibility exists that potentially significant unidentified cultural remains could be encountered during project construction. If buried or otherwise obscured cultural resources are encountered during construction, activities in the area of the find would be halted, and a qualified archeologist would be consulted immediately to evaluate the find.

Should any potentially significant cultural resources be discovered, compliance with 36 CFR 800.13(b), "Discoveries without prior planning," would be implemented. Data recovery or other mitigation measures might be necessary to mitigate adverse effects to significant properties. Implementation of Mitigation Measure CUL-MM-1, Compliance with National Historic Preservation Act of 1966, Historic and Archeological Resources Protection Act, and Protection of Historic Properties, would reduce this effect to a less-than-significant level. On March 29, 2012, a letter was sent to the State Historic Preservation Officer asking for their concurrence with a finding of no effect on historic properties (36 CFR 800.4[d][1]).

4.0 Growth-Inducing Effects

The proposed action alternative would not induce growth in or near the project area. Local population growth and development would be consistent with the City of Sacramento 2030 General Plan, adopted in 2009 (City of Sacramento, 2009). As mentioned previously, the goal of the proposed action alternative is to construct levee improvements in one reach along the American River that would meet Corps requirements for levee seepage criteria. In addition, construction, operation, and maintenance of the improved levee would not result in a substantial increase in the number of permanent workers or employees.

5.0 Cumulative Effects

The NEPA regulations and CEQA guidelines require an EIS/EIR discuss project effects that, when combined with the effects of other projects, result in significant cumulative effects. The NEPA regulations define a cumulative effect as:

“The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor or collectively significant actions taken over a period of time” (40 CFR 1508.7).

The CEQA Guidelines require an EIR discuss cumulative effects “when they are significant” (Section 15130). The CEQA Guidelines define cumulative effects as “two or more individual affects which, when considered together, compound or increase other environmental impacts” (Section 15355). Additionally, the CEQA Guidelines state: “The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to the other closely related past, present, and reasonable foreseeable probable future projects” (Section 15355).

The NEPA and CEQA require that an environmental evaluation discuss cumulative projects effects. The effects of the proposed construction of the Common Features Project would result in minor net cumulative effects for some resources. Resources such as wildlife habitat would be affected somewhat during construction, but should recover to comparable levels regionally over the long term as a result of mitigation measures.

The Common Features Project’s Proposed Alternative would likely have no adverse cumulative effects on topography and soils, land use, socioeconomics, noise, recreation and visual resources, cultural resources, HTRW, fisheries, vegetation and wildlife, or special-status species. There would be short term cumulative effects on traffic and air quality. The amounts of traffic and emissions would increase due to the operation of construction, and mitigation measures would be implemented to reduce the effects.

The cumulative effects of the Common Features Project were addressed in the 1996 SEIR/EIR. Cumulatively, other ongoing regional flood control projects could have beneficial effects by raising the level of flood protection provided to lands in the Sacramento Valley region, thereby reducing the risk of adverse effects related to floods. At the same time, however, the projects could reduce the riparian ecosystems along the river where construction would take place. Mitigation would occur, resulting in no loss riparian values, but causing temporary losses and probable changes in the specific types, quantities, and locations of the habitat.

5.1 Local Projects

This section briefly describes other major Federal projects in the Sacramento area. All of these projects are required to evaluate the effects of the proposed project features on environmental resources in the area. In addition, mitigation or compensation measures must be developed to avoid or reduce any adverse effects to less than significant based on Federal and local agency criteria. Those effects that cannot be avoided or reduced to less than significant are more likely to contribute to cumulative effects in the area.

5.1.1 Folsom Dam Flood Management Operations Study

The Flood Management Operations Study is being completed in conjunction with the JFP by the Corps, USBR, CVFPB, and SAFCA. The Flood Management Operations Study for Folsom Dam will develop, evaluate, and recommend changes to the flood control operations at Folsom Dam that would further reduce flood risks to the Sacramento area. Operational changes may be necessary to fully realize the flood risk reduction benefits of the following:

- The additional operational capabilities created by the auxiliary spillway;
- The increased downstream conveyance capabilities anticipated to be provided by the American River Common Features Project (Common Features);
- The increased flood storage capacity anticipated to be provided by completion of the Folsom Dam Raise Project (Dam Raise); and
- The use of improved forecasts from the National Weather Service.

Further, the Flood Management Operations Study will evaluate options for the inclusion of creditable flood control transfer space in Folsom Reservoir in conjunction with Union Valley, Hell Hole, and French Meadows Reservoirs (also referred to as Variable Space Storage). The study will result in a Corps decision document and will be followed by a water control manual implementing the recommendations of the Study. It should be recognized that the initial water control manual will implement the recommendations of the study, but will not include the capabilities to be provided by the Dam Raise and additional Common Features project improvements until such time as these projects have been completed.

5.1.2 Folsom Dam Raise

The Folsom Dam Raise project will follow the JFP. This project includes raising the Folsom Dam, and the dikes around Folsom Reservoir by 3.5 feet; replacing the three emergency spillway gates; and three ecosystem restoration projects (automation of the temperature control shutters at Folsom Dam and restoration of the Bushy and Woodlake sites downstream). The ecosystem restoration projects have been prioritized at different levels and separated, with automation of the temperature control shutters to be the next completed feature in 2017 and the two downstream restoration sites to be completed in approximately 2016-2017. For the dam raise portion of the project, the design should

begin in 2015 and be completed in FY16, with construction following in phases through 2017 and 2018.

5.1.3 Folsom Dam Safety and Flood Damage Reduction Project Ongoing Construction Activities

The Folsom Dam Safety and Flood Damage Reduction Project address the dam safety hydrologic risk at the Folsom Facility and improve flood protection. Several activities associated the project include: Phase II, Phase III, and Phase IV of the Folsom Dam Auxiliary Spillway Joint Federal Project, referred to as the Joint Federal Project (JFP), static upgrades to Dike 4, Mormon Island Auxiliary Dam (MIAD) modifications, and seismic upgrades (piers and tendons) to the Main Concrete Dam.

Auxiliary Spillway Excavation

Spring 2009 to Fall 2010. Major work under Phase II of the JFP includes partial excavation of the western portion of the auxiliary spillway, construction of the downstream cofferdams, relocation of the Natoma Pipeline, and the creation of an access road to the stilling basin. This portion of the JFP was covered under the U.S. Bureau of Reclamation (USBR) 2007 Folsom Dam Safety and Flood Damage Reduction Project EIS/EIR (2007 EIS/EIR). Construction was conducted by USBR and was completed prior to the start of the Control Structure construction effort.

Dike 4 and 6 Repairs

Summer 2009 to June 2010. To address seepage concerns due to static and hydrologic loading for Dikes 4 and 6, USBR installed full height filters, toe drains, and overlays on the downstream face of each earthen structure. This portion of the JFP was covered under the 2007 EIS/EIR.

Mormon Island Auxiliary Dam Modification Project

Summer 2010 to Summer 2014. USBR released the Draft EIS/EIR for the MIAD Modification Project in December 2009. The preferred MIAD action alternative of jet grouting selected in the 2007 EIS/EIR was determined to be neither technically nor economically feasible. Four action alternatives were analyzed in the MIAD Draft Supplemental EIS/EIR. All alternatives address methods to excavate and replace the MIAD foundation, place an overlay on the downstream side, and install drains and filters; the alternatives differ only in their method of excavation. In addition, all four action alternatives in the Draft Supplemental EIS/EIR include habitat mitigation proposed for up to 80 acres at Mississippi Bar on the shore of Lake Natoma to address impacts from the JFP.

Pier Tendon Installation, Spillway Pier Wraps, and Braces at Main Concrete Dam

April 2011 through Spring 2012. These three projects address seismic concerns at the main concrete dam. These improvements will help to stabilize the main concrete dam against movement during a major earthquake. This portion of the JFP was covered under the 2007 EIS/EIR, and will be completed prior to implementation of the NEMDC project.

Control Structure, Chute and Stilling Basin

Spring 2011 to Fall 2017. Phase III of the JFP consists of construction of the auxiliary spillway control structure. This effort is currently under construction by the Corps and will be completed in approximately fall 2014. Concrete lining of the spillway chute and stilling basin will be conducted by the Corps as the final phase of the JFP. These actions will be constructed from approximately summer 2013 to fall 2017. Construction of the control structure, and the concrete lining of the chute and stilling basin were all covered under the Corps' 2010 EA/EIR.

Additional Downstream Features

Fall 2012 to Spring 2013. The design refinements to Phase III construction are being evaluated in a supplemental EA/EIR include the construction of a temporary traffic light, modification to the existing dirt access haul road, installation of the stilling basin drain, and use of the existing nearby staging area with the installation of a new batch plant to be used and operated for other downstream features work. A draft EA/EIR is scheduled for public review in summer 2012.

Approach Channel

Spring 2013 to Fall 2017. The approach channel project is the final construction activity of Phase IV of the JFP. The primary and permanent structures consist of the 1,100 foot long excavated approach channel and spur dike. A transload facility and concrete batch plant will be constructed as necessary temporary structures to facilitate the construction. Additional existing sites and facilities that would be utilized for the length of the project include the Folsom Prison staging area, the existing Bureau of Reclamation Overlook, the MIAD area, and Dike 7. These sites and facilities are connected by an internal project haul road. Criteria pollutant emissions from the approach channel project and the downstream project would be less than significant for ROG, CO, SO₂, and PM_{2.5}, less than significant with mitigation for PM₁₀. NO_x exceeds the GCR de minimis threshold, but would be addressed by inclusion in the State Implementation Plan, which would provide compliance with the GCR of the Federal Clean Air Act. The draft supplemental EIS/EIR is scheduled to be available for public review in summer 2012.

5.1.4 Lower American River Common Features Project

Based on congressional authorizations (Water Resource Development Act, or WRDA) in 1996 and 1999, the Corps, the Board, and SAFCA have undertaken various improvements to the levees along the north and south banks of the American River and the east bank of the Sacramento River. Under WRDA 96, the most recent improvements include seepage protection at RM 62 on the east bank of the Sacramento River (2009), RM 7.0 left and right bank (2010), RM 8.5 left bank (2010), and RM 5.5 right bank (2011), all on the American River. A site at RM 6.5 right bank (Site R6) is scheduled for construction in 2012 and a site at RM 9.5 (Site R10) is scheduled for construction in 2013. Two smaller sites under WRDA 96 (L9/L9A, and L5A, totaling 371 linear feet) are currently scheduled for construction in 2013, however they are expected to be approved under NEPA Categorical Exclusions and would not have air quality emissions data to consider under cumulative effects. Several other sites are being considered for construction in 2014 and beyond, but evaluations of environmental impacts have not yet begun.

Of the five sites authorized under WRDA 99, Mayhew Levee Raise (2008) and Mayhew Drain Closure Structure (2008) have been completed; Jacob Lane (Reaches A & B, 2009 and 2010) would be completed with the construction of Reach C scheduled for 2013; Howe Avenue is scheduled for construction in 2012 and the Natomas East Main Drain Canal is scheduled for construction in 2013 and 2014.

Several other phases of repairs have been completed in the Natomas Basin under the Lower American River Common Features Project. The project will continue to study potential erosion control repairs along the lower American River and the east bank of the Sacramento River.

5.1.5 Sacramento River Bank Protection Project

The Sacramento River Bank Protection Project (SRBPP) was authorized to protect the existing levees and flood control facilities of the Sacramento River Flood Control Project. The SRBPP is a long-range program of bank protection authorized by the Flood Control Act of 1960. The SRBPP directs the Corps to provide bank protection along the Sacramento River and its tributaries, including that portion of the lower American River bordered by Federal flood control project levees. Beginning in 1996, erosion control projects at five sites covering almost 2 miles of the south and north banks of the lower American River have been implemented. Additional sites at RM 149 and 56.7 on the Sacramento River totaling one-half mile have been constructed since 2001. During 2005 through 2007 construction of 29 critical sites under the Declaration of Flood Emergency by Governor Schwarzenegger totaling approximately 16,000 linear feet. This is an ongoing project, and additional sites requiring maintenance will continue to be identified indefinitely until the remaining authority of approximately 24,000 linear feet is exhausted over the next 3 years. The Water Resources Development Act of 2007 authorized an additional 80,000 linear feet of bank.

These projects would help to improve flood protection to residents in the Sacramento area by ensuring the integrity of the levees along the American and Sacramento Rivers. The Lower American River Common Features Project and the Sacramento River Bank Protection Project would also help meet FEMA's 100-year flood criteria for the Sacramento area levee system. These would be considered beneficial cumulative effects.

5.1.6 Natomas Levee Improvement Project

The Natomas Levee Improvement Project was authorized in 2007 as an early-implementation project initiated by SAFCA in order to provide flood protection to the Natomas Basin as quickly as possible. These projects consist of improvements to the perimeter levee system of the Natomas Basin in Sutter and Sacramento Counties, California, as well as associated landscape and irrigation/drainage infrastructure modifications. SAFCA, DWR, CVFPB, and the Corps have initiated this effort with the aim of incorporating the Landside Improvements Project and the Natomas Levee Improvement Project into the Federally authorized American River Common Features Project. The project is still under construction at this writing. Future project features would be completed under the proposed American River Common Features General Reevaluation Report, upon authorization.

5.2 Cumulative Effects

Land Use

The River Corridor Management Plan and American River Parkway Plan recognize the American River Parkway as the key feature of the American River flood control system in Sacramento, and consider flood management the primary land use on the Parkway. The use of Parkway land to provide flood protection to the Sacramento area is consistent with these plans. As a result, the project is consistent with adopted plans and policies on land use in the project area and would not contribute significantly to cumulative effects on land use.

Recreation

The project would have a short-term restriction on recreation access during construction. The project would have a minor, short-term restriction on recreation access during construction. This project and other similar past, present, and reasonably foreseeable future projects are not expected to result in changes to recreation access or opportunities on the Parkway and therefore are not expected to result in adverse cumulative effects.

Esthetics and Visual Resources

The project would result in short-term and long-term changes to the esthetics in the project area. All areas that would be disturbed during construction would be restored

and revegetated upon completion of construction activities. Any trees that would be removed during construction would be replaced with native tree species.

The project would temporarily affect local scenic views and contribute to adverse cumulative effects on local esthetics based on the presence of construction equipment and the construction of levees, but is not expected to result in a significant long-term effects on esthetics. Thus the NEMDC project would not significantly contribute to cumulative effects in the project vicinity.

Traffic and Circulation

The project would result in minor changes in the types, volumes, and movement of traffic in the area during construction. Large trucks transporting equipment and materials to the work area would be consistent with the types of traffic using the local streets. These trucks, as well as worker vehicles, would use the local streets to access the work areas from Highway 160 and Del Paso Boulevard. The daily number of trips during construction would actually vary, depending on the work being conducted and the duration of the work. However, the increases in traffic would not be significant as compared with existing levels of local traffic on all but one street proposed as part of a haul route. During construction, trucks and worker vehicles would be entering and exiting the project area via Del Paso Boulevard. This could occasionally disrupt the traffic flow at intersections and possibly pose a safety hazard to other motorists, pedestrians, and bicyclists on and along this roadway and access points to the Parkway. Implementation of measures in the Traffic Management Plan would minimize traffic congestion and delays, and ensure public safety. These projects would be constructed in different areas and on different schedules, thus, due to the minimal increase in local traffic, and proposed mitigation measures, the project would not contribute to adverse cumulative effects on local traffic.

Noise

The project would have a temporary, short-term impact on ambient noise levels in the residential area and Parkway during construction. Movement and operation of equipment, haul trucks, and worker vehicles would generate noise in the work area, as well as on neighborhood roadways that provide access through the residential area. Noise levels could reach the high 80's dBA, depending on the type of equipment or truck. Since ambient noise levels normally range in the low to mid-50's dBA, such an increase would be significant. However, the City Noise Ordinance (Sacramento City Code, 8.68.080 Exemptions) contains a section specifically exempting construction activities from the standards between the hours of 7:00 a.m. and 6:00 p.m. Monday through Saturday, as well as between the hours of 9:00 a.m. and 6:00 p.m. on Sundays. As a result, the project would not contribute significantly to cumulative effects on local noise.

Air Quality

According to SMAQMD, a project is considered to have a significant cumulative effect if:

- The project requires a change in the existing land use designation (general plan amendment or rezone), and
- Projected emissions (ROG or NO_x) or emission concentrations (criteria pollutants) of the proposed project are greater than the emissions anticipated for the site if developed under the existing land use designation.
- The project individually would result in a significant effect on air quality.

Construction of the NEMDC project is not expected to have any long-term effects on air quality since the operational activities (including inspection and maintenance) are expected to be similar to existing conditions. However, construction would result in direct, short-term effects on air quality mainly related to combustion emissions and dust emissions. If the upstream segment of the NEMDC project is constructed in late 2013 it may overlap with the construction of Jacob Lane Reach C, the WRDA 1996 site R10 project, as well as the construction of the auxiliary spillway for the Folsom Dam Joint Federal Project (JFP). Neither the NEMDC project nor the Site R10 project would add significantly to this determination nor would it change the determination. Table 5 shows the combined emissions for the Jacob Lane Reach C, NEMDC and Site R10 projects if they were constructed concurrently. No Federal standards would be exceeded and only the SMAQMD threshold for NO_x (combined total) would be exceeded, however this was already an impact for the JFP. The JFP identified impacts to air quality that would be significant and unavoidable. The JFP is currently evaluating measures to reduce or offset emissions to demonstrate conformity with the SIP under the CAA.

When the project air emissions calculations indicates that the project would not meet SMAQMD thresholds, the contractor would be required to follow the requirements of SMAQMD's standard mitigation program (Appendix B) which is intended to reduce NO_x emissions by 20 percent. Any remaining emissions over the NO_x threshold should be reduced via a mitigation fee payment. No Federal standards would be exceeded for the combined project emissions. Implementation of mitigation measures during construction would reduce emissions to the extent possible. Since the project would not require a change in the existing land use designation, long-term projected emissions of criteria pollutants would be the same with or without the construction of the levee improvements. Therefore, the NEMDC project would not contribute significantly to cumulative effects on air quality.

Table 5. Combined Estimated Air Emissions for Concurrent Construction of the NEMDC, Jacob Lane Reach C and Site R10 Projects

	ROG	CO	NO_x	PM₁₀	PM_{2.5}	CO₂
Total emissions (lbs/day)	22.8	169.3	162.2	58.6	16.8	22,414.4
SMAQMD thresholds (lbs/day)	N/A	N/A	85	N/A	N/A	N/A
Total (tons/construction project)	0.6	4.9	4.7	1.4	0.4	647.2
Federal standards (tons/year)	25	100	25	100	N/A	N/A

Note: Estimates rounded.

Water Resources and Quality

The NEMDC project could result in accidental spills or leaks that could affect surface and ground water resources. Measures included during each project construction would be implemented to avoid or reduce these effects to less than significant. As a result, the project would not contribute significantly to cumulative effects on water resources and quality.

In addition, the NEMDC project may have an overall positive effect on water quality. By diminishing the possibility for a catastrophic flood event, this would avoid significant long term impacts to water quality by avoiding contamination from flooded vehicles, household and industrial chemicals, raw sewage, and other wastes that may be present in the area.

Vegetation and Wildlife

The grassland habitat that would be occupied by the staging area would be disturbed during project construction. The waterside slope of the levee would also be disturbed in order to implement the levee improvements. These areas would be restored and re-vegetated upon completion of project construction. The project would not remove any riparian habitat; however, the project would directly impact twelve elderberry shrubs and potentially affect any VELB potentially occupying the shrubs. The project would result in short-term disturbances of wildlife habitat, but the project would not substantially reduce the connectivity or extent of natural vegetation and wildlife habitat along the American River. Mitigation measures through the establishment of native vegetation on the Parkway for this and other projects including the Jacob Lane Reach C Project would have short-term effects on vegetation and wildlife associated with construction activities. However, improved habitat would be provided by planting native tree species, such as valley oak and sycamore, for mitigation measures. Such measures are expected to result in a net, long-term improvement in native vegetation and wildlife habitat values in the Parkway primarily by restoring degraded areas at a ratio higher than what was removed.

Special Status Species

The NEMDC Project would result in direct and indirect effects on elderberry plants, which is the host plant for the Federally-listed threatened valley elderberry longhorn beetle. However, with implementation of the conservation measures stated previously, effects to the valley elderberry longhorn beetle would be minimized.

Other local projects including the Mayhew Levee Raise Project and the Mayhew Drain Closure Structure Project resulted in the removal of elderberry shrubs. The limited spatial extent of elderberry shrub removal, prevalence of existing elderberry shrubs in the project vicinity, and the transplanting of up to 140 shrubs from the Levee Raise Project area to the vicinity, the overall extent and connectivity of beetle habitat is not expected to be diminished by this project. Establishment of new, additional beetle mitigation areas on the Parkway consistent with USFWS Guidelines would result in the long-term net improvement of beetle habitat by increasing habitat extent and connectivity along the American River. While this and other projects have resulted in short-term, localized effects to beetle habitat, the incorporation of habitat mitigation on the Parkway is expected to result in the long-term, cumulative improvement to beetle habitat on the Parkway and ultimately assist in the recovery of the species.

No other special status species would be affected in addition to the VELB. As a result, the project would not contribute significantly to cumulative adverse effects on special status species.

Fisheries

Construction of the NEMDC project could indirectly affect Central Valley steelhead, and Central Valley fall/late fall run Chinook salmon or their critical habitat due to potential effects to water quality. However, the project would have no effect on steelhead and salmon provided that erosion and sediment control measures implemented as part of the SWPPP are incorporated into the proposed project.

Construction activities and the staging area would be confined to the levees and terraces 1,700 hundred feet from the streambank and channel. The project includes no work in or near the stream or associated riparian vegetation, and no work in ponds, tributaries, or drainage ditches that flow into the river from the project area. Whereas other local projects may result in potential impacts to fisheries, the construction of the NEMDC project would not contribute significantly to cumulative adverse effects to fisheries.

Cultural Resources

Based on existing information from literature searches and field examination, the project would have no effect on historic properties in the NEMDC project area. If necessary, mitigation measures would be implemented to provide for any buried resources that might be uncovered during construction. Since the anticipated effects on

known and potential archaeological sites would be less than significant, the project would not contribute significantly to cumulative effects on cultural resources.

6.0 Compliance with Environmental Laws and Regulations

6.1 Federal

Archaeological Resources Protection Act of 1979, 16 U.S.C. 470, et seq. *Full Compliance.* This act prohibits the removal, sale, receipt, and interstate transportation of archaeological resources obtained illegally (without permits) from public lands. The proposed project would not involve any such archaeological resources.

Clean Air Act of 1972, as amended, 42 U.S.C. 7401, et seq. *Full Compliance.* The proposed action is not expected to violate any Federal air quality standards, exceed the U.S. EPA's general conformity *de minimis* threshold, or hinder the attainment of air quality objectives in the local air basin. Implementation of best management practices and adopted SMAQMD measures would reduce NOx emissions to below local thresholds. Thus, the Corps has determined that the proposed project would have no significant effects on the future air quality of the area.

Clean Water Act of 1972, as amended, 33 U.S.C. 1251, et seq. *Full compliance.* The proposed action is not expected to adversely affect surface or ground water quality or deplete ground water supplies. Best management practices would be implemented to avoid movement of soils or accidental spills into the river. No discharge of dredge or fill materials into navigable waters or adjacent wetlands would occur under the project. The Corps has determined that the proposed project would have no significant effects on the future water quality of the area.

The contractor would be required to obtain a NPDES permit from the CRWQCB, Central Valley Region, since the project would disturb 1 or more acres of land and involve possible storm water discharges to surface waters. As part of the permit, the contractor would be required to prepare a SWPPP identifying best management practices to be used to avoid or minimize any adverse effects of construction on surface waters.

Endangered Species Act of 1973, as amended, 16 U.S.C. 1531, et seq. *Partial compliance.* In accordance with Section 7(c), the Corps obtained a list from USFWS of Federally listed and proposed species likely to occur in the project area. The only listed species potentially affected by the project would be the valley elderberry longhorn beetle. The Corps' determination is that the project may affect, but is not likely to adversely affect this species.

The Corps as the action agency has made the determination that there would be "no effect" on any listed species under the jurisdiction of the National Marine Fisheries Service (NMFS). As a result, consultation is not required with NMFS under Section 7 of the Endangered Species Act.

The project will be in full compliance when the Corps receives correspondence from USFWS indicating that Section 7 consultation has been completed.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. *Full compliance.* This order directs all Federal agencies to identify and address adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. There are no minority, or low-income populations in the project area. All nearby residents would benefit equally from the proposed project.

Farmland Protection Policy Act (7 U.S.C. 4201, et seq). *Full compliance.* There are no prime and unique farmlands in the project area.

Fish and Wildlife Coordination Act of 1958, as amended, 16 U.S.C. 661, et seq. *Partial compliance.* Coordination with USFWS is ongoing to determine the effects on vegetation and wildlife in the project area. The USFWS provided a draft Coordination Act Report (CAR) on May 23, 2012 to address these effects (Appendix D).

The project will be in full compliance when the final CAR is issued by USFWS.

Migratory Bird Treaty Act (15 U.S.C 701-18h). *Full compliance.* Construction would be timed to avoid physical destruction of active bird nests or young of birds that breed in the area. If this is not feasible, a qualified biologist would survey the area prior to initiation of construction. If active nests are located, a protective buffer would be delineated and the entire area avoided, preventing direct physical disturbance of nests until they are no longer active. Because only minimal removal of vegetation would be required for construction, no impacts to nesting migratory birds are anticipated.

National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321, et seq. *Partial Compliance.* This EA/IS is in partial compliance with this act. Comments received during the public review period will be incorporated into the EA/IS, as appropriate, and a comments and responses appendix will be prepared. The final EA/IS will be accompanied by a final FONSI if determined appropriate by the District Engineer after consideration of public comments. These actions will provide full compliance with this act.

National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 et seq. *Full Compliance.* Section 106 of this Act requires a Federal agency to take into account the effects of Federal undertakings on historical properties following the procedures outlined in 36 CFR 800. A records and literature search of the area of potential effects (APE) was conducted and the APE was surveyed on October 31, 2011, and March 9, 2012.

The American River north levee (CA-SAC-481H) is the only cultural resources known to exist in the APE. Herbert and Blosser's 2001 site record form concluded that site CA-SAC-481H is not eligible for listing in the National Register of Historic Places

(NRHP). The Corps formally evaluated the levee for the 2008 Jacob Lane project, and in a letter dated July 7, 2009, the State Historic Preservation Officer concurred that CA-SAC-481H is not eligible for listing in the NRHP. The Corps has determined that the proposed project would have no effect on historic properties pursuant to 36 CFR 800.4(d)(1). Consultation with the State Historic Preservation Officer has been initiated, and upon the conclusion of this process, the Corps will be in full compliance with Section 106 of the National Historic Preservation Act.

Native American Graves Protection and Repatriation Act of 1990, 23 U.S.C. 3002. *Full Compliance.* This act requires Federal agencies to (1) establish procedures for identifying Native American groups associated with cultural items on Federal lands, (2) inventory human remains and associated funerary objects in Federal possession, and (3) return such items upon request to the affiliated groups. The law also requires that any discoveries of cultural items covered by the act be reported to the head of the Federal entity, who would notify the appropriate Native Americans group. The proposed action would not involve any such cultural items.

Wild and Scenic Rivers Act of 1968 (16 U.S.C. 1271 et seq.). *Full compliance.* The lower American River has been designated as a “recreational” component of the Federal Wild and Scenic Rivers system. The project would neither adversely affect the resources for which the American River was designated nor adversely affect the river's free-flowing status. All construction activities would be at least 1,700 feet away from the river.

6.2 State

California Clean Air Act of 1988. *Full compliance.* The SMAQMD determines whether project emission sources and emission levels significantly affect air quality based on Federal standards established by the U.S. EPA and State standards set by the California Air Resources Board. The project is in compliance with all provisions of the Federal and State Clean Air Acts.

California Endangered Species Act of 1984. *Full compliance.* The California Department of Fish and Game administers this State law providing protection of fish and wildlife resources. This act requires the non-Federal lead agencies to prepare biological assessments if a project may adversely affect one or more State-listed endangered species. No State-listed species would be adversely affected by the project. As a Federal agency, the Corps is not required to obtain a California Fish and Game Code Section 1602 Stream Alterations Agreement issued by the California Department of Fish and Game.

California Environmental Quality Act, California Public Resources Code, Section 21000 et seq. *Partial compliance.* This EA/IS is in partial compliance with this act. All comments received during the public review period will be considered and incorporated into the EA/IS, as appropriate. The final EA/IS will be accompanied by a

final Negative Declaration. The Central Valley Flood Protection Board as the non-Federal sponsor will ensure full compliance with the requirements of this act.

7.0 Coordination and Review of the Final EA/IS

The draft EA/IS and draft FONSI/Negative Declaration will be circulated for 30 days to agencies, organizations and individuals known to have a special interest in the project. Copies of the draft EA/IS will be posted on the SAFCA website made available for viewing at local public libraries, or provided by mail upon request. This project has been coordinated with all the appropriate Federal, State, and local government agencies including the U.S. Fish and Wildlife Service, State Historic Preservation Office, California Department of Fish and Game, and California Department of Water Resources.

8.0 Findings

This EA/IS evaluated the environmental effects of the proposed project of constructing levee improvements along one reach of the American River near the downtown area of Sacramento. Potential adverse effects to the following resources were evaluated in detail: recreation, special status species, vegetation and wildlife, air quality, water resources and quality, traffic and circulation, esthetics, noise, and cultural resources.

Results of the EA/IS, field visits, and coordination with other agencies indicate that the proposed project would have no significant long-term effects on environmental resources. Short-term effects during construction would either be less than significant or mitigated to less than significance using best management practices.

Based on this evaluation, the proposed project meets the definition of a FONSI as described in 40 CFR 1508.13. A FONSI may be prepared when an action would not have a significant effect on the human environment and for which an environmental impact statement would not be prepared. Therefore, a draft FONSI has been prepared and accompanies the draft EA. The Corps, District Commander, will, following public review of the draft EA, determine whether a FONSI is appropriate or if a supplemental EIS should be prepared.

9.0 List of Preparers

John Suazo
Environmental Manager, Corps of Engineers
20 years environmental management and environmental studies
Report preparation and coordination

Anne Baker
Technical Writer, Corps of Engineers
Report review and editing

S. Joe Griffin
Archeologist, Corps of Engineers
Cultural resources analysis and coordination

Mathew Davis
NEPA Technical Specialist, Corps of Engineers
23 years environmental planning and management
Technical Review

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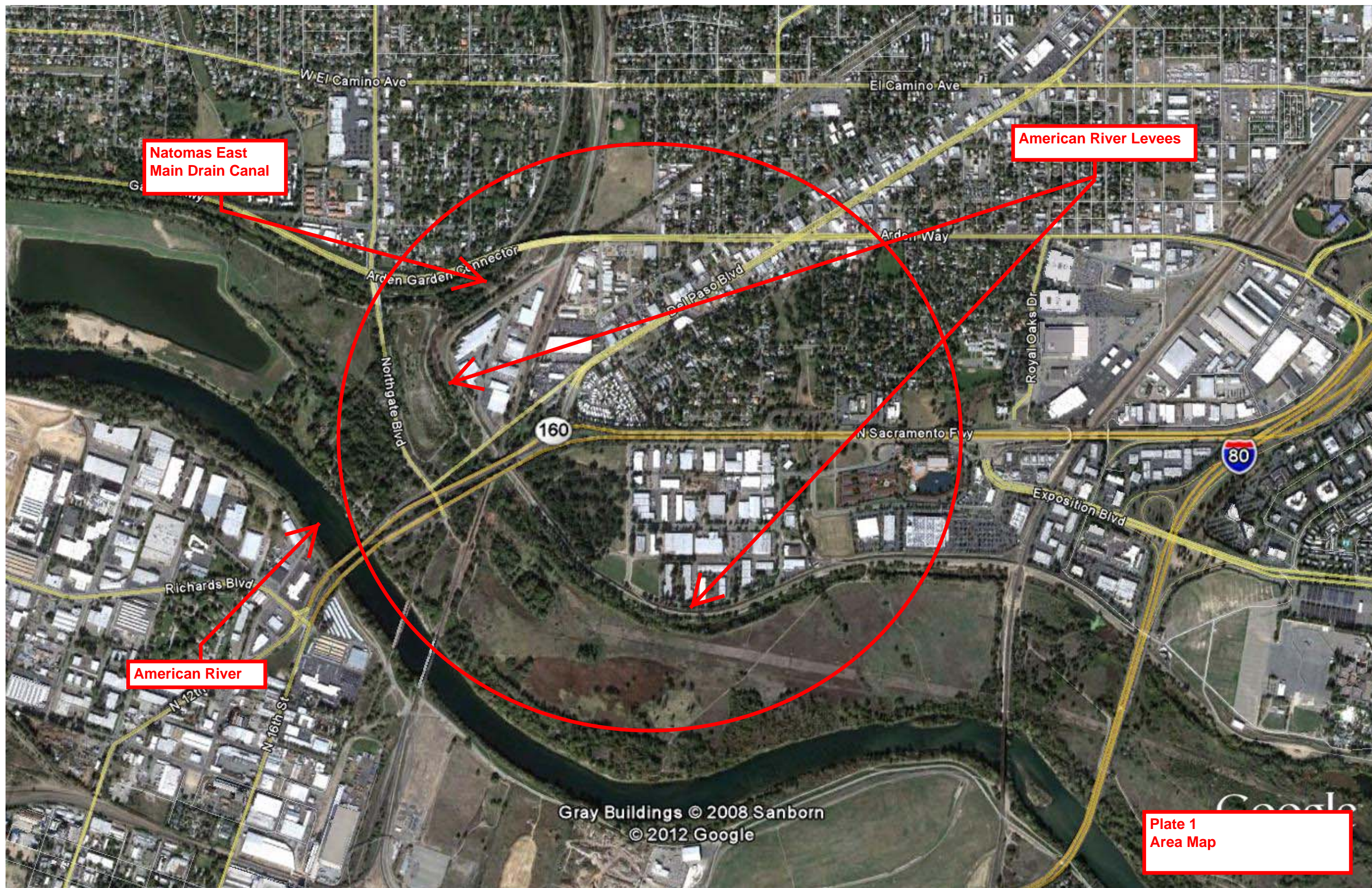
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10.2 List of Agencies and Persons Contacted

California State Department of Water Resources: Ms. Erin Brehmer
 Sacramento Area Flood Control Agency: Mr. Grant Kreinberg
 Sacramento County Regional Parks: Ms. Mary Maret

Plates

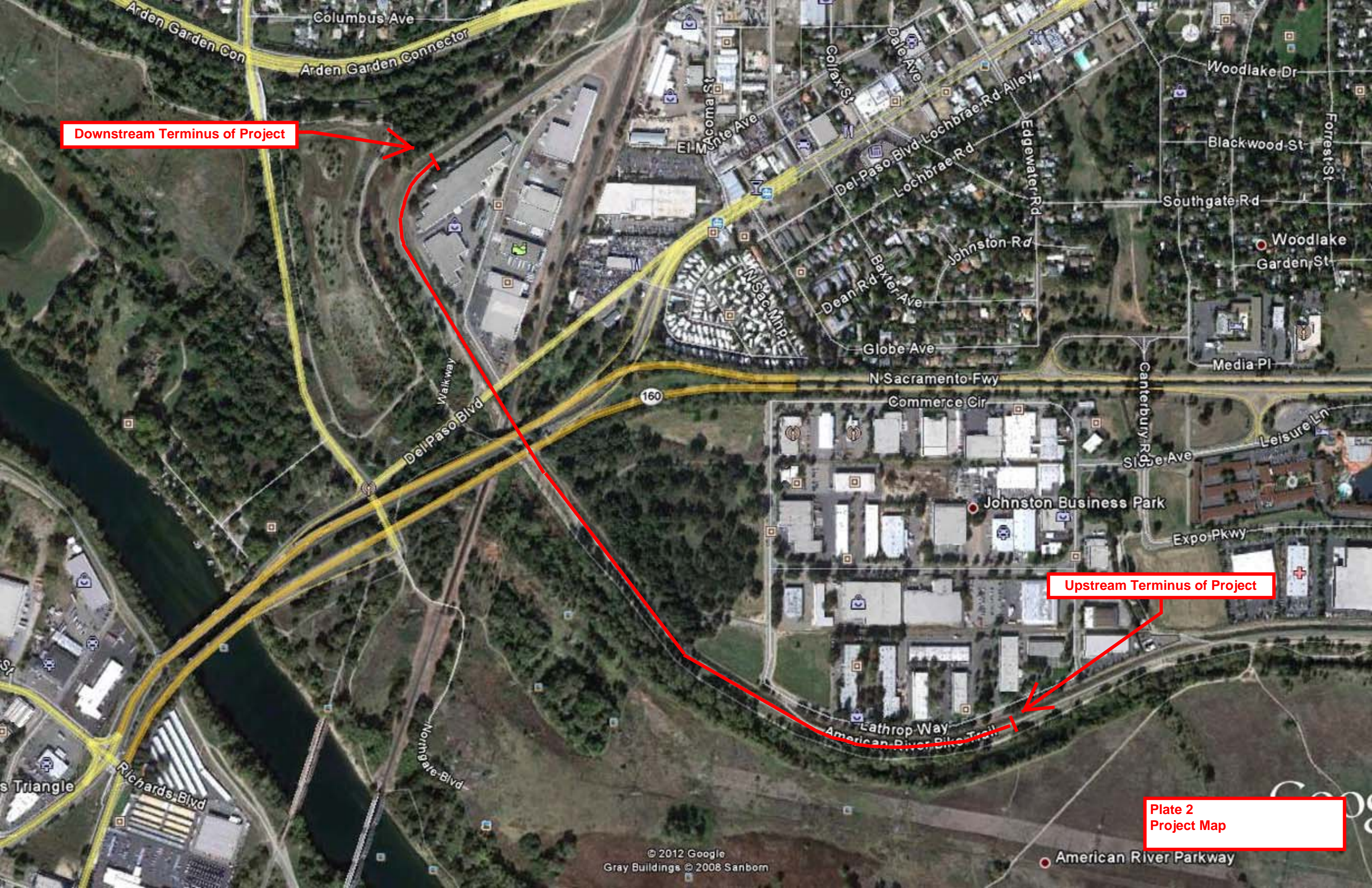


Natomas East
Main Drain Canal

American River Levees

American River

Plate 1
Area Map



Downstream Terminus of Project

Upstream Terminus of Project

Plate 2
Project Map

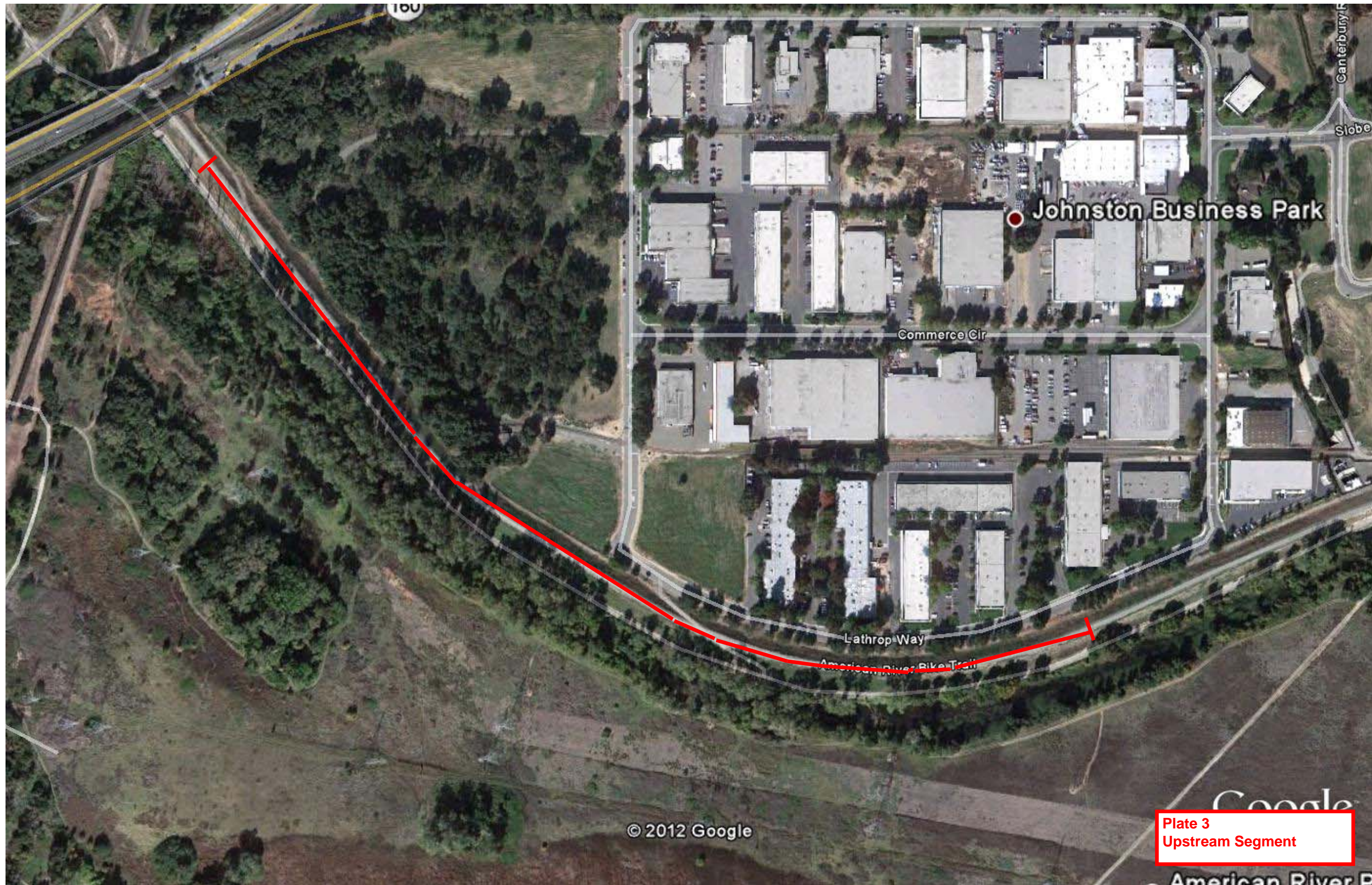
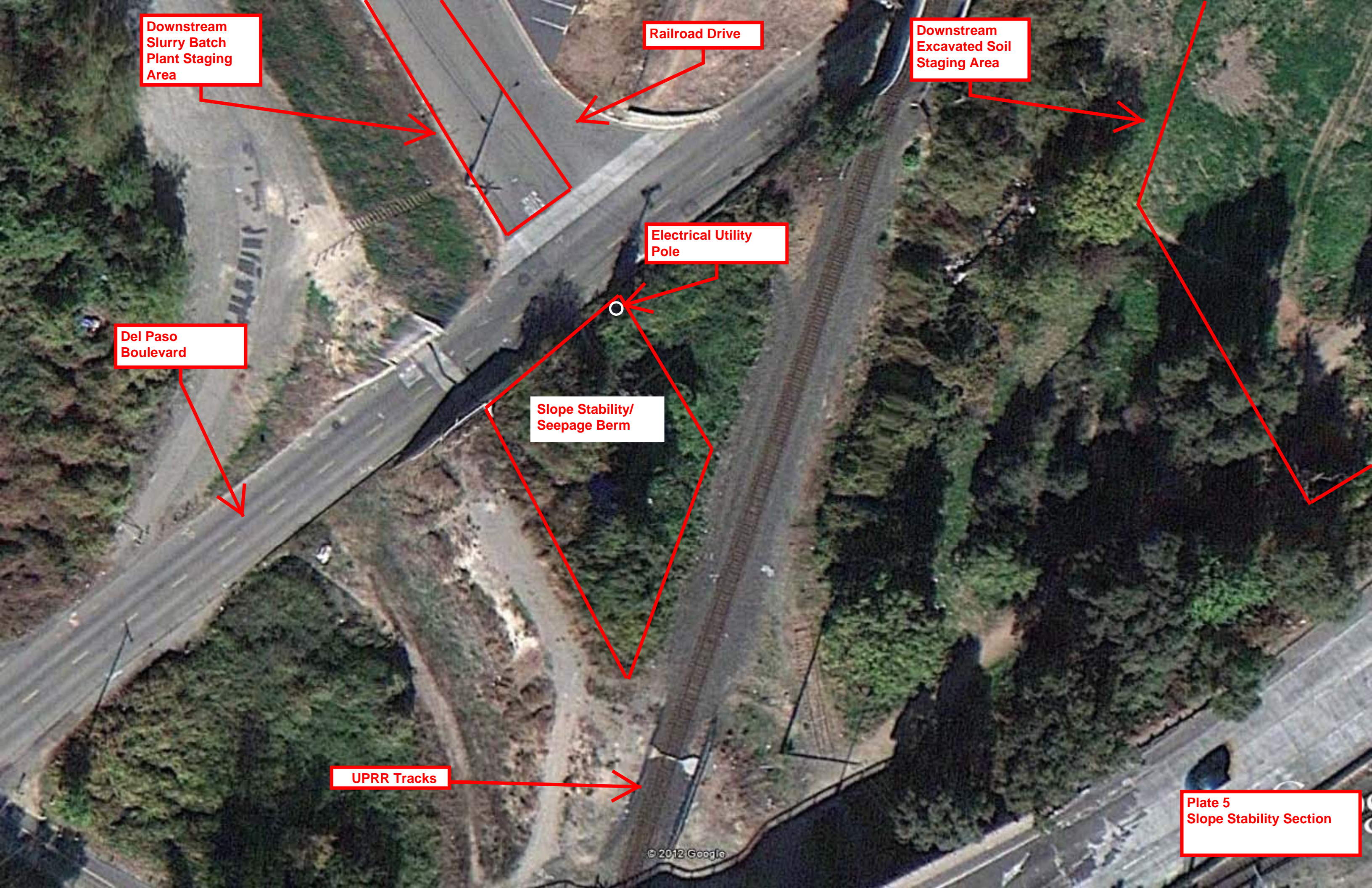


Plate 3
Upstream Segment



Plate 4
Downstream Segment



Downstream
Slurry Batch
Plant Staging
Area

Railroad Drive

Downstream
Excavated Soil
Staging Area

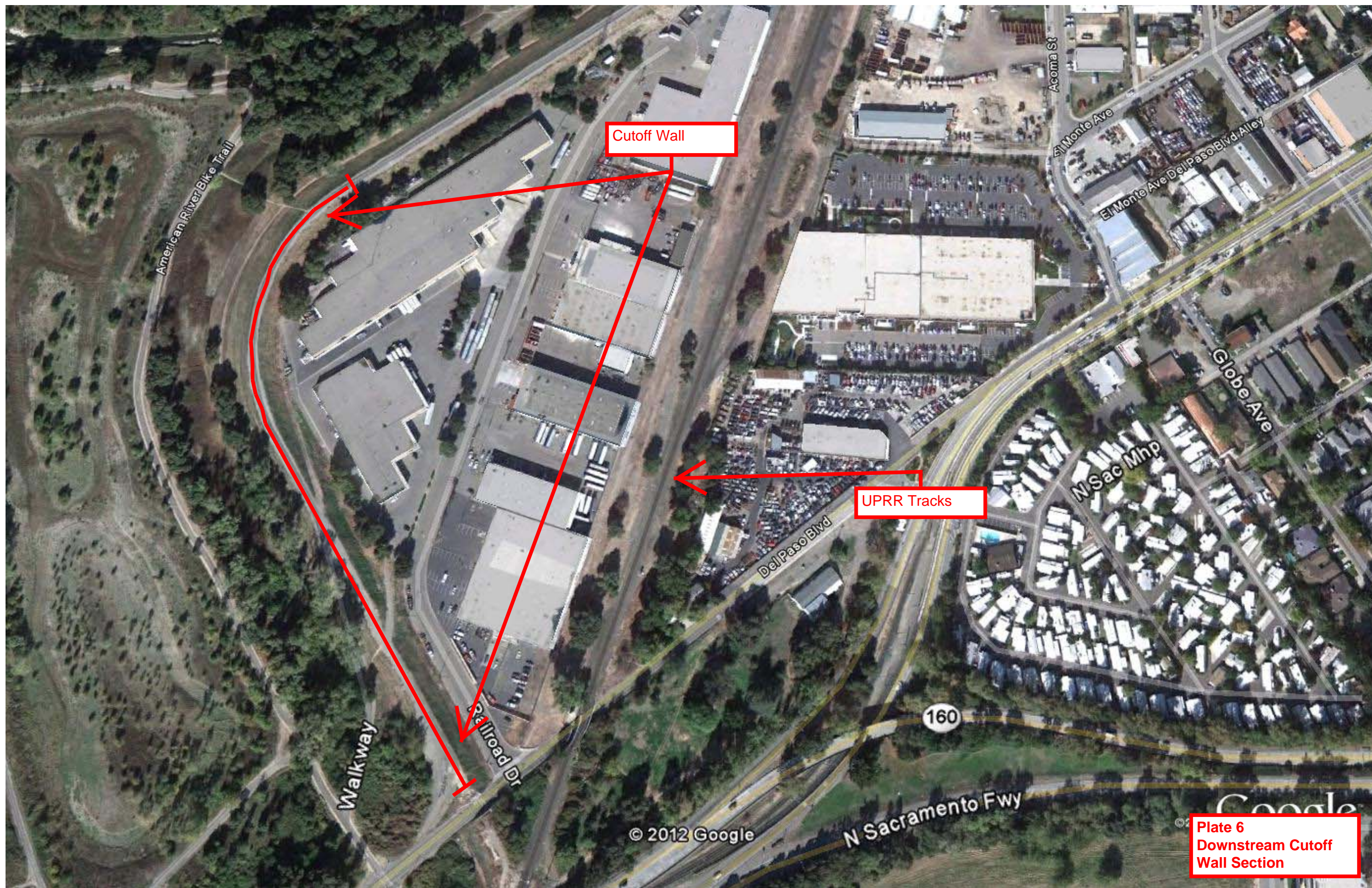
Del Paso
Boulevard

Electrical Utility
Pole

Slope Stability/
Seepage Berm

UPRR Tracks

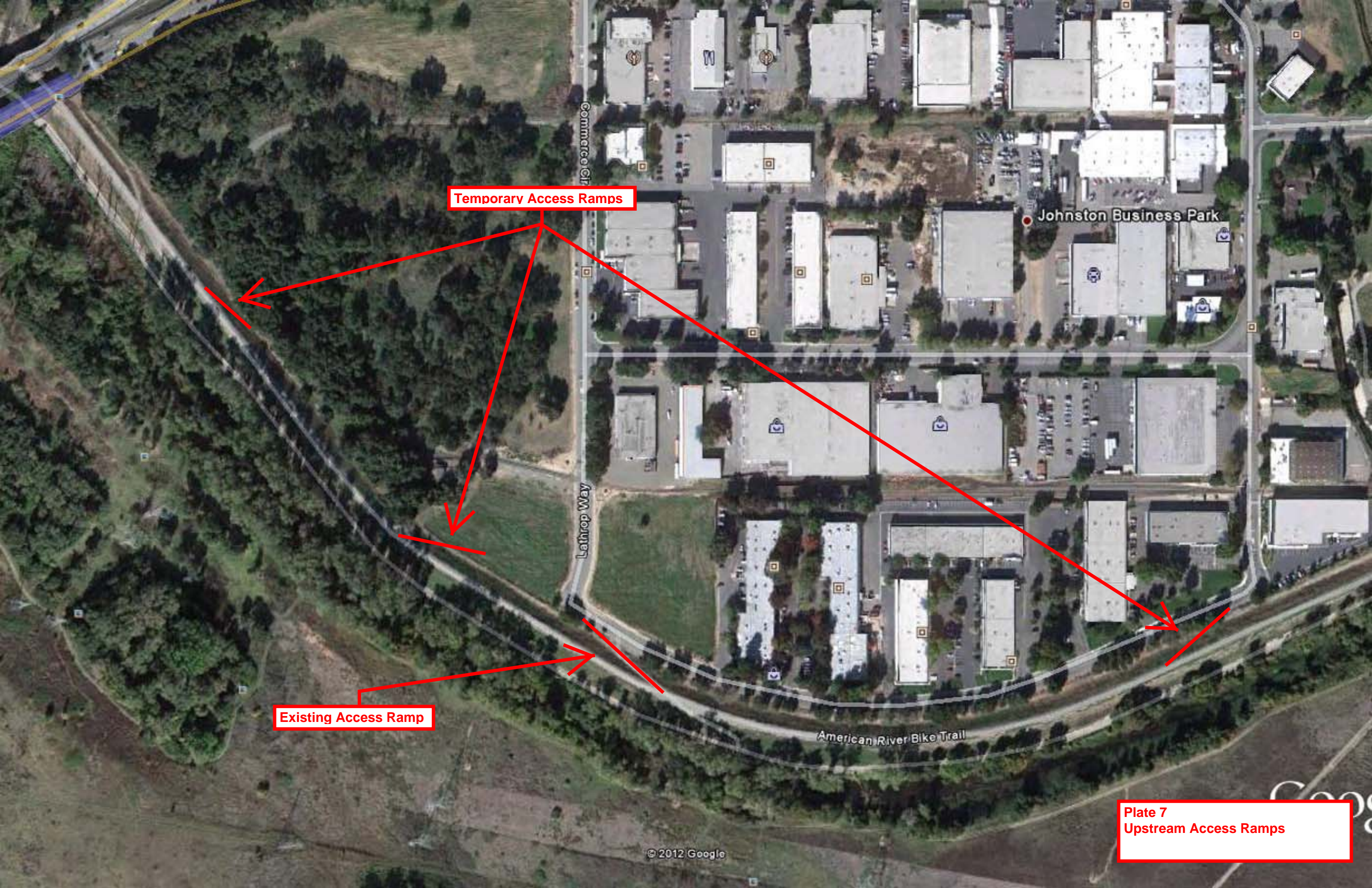
Plate 5
Slope Stability Section



Cutoff Wall

UPRR Tracks

Plate 6
Downstream Cutoff
Wall Section



Temporary Access Ramps

Johnston Business Park

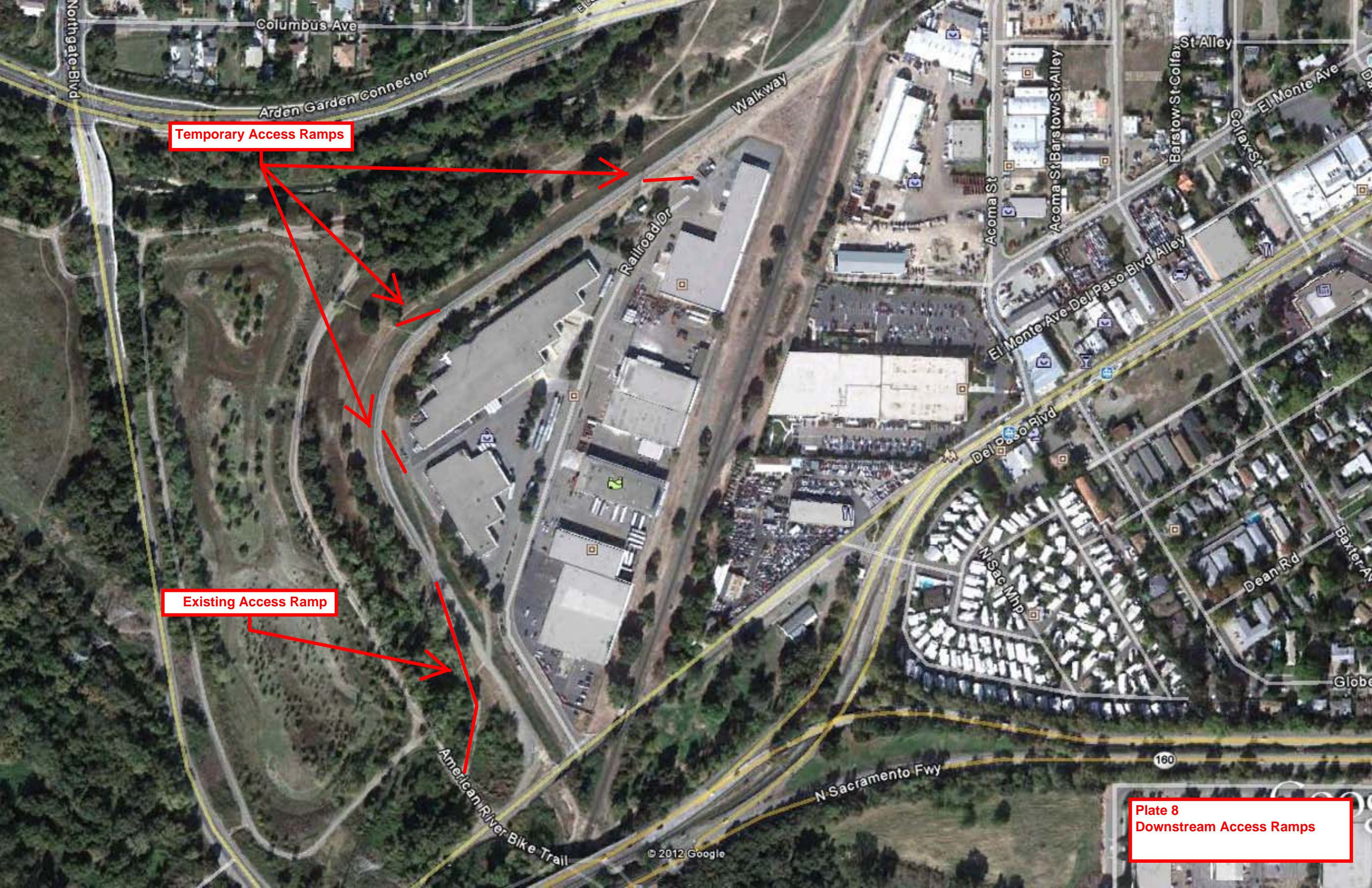
Commerce Cir

Lathrop Way

American River Bike Trail

Existing Access Ramp

Plate 7
Upstream Access Ramps



Temporary Access Ramps

Existing Access Ramp

Plate 8
Downstream Access Ramps



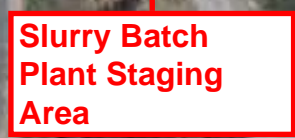
Lathrop Way

Slurry Batch
Plant Staging

Soil Staging

Primary Staging
Area

Plate 9
Upstream Staging Area



UPRR Tracks

Downstream Staging Areas

Del Paso Boulevard

**Excavated
Soil Staging
Area**

Highway 160

Plate 10
Downstream Staging Areas

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Johnston Business Park

Commerce Cir

Expo Pkwy

Lathrop Way

American River Bike Trail

American River Parkway

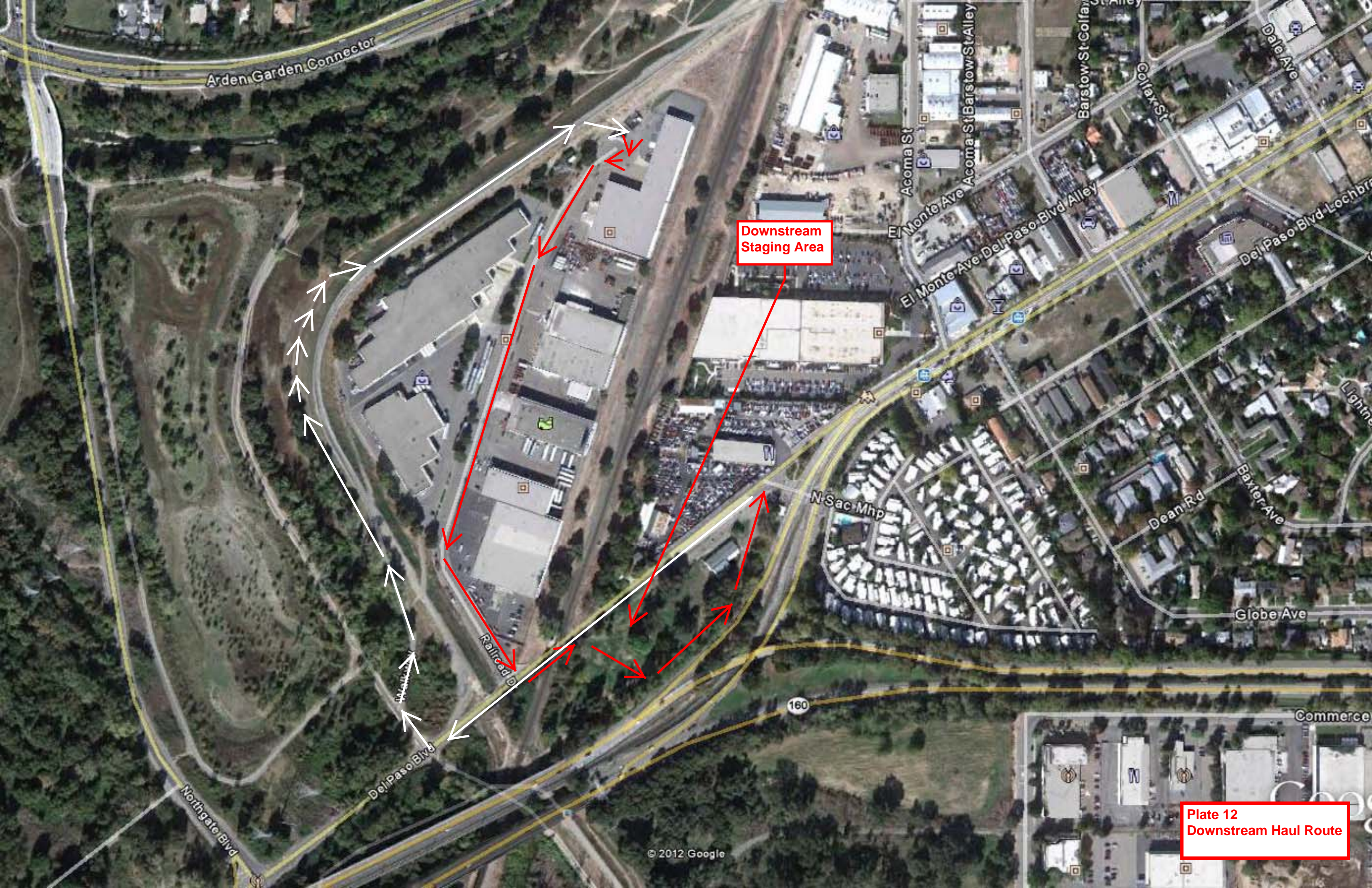
Plate 11a
Upstream Segment Haul Route

Turnaround in
Downstream
Staging Area

Turnaround in
Upstream
Staging Area

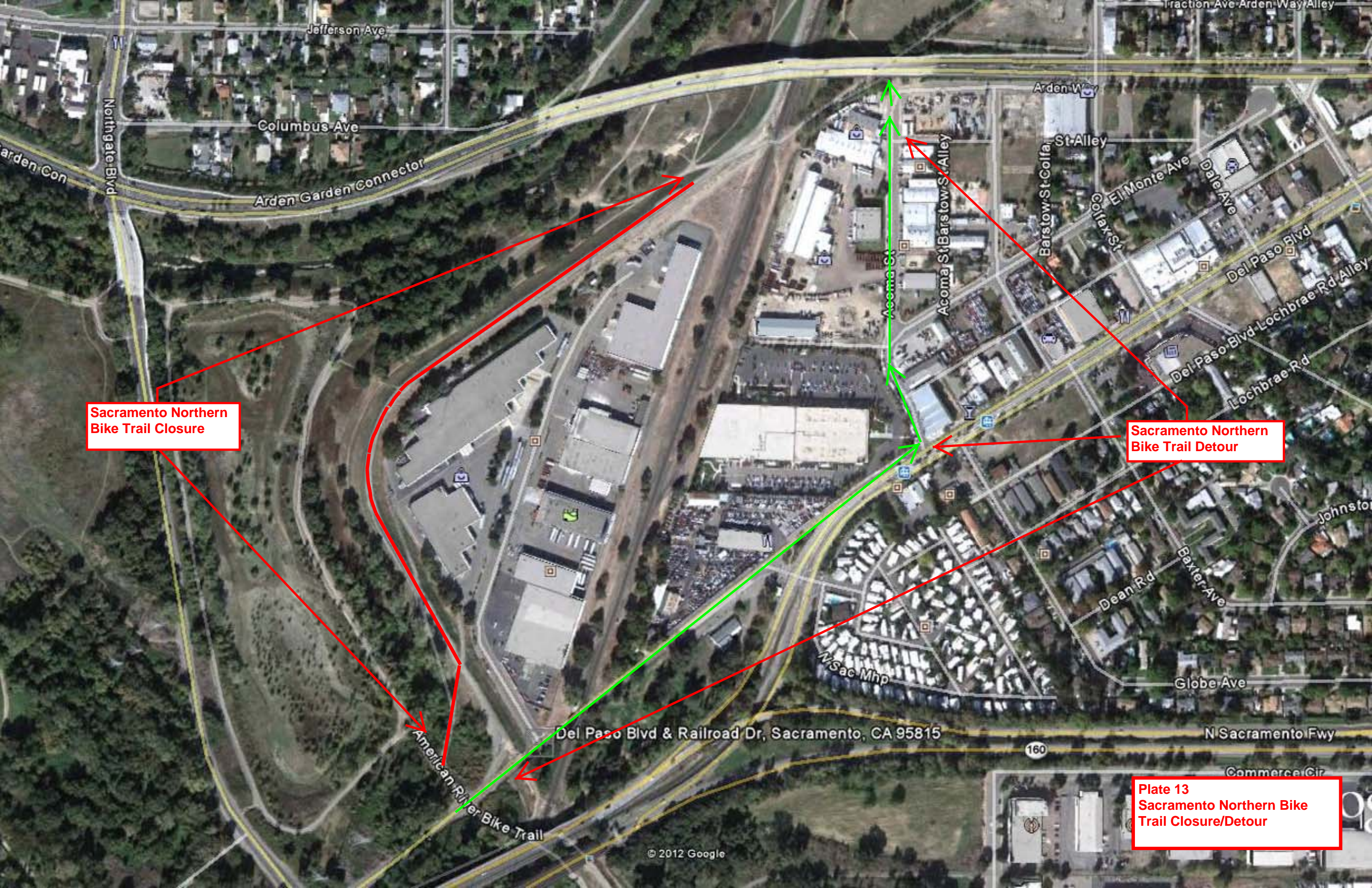
Plate 11b
Upstream Segment Haul
Route (Middle section)





Downstream
Staging Area

Plate 12
Downstream Haul Route



Sacramento Northern
Bike Trail Closure

Sacramento Northern
Bike Trail Detour

Plate 13
Sacramento Northern Bike
Trail Closure/Detour

Appendix A

Correspondence Regarding Special Status Species



REPLY TO
ATTENTION OF

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

Environmental Resources Branch

Ms. Susan Moore, Field Supervisor
U.S. Fish and Wildlife Service
2800 Cottage Way, Suite W2605
Sacramento, California 95825-1846

MAY 23 2012

Dear Ms. Moore:

This letter is to reinstate consultation for the Federally-listed valley elderberry longhorn beetle (VELB) (*Desmocerus californicus*) under Section 7(a) of the Endangered Species Act, as amended, for the Natomas East Main Drain Canal (NEMDC) Project, as part of the 1999 Water Resources Development Act's American River Watershed (Common Features) Project, Sacramento County, California. We are requesting amending the existing Biological Opinion 1-1-00-F-0193, subject as above, dated July 16, 2003. This reinstatement is due to changes in the project description which was originally analyzed in the earlier consultation. The entire project is located in Sacramento County along the north bank of the American River between approximately river mile (RM) 2.0R and 3.6R. Specifically, the NEMDC project will install 4,680 feet of slurry cutoff wall and construct 120 feet of slope stability features in approximately 5,500 linear feet (lf) of levee along the American River situated between the NEMDC on the downstream end and the Johnston Business Park on the upstream end (Plate 1). The project is divided into two segments: an upstream segment from the upstream terminus at Johnston Business Park downstream to just short of Highway 160 (3,300 lf); and the downstream segment from the Union Pacific Railroad (UPRR) tracks to the downstream terminus at the NEMDC (1,500 lf) (Plates 2 through 5). The project is scheduled to be constructed over two years: the upstream segment in 2013 and the downstream segment in 2014. Construction in either year will begin no earlier than June 15. The completed project would stabilize the levees by addressing seepage concerns in this section to safely convey emergency releases of 160,000 cfs from Folsom Dam to the American River.

Construction activities will be conducted from both the landside and waterside of the levee, as well as the levee crown. Prior to construction of each segment, the levee slopes will be grubbed and scraped to prepare for degrading and excavation. The degrading of the levee crown (approximately 6 feet) will be necessary to prepare the levee for the excavation of the slot trench and the installation of the slurry walls. The degrading and excavation of the levee would remove a total of 37,690 cubic yards (cy) of material: 29,030 cy for the upstream segment; 8,660 cy for the downstream segment. Due to the limited space in the staging areas, and the proposed slurry wall construction methodology, all soil removed during clearing and grubbing, levee degrade, and excavation would be disposed as spoils. The grubbing and scraping of the levee will not disturb any woody vegetation, however, there is presence of elderberry shrubs (*Sambucus sp.*) in, or near, both upstream and downstream segments of the project area. There is critical habitat for the VELB located adjacent to the upstream segment of the project along the landside toe (Plate 2). That area will not be disturbed by construction activities, but a haul road will be

located along the landside toe of the levee adjacent to the critical habitat. The critical habitat will be protected from the haul road using concrete or water-filled barriers which will be placed at the edge of the haul road. Although the haul road will pass through the upstream corner of the critical habitat, each side of that pathway will be bordered by barriers to protect oak trees in the area. Only a few branches on one oak tree will require minor trimming to prevent more extensive damage by the truck movement. The project construction trailer will be located adjacent to the critical habitat to provide an additional buffer for the elderberry shrubs. It would be difficult to observe a full 100-foot buffer for the elderberry shrubs, however, the furthest distance from the driplines of the shrubs would be established for placement of the protective measures.

In the downstream segment, there are several elderberry shrubs that would be within 100 feet of the slurry wall construction activities or the equipment access point (Plate 5). These shrubs would be protected in place, but the 100-foot buffer will not be able to be observed. Concrete or water-filled barriers will be used to protect the complex of shrubs nearest to the waterside toe of the levee from soil or material moving down the levee slope. A biological monitor would also be on site during the period when the construction activities are adjacent to the shrubs. Once the installation of the slurry cutoff walls has been completed, the levee will be reconstructed, the crown of the levee will be covered with compacted aggregate base, and the levee slopes will be restored to their preconstruction condition.

During the process of establishing the project design (construction footprint, access ramps, haul roads, staging area, etc.), U.S. Fish and Wildlife Service (USFWS) staff accompanied Corps project team members on site visits to understand the proposed project and provide an initial assessment of potential special status species issues. It was determined that the only area where project activities would impact elderberry shrubs, the sole host plant for the VELB, is in the slope stability section in the downstream segment (Plate 6). Construction of the slope stability/seepage berm would create a flattened landside levee slope that would extend from 35 feet to 50 feet from the current landside levee toe. This section, although short (approximately 120 feet), is complicated by several site factors that the "low-tech" earthwork would address: the short length of the reach restricts the use of equipment on top of the levee to install a cutoff wall; the wing walls associated with the Del Paso Boulevard flood gates and the UPRR tracks restrict the ability to degrade the levee crown; several utilities passing through the levee also restrict incursion through the center of the levee; the landside toe of the levee has been severely altered by a long-standing homeless encampment; significant growth of woody vegetation at the landside levee toe and an existing power pole are levee safety concerns that must be addressed. This action would require removal of the vegetation in this area including approximately 12 elderberry shrubs with one stem each greater than 5 inches in diameter at ground level, and one oak tree. Estimates related to the elderberry shrubs were necessary due to the presence of the homeless encampment located within the shrubs. The situation was considered unsafe for entry by Corps or USFWS staff. Estimates were based on observations

taken from the top of the levee and adjacent to the UPRR tracks. This area is considered non-riparian, however, as a conservative approach, the shrubs are assumed to have exit holes. This complex of shrubs is located 300 feet away from the critical habitat and is separated by Highway 160 and UPRR tracks.

Initial formal consultation is being initiated based on these estimates. When the homeless encampment has been removed prior to construction activities in this section, protocol surveys will be conducted for the elderberry shrubs and consultation will be reinitiated to recalculate compensation requirements. This is projected to take place during November 2013 to February 2014. Other shrubs located within this area will not be directly impacted by the construction work, but to avoid damage to the shrubs by the equipment, they will be protected in place with concrete or water-filled barriers. The barriers would be placed as far from the dripline of the shrubs as possible. Due to the limited space within this construction area, it would be difficult to observe the USFWS recommended 100-foot radius buffer zone for protection of the elderberry shrubs. The Corps is proposing a minimum 20-foot radius buffer zone, using barriers for protection, and limiting construction until after the no-disturbance period (after June 15).

Based on the information described, above, the Corps proposes compensation for the loss of the twelve shrubs by planting 72 elderberry seedlings and 144 associated native plantings in approximately 0.9 acres. Transplants and compensation plantings would be proposed at an existing mitigation site, such as Goethe or Rossmoor. However, if adequate space is not available at an existing mitigation site, a USFWS-approved mitigation bank would be used.

To minimize potential take of the VELB, the following measures taken from the USFWS "Conservation Guidelines for the Valley Elderberry Longhorn Beetle," July 1999 would be incorporated into the project:

- A minimum setback of 100 feet from the dripline of all elderberry shrubs will be established, if possible. If the 100 foot minimum buffer zone is not possible, the next maximum distance allowable will be established. Due to the limited options for locating the staging area, as well as the limited space within the staging area, it would be difficult to observe the required 100-foot radius buffer zone for protection of the elderberry shrubs. The Corps is proposing a minimum 20-foot radius buffer zone, using concrete or water-filled barriers for protection, and limiting construction until after the no-disturbance period (after June 15). These areas would be fenced, flagged, and maintained during construction.
- Environmental awareness training would be conducted for all workers before they begin work. The training would include status, the need to avoid adversely affecting the elderberry shrub, avoidance areas and measures taken by the workers during construction, and contact information.


- Signs would be placed every 50 feet along the edge of the elderberry buffer zones. The signs would include: "This area is the habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be readable from a distance of 20 feet and would be maintained during construction.

Dust suppression measures will be used and a biological monitor will provide instruction on establishing the buffer zones for the shrubs. All areas disturbed by construction activities will be restored to preproject conditions. All levee slopes and parkway areas will be reseeded with native grasses.

We request your concurrence with our determination that the NEMDC Project may effect, but is not likely to adversely affect, the valley elderberry longhorn beetle, or its habitat. If you need additional information, please contact Mr. John Suazo at (916) 557-6719 or email: john.suazo@usace.army.mil. Thank you for your coordination on this project.

Sincerely,



 Alicia E. Kirchner
Chief, Planning Division

Enclosure

Copy furnished (w/o enclosures):

Mr. Doug Weinrich, U.S. Fish and Wildlife Service, 2800 Cottage Way, Sacramento, CA 95825

U.S. Fish & Wildlife Service

Sacramento Fish & Wildlife Office

**Federal Endangered and Threatened Species that Occur in
or may be Affected by Projects in the
SACRAMENTO EAST (512C)
U.S.G.S. 7 1/2 Minute Quad**

Database last updated: September 18, 2011

Report Date: March 20, 2012

Listed Species

Invertebrates

Branchinecta lynchi

vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus

Critical habitat, valley elderberry longhorn beetle (X)

valley elderberry longhorn beetle (T)

Lepidurus packardi

vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris

green sturgeon (T) (NMFS)

Hypomesus transpacificus

Critical habitat, delta smelt (X)

delta smelt (T)

Oncorhynchus mykiss

Central Valley steelhead (T) (NMFS)

Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha

Central Valley spring-run chinook salmon (T) (NMFS)

Critical Habitat, Central Valley spring-run chinook (X) (NMFS)

winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense

California tiger salamander, central population (T)

Rana draytonii

California red-legged frog (T)

Reptiles

Thamnophis gigas

giant garter snake (T)

Key:

- (E) Endangered - Listed as being in danger of extinction.
- (T) Threatened - Listed as likely to become endangered within the foreseeable future.
- (P) Proposed - Officially proposed in the Federal Register for listing as endangered or threatened.
- (NMFS) Species under the Jurisdiction of the [National Oceanic & Atmospheric Administration Fisheries Service](#). Consult with them directly about these species.
- Critical Habitat - Area essential to the conservation of a species.
- (PX) Proposed Critical Habitat - The species is already listed. Critical habitat is being proposed for it.
- (C) Candidate - Candidate to become a proposed species.
- (V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
- (X) Critical Habitat designated for this species

U.S. Fish & Wildlife Service

Sacramento Fish & Wildlife Office

**Federal Endangered and Threatened Species that Occur in
or may be Affected by Projects in the
CARMICHAEL (512D)
U.S.G.S. 7 1/2 Minute Quad**

Database last updated: September 18, 2011

Report Date: March 20, 2012

Listed Species

Invertebrates

Branchinecta conservatio

Conservancy fairy shrimp (E)

Branchinecta lynchi

Critical habitat, vernal pool fairy shrimp (X)

vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus

Critical habitat, valley elderberry longhorn beetle (X)

valley elderberry longhorn beetle (T)

Lepidurus packardi

Critical habitat, vernal pool tadpole shrimp (X)

vernal pool tadpole shrimp (E)

Fish

Hypomesus transpacificus

delta smelt (T)

Oncorhynchus mykiss

Central Valley steelhead (T) (NMFS)

Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha

Central Valley spring-run chinook salmon (T) (NMFS)

winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense

California tiger salamander, central population (T)

Rana draytonii

California red-legged frog (T)

Reptiles

Thamnophis gigas

giant garter snake (T)

Plants

Orcuttia tenuis

Critical habitat, slender Orcutt grass (X)

slender Orcutt grass (T)

Orcuttia viscida

Critical habitat, Sacramento Orcutt grass (X)

Key:

- (E) Endangered - Listed as being in danger of extinction.
- (T) Threatened - Listed as likely to become endangered within the foreseeable future.

- (P) Proposed - Officially proposed in the Federal Register for listing as endangered or threatened.
- (NMFS) Species under the Jurisdiction of the [National Oceanic & Atmospheric Administration Fisheries Service](#). Consult with them directly about these species.
- Critical Habitat - Area essential to the conservation of a species.
- (PX) Proposed Critical Habitat - The species is already listed. Critical habitat is being proposed for it.
- (C) Candidate - Candidate to become a proposed species.
- (V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
- (X) Critical Habitat designated for this species



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number:	45347	EO Index:	45347
Key Quad:	Sacramento East (3812154)	Element Code:	ABNKC19070
Occurrence Number:	931	Occurrence Last Updated:	2001-05-15

Scientific Name:	<i>Buteo swainsoni</i>	Common Name:	Swainson's hawk
Listing Status:	Federal: None State: Threatened	Rare Plant Rank:	
CNDDB Element Ranks:	Global: G5 State: S2	Other Lists:	ABC_WLBCC-Watch List of Birds of Conservation Concern BLM_S-Sensitive IUCN_LC-Least Concern USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern

General Habitat:	Micro Habitat:
BREEDS IN GRASSLANDS WITH SCATTERED TREES, JUNIPER-SAGE FLATS, RIPARIAN AREAS, SAVANNAHS, & AGRICULTURAL OR RANCH LANDS WITH GROVES OR LINES OF TREES.	REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Last Date Observed:	2001-04-20	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2001-04-20	Occurrence Rank:	Fair
Owner/Manager:	UNKNOWN	Trend:	Unknown
Presence:	Presumed Extant		

Location:
ALONG NATOMAS EAST MAIN DRAIN, JUST NORTH OF THE GARDEN HIGHWAY, 0.5 MILE EAST OF TRUXEL, SACRAMENTO

Detailed Location:

Ecological:
NEST TREE IS A COTTONWOOD, LOCATED WITHIN RIPARIAN ALONG THE NATOMAS EAST MAIN DRAIN; SURROUNDED BY AN URBAN AREA ADJACENT TO THE GARDEN HIGHWAY TO THE NORTH AND A RECREATIONAL AREA ALONG THE JEDIDIAH SMITH BIKE TRAIL TO THE SOUTH.

Threats:
POSSIBLE THREAT FROM HUMAN USE OF THE NEARBY RECREATIONAL AREA.

General:
ON 20 APR 2001, THE MALE WAS OBSERVED PERCHED IN A COTTONWOOD, 100 FEET EAST OF THE NEST TREE; FEMALE WAS OBSERVED SITTING ON THE NEST.

PLSS:	T09N, R04E, Sec. 25 (M)	Accuracy:	80 meters	Area (acres):	0
UTM:	Zone-10 N4274590 E631466	Latitude/Longitude:	38.61009 / -121.49006	Elevation (feet):	20

County Summary:	Quad Summary:
Sacramento	Sacramento East (3812154)

Sources:
ZET01F0001 ZETTLER, B. (JONES AND STOKES ASSOCIATES) - FIELD SURVEY FORM FOR BUTEO SWAINSONI (NEST SITE) 2001-04-20



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number:	65482	EO Index:	65561
Key Quad:	Sacramento East (3812154)	Element Code:	ABNKC19070
Occurrence Number:	1645	Occurrence Last Updated:	2006-07-31

Scientific Name:	<i>Buteo swainsoni</i>	Common Name:	Swainson's hawk
Listing Status:	Federal: None State: Threatened	Rare Plant Rank:	
CNDDB Element Ranks:	Global: G5 State: S2	Other Lists:	ABC_WLBCC-Watch List of Birds of Conservation Concern BLM_S-Sensitive IUCN_LC-Least Concern USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern

General Habitat:	Micro Habitat:
BREEDS IN GRASSLANDS WITH SCATTERED TREES, JUNIPER-SAGE FLATS, RIPARIAN AREAS, SAVANNAHS, & AGRICULTURAL OR RANCH LANDS WITH GROVES OR LINES OF TREES.	REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Last Date Observed:	2005-05-15	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2005-05-15	Occurrence Rank:	Good
Owner/Manager:	SAC COUNTY-PARKS & REC	Trend:	Unknown
Presence:	Presumed Extant		

Location:
BETWEEN NATOMAS EAST MAIN DRAIN AND THE LOWER AMERICAN RIVER, 0.7 MILE EAST OF I-5, DISCOVERY PARK, SACRAMENTO

Detailed Location:
NEST SITE IS LOCATED WITHIN A 23-MILE EXPANSE OF RIPARIAN PROTECTED BY THE AMERICAN RIVER PARKWAY. ~15 ACRES OF GRASSLAND FORAGING HABITAT IN THE VICINITY TO BE RESTORED TO RIPARIAN FOREST TO MITIGATE FOR VALLEY ELDERBERRY LONGHORN BEETLE.

Ecological:
NEST TREE WAS A FREMONT COTTONWOOD WITHIN A LARGE STAND OF COTTONWOODS NEAR THE LOWER AMERICAN RIVER (RT BANK).

Threats:
THREATENED BY LONG-TERM LOSS OF LARGE NEST TREES (FIRE, SENESCENCE, & BANK EROSION) & LACK OF NATURAL TREE REGENERATION.

General:
NEST WITH 2 ADULTS OBSERVED ON 15 MAY 2005.

PLSS:	T09N, R04E, Sec. 25 (M)	Accuracy:	80 meters	Area (acres):	0
UTM:	Zone-10 N4274052 E631106	Latitude/Longitude:	38.60529 / -121.49429	Elevation (feet):	

County Summary:	Quad Summary:
Sacramento	Sacramento East (3812154)

Sources:
BUR05F0002 BURWELL, T.A. (SACRAMENTO COUNTY PARKS) - FIELD SURVEY FORM FOR BUTEO SWAINSONI (NEST SITE) 2005-05-15



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number:	65488	EO Index:	65567
Key Quad:	Sacramento East (3812154)	Element Code:	ABNKC19070
Occurrence Number:	1646	Occurrence Last Updated:	2006-07-31

Scientific Name:	<i>Buteo swainsoni</i>	Common Name:	Swainson's hawk
Listing Status:	Federal: None State: Threatened	Rare Plant Rank:	
CNDDB Element Ranks:	Global: G5 State: S2	Other Lists:	ABC_WLBCC-Watch List of Birds of Conservation Concern BLM_S-Sensitive IUCN_LC-Least Concern USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern

General Habitat:	Micro Habitat:
BREEDS IN GRASSLANDS WITH SCATTERED TREES, JUNIPER-SAGE FLATS, RIPARIAN AREAS, SAVANNAHS, & AGRICULTURAL OR RANCH LANDS WITH GROVES OR LINES OF TREES.	REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Last Date Observed:	2006-06-06	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2006-06-06	Occurrence Rank:	Good
Owner/Manager:	SAC COUNTY-PARKS & REC	Trend:	Unknown
Presence:	Presumed Extant		

Location:
AMERICAN RIVER, 0.6 MILE UPSTREAM OF THE HOWE AVENUE BRIDGE, SACRAMENTO

Detailed Location:
NEST SITE IS LOCATED WITHIN A 23-MILE EXPANSE OF RIPARIAN PROTECTED BY THE AMERICAN RIVER PARKWAY. NEST TREE IS SITUATED AWAY FROM ACTIVE RECREATION USES, AND THERE IS NO ACCESS TO THIS SITE EXCEPT BY BOAT.

Ecological:
NEST TREE WAS A FREMONT COTTONWOOD WITHIN A SMALL STAND OF COTTONWOODS ON A MID-CHANNEL ISLAND IN THE AMERICAN RIVER (LEFT BANK). SURROUNDING VEGETATION CONSISTS OF ARROYO WILLOW, YELLOW WILLOW, NARROW-LEAFED WILLOW, OREGON ASH, & SYCAMORE.

Threats:
THREATENED BY LONG-TERM LOSS OF LARGE NEST TREES (FIRE, SENESCENCE, & BANK EROSION) & LACK OF NATURAL TREE REGENERATION.

General:
2 ADULTS OBSERVED NESTING ON 6 JUN 2006.

PLSS:	T08N, R05E, Sec. 11 (M)	Accuracy:	80 meters	Area (acres):	0
UTM:	Zone-10 N4269368 E639522	Latitude/Longitude:	38.56181 / -121.39861	Elevation (feet):	25

County Summary:	Quad Summary:
Sacramento	Sacramento East (3812154)

Sources:
BUR06F0001 BURWELL, T.A. (SACRAMENTO COUNTY PARKS) - FIELD SURVEY FORM FOR BUTEO SWAINSONI (NEST SITE) 2006-06-06



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number:	84532	EO Index:	85552
Key Quad:	Sacramento East (3812154)	Element Code:	ABNKC19070
Occurrence Number:	1769	Occurrence Last Updated:	2011-12-16

Scientific Name:	<i>Buteo swainsoni</i>	Common Name:	Swainson's hawk
Listing Status:	Federal: None State: Threatened	Rare Plant Rank:	
CNDDB Element Ranks:	Global: G5 State: S2	Other Lists:	ABC_WLBCC-Watch List of Birds of Conservation Concern BLM_S-Sensitive IUCN_LC-Least Concern USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern

General Habitat:	Micro Habitat:
BREEDS IN GRASSLANDS WITH SCATTERED TREES, JUNIPER-SAGE FLATS, RIPARIAN AREAS, SAVANNAHS, & AGRICULTURAL OR RANCH LANDS WITH GROVES OR LINES OF TREES.	REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Last Date Observed:	2011-04-27	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2011-04-27	Occurrence Rank:	Good
Owner/Manager:	SAC COUNTY-PARKS & REC	Trend:	Unknown

Presence: Presumed Extant

Location:

SOUTH SIDE OF GARDEN HWY ABOUT 0.5 ROAD MILES WEST OF NORTHGATE BLVD, AMERICAN RIVER PARKWAY.

Detailed Location:

ALONG RIPARIAN STRIP (STEELHEAD CREEK/NATOMAS EAST MAIN DRAINAGE CANAL) BETWEEN GARDEN HWY AND AMERICAN RIVER PARKWAY BIKE PATH (JEDEDIAH SMITH MEMORIAL TRAIL). MAPPED TO PROVIDED COORDINATES.

Ecological:

NEST IN COTTONWOOD OVER WATER. HABITAT DESCRIBED AS COTTONWOOD RIPARIAN, RIVERINE, GRASSLAND, HIGHWAY, RESIDENTIAL. OTHER BIRDS DETECTED NEARBY INCLUDED NORTHERN HARRIER, WHITE-TAILED KITE, AMERICAN KESTREL, GREAT EGRET, & GREAT BLUE HERON.

Threats:

POTENTIALLY THREATENED BY HUMAN DISTURBANCE ASSOCIATED WITH BIKE PATH, PARK, AND RECREATION.

General:

2 ADULTS DETECTED NESTING ON 27 APR 2011 AND THE FOLLOWING BEHAVIORS WERE DOCUMENTED: PERCHING ON NEST, FOOD SHARING, NEST BUILDING, CALLING, PERCHING NEAR NEST, SOARING, CHASING. UNKNOWN IF OBSERVATIONS MADE ON MULTIPLE DATES.

PLSS:	T09N, R04E, Sec. 25 (M)	Accuracy:	80 meters	Area (acres):	0
UTM:	Zone-10 N4274349 E631812	Latitude/Longitude:	38.60786 / -121.48612	Elevation (feet):	20

County Summary:	Quad Summary:
Sacramento	Sacramento East (3812154)

Sources:

CAH11F0001 CAHILL, K. (CALIFORNIA DEPARTMENT OF FISH AND GAME-WILDLIFE MANAGEMENT BRANCH) - FIELD SURVEY FORM FOR BUTEO SWAINSONI 2011-04-27



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 11372 **EO Index:** 12978
Key Quad: Sacramento East (3812154) **Element Code:** ABPAU08010
Occurrence Number: 94 **Occurrence Last Updated:** 1998-10-28

Scientific Name: *Riparia riparia* **Common Name:** bank swallow
Listing Status: **Federal:** None **Rare Plant Rank:**
State: Threatened **Other Lists:** BLM_S-Sensitive
IUCN_LC-Least Concern
CNDDB Element Ranks: **Global:** G5
State: S2S3

General Habitat: COLONIAL NESTER; NESTS PRIMARILY IN RIPARIAN AND OTHER LOWLAND HABITATS WEST OF THE DESERT.
Micro Habitat: REQUIRES VERTICAL BANKS/CLIFFS WITH FINE-TEXTURED/SANDY SOILS NEAR STREAMS, RIVERS, LAKES, OCEAN TO DIG NESTING HOLE.

Last Date Observed: 1986-XX-XX **Occurrence Type:** Natural/Native occurrence
Last Survey Date: 1986-XX-XX **Occurrence Rank:** Unknown
Owner/Manager: SAC COUNTY **Trend:** Unknown
Presence: Presumed Extant

Location: SOUTH SIDE OF AMERICAN RIVER UPSTREAM FROM CAL EXPO, NEAR BUSINESS 80 BRIDGE.

Detailed Location:

Ecological:

Threats:

General:

42 BURROWS WITH 30 BIRDS ESTIMATED BY RON SCHLORFF; VISIBLE FROM THE BUSINESS 80 BRIDGE.

PLSS: T09N, R05E, Sec. 33 (M) **Accuracy:** nonspecific area **Area (acres):** 30
UTM: Zone-10 N4271808 E635575 **Latitude/Longitude:** 38.58441 / -121.44342 **Elevation (feet):** 30

County Summary: Sacramento **Quad Summary:** Sacramento East (3812154)

Sources:

HUM86U0001 HUMPHREY, J. - COMPILATION OF BANK SWALLOW LOCALITIES FOR 1971-1986. 1986-XX-XX



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	31558	EO Index:	6893
Key Quad:	Sacramento East (3812154)	Element Code:	ICBRA03030
Occurrence Number:	32	Occurrence Last Updated:	1995-08-25

Scientific Name:	<i>Branchinecta lynchi</i>	Common Name:	vernal pool fairy shrimp
Listing Status:	Federal: Threatened State: None	Rare Plant Rank:	
CNDDDB Element Ranks:	Global: G3 State: S2S3	Other Lists:	IUCN_VU-Vulnerable

General Habitat:

ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.

Micro Habitat:

INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Last Date Observed:	1995-02-08	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1995-04-21	Occurrence Rank:	Fair
Owner/Manager:	DOD-BT COLLINS RESERVE TR CNTR	Trend:	Unknown
Presence:	Presumed Extant		

Location:

FORMER SACRAMENTO ARMY DEPOT. B.T. COLLINS ARMY RESERVE TRAINING CENTER.

Detailed Location:

FOUND ONLY IN SEASONAL WETLAND IN THE IMMEDIATE VICINITY OF THE RUNNING TRACK.

Ecological:

53 PONDED WATER AREAS SAMPLED EVERY 2 WEEKS BETWEEN 12/19/95 & 4/21/95. AREAS SURVEYED INCLUDED SEASONAL WETLANDS, SHALLOW SWALES, TIRE TRACKS, PONDED AREAS IN RUNNING TRACK & BASEBALL DIAMOND, FIELD & ROADSIDE DRAINAGE DITCHES.

Threats:

General:

BRACHINECTA LYNCHI FOUND IN ONLY 3 OF 53 SITES. FOUND ONLY BETWEEN 1/31/95 & 2/8/95. 2 POOLS HAD POP. EST. <50, 1 POOL >50. ALSO FOUND LINDERIELLA OCCIDENTALIS; 11 ADULTS COLLECTED AND DEPOSITED IN CAS; MORE POOL INFO IN REPORT.

PLSS:	T08N, R05E, Sec. 26 (M)	Accuracy:	nonspecific area	Area (acres):	5
UTM:	Zone-10 N4263773 E639762	Latitude/Longitude:	38.51137 / -121.39697	Elevation (feet):	40

County Summary:

Sacramento

Quad Summary:

Sacramento East (3812154)

Sources:

CRO95F0002	CROWE, D. - FIELD SURVEY FORM FOR BRACHINECTA LYNCHI (VERNAL POOL FAIRY SHRIMP) 1995-01-31
FOS95R0001	FOSTER WHEELER ENVIRONMENTAL CORP. - B.T. COLLINS ARMY RESERVE TRAINING CENTER 1994-95 VERNAL POOL CRUSTACEAN PRESENCE/ABSENCE SURVEY 60-DAY REPORT 1995-06-XX



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	32443	EO Index:	637
Key Quad:	Sacramento East (3812154)	Element Code:	ICBRA03030
Occurrence Number:	35	Occurrence Last Updated:	1996-03-11

Scientific Name:	<i>Branchinecta lynchi</i>	Common Name:	vernal pool fairy shrimp
Listing Status:	Federal: Threatened State: None	Rare Plant Rank:	
CNDDDB Element Ranks:	Global: G3 State: S2S3	Other Lists:	IUCN_VU-Vulnerable

General Habitat:

ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.

Micro Habitat:

INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Last Date Observed:	1995-01-05	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1995-01-05	Occurrence Rank:	Unknown
Owner/Manager:	PVT-PIPE TRADES TRUST FUND	Trend:	Unknown
Presence:	Presumed Extant		

Location:

1.2 KM ESE OF ELDER CREEK ROAD X FLORIN PERKINS ROAD; SE OF THE FORMER SACRAMENTO ARMY DEPOT.

Detailed Location:

ELDER CREEK PROPERTY. BRANCHINECTA LYNCHI WERE FOUND IN TWO OF 90 SAMPLED WETLANDS.

Ecological:

HARDPAN VERNAL POOL IN ANNUAL GRASSLAND.

Threats:

RURAL AGRICULTURE; URBAN DEVELOPMENT OCCURRING IN VICINITY.

General:

POOL #46: 12/21/1994: >50 ADULTS OBSERVED, 1/5/1995: <50 ADULTS OBSERVED, 3 SPECIMENS COLLECTED AND DEPOSITED IN CAS; POOL #51: 12/21/94: >50 ADULTS OBSERVED, 1/5/95: >50 ADULTS OBSERVED.

PLSS:	T08N, R05E, Sec. 36 (M)	Accuracy:	nonspecific area	Area (acres):	16
UTM:	Zone-10 N4263165 E641409	Latitude/Longitude:	38.50564 / -121.37821	Elevation (feet):	40

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153), Sacramento East (3812154)

Sources:

SUG95R0001 SUGNET & ASSOCIATES - ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED CRUSTACEA CONDUCTED UNDER FEDERAL FISH AND WILDLIFE PERMIT #PRT-795933. (2 BINDERS) 1995-06-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number:	33380	EO Index:	28755
Key Quad:	Sacramento East (3812154)	Element Code:	ICBRA03030
Occurrence Number:	122	Occurrence Last Updated:	1996-08-05

Scientific Name:	<i>Branchinecta lynchi</i>	Common Name:	vernal pool fairy shrimp
Listing Status:	Federal: Threatened	Rare Plant Rank:	
	State: None	Other Lists:	IUCN_VU-Vulnerable
CNDDDB Element Ranks:	Global: G3		
	State: S2S3		

General Habitat:

ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.

Micro Habitat:

INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Last Date Observed:	1996-03-10	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1996-03-10	Occurrence Rank:	Poor
Owner/Manager:	PVT	Trend:	Unknown
Presence:	Presumed Extant		

Location:

ALONG THE CENTRAL CALIFORNIA TRACTION COMPANY (RAILROAD) RIGHT-OF-WAY, AT THE NORTH END OF 83RD STREET, SACRAMENTO.

Detailed Location:

LOCATED IN A SERIES OF PONDED DEPRESSIONS ALONG THE RAILROAD RIGHT-OF-WAY. B. LYNCHI FOUND IN 5 OF 27 SAMPLED DEPRESSIONS.

Ecological:

HABITAT CONSISTS OF PONDED DEPRESSIONS; OTHER RARE SPECIES FOUND INCLUDE BRANCHINECTA MESOVALLENSIS (UNDESCRIBED) AND LINDERIELLA OCCIDENTALIS.

Threats:

CONSTANT DISTURBANCE BY RAILROAD TRUCKS AND OTHERS DRIVING THROUGH POOLED AREAS. ALSO TIRES AND DEBRIS IN POOLED AREAS.

General:

>50 INDIVIDUALS OBSERVED IN FIVE OF THE DEPRESSIONS DURING SURVEYS CONDUCTED FROM 6 FEBRUARY TO 10 MARCH 1996.

PLSS:	T08N, R05E, Sec. 23 (M)	Accuracy:	specific area	Area (acres):	6
UTM:	Zone-10 N4266068 E639528	Latitude/Longitude:	38.53209 / -121.39920	Elevation (feet):	40

County Summary:

Sacramento

Quad Summary:

Sacramento East (3812154)

Sources:

MAR96F0001 MARTIN, D. (BIOTA) - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI & LINDERIELLA OCCIDENTALIS 1996-03-10



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 34791 **EO Index:** 12989
Key Quad: Sacramento East (3812154) **Element Code:** ICBRA03030
Occurrence Number: 131 **Occurrence Last Updated:** 1996-08-05

Scientific Name: *Branchinecta lynchi* **Common Name:** vernal pool fairy shrimp
Listing Status: **Federal:** Threatened **Rare Plant Rank:**
State: None **Other Lists:** IUCN_VU-Vulnerable
CNDDDB Element Ranks: **Global:** G3
State: S2S3

General Habitat: ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.
Micro Habitat: INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Last Date Observed: 1992-04-03 **Occurrence Type:** Natural/Native occurrence
Last Survey Date: 1992-04-03 **Occurrence Rank:** Unknown
Owner/Manager: PVT-SPRR **Trend:** Unknown
Presence: Presumed Extant

Location:
RAILROAD DITCH AT 47TH AVENUE (ELDER CREEK RD) AND SPTRR, NEAR POWER INN ROAD; NEAR SW CORNER OF SACRAMENTO ARMY DEPOT.

Detailed Location:
SPTRR IS SOUTHERN PACIFIC TRACTION RR, WHICH RUNS SE FROM CORNER OF 65TH ST & HWY 50.

Ecological:
RAILROAD DITCH.

Threats:
General:
KOFORD OBSERVED B. LYNCHI IN DITCH DURING SURVEY IN SPRING OF 1992; LINDERIELLA OCCIDENTALIS AND LEPIDURUS PACKARDI ALSO OBSERVED.

PLSS: T08N, R05E, Sec. 26 (M) **Accuracy:** 80 meters **Area (acres):** 0
UTM: Zone-10 N4263677 E639309 **Latitude/Longitude:** 38.51058 / -121.40219 **Elevation (feet):** 40

County Summary: **Quad Summary:**
Sacramento Sacramento East (3812154)

Sources:
KOF92U0001 KOFORD, E.J. (EBASCO) - LETTER TO USFWS REGARDING ADDITIONAL LOCALITIES OF FAIRY SHRIMP IN SACRAMENTO: BRANCHINECTA LYNCHI, LINDERIELLA OCCIDENTALIS & LEPIDURUS PACKARDI. 1992-04-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 33692 **EO Index:** 30609
Key Quad: Sacramento East (3812154) **Element Code:** ICBRA03030
Occurrence Number: 166 **Occurrence Last Updated:** 1998-08-10

Scientific Name: *Branchinecta lynchi* **Common Name:** vernal pool fairy shrimp
Listing Status: **Federal:** Threatened **Rare Plant Rank:**
State: None **Other Lists:** IUCN_VU-Vulnerable
CNDDDB Element Ranks: **Global:** G3
State: S2S3

General Habitat: ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.
Micro Habitat: INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Last Date Observed: 1992-04-03 **Occurrence Type:** Natural/Native occurrence
Last Survey Date: 1992-04-03 **Occurrence Rank:** Unknown
Owner/Manager: UNKNOWN **Trend:** Unknown
Presence: Presumed Extant

Location:
SOUTH OF FRUITRIDGE RD, NORTH OF FLORIN RD, EAST OF POWER INN RD, & WEST OF FLORIN PERKINS RD.

Detailed Location:
ROADSIDE DITCHES LOCATED SOMEWHERE IN SECTIONS 26 AND 35.

Ecological:
MOST OF SECTION 26 IS URBANIZED.

Threats:

General:
A MANMADE ROADSIDE DITCH IN SECTION 35 CONTAINED B. LYNCHI AND LEPIDURUS PACKARDI.

PLSS: T08N, R05E, Sec. 35 (M) **Accuracy:** specific area **Area (acres):** 1,513
UTM: Zone-10 N4263669 E639514 **Latitude/Longitude:** 38.51048 / -121.39984 **Elevation (feet):** 35

County Summary: Sacramento **Quad Summary:** Florin (3812144), Sacramento East (3812154)

Sources:
SUG93U0001 SUGNET & ASSOCIATES - PRINTOUT OF LOCATION (T-R-S) OF FAIRY SHRIMP SAMPLING. (OBTAINED FROM THE U.S. FISH AND WILDLIFE SERVICE) 1993-XX-XX



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	32443	EO Index:	638
Key Quad:	Sacramento East (3812154)	Element Code:	ICBRA10010
Occurrence Number:	14	Occurrence Last Updated:	1996-03-06

Scientific Name:	<i>Lepidurus packardii</i>	Common Name:	vernal pool tadpole shrimp
Listing Status:	Federal: Endangered State: None	Rare Plant Rank:	
CNDDB Element Ranks:	Global: G3 State: S2S3	Other Lists:	IUCN_EN-Endangered

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed:	1995-03-31	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1995-03-31	Occurrence Rank:	Unknown
Owner/Manager:	PVT-PIPE TRADES TRUST FUND	Trend:	Unknown
Presence:	Presumed Extant		

Location:

1.2 KM ESE OF ELDER CREEK ROAD X FLORIN PERKINS ROAD; SE OF THE FORMER SACRAMENTO ARMY DEPOT.

Detailed Location:

ELDER CREEK PROPERTY. LEPIDURUS PACKARDI WERE FOUND IN 10 OF 90 SAMPLED WETLANDS.

Ecological:

HARDPAN VERNAL POOLS IN ANNUAL GRASSLAND.

Threats:

RURAL AGRICULTURE; URBAN DEVELOPMENT OCCURING IN VICINITY.

General:

POOL #86: 2/21/1995: <50 ADULTS OBSERVED, 3/31/1995: <50 ADULTS OBSERVED; POOLS #21,43,46: <50 ADULTS OBSERVED; POOLS #38,41,44,45,50,53: >50 ADULTS OBSERVED; 4 ADULTS DEPOSITED IN CAS.

PLSS:	T08N, R05E, Sec. 36 (M)	Accuracy:	nonspecific area	Area (acres):	16
UTM:	Zone-10 N4263165 E641409	Latitude/Longitude:	38.50564 / -121.37821	Elevation (feet):	40

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153), Sacramento East (3812154)

Sources:

SUG95R0001 SUGNET & ASSOCIATES - ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED CRUSTACEA CONDUCTED UNDER FEDERAL FISH AND WILDLIFE PERMIT #PRT-795933. (2 BINDERS) 1995-06-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 34791 **EO Index:** 13036
Key Quad: Sacramento East (3812154) **Element Code:** ICBRA10010
Occurrence Number: 66 **Occurrence Last Updated:** 1996-08-05

Scientific Name: *Lepidurus packardii* **Common Name:** vernal pool tadpole shrimp
Listing Status: **Federal:** Endangered **Rare Plant Rank:**
State: None **Other Lists:** IUCN_EN-Endangered
CNDDB Element Ranks: **Global:** G3
State: S2S3

General Habitat: INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.
Micro Habitat: POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed: 1992-04-03 **Occurrence Type:** Natural/Native occurrence
Last Survey Date: 1992-04-03 **Occurrence Rank:** Unknown
Owner/Manager: PVT-SPRR **Trend:** Unknown
Presence: Presumed Extant

Location: RAILROAD DITCH AT 47TH AVENUE (ELDER CREEK RD) & SPTRR, NEAR POWER INN ROAD; NEAR SW CORNER OF SACRAMENTO ARMY DEPOT.
Detailed Location:

SPTRR IS SOUTHERN PACIFIC TRACTION RR, WHICH RUNS SE FROM CORNER OF 65TH ST AND HWY 50.

Ecological: RAILROAD DITCH.

Threats:

General: KOFORD OBSERVED TADPOLE SHRIMP DURING SURVEY IN SPRING OF 1992; BRANCHINECTA LYNCHI AND LINDERIELLA OCCIDENTALIS ALSO OBSERVED.

PLSS: T08N, R05E, Sec. 26 (M) **Accuracy:** 80 meters **Area (acres):** 0
UTM: Zone-10 N4263677 E639309 **Latitude/Longitude:** 38.51058 / -121.40219 **Elevation (feet):** 40

County Summary: Sacramento **Quad Summary:** Sacramento East (3812154)

Sources: KOF92U0001 KOFORD, E.J. (EBASCO) - LETTER TO USFWS REGARDING ADDITIONAL LOCALITIES OF FAIRY SHRIMP IN SACRAMENTO: BRANCHINECTA LYNCHI, LINDERIELLA OCCIDENTALIS & LEPIDURUS PACKARDI. 1992-04-XX



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	34792	EO Index:	13094
Key Quad:	Sacramento East (3812154)	Element Code:	ICBRA10010
Occurrence Number:	67	Occurrence Last Updated:	1996-08-05

Scientific Name:	<i>Lepidurus packardii</i>	Common Name:	vernal pool tadpole shrimp
Listing Status:	Federal: Endangered State: None	Rare Plant Rank:	
CNDDDB Element Ranks:	Global: G3 State: S2S3	Other Lists:	IUCN_EN-Endangered

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed:	1992-04-02	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1992-04-02	Occurrence Rank:	Unknown
Owner/Manager:	PVT-SPRR	Trend:	Unknown
Presence:	Presumed Extant		

Location:

FRUITRIDGE ROAD X SPTRR, NEAR POWER INN ROAD; NEAR NORTHWEST CORNER OF SACRAMENTO ARMY DEPOT.

Detailed Location:

SPTRR IS SOUTHERN PACIFIC TRACTION RR, WHICH RUNS SE FROM CORNER OF 65TH ST & HWY 50.

Ecological:

TURBID POOL.

Threats:

General:

TADPOLE SHRIMP OBSERVED BY E.J. KOFORD DURING SURVEY IN SPRING OF 1992; LINDERIELLA OCCIDENTALIS ALSO PRESENT.

PLSS:	T08N, R05E, Sec. 26 (M)	Accuracy:	80 meters	Area (acres):	0
UTM:	Zone-10 N4265267 E638840	Latitude/Longitude:	38.52498 / -121.40725	Elevation (feet):	35

County Summary:

Sacramento

Quad Summary:

Sacramento East (3812154)

Sources:

KOF92U0001 KOFORD, E.J. (EBASCO) - LETTER TO USFWS REGARDING ADDITIONAL LOCALITIES OF FAIRY SHRIMP IN SACRAMENTO: BRANCHINECTA LYNCHI, LINDERIELLA OCCIDENTALIS & LEPIDURUS PACKARDI. 1992-04-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 33691 **EO Index:** 30608
Key Quad: Sacramento East (3812154) **Element Code:** ICBRA10010
Occurrence Number: 92 **Occurrence Last Updated:** 1997-03-07

Scientific Name: *Lepidurus packardii* **Common Name:** vernal pool tadpole shrimp
Listing Status: **Federal:** Endangered **Rare Plant Rank:**
State: None **Other Lists:** IUCN_EN-Endangered
CNDDDB Element Ranks: **Global:** G3
State: S2S3

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed: 1992-04-02 **Occurrence Type:** Natural/Native occurrence
Last Survey Date: 1992-04-02 **Occurrence Rank:** Unknown
Owner/Manager: UNKNOWN **Trend:** Unknown
Presence: Presumed Extant

Location:

SOUTH OF 47TH AVE, NORTH OF FLORIN RD, EAST OF WOODBINE AVE. ON SOUTHERN END OF SACRAMENTO.

Detailed Location:

ROADSIDE DITCHES SOMEWHERE IN SECTION 31.

Ecological:

MOST OF THIS SECTION IS URBANIZED.

Threats:

General:

LEPIDURUS PACKARDI WAS OBSERVED IN A ROADSIDE DITCH ON 4/2/92. SUGNET RECORD #144.

PLSS: T08N, R05E, Sec. 31 (M) **Accuracy:** 3/5 mile **Area (acres):** 0
UTM: Zone-10 N4262718 E633076 **Latitude/Longitude:** 38.50290 / -121.47384 **Elevation (feet):** 15

County Summary:

Sacramento

Quad Summary:

Florin (3812144), Sacramento East (3812154)

Sources:

SUG93U0001 SUGNET & ASSOCIATES - PRINTOUT OF LOCATION (T-R-S) OF FAIRY SHRIMP SAMPLING. (OBTAINED FROM THE U.S. FISH AND WILDLIFE SERVICE) 1993-XX-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 33692 **EO Index:** 30610
Key Quad: Sacramento East (3812154) **Element Code:** ICBRA10010
Occurrence Number: 93 **Occurrence Last Updated:** 1998-08-10

Scientific Name: *Lepidurus packardii* **Common Name:** vernal pool tadpole shrimp
Listing Status: **Federal:** Endangered **Rare Plant Rank:**
State: None **Other Lists:** IUCN_EN-Endangered
CNDDB Element Ranks: **Global:** G3
State: S2S3

General Habitat: INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.
Micro Habitat: POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed: 1992-04-03 **Occurrence Type:** Natural/Native occurrence
Last Survey Date: 1992-04-03 **Occurrence Rank:** Unknown
Owner/Manager: UNKNOWN **Trend:** Unknown
Presence: Presumed Extant

Location: SOUTH OF FRUITRIDGE RD, NORTH OF FLORIN RD, EAST OF POWER INN RD, AND WEST OF FLORIN PERKINS RD.

Detailed Location: MANMADE ROADSIDE DITCHES LOCATED SOMEWHERE IN SECTIONS 26 AND 35.

Ecological: MOST OF SECTION 26 IS URBANIZED.

Threats:

General: LEPIDURUS PACKARDI OBSERVED IN A ROADSIDE DITCH IN SECTION 26 AND A ROADSIDE DITCH IN SECTION 35. SUGNET RECORD #S 143 & 145.

PLSS: T08N, R05E, Sec. 35 (M) **Accuracy:** specific area **Area (acres):** 1,513
UTM: Zone-10 N4263669 E639514 **Latitude/Longitude:** 38.51048 / -121.39984 **Elevation (feet):** 35

County Summary: Sacramento **Quad Summary:** Florin (3812144), Sacramento East (3812154)

Sources: SUG93U0001 SUGNET & ASSOCIATES - PRINTOUT OF LOCATION (T-R-S) OF FAIRY SHRIMP SAMPLING. (OBTAINED FROM THE U.S. FISH AND WILDLIFE SERVICE) 1993-XX-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 11337
Key Quad: Sacramento East (3812154)
Occurrence Number: 6
EO Index: 22744
Element Code: IICOL48011
Occurrence Last Updated: 1998-09-08

Scientific Name: *Desmocerus californicus dimorphus*
Common Name: valley elderberry longhorn beetle
Listing Status: **Federal:** Threatened
State: None
Rare Plant Rank:
Other Lists:
CNDDDB Element Ranks: **Global:** G3T2
State: S2

General Habitat:
OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).
Micro Habitat:
PREFERS TO LAY EGGS IN ELDERBERRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Last Date Observed: 1984-06-XX
Last Survey Date: 1984-06-XX
Owner/Manager: PVT
Presence: Presumed Extant
Occurrence Type: Natural/Native occurrence
Occurrence Rank: Unknown
Trend: Decreasing

Location:
JUST SOUTH OF HIGHWAY 160 AT DEL PASO BLVD, JOHNSON INDUSTRIAL PARK.

Detailed Location:
SACRAMENTO ZONE - JOHNSON INDUSTRIAL PARK CRITICAL HABITAT.

Ecological:
LARVAE ARE BORERS; ADULTS FEED ON FOLIAGE.

Threats:

General:
ADULTS OBSERVED BY ARNOLD IN 1984.

PLSS: T09N, R05E, Sec. 30 (M) **Accuracy:** specific area **Area (acres):** 27
UTM: Zone-10 N4273301 E633403 **Latitude/Longitude:** 38.59819 / -121.46807 **Elevation (feet):** 25

County Summary: Sacramento
Quad Summary: Sacramento East (3812154)

Sources:
ARN84R0001 ARNOLD, R. - DISTRIBUTIONAL AND ECOLOGICAL STUDIES OF FIVE ENDANGERED INSECTS 1984-07-27
ARN84U0002 ARNOLD, R.A. - REPORT FOR ENDANGERED INSECT CONTRACT WITH R. A. ARNOLD, 1984 - ECOLOGICAL STUDIES OF THE VALLEY ELDERBERRY LONGHORN BEETLE. 1984-04-XX
EYA76R0001 EYA, B.K. - REPORT ON THE DISTRIBUTION & STATUS OF A LONGHORN BEETLE, DESMOCERUS CALIFORNICUS DIMORPHUS (COLEOPTERA: CERAMBYCIDAE). OBTAINED THROUGH DR. LARRY ENG. 1976-XX-XX
FWS84R0002 U.S. FISH & WILDLIFE SERVICE - RECOVERY PLAN FOR THE VALLEY ELDERBERRY LONGHORN BEETLE. 1984-XX-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 11410

Key Quad: Sacramento East (3812154)

Occurrence Number: 7

EO Index: 22742

Element Code: IICOL48011

Occurrence Last Updated: 1998-07-15

Scientific Name: *Desmocerus californicus dimorphus*

Common Name: valley elderberry longhorn beetle

Listing Status: Federal: Threatened

Rare Plant Rank:

State: None

Other Lists:

CNDDDB Element Ranks: Global: G3T2

State: S2

General Habitat:

OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).

Micro Habitat:

PREFERS TO LAY EGGS IN ELDERBERRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Last Date Observed: 1984-06-XX

Occurrence Type: Natural/Native occurrence

Last Survey Date: 1984-06-XX

Occurrence Rank: Unknown

Owner/Manager: UNKNOWN

Trend: Unknown

Presence: Presumed Extant

Location:

SOUTH BANK AMERICAN RIVER WEST OF GLEN HALL PARK (ACROSS FROM CAL EXPO), RIVER MILE 5.

Detailed Location:

Ecological:

HABITAT IS A NARROW RIPARIAN BAND.

Threats:

General:

OBSERVED ON A STEM OF A LARGE (1.0-1.5 CM DIAMETER) ELDERBERRY SHRUB. FEMALE SPECIMEN HELD FOR TWO DAYS; IT ATE ELDERBERRY LEAVES, LAID 10 EGGS, THEN WAS RELEASED AT CAPTURE SITE. ADULTS WERE ALSO OBSERVED BY ARNOLD IN 1984.

PLSS: T08N, R05E, Sec. 04 (M)

Accuracy: 1/5 mile

Area (acres): 0

UTM: Zone-10 N4271543 E636777

Latitude/Longitude: 38.58184 / -121.42968

Elevation (feet): 25

County Summary:

Sacramento

Quad Summary:

Sacramento East (3812154)

Sources:

ARN84R0001 ARNOLD, R. - DISTRIBUTIONAL AND ECOLOGICAL STUDIES OF FIVE ENDANGERED INSECTS 1984-07-27

ARN84R0003 ARNOLD, R.A. - REPORTS: THE FINDINGS OF MY RECENT FIELD STUDIES OF THE ENDANGERED VALLEY ELDERBERRY LONGHORN BEETLE; LETTERS FROM: DOWNEY, BRAND, SEYMORE & ROHWER; USFWS; UC BERKELEY. 1984-06-21

ARN84U0002 ARNOLD, R.A. - REPORT FOR ENDANGERED INSECT CONTRACT WITH R. A. ARNOLD, 1984 - ECOLOGICAL STUDIES OF THE VALLEY ELDERBERRY LONGHORN BEETLE. 1984-04-XX

ENG83F0001 ENG, L.L. - FIELD SURVEY FORM FOR DESMOCERUS CALIFORNICUS DIMORPHUS 1983-XX-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 11398

Key Quad: Sacramento East (3812154)

Occurrence Number: 8

EO Index: 22739

Element Code: IICOL48011

Occurrence Last Updated: 1998-07-15

Scientific Name: *Desmocerus californicus dimorphus*

Common Name: valley elderberry longhorn beetle

Listing Status: Federal: Threatened

Rare Plant Rank:

State: None

Other Lists:

CNDDDB Element Ranks: Global: G3T2

State: S2

General Habitat:

OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).

Micro Habitat:

PREFERS TO LAY EGGS IN ELDERBERRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Last Date Observed: XXXX-XX-XX

Occurrence Type: Natural/Native occurrence

Last Survey Date: 1984-06-XX

Occurrence Rank: Unknown

Owner/Manager: PVT

Trend: Unknown

Presence: Presumed Extant

Location:

BUSHY LAKE, NEAR CAL EXPO.

Detailed Location:

Ecological:

LARVAE ARE ELDERBERRY STEM BORERS AND ADULTS FEED ON ELDERBERRY FOLIAGE.

Threats:

General:

COLLECTIONS KNOWN FROM THIS AREA. NO ADULTS OR FRESH EXIT HOLES OBSERVED IN 1984.

PLSS: T09N, R05E, Sec. 33 (M)

Accuracy: 1/5 mile

Area (acres): 0

UTM: Zone-10 N4272184 E636307

Latitude/Longitude: 38.58768 / -121.43495

Elevation (feet): 20

County Summary:

Quad Summary:

Sacramento

Sacramento East (3812154)

Sources:

ARN84R0001 ARNOLD, R. - DISTRIBUTIONAL AND ECOLOGICAL STUDIES OF FIVE ENDANGERED INSECTS 1984-07-27

FWS84R0002 U.S. FISH & WILDLIFE SERVICE - RECOVERY PLAN FOR THE VALLEY ELDERBERRY LONGHORN BEETLE. 1984-XX-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 11343
Key Quad: Sacramento East (3812154)
Occurrence Number: 9
EO Index: 22740
Element Code: IICOL48011
Occurrence Last Updated: 1998-07-14

Scientific Name: *Desmocerus californicus dimorphus*
Common Name: valley elderberry longhorn beetle
Listing Status: **Federal:** Threatened
State: None
Rare Plant Rank:
Other Lists:
CNDDDB Element Ranks: **Global:** G3T2
State: S2

General Habitat:
OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).
Micro Habitat:
PREFERS TO LAY EGGS IN ELDERBERRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Last Date Observed: 1984-06-00
Last Survey Date: 1984-06-00
Owner/Manager: PVT
Presence: Presumed Extant
Occurrence Type: Natural/Native occurrence
Occurrence Rank: Unknown
Trend: Unknown

Location:
AMERICAN RIVER FLOODPLAIN 22 ACRE PARCEL BETWEEN RAILROAD TRACK OVERPASSES (BTWN I-80 & HWY 160).

Detailed Location:
ADULTS OBSERVED ON "STRESSED" ELDERBERRIES IN RIPARIAN VEGETATION ALONG THE AMERICAN RIVER.

Ecological:

Threats:

General:

NORTH SACRAMENTO LAND COMPANY PROPERTY.

PLSS: T09N, R05E, Sec. 32 (M) **Accuracy:** 1/5 mile **Area (acres):** 0
UTM: Zone-10 N4272354 E633690 **Latitude/Longitude:** 38.58961 / -121.46495 **Elevation (feet):** 10

County Summary:

Sacramento

Quad Summary:

Sacramento East (3812154)

Sources:

ARN84R0001 ARNOLD, R. - DISTRIBUTIONAL AND ECOLOGICAL STUDIES OF FIVE ENDANGERED INSECTS 1984-07-27
ARN84R0003 ARNOLD, R.A. - REPORTS: THE FINDINGS OF MY RECENT FIELD STUDIES OF THE ENDANGERED VALLEY ELDERBERRY LONGHORN BEETLE; LETTERS FROM: DOWNEY, BRAND, SEYMORE & ROHWER; USFWS; UC BERKELEY. 1984-06-21
ARN84U0002 ARNOLD, R.A. - REPORT FOR ENDANGERED INSECT CONTRACT WITH R. A. ARNOLD, 1984 - ECOLOGICAL STUDIES OF THE VALLEY ELDERBERRY LONGHORN BEETLE. 1984-04-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 11431

Key Quad: Sacramento East (3812154)

Occurrence Number: 10

EO Index: 22741

Element Code: IICOL48011

Occurrence Last Updated: 1998-07-14

Scientific Name: *Desmocerus californicus dimorphus*

Common Name: valley elderberry longhorn beetle

Listing Status: Federal: Threatened

Rare Plant Rank:

State: None

Other Lists:

CNDDDB Element Ranks: Global: G3T2

State: S2

General Habitat:

OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).

Micro Habitat:

PREFERS TO LAY EGGS IN ELDERBERRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Last Date Observed: 1984-06-00

Occurrence Type: Natural/Native occurrence

Last Survey Date: 1984-06-00

Occurrence Rank: Unknown

Owner/Manager: UNKNOWN

Trend: Unknown

Presence: Presumed Extant

Location:

BETWEEN MILEAGE MARKERS 6 & 7 ON AMERICAN RIVER PARKWAY BIKE TRAIL.

Detailed Location:

ADULTS OBSERVED BY ARNOLD ON "STRESSED" ELDERBERRIES IN RIPARIAN VEGETATION ALONG THE AMERICAN RIVER.

Ecological:

Threats:

General:

PLSS: T09N, R05E, Sec. 03 (M)

Accuracy: 1/5 mile

Area (acres): 0

UTM: Zone-10 N4271467 E637721

Latitude/Longitude: 38.58101 / -121.41885

Elevation (feet): 10

County Summary:

Quad Summary:

Sacramento

Sacramento East (3812154)

Sources:

ARN84R0001 ARNOLD, R. - DISTRIBUTIONAL AND ECOLOGICAL STUDIES OF FIVE ENDANGERED INSECTS 1984-07-27

ARN84R0003 ARNOLD, R.A. - REPORTS: THE FINDINGS OF MY RECENT FIELD STUDIES OF THE ENDANGERED VALLEY ELDERBERRY LONGHORN BEETLE; LETTERS FROM: DOWNEY, BRAND, SEYMORE & ROHWER; USFWS; UC BERKELEY. 1984-06-21

ARN84U0002 ARNOLD, R.A. - REPORT FOR ENDANGERED INSECT CONTRACT WITH R. A. ARNOLD, 1984 - ECOLOGICAL STUDIES OF THE VALLEY ELDERBERRY LONGHORN BEETLE. 1984-04-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 11316

Key Quad: Sacramento East (3812154)

Occurrence Number: 11

EO Index: 12887

Element Code: IICOL48011

Occurrence Last Updated: 1998-07-14

Scientific Name: *Desmocerus californicus dimorphus*

Common Name: valley elderberry longhorn beetle

Listing Status: Federal: Threatened

Rare Plant Rank:

State: None

Other Lists:

CNDDDB Element Ranks: Global: G3T2

State: S2

General Habitat:

OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).

Micro Habitat:

PREFERS TO LAY EGGS IN ELDERBERRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Last Date Observed: 1984-06-00

Occurrence Type: Natural/Native occurrence

Last Survey Date: 1984-06-00

Occurrence Rank: Unknown

Owner/Manager: UNKNOWN

Trend: Unknown

Presence: Presumed Extant

Location:

JUNCTION OF GARDEN HIGHWAY AND NORTHGATE BLVD.

Detailed Location:

10 ACRE PARCEL, REFERRED TO AS THE NORTHGATE TRIANGLE.

Ecological:

MOST BEETLES FOUND ON "STRESSED" ELDERBERRIES.

Threats:

General:

ADULTS OBSERVED BY ARNOLD.

PLSS: T09N, R05E, Sec. 30 (M)

Accuracy: 1/5 mile

Area (acres): 0

UTM: Zone-10 N4274002 E632670

Latitude/Longitude: 38.60461 / -121.47634

Elevation (feet): 10

County Summary:

Quad Summary:

Sacramento

Sacramento East (3812154)

Sources:

ARN84R0001 ARNOLD, R. - DISTRIBUTIONAL AND ECOLOGICAL STUDIES OF FIVE ENDANGERED INSECTS 1984-07-27

ARN84R0003 ARNOLD, R.A. - REPORTS: THE FINDINGS OF MY RECENT FIELD STUDIES OF THE ENDANGERED VALLEY ELDERBERRY LONGHORN BEETLE; LETTERS FROM: DOWNEY, BRAND, SEYMORE & ROHWER; USFWS; UC BERKELEY. 1984-06-21

ARN84U0002 ARNOLD, R.A. - REPORT FOR ENDANGERED INSECT CONTRACT WITH R. A. ARNOLD, 1984 - ECOLOGICAL STUDIES OF THE VALLEY ELDERBERRY LONGHORN BEETLE. 1984-04-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number:	64907	EO Index:	64986
Key Quad:	Carmichael (3812153)	Element Code:	ABNKC19070
Occurrence Number:	1641	Occurrence Last Updated:	2007-05-25

Scientific Name:	<i>Buteo swainsoni</i>	Common Name:	Swainson's hawk
Listing Status:	Federal: None State: Threatened	Rare Plant Rank:	
CNDDB Element Ranks:	Global: G5 State: S2	Other Lists:	ABC_WLBCC-Watch List of Birds of Conservation Concern BLM_S-Sensitive IUCN_LC-Least Concern USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern

General Habitat:	Micro Habitat:
BREEDS IN GRASSLANDS WITH SCATTERED TREES, JUNIPER-SAGE FLATS, RIPARIAN AREAS, SAVANNAHS, & AGRICULTURAL OR RANCH LANDS WITH GROVES OR LINES OF TREES.	REQUIRES ADJACENT SUITABLE FORAGING AREAS SUCH AS GRASSLANDS, OR ALFALFA OR GRAIN FIELDS SUPPORTING RODENT POPULATIONS.

Last Date Observed:	2007-05-16	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2007-05-16	Occurrence Rank:	Good
Owner/Manager:	PVT-GENCORP AEROJET	Trend:	Unknown
Presence:	Presumed Extant		

Location:
NORTH OF WHITE ROCK ROAD, 0.5 MILE EAST OF SUNRISE BOULEVARD, RANCHO CORDOVA.

Detailed Location:
NESTS WERE ALL LOCATED IN COTTONWOODS, WITH THE 2006-07 NEST TREE LOCATED ~1000' NORTH OF THE 2005 NEST TREE. SITE IS SURROUNDED BY COMMERCIAL DEVELOPMENT TO THE WEST, AND DREDGER TAILINGS TO THE NORTH, EAST, AND SOUTH.

Ecological:
NEST TREE WAS A COTTONWOOD, SURROUNDED BY SCATTERED COTTONWOODS AND OAKS, AND AN UNDERSTORY COMPOSED PRIMARILY OF DREDGER TAILINGS. ANNUAL GRASSES, THISTLES AND OTHER HERBACEOUS VEGETATE THE DREDGER TAILINGS.

Threats:

General:
IN 2005, A SWHA PAIR NESTED JUST NORTH OF WHITE ROCK ROAD. ON 8 JUN 2006, A FEMALE WAS OBSERVED ON A NEST IN A TREE 1000' NORTH OF THE 2005 NEST TREE. PAIR OBSERVED NESTING ON 16 MAY 2007 IN THE 2006 NEST TREE.

PLSS:	T09N, R07E, Sec. 31 (M)	Accuracy:	specific area	Area (acres):	17
UTM:	Zone-10 N4273046 E651960	Latitude/Longitude:	38.59290 / -121.25511	Elevation (feet):	130

County Summary:	Quad Summary:
Sacramento	Carmichael (3812153)

Sources:

BAL06F0001	BALLARD, A. (ECORP CONSULTING, INC.) - FIELD SURVEY FORM FOR BUTEO SWAINSONI (NEST SITE) 2006-06-08
BAL07F0001	BALLARD, A. (ECORP CONSULTING, INC.) - FIELD SURVEY FORM FOR BUTEO SWAINSONI 2007-05-16



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number:	33222	EO Index:	2603
Key Quad:	Carmichael (3812153)	Element Code:	ABPAU08010
Occurrence Number:	199	Occurrence Last Updated:	1995-11-02

Scientific Name:	<i>Riparia riparia</i>	Common Name:	bank swallow
Listing Status:	Federal: None State: Threatened	Rare Plant Rank:	
CNDDB Element Ranks:	Global: G5 State: S2S3	Other Lists:	BLM_S-Sensitive IUCN_LC-Least Concern

General Habitat:	Micro Habitat:
COLONIAL NESTER; NESTS PRIMARILY IN RIPARIAN AND OTHER LOWLAND HABITATS WEST OF THE DESERT.	REQUIRES VERTICAL BANKS/CLIFFS WITH FINE-TEXTURED/SANDY SOILS NEAR STREAMS, RIVERS, LAKES, OCEAN TO DIG NESTING HOLE.

Last Date Observed:	1995-06-12	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1995-06-12	Occurrence Rank:	Good
Owner/Manager:	SAC COUNTY	Trend:	Unknown
Presence:	Presumed Extant		

Location:
AMERICAN RIVER, AT THE DOWNSTREAM END OF SUICIDE BEND, AMERICAN RIVER PARKWAY.

Detailed Location:

Ecological:
HABITAT CONSISTED OF A VERTICAL, SW-FACING SANDY BANK SURROUNDED BY RIPARIAN WOODLAND.

Threats:
POSSIBLE THREATS INCLUDE HEAVY RECREATIONAL USE OF RIVER AND SURROUNDING AREA BY RAFTERS.

General:
10 ADULTS OBSERVED NESTING AND FORAGING ON 12 JUNE 1995.

PLSS:	T09N, R06E, Sec. 23 (M)	Accuracy:	80 meters	Area (acres):	0
UTM:	Zone-10 N4276424 E648890	Latitude/Longitude:	38.62385 / -121.28962	Elevation (feet):	70

County Summary:	Quad Summary:
Sacramento	Carmichael (3812153)

Sources:
PER95F0001 PERRINE, P., B. BABA & T. CHAPPELLE - FIELD SURVEY FORM FOR RIPARIA RIPARIA (COLONY SITE) 1995-06-12



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 33179
Key Quad: Carmichael (3812153)
Occurrence Number: 13
EO Index: 2804
Element Code: ICBRA03030
Occurrence Last Updated: 1996-07-08

Scientific Name: *Branchinecta lynchi*
Common Name: vernal pool fairy shrimp
Listing Status: **Federal:** Threatened
State: None
Rare Plant Rank:
Other Lists: IUCN_VU-Vulnerable
CNDDB Element Ranks: **Global:** G3
State: S2S3

General Habitat: ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.
Micro Habitat: INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Last Date Observed: 1995-04-03
Last Survey Date: 1995-04-03
Owner/Manager: PVT-RMC LONESTAR
Presence: Presumed Extant
Occurrence Type: Natural/Native occurrence
Occurrence Rank: Good
Trend: Unknown

Location: 0.6 MILE NNW OF THE INTERSECTION OF EAGLES NEST ROAD AND DOUGLAS ROAD, NE OF (FORMER) MATHER AIR FORCE BASE.

Detailed Location:

Ecological:

HABITAT CONSISTS OF A VERNAL POOL ON RED BLUFF LOAM SOIL; DOMINANT PLANTS INCLUDE RANUNCULUS BONARIENSIS VAR TRISEPALUS, ERYNGIUM VASEYI, LIMNANTHES ALBA, AND ELEOCHARIS MACROSTACHYA.

Threats:

POSSIBLE THREAT OF GRAVEL MINING - SITE IS OWNED BY A GRAVEL MINING COMPANY, CURRENTLY MINING NORTH AND WEST OF SITE.

General:

1 EXUVIUM COLLECTED ON 3 APRIL 1995 AND DEPOSITED AT CAS.

PLSS: T08N, R06E, Sec. 12 (M) **Accuracy:** 80 meters **Area (acres):** 0
UTM: Zone-10 N4270325 E651241 **Latitude/Longitude:** 38.56852 / -121.26395 **Elevation (feet):** 125

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153)

Sources:

FIE95F0002 FIELDS, W. (HYDROZOOLOGY) - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI 1995-04-03
FIE95U0001 FIELDS, W.C. (HYDROZOOLOGY) - FORMAL LETTER TO DFG FOR VERNAL POOL CRUSTACEAN SURVEY ON RMC LONESTAR LAND - ATTACHED TO FIE95F0001 & FIE95F0002. 1995-05-30



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	32441	EO Index:	2104
Key Quad:	Buffalo Creek (3812152)	Element Code:	ICBRA03030
Occurrence Number:	33	Occurrence Last Updated:	1995-09-22

Scientific Name:	<i>Branchinecta lynchi</i>	Common Name:	vernal pool fairy shrimp
Listing Status:	Federal: Threatened	Rare Plant Rank:	
	State: None	Other Lists:	IUCN_VU-Vulnerable
CNDDDB Element Ranks:	Global: G3		
	State: S2S3		

General Habitat:

ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.

Micro Habitat:

INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Last Date Observed:	1995-02-01	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1995-02-01	Occurrence Rank:	Unknown
Owner/Manager:	PVT	Trend:	Unknown
Presence:	Presumed Extant		

Location:

ADJACENT TO MATHER AIR FORCE BASE; APPROX. 0.6 KM SOUTHWEST OF THE INTERSECTION BETWEEN SUNRISE BLVD AND JACKSON ROAD.

Detailed Location:

GRECH PROPERTY (SURVEYED FOR SACRAMENTO AGGREGATES).

Ecological:

HARDPAN VERNAL POOL IN ANNUAL GRASSLAND.

Threats:

RURAL AGRICULTURAL USES.

General:

POOLS #41 & 42: <50 ADULTS OBSERVED; POOLS #47 & 48: 50+ ADULTS OBSERVED; 11 ADULTS COLLECTED AND DEPOSITED IN CAS.

PLSS:	T08N, R07E, Sec. 31 (M)	Accuracy:	1/5 mile	Area (acres):	0
UTM:	Zone-10 N4263033 E652766	Latitude/Longitude:	38.50257 / -121.24805	Elevation (feet):	120

County Summary:

Sacramento

Quad Summary:

Sloughhouse (3812142), Buffalo Creek (3812152), Carmichael (3812153)

Sources:

SUG95R0001	SUGNET & ASSOCIATES - ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED CRUSTACEA CONDUCTED UNDER FEDERAL FISH AND WILDLIFE PERMIT #PRT-795933. (2 BINDERS) 1995-06-XX
SUG95R0002	SUGNET & ASSOCIATES - CORRECTIONS TO ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED CRUSTACEA CONDUCTED UNDER FEDERAL FISH AND WILDLIFE PERMIT #PRT-795933, 1994-95. 1995-10-30



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 32443 **EO Index:** 637
Key Quad: Sacramento East (3812154) **Element Code:** ICBRA03030
Occurrence Number: 35 **Occurrence Last Updated:** 1996-03-11

Scientific Name: *Branchinecta lynchi* **Common Name:** vernal pool fairy shrimp
Listing Status: **Federal:** Threatened **Rare Plant Rank:**
State: None **Other Lists:** IUCN_VU-Vulnerable
CNDDB Element Ranks: **Global:** G3
State: S2S3

General Habitat: ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.
Micro Habitat: INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Last Date Observed: 1995-01-05 **Occurrence Type:** Natural/Native occurrence
Last Survey Date: 1995-01-05 **Occurrence Rank:** Unknown
Owner/Manager: PVT-PIPE TRADES TRUST FUND **Trend:** Unknown
Presence: Presumed Extant

Location:
1.2 KM ESE OF ELDER CREEK ROAD X FLORIN PERKINS ROAD; SE OF THE FORMER SACRAMENTO ARMY DEPOT.

Detailed Location:
ELDER CREEK PROPERTY. BRANCHINECTA LYNCHI WERE FOUND IN TWO OF 90 SAMPLED WETLANDS.

Ecological:
HARDPAN VERNAL POOL IN ANNUAL GRASSLAND.

Threats:
RURAL AGRICULTURE; URBAN DEVELOPMENT OCCURING IN VICINITY.

General:
POOL #46: 12/21/1994: >50 ADULTS OBSERVED, 1/5/1995: <50 ADULTS OBSERVED, 3 SPECIMENS COLLECTED AND DEPOSITED IN CAS; POOL #51: 12/21/94: >50 ADULTS OBSERVED, 1/5/95: >50 ADULTS OBSERVED.

PLSS: T08N, R05E, Sec. 36 (M) **Accuracy:** nonspecific area **Area (acres):** 16
UTM: Zone-10 N4263165 E641409 **Latitude/Longitude:** 38.50564 / -121.37821 **Elevation (feet):** 40

County Summary: Sacramento **Quad Summary:** Carmichael (3812153), Sacramento East (3812154)

Sources:
SUG95R0001 SUGNET & ASSOCIATES - ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED CRUSTACEA CONDUCTED UNDER FEDERAL FISH AND WILDLIFE PERMIT #PRT-795933. (2 BINDERS) 1995-06-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number:	32447	EO Index:	1012
Key Quad:	Carmichael (3812153)	Element Code:	ICBRA03030
Occurrence Number:	39	Occurrence Last Updated:	1997-03-27

Scientific Name:	<i>Branchinecta lynchi</i>	Common Name:	vernal pool fairy shrimp
Listing Status:	Federal: Threatened	Rare Plant Rank:	
	State: None	Other Lists:	IUCN_VU-Vulnerable
CNDDDB Element Ranks:	Global: G3		
	State: S2S3		

General Habitat:

ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.

Micro Habitat:

INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Last Date Observed:	1995-02-05	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1995-02-05	Occurrence Rank:	Unknown
Owner/Manager:	PVT-GRANITE CONSTRUCTION CO	Trend:	Unknown
Presence:	Presumed Extant		

Location:

1.3 KM W OF KIEFER BLVD & MATHER PARK WAY; S OF FORMER MATHER AFB.

Detailed Location:

GRANITE-TEICHERT PILOT PROJECT SITE (PART).

Ecological:

BOTH CONSTRUCTED & HISTORIC HARDPAN VERNAL POOLS IN ANNUAL GRASSLAND; WETLAND COMPENSATION/MITIGATION PRESERVE.

Threats:**General:**

POOLS #1,2,4,5,6,&7: 50+ OBSERVED IN EACH POOL; 11 COLLECTED & DEPOSITED IN CAS.

PLSS:	T08N, R06E, Sec. 22 (M)	Accuracy:	specific area	Area (acres):	5
UTM:	Zone-10 N4266606 E647513	Latitude/Longitude:	38.53565 / -121.30751	Elevation (feet):	70

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153)

Sources:

SUG95R0001	SUGNET & ASSOCIATES - ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED CRUSTACEA CONDUCTED UNDER FEDERAL FISH AND WILDLIFE PERMIT #PRT-795933. (2 BINDERS) 1995-06-XX
SUG95R0002	SUGNET & ASSOCIATES - CORRECTIONS TO ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED CRUSTACEA CONDUCTED UNDER FEDERAL FISH AND WILDLIFE PERMIT #PRT-795933, 1994-95. 1995-10-30



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	32448	EO Index:	1013
Key Quad:	Carmichael (3812153)	Element Code:	ICBRA03030
Occurrence Number:	40	Occurrence Last Updated:	1996-01-12

Scientific Name:	<i>Branchinecta lynchi</i>	Common Name:	vernal pool fairy shrimp
Listing Status:	Federal: Threatened State: None	Rare Plant Rank:	
CNDDB Element Ranks:	Global: G3 State: S2S3	Other Lists:	IUCN_VU-Vulnerable

General Habitat: ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.	Micro Habitat: INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.
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Last Date Observed:	1995-02-01	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1995-02-01	Occurrence Rank:	Unknown
Owner/Manager:	PVT-SACRAMENTO AGGREGATES	Trend:	Unknown
Presence:	Presumed Extant		

Location:
0.9 KM ESE OF EAGLES NEST ROAD X JACKSON ROAD; S OF FORMER MATHER AFB.

Detailed Location:
GRECH PROPERTY.

Ecological:
HARDPAN VERNAL POOL IN ANNUAL GRASSLAND.

Threats:
AGRICULTURE.

General:
POOLS #6, 55, 63 & 64: 50+ ADULTS OBSERVED; POOL #21-1000+ ADULTS OBSERVED; 8 ADULTS COLLECTED AND DEPOSITED IN CAS.

PLSS:	T08N, R07E, Sec. 31 (M)	Accuracy:	nonspecific area	Area (acres):	9
UTM:	Zone-10 N4263319 E652340	Latitude/Longitude:	38.50522 / -121.25287	Elevation (feet):	120

County Summary:	Quad Summary:
Sacramento	Carmichael (3812153)

Sources:

SUG95R0001	SUGNET & ASSOCIATES - ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED CRUSTACEA CONDUCTED UNDER FEDERAL FISH AND WILDLIFE PERMIT #PRT-795933. (2 BINDERS) 1995-06-XX
SUG95R0002	SUGNET & ASSOCIATES - CORRECTIONS TO ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED CRUSTACEA CONDUCTED UNDER FEDERAL FISH AND WILDLIFE PERMIT #PRT-795933, 1994-95. 1995-10-30



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	32459	EO Index:	1745
Key Quad:	Carmichael (3812153)	Element Code:	ICBRA03030
Occurrence Number:	47	Occurrence Last Updated:	1999-12-21

Scientific Name:	<i>Branchinecta lynchi</i>			Common Name:	vernal pool fairy shrimp
Listing Status:	Federal:	Threatened	Rare Plant Rank:		
	State:	None	Other Lists:	IUCN_VU-Vulnerable	
CNDDDB Element Ranks:	Global:	G3			
	State:	S2S3			

General Habitat:

ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.

Micro Habitat:

INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Last Date Observed:	1999-02-23	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1999-02-23	Occurrence Rank:	Excellent
Owner/Manager:	PVT	Trend:	Unknown
Presence:	Presumed Extant		

Location:

SW OF MATHER AFB; BETWEEN KIEFER BLVD, BRADSHAW ROAD, JACKSON ROAD AND EXCELSIOR ROAD.

Detailed Location:

GRANITE CONSTRUCTION CO. AND TEICHERT MINING CO. GANITE I PRESERVE IS IN THE NORTHERN MIDDLE PORTION OF MAPPED AREA ALONG KIEFER BLVD, SURVEYED 1997-99.

Ecological:

VERNAL POOLS; GRAZED ANNUAL GRASSLAND.

Threats:

GRAZING; GRAVEL PITS IN NORTHERN PORTION OF SITE; PROPOSED AGGREGATE MINING.

General:

MANY INDIVIDUALS OBSERVED; SURVEY CONDUCTED FROM 2/22/91 TO 3/30/91; OVERALL SITE QUALITY IS QUESTIONABLE. UNKNOWN NUMBER OBSERVED IN 1 VERNAL POOL ON 3/5/93. SUGNET RECORD #73. PRESERVE SITE HAD 100'S TO 1000'S OBSERVED IN 1997-99

PLSS:	T08N, R06E, Sec. 21 (M)	Accuracy:	nonspecific area	Area (acres):	1,493
UTM:	Zone-10 N4266114 E646979	Latitude/Longitude:	38.53130 / -121.31374	Elevation (feet):	70

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153)

Sources:

HUB91F0001	HUBER, A. (BIOSYSTEMS ANALYSIS, INC.) - FIELD SURVEY FORMS FOR BRANCHINECTA LYNCHI (VERNAL POOL FAIRY SHRIMP) 1991-03-XX
SUG93U0001	SUGNET & ASSOCIATES - PRINTOUT OF LOCATION (T-R-S) OF FAIRY SHRIMP SAMPLING. (OBTAINED FROM THE U.S. FISH AND WILDLIFE SERVICE) 1993-XX-XX
WHI97F0001	WHITNEY, K. - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI (VERNAL POOL FAIRY SHRIMP) 1997-01-24
WHI98F0001	WHITNEY, K. - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI (VERNAL POOL FAIRY SHRIMP) 1998-01-XX
WHI99F0001	WHITNEY, K. - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI (VERNAL POOL FAIRY SHRIMP) 1999-02-23



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 36806

Key Quad: Carmichael (3812153)

Occurrence Number: 185

EO Index: 31803

Element Code: ICBRA03030

Occurrence Last Updated: 1997-09-22

Scientific Name: *Branchinecta lynchi*

Common Name: vernal pool fairy shrimp

Listing Status: Federal: Threatened

Rare Plant Rank:

State: None

Other Lists: IUCN_VU-Vulnerable

CNDDDB Element Ranks: Global: G3

State: S2S3

General Habitat:

ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.

Micro Habitat:

INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Last Date Observed: 1991-04-06

Occurrence Type: Natural/Native occurrence

Last Survey Date: 1991-04-06

Occurrence Rank: Unknown

Owner/Manager: PVT

Trend: Unknown

Presence: Presumed Extant

Location:

0.25 MILE EAST OF THE INTERSECTION OF EXCELSIOR ROAD AND JACKSON HWY, SOUTH OF (OLD) MATHER AIR FORCE BASE.

Detailed Location:

LOCATED ON THE NORTH SIDE OF JACKSON HWY.

Ecological:

HABITAT CONSISTS OF VERNAL POOLS.

Threats:

General:

UNKNOWN NUMBER COLLECTED BY CHRIS NAGANO AND JAMIE KING; SENT TO DENTON BELK (DB #990) FOR IDENTIFICATION.

PLSS: T08N, R06E, Sec. 26 (M)

Accuracy: 1/10 mile

Area (acres): 0

UTM: Zone-10 N4264728 E648763

Latitude/Longitude: 38.51852 / -121.29357

Elevation (feet): 115

County Summary:

Quad Summary:

Sacramento

Carmichael (3812153)

Sources:

BEL94U0001 BELK, D. - DENTON BELK'S COLLECTION CARDS FOR BRANCHINECTA LYNCHI, COLLECTED 1991-94 1994-XX-XX



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	36874	EO Index:	31871
Key Quad:	Carmichael (3812153)	Element Code:	ICBRA03030
Occurrence Number:	190	Occurrence Last Updated:	2000-08-10

Scientific Name:	<i>Branchinecta lynchi</i>	Common Name:	vernal pool fairy shrimp
Listing Status:	Federal: Threatened	Rare Plant Rank:	
	State: None	Other Lists:	IUCN_VU-Vulnerable
CNDDB Element Ranks:	Global: G3		
	State: S2S3		

General Habitat:

ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.

Micro Habitat:

INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Last Date Observed:	2000-03-15	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2000-03-15	Occurrence Rank:	Good
Owner/Manager:	PVT	Trend:	Unknown
Presence:	Presumed Extant		

Location:

VICINITY OF THE INTERSECTION OF EAGLES NEST ROAD AND HWY 16 (JACKSON ROAD), SOUTH OF MATHER AIR FORCE BASE.

Detailed Location:

Ecological:

HABITAT CONSISTS OF NORTHERN HARDPAN VERNAL POOLS, AS WELL AS SCRAPES, SWALES, DEPRESSIONS, AND STOCK PONDS; SURROUNDED BY NON-NATIVE GRASSLAND.

Threats:

THREATENED BY GRAVEL MINING.

General:

NUMEROUS FAIRY SHRIMP FOUND AT THIS SITE DURING SPRING 1996 AND 1997 SURVEYS. OBSERVED 10+ ADULTS MARCH 2000, IN WESTERN PORTION OF POLYGON.

PLSS:	T08N, R07E, Sec. 31 (M)	Accuracy:	nonspecific area	Area (acres):	588
UTM:	Zone-10 N4263168 E652250	Latitude/Longitude:	38.50388 / -121.25393	Elevation (feet):	125

County Summary:

Sacramento

Quad Summary:

Sloughhouse (3812142), Elk Grove (3812143), Buffalo Creek (3812152), Carmichael (3812153)

Sources:

MUT00F0008	MUTH, D. - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI (VERNAL POOL FAIRY SHRIMP) 2000-03-15
MUT96F0007	MUTH, D. (LSA ASSOCIATES, INC.) - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI 1996-XX-XX
MUT96F0008	MUTH, D. (LSA ASSOCIATES, INC.) - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI 1996-XX-XX
MUT96F0009	MUTH, D. (LSA ASSOCIATES, INC.) - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI 1996-XX-XX
MUT96F0010	MUTH, D. (LSA ASSOCIATES, INC.) - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI 1996-XX-XX
MUT96F0011	MUTH, D. (LSA ASSOCIATES, INC.) - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI 1996-XX-XX
MUT96F0012	MUTH, D. (LSA ASSOCIATES, INC.) - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI 1996-XX-XX
MUT97F0001	MUTH, D. (LSA ASSOCIATES, INC.) - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI 1997-XX-XX
MUT97F0002	MUTH, D. (LSA ASSOCIATES, INC.) - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI 1997-XX-XX
MUT97F0003	MUTH, D. (LSA ASSOCIATES, INC.) - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI 1997-XX-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number:	33693	EO Index:	42057
Key Quad:	Elk Grove (3812143)	Element Code:	ICBRA03030
Occurrence Number:	228	Occurrence Last Updated:	1999-12-27

Scientific Name:	<i>Branchinecta lynchi</i>	Common Name:	vernal pool fairy shrimp
Listing Status:	Federal: Threatened	Rare Plant Rank:	
	State: None	Other Lists:	IUCN_VU-Vulnerable
CNDDDB Element Ranks:	Global: G3		
	State: S2S3		

General Habitat:

ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.

Micro Habitat:

INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Last Date Observed:	1998-01-28	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1998-01-28	Occurrence Rank:	Excellent
Owner/Manager:	PVT	Trend:	Unknown
Presence:	Presumed Extant		

Location:

ARROYO SECO SITE, 0.8 MILE ENE JCT OF EXCELSIOR RD & FLORIN RD, 1.5 MILES WSW OF JCT EAGLES NEST RD & JACKSON RD.

Detailed Location:

ARROYO SECO MITIGATION BANK SITE (PREVIOUSLY DESCRIBED AS: VERNAL POOLS SOMEWHERE IN SECTION 35).

Ecological:

NATURAL VERNAL POOLS IN A VERNAL POOL COMMUNITY.

Threats:**General:**

100'S OBSERVED IN MITIGATION BANK, SURVEYED 28 JAN 1998.

PLSS:	T08N, R06E, Sec. 35 (M)	Accuracy:	specific area	Area (acres):	162
UTM:	Zone-10 N4262624 E649584	Latitude/Longitude:	38.49943 / -121.28461	Elevation (feet):	115

County Summary:

Sacramento

Quad Summary:

Elk Grove (3812143), Carmichael (3812153)

Sources:

WHI98F0003 WHITNEY, K. - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI (VERNAL POOL FAIRY SHRIMP) 1998-01-28



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number:	48381	EO Index:	48381
Key Quad:	Carmichael (3812153)	Element Code:	ICBRA03030
Occurrence Number:	321	Occurrence Last Updated:	2002-07-29

Scientific Name:	<i>Branchinecta lynchi</i>	Common Name:	vernal pool fairy shrimp
Listing Status:	Federal: Threatened	Rare Plant Rank:	
	State: None	Other Lists:	IUCN_VU-Vulnerable
CNDDDB Element Ranks:	Global: G3		
	State: S2S3		

General Habitat:	Micro Habitat:
ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.	INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Last Date Observed:	2002-01-12	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2002-01-31	Occurrence Rank:	Unknown
Owner/Manager:	SAC COUNTY-PARKS & REC	Trend:	Unknown
Presence:	Presumed Extant		

Location:

MATHER LAKE REGIONAL PARK, NE SIDE OF MATHER LAKE, SOUTH OF DOUGLAS ROAD & WEST OF SUNRISE BLVD.

Detailed Location:

OBSERVED IN ALL OF THE SAMPLED WETLANDS (A, B, C, D, E, F AND G).

Ecological:

HABITAT CONSISTS OF ANNUAL GRASSLAND DOMINATED BY NON-NATIVE PLANTS WITH NATURALLY OCCURRING & POSSIBLY ARTIFICIAL SEASONAL WETLANDS, INCLUDING VERNAL POOLS. PLANTS WITHIN WETLANDS: CARTER'S BUTTERCUP, WINGED WATER-STARWORT, POPCORN FLOWER.

Threats:

General:

INDIVIDUALS OBSERVED ON 12 JAN 2002. VOUCHER SPECIMENS TO BE COLLECTED ON 31 JAN 2002, HOWEVER NO INDIVIDUALS WERE OBSERVED.

PLSS:	T08N, R07E, Sec. 07 (M)	Accuracy:	specific area	Area (acres):	16
UTM:	Zone-10 N4269103 E652367	Latitude/Longitude:	38.55732 / -121.25130	Elevation (feet):	135

County Summary:

Sacramento

Quad Summary:

Buffalo Creek (3812152), Carmichael (3812153)

Sources:

ECO02R0002 ECORP CONSULTING, INC. - ANNUAL REPORT OF FINDINGS REGARDING FEDERALLY-LISTED BRANCHIOPODS FOR MATHER LAKE REGIONAL PARK, SACRAMENTO COUNTY, CALIFORNIA. 2002-04-17



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number:	53920	EO Index:	53922
Key Quad:	Carmichael (3812153)	Element Code:	ICBRA03030
Occurrence Number:	355	Occurrence Last Updated:	2004-01-13

Scientific Name:	<i>Branchinecta lynchi</i>	Common Name:	vernal pool fairy shrimp
Listing Status:	Federal: Threatened	Rare Plant Rank:	
	State: None	Other Lists:	IUCN_VU-Vulnerable
CNDDDB Element Ranks:	Global: G3		
	State: S2S3		

General Habitat:

ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.

Micro Habitat:

INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Last Date Observed:	2002-03-15	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2002-03-15	Occurrence Rank:	Excellent
Owner/Manager:	PVT-GRANITE CONSTRUCTION CO	Trend:	Unknown
Presence:	Presumed Extant		

Location:

SW END OF THE RUNWAY OF OLD MATHER AIR FORCE BASE, 1 MILE NE OF THE INTERSECTION OF BRADSHAW ROAD AND JACKSON ROAD

Detailed Location:

VERNAL POOL PRESERVE CONSISTS OF 38 VERNAL POOLS ON 10.04 ACRES.

Ecological:

HABITAT CONSISTS OF A A VERNAL POOL PRESERVE, DOMINATED BY PLAGIOBOTHRYUS STIPITATUS, LASTHENIA FREMONTII, DOWNINGIA BICORNUTA, ERYNGIUM VASEYI, NAVARRETIA LEUCOCEPHALA, AND DESCHAMPSIA DANTHONIOIDES.

Threats:

General:

POOLS HAVE BEEN MONITORED EACH YEAR IN EARLY SPRING SINCE 1998; EVERY YEAR, 1998-2002, BRANCHINECTA LYNCHI HAS BEEN FOUND, VARYING FROM 10'S TO 1000'S IN MANY POOLS AT THIS SITE.

PLSS:	T08N, R06E, Sec. 16 (M)	Accuracy:	specific area	Area (acres):	44
UTM:	Zone-10 N4267058 E646210	Latitude/Longitude:	38.53993 / -121.32235	Elevation (feet):	65

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153)

Sources:

FAR02F0002 FARMER, M. - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI 2002-03-15



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	64355	EO Index:	64434
Key Quad:	Carmichael (3812153)	Element Code:	ICBRA03030
Occurrence Number:	413	Occurrence Last Updated:	2006-03-27

Scientific Name:	<i>Branchinecta lynchi</i>	Common Name:	vernal pool fairy shrimp
Listing Status:	Federal: Threatened State: None	Rare Plant Rank:	
CNDDB Element Ranks:	Global: G3 State: S2S3	Other Lists:	IUCN_VU-Vulnerable

General Habitat:

ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.

Micro Habitat:

INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Last Date Observed:	2005-02-20	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2005-02-20	Occurrence Rank:	Excellent
Owner/Manager:	PVT-SACRAMENTO VLY CONSERVANCY	Trend:	Unknown
Presence:	Presumed Extant		

Location:

SACRAMENTO PRAIRIE VERNAL POOL PRESERVE.

Detailed Location:

ABOUT 1.3 MILES SOUTHEAST OF INTERSECTION OF JACKSON RD. AND EXCELSIOR RD.

Ecological:

VERNAL POOLS.

Threats:

THE GRASS GLYCERIA DECLINATA IS BECOMING PROBLEMATIC IN THE GENERAL AREA.

General:

"LOTS" FOUND IN ONE POOL.

PLSS:	T08N, R06E, Sec. 35 (M)	Accuracy:	specific area	Area (acres):	1
UTM:	Zone-10 N4263264 E649989	Latitude/Longitude:	38.50513 / -121.27983	Elevation (feet):	120

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153)

Sources:

WIT05F0001	WITHAM, C. - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI. ATTACHED TO REPORT, WIT05R01. 2005-02-20
WIT05R0001	WITHAM, C. - SACRAMENTO PRAIRIE VERNAL POOL PRESERVE, SPECIAL STATUS CRUSTACEAN LOCATIONS. 2005-05-17



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 33179
Key Quad: Carmichael (3812153)
Occurrence Number: 5
EO Index: 2805
Element Code: ICBRA10010
Occurrence Last Updated: 1996-07-08

Scientific Name: *Lepidurus packardii*
Common Name: vernal pool tadpole shrimp
Listing Status: **Federal:** Endangered
State: None
Rare Plant Rank:
Other Lists: IUCN_EN-Endangered
CNDDB Element Ranks: **Global:** G3
State: S2S3

General Habitat:
INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.
Micro Habitat:
POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed: 1995-02-28
Last Survey Date: 1995-02-28
Owner/Manager: PVT-RMC LONESTAR
Presence: Presumed Extant
Occurrence Type: Natural/Native occurrence
Occurrence Rank: Good
Trend: Unknown

Location:
0.6 MILE NNW OF THE INTERSECTION OF EAGLES NEST ROAD AND DOUGLAS ROAD, NE OF (FORMER) MATHER AIR FORCE BASE.

Detailed Location:

Ecological:

HABITAT CONSISTS OF A VERNAL POOL ON RED BLUFF LOAM SOIL; DOMINANT PLANTS INCLUDE RANUNCULUS BONARIENSIS VAR TRISEPALUS, ERYNGIUM VASEYI, LIMNANTHES ALBA, AND ELEOCHARIS MACROSTACHYA.

Threats:

POSSIBLE THREAT OF GRAVEL MINING - SITE IS OWNED BY A GRAVEL MINING COMPANY, CURRENTLY MINING NORTH AND WEST OF SITE.

General:

1 EXUVIUM COLLECTED ON 28 FEBRUARY 1995 AND DEPOSITED AT CAS.

PLSS: T08N, R06E, Sec. 12 (M) **Accuracy:** 80 meters **Area (acres):** 0
UTM: Zone-10 N4270325 E651241 **Latitude/Longitude:** 38.56852 / -121.26395 **Elevation (feet):** 125

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153)

Sources:

FIE95F0001 FIELDS, W. (HYDROZOOLOGY) - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI 1995-02-28
FIE95U0001 FIELDS, W.C. (HYDROZOOLOGY) - FORMAL LETTER TO DFG FOR VERNAL POOL CRUSTACEAN SURVEY ON RMC LONESTAR LAND - ATTACHED TO FIE95F0001 & FIE95F0002. 1995-05-30



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 82551
Key Quad: Buffalo Creek (3812152)
Occurrence Number: 12

EO Index: 2105
Element Code: ICBRA10010
Occurrence Last Updated: 2011-06-24

Scientific Name: *Lepidurus packardii*
Common Name: vernal pool tadpole shrimp

Listing Status:
Federal: Endangered
State: None
CNDDB Element Ranks:
Global: G3
State: S2S3

Rare Plant Rank:
Other Lists: IUCN_EN-Endangered

General Habitat:
INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:
POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed: 1996-XX-XX
Last Survey Date: 1996-XX-XX
Owner/Manager: PVT
Presence: Presumed Extant

Occurrence Type: Natural/Native occurrence
Occurrence Rank: Unknown
Trend: Unknown

Location:
NORTHWEST THE JCT OF FLORIN RD & SUNRISE BLVD, INTERSECTED BY JACKSON HWY TO THE NORTH.

Detailed Location:
GRECH PROPERTY. SURVEYED FOR SACRAMENTO AGGREGATES. NAIP 2010 AERIAL IMAGE SHOWS HABITAT MODIFICATION FROM MINING.

Ecological:
HARDPAN VERNAL POOLS, SEASONAL WETLANDS, CUT OFF DRAINAGE CHANNEL, AND STOCKPOND IN A NON-NATIVE GRASSLAND. CURRENT/SURROUNDING LAND USE IS GRAZING.

Threats:
RURAL AGRICULTURAL USES AND MINING.

General:
1 FEB 1995: OBS <50 ADULTS IN POOLS #42, 70B, 72. & 200; ~50 ADULTS OBS IN POOLS 41, 44, 83C (6 COLL & DEPOSITED INTO CAS). 22 FEB 1995: <50 OBS IN POOL #44. 50+ ADULTS OBS IN POOL #41. SPRING 1996: >10 - ~100 IN POOLS N&S OF JACKSON HWY.

PLSS: T08N, R07E, Sec. 31 (M)
UTM: Zone-10 N4263033 E652768

Accuracy: nonspecific area
Latitude/Longitude: 38.50257 / -121.24802

Area (acres): 196
Elevation (feet): 120

County Summary: Sacramento
Quad Summary: Sloughouse (3812142), Buffalo Creek (3812152), Carmichael (3812153)

Sources:

MUT96F0004	MUTH, D. (LSA ASSOCIATES, INC.) - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI 1996-XX-XX
MUT96F0005	MUTH, D. (LSA ASSOCIATES, INC.) - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI 1996-XX-XX
MUT96F0006	MUTH, D. (LSA ASSOCIATES, INC.) - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI 1996-XX-XX
SUG95R0001	SUGNET & ASSOCIATES - ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED CRUSTACEA CONDUCTED UNDER FEDERAL FISH AND WILDLIFE PERMIT #PRT-795933. (2 BINDERS) 1995-06-XX
SUG95R0002	SUGNET & ASSOCIATES - CORRECTIONS TO ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED CRUSTACEA CONDUCTED UNDER FEDERAL FISH AND WILDLIFE PERMIT #PRT-795933, 1994-95. 1995-10-30



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	32443	EO Index:	638
Key Quad:	Sacramento East (3812154)	Element Code:	ICBRA10010
Occurrence Number:	14	Occurrence Last Updated:	1996-03-06

Scientific Name:	<i>Lepidurus packardii</i>	Common Name:	vernal pool tadpole shrimp
Listing Status:	Federal: Endangered State: None	Rare Plant Rank:	
CNDDB Element Ranks:	Global: G3 State: S2S3	Other Lists:	IUCN_EN-Endangered

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed:	1995-03-31	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1995-03-31	Occurrence Rank:	Unknown
Owner/Manager:	PVT-PIPE TRADES TRUST FUND	Trend:	Unknown
Presence:	Presumed Extant		

Location:

1.2 KM ESE OF ELDER CREEK ROAD X FLORIN PERKINS ROAD; SE OF THE FORMER SACRAMENTO ARMY DEPOT.

Detailed Location:

ELDER CREEK PROPERTY. LEPIDURUS PACKARDI WERE FOUND IN 10 OF 90 SAMPLED WETLANDS.

Ecological:

HARDPAN VERNAL POOLS IN ANNUAL GRASSLAND.

Threats:

RURAL AGRICULTURE; URBAN DEVELOPMENT OCCURING IN VICINITY.

General:

POOL #86: 2/21/1995: <50 ADULTS OBSERVED, 3/31/1995: <50 ADULTS OBSERVED; POOLS #21,43,46: <50 ADULTS OBSERVED; POOLS #38,41,44,45,50,53: >50 ADULTS OBSERVED; 4 ADULTS DEPOSITED IN CAS.

PLSS:	T08N, R05E, Sec. 36 (M)	Accuracy:	nonspecific area	Area (acres):	16
UTM:	Zone-10 N4263165 E641409	Latitude/Longitude:	38.50564 / -121.37821	Elevation (feet):	40

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153), Sacramento East (3812154)

Sources:

SUG95R0001 SUGNET & ASSOCIATES - ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED CRUSTACEA CONDUCTED UNDER FEDERAL FISH AND WILDLIFE PERMIT #PRT-795933. (2 BINDERS) 1995-06-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number:	32447	EO Index:	1011
Key Quad:	Carmichael (3812153)	Element Code:	ICBRA10010
Occurrence Number:	21	Occurrence Last Updated:	1997-03-27

Scientific Name:	<i>Lepidurus packardii</i>	Common Name:	vernal pool tadpole shrimp
Listing Status:	Federal: Endangered	Rare Plant Rank:	
	State: None	Other Lists:	IUCN_EN-Endangered
CNDDDB Element Ranks:	Global: G3		
	State: S2S3		

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed:	1996-03-21	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1996-03-21	Occurrence Rank:	Unknown
Owner/Manager:	PVT-GRANITE CONSTRUCTION CO	Trend:	Unknown
Presence:	Presumed Extant		

Location:

0.8 MI W OF EXCELSIOR RD AT KIEFER BLVD, SW OF FORMER MATHER AFB, 0.8 MI NNE OF CAMELIA MEMORIAL CEMETERY, SAC CO.

Detailed Location:

SMALL PARCEL LOCATED WITHIN GRANITE-TEICHERT PILOT PROJECT SITE, SOUTH OF GRAVEL PITS ALONG KIEFER ROAD. 1995 & 1996 SURVEYS: 10 TOTAL WATERBODIES SURVEYED.

Ecological:

WETLAND COMPENSATION/MITIGATION PRESERVE COMPRISED OF BOTH CONSTRUCTED AND HISTORIC HARDPAN VERNAL POOLS IN ANNUAL GRASSLAND. MID-VALLEY FAIRY SHRIMP (BRANCHINECTA SP) & LINDERIELLA OCCIDENTALIS ALSO PRESENT.

Threats:

General:

5 FEB 1995: 50+ ADULTS OBSERVED IN POOLS 7 & 8 (2 ADULTS COLLECTED & DEPOSITED IN CAS). 21 MAR 1996: <50 ADULTS OBSERVED IN POOL #7.

PLSS:	T08N, R06E, Sec. 22 (M)	Accuracy:	specific area	Area (acres):	5
UTM:	Zone-10 N4266606 E647513	Latitude/Longitude:	38.53565 / -121.30751	Elevation (feet):	70

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153)

Sources:

SUG95R0001	SUGNET & ASSOCIATES - ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED CRUSTACEA CONDUCTED UNDER FEDERAL FISH AND WILDLIFE PERMIT #PRT-795933. (2 BINDERS) 1995-06-XX
SUG95R0002	SUGNET & ASSOCIATES - CORRECTIONS TO ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED CRUSTACEA CONDUCTED UNDER FEDERAL FISH AND WILDLIFE PERMIT #PRT-795933, 1994-95. 1995-10-30
SUG96R0001	SUGNET & ASSOCIATES - ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED BRANCHIOPODS CONDUCTED UNDER FEDERAL FISH AND WILDLIFE PERMIT NO. PRT-795933. 1996-XX-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 32455 **EO Index:** 8883
Key Quad: Carmichael (3812153) **Element Code:** ICBRA10010
Occurrence Number: 22 **Occurrence Last Updated:** 2007-12-10

Scientific Name: *Lepidurus packardii* **Common Name:** vernal pool tadpole shrimp
Listing Status: **Federal:** Endangered **Rare Plant Rank:**
State: None **Other Lists:** IUCN_EN-Endangered
CNDDB Element Ranks: **Global:** G3
State: S2S3

General Habitat: **Micro Habitat:**
INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF
CONTAINING CLEAR TO HIGHLY TURBID WATER. UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED &
HIGHLY TURBID.

Last Date Observed: 1996-03-21 **Occurrence Type:** Natural/Native occurrence
Last Survey Date: 1996-03-21 **Occurrence Rank:** Unknown
Owner/Manager: PVT-GRANITE CONSTRUCTION CO **Trend:** Unknown
Presence: Presumed Extant

Location:
ALONG N EDGE OF KIEFER BLVD; 0.7 KM WNW OF KIEFER BLVD X MATHER PARK WAY.

Detailed Location:
GRANITE-TEICHERT PILOT PROJECT SITE (PART). 1995: 10 TOTAL WATERBODIES SURVEYED, DISCREPANCY BETWEEN MAP AND FIELD
SURVEY FORM; MAPPED ACCORDING TO MAP NOT SURVEY FORM. 1996: 10 TOTAL WATERBODIES SURVEYED.

Ecological:
BOTH CONSTRUCTED & HISTORIC HARDPAN VERNAL POOLS IN ANNUAL GRASSLAND; WETLAND COMPENSATION/MITIGATION PRESERVE.

Threats:
General:
2/5/1995: POOL #10: 50+ OBSERVED. 2/21: POOLS #9 & 10: 50+ OBSERVED IN EACH POOL; 2 ADULTS COLLECTED AND DEPOSITED IN CAS.
3/21/1996: POOLS #7, 9 & 10: <50 ADULTS OBSERVED; LINDERIELLA OCCIDENTALIS ALSO PRESENT.

PLSS: T08N, R06E, Sec. 22 (M) **Accuracy:** specific area **Area (acres):** 2
UTM: Zone-10 N4266913 E648056 **Latitude/Longitude:** 38.53832 / -121.30122 **Elevation (feet):** 70

County Summary: **Quad Summary:**
Sacramento Carmichael (3812153)

Sources:
SUG95R0001 SUGNET & ASSOCIATES - ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED CRUSTACEA CONDUCTED
UNDER FEDERAL FISH AND WILDLIFE PERMIT #PRT-795933. (2 BINDERS) 1995-06-XX
SUG95R0002 SUGNET & ASSOCIATES - CORRECTIONS TO ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED
CRUSTACEA CONDUCTED UNDER FEDERAL FISH AND WILDLIFE PERMIT #PRT-795933, 1994-95. 1995-10-30
SUG96R0001 SUGNET & ASSOCIATES - ANNUAL REPORT TO THE USFWS REGARDING SURVEYS FOR LISTED BRANCHIOPODS CONDUCTED
UNDER FEDERAL FISH AND WILDLIFE PERMIT NO. PRT-795933. 1996-XX-XX



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	82507	EO Index:	1888
Key Quad:	Carmichael (3812153)	Element Code:	ICBRA10010
Occurrence Number:	25	Occurrence Last Updated:	2011-06-24

Scientific Name:	<i>Lepidurus packardii</i>	Common Name:	vernal pool tadpole shrimp
Listing Status:	Federal: Endangered State: None	Rare Plant Rank:	
CNDDB Element Ranks:	Global: G3 State: S2S3	Other Lists:	IUCN_EN-Endangered

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed:	1993-03-05	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1993-03-05	Occurrence Rank:	Fair
Owner/Manager:	PVT-GRANITE CONSTRUCTION CO	Trend:	Unknown
Presence:	Presumed Extant		

Location:

SW OF MATHER AFB; BOUNDED BY KIEFER BLVD TO N, BRADSHAW RD TO W, JACKSON RD TO S, AND EXCELSIOR RD TO E, SACRAMENTO CO.

Detailed Location:

GRANITE-TEICHERT PILOT PROJECT SITE. REPORTS GIVE LOCATION AS T8N, R6E, SECTIONS 21 & 22. HABITAT APPEARED INTACT OVER MOST OF SITE IN 1993; HOWEVER, 2009 AERIAL IMAGERY SHOWS GRADING/MINING ACTIVITIES AND CHANGE IN HYDROLOGY AT SITE.

Ecological:

VERNAL POOLS, GRAZED ANNUAL GRASSLAND. LAND USED FOR AGGREGATE MINING.

Threats:

GRAZING; GRAVEL PITS IN NORTHERN PORTION OF SITES; PROPOSED AGGREGATE MINING.

General:

MANY INDIVIDUALS OBSERVED ON 7 AND 24 APR 1991; OVERALL SITE QUALITY MAY BE QUESTIONABLE. UNKNOWN NUMBER OBSERVED IN 1 NATURAL VERNAL POOL ON 5 MAR 1993, SUGNET RECORD #149.

PLSS:	T08N, R06E, Sec. 22 (M)	Accuracy:	nonspecific area	Area (acres):	1,421
UTM:	Zone-10 N4266264 E646754	Latitude/Longitude:	38.53268 / -121.31628	Elevation (feet):	70

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153)

Sources:

HUB91F0003	HUBER, A. (BIOSYSTEMS ANALYSIS, INC.) - FIELD SURVEY FORMS FOR LEPIDURUS PACKARDI (VERNAL POOL TADPOLE SHRIMP) 1991-04-XX
SUG93U0001	SUGNET & ASSOCIATES - PRINTOUT OF LOCATION (T-R-S) OF FAIRY SHRIMP SAMPLING. (OBTAINED FROM THE U.S. FISH AND WILDLIFE SERVICE) 1993-XX-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 32730 **EO Index:** 1142
Key Quad: Buffalo Creek (3812152) **Element Code:** ICBRA10010
Occurrence Number: 54 **Occurrence Last Updated:** 1996-01-05

Scientific Name: *Lepidurus packardii* **Common Name:** vernal pool tadpole shrimp
Listing Status: **Federal:** Endangered **Rare Plant Rank:**
State: None **Other Lists:** IUCN_EN-Endangered
CNDDDB Element Ranks: **Global:** G3
State: S2S3

General Habitat: INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.
Micro Habitat: POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed: 1993-02-02 **Occurrence Type:** Natural/Native occurrence
Last Survey Date: 1993-02-02 **Occurrence Rank:** Fair
Owner/Manager: BLM **Trend:** Unknown
Presence: Presumed Extant

Location: FORMER MATHER AIR FORCE BASE; WESTERN PORTION OF TRIANGLE FORMED BY DOUGLAS RD, SUNRISE BOULEVARD & FOLSOM SOUTH CANAL.

Detailed Location: LAND TO THE NORTH AND EAST IS PRIVATELY-OWNED FOR INDUSTRIAL/BUSINESS; THE FORMER MATHER AFB IS TO THE SOUTH AND WEST; EAST PARCEL IS UNDEVELOPED.

Ecological: GRASSLANDS.

Threats: IDENTIFIED FOR EXCHANGE.

General: MANY INDIVIDUALS OF BOTH SPECIES, LEPIDURUS PACKARDI AND LINDERIELLA OCCIDENTALIS, OBSERVED; COLLECTION MADE.

PLSS: T08N, R07E, Sec. 07 (M) **Accuracy:** specific area **Area (acres):** 20
UTM: Zone-10 N4269191 E652586 **Latitude/Longitude:** 38.55807 / -121.24877 **Elevation (feet):** 140

County Summary: Sacramento **Quad Summary:** Buffalo Creek (3812152), Carmichael (3812153)

Sources: CRA93F0002 CRANSTON, P. (U.S. BUREAU OF LAND MANAGEMENT) - FIELD SURVEY FORM FOR LINDERIELLA OCCIDENTALIS & LEPIDURUS PACKARDI 1993-02-02



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	34802	EO Index:	11938
Key Quad:	Elk Grove (3812143)	Element Code:	ICBRA10010
Occurrence Number:	71	Occurrence Last Updated:	2011-06-29

Scientific Name:	<i>Lepidurus packardii</i>	Common Name:	vernal pool tadpole shrimp
Listing Status:	Federal: Endangered State: None	Rare Plant Rank:	
CNDDDB Element Ranks:	Global: G3 State: S2S3	Other Lists:	IUCN_EN-Endangered

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed:	1992-04-02	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1992-04-02	Occurrence Rank:	Unknown
Owner/Manager:	PVT-SACRAMENTO VLY CONSERVANCY	Trend:	Unknown
Presence:	Presumed Extant		

Location:

PART OF ARROYO SECO (FLORIN MITIGATION BANK), NE CORNER OF EXCELSIOR ROAD & FLORIN ROAD, 4.1 MI E OF FLORIN PO, SAC CO.

Detailed Location:

LOCATION STATED AS "VERNAL POOL NEAR NORTHEAST CORNER OF EXCELSIOR AND FLORIN." MAPPED ACCORDING TO STATED LOCATION. 1993 SUGNET REPORT: VERNAL POOL SOMEWHERE IN SECTION 35.

Ecological:

VERNAL POOL.

Threats:

General:

KOFORD OBSERVED TADPOLE SHRIMP HERE DURING SURVEY ON 2 APRIL 1992. UNKNOWN NUMBER OF LEPIDURUS PACKARDI OBS 2 APR 1992 IN VERNAL POOL SOMEWHERE IN SECTION 35, (SUGNET #150) - POSSIBLY SAME SIGHTING AS KOFORD.

PLSS:	T08N, R06E, Sec. 35 (M)	Accuracy:	1/5 mile	Area (acres):	0
UTM:	Zone-10 N4262458 E648688	Latitude/Longitude:	38.49808 / -121.29492	Elevation (feet):	110

County Summary:

Sacramento

Quad Summary:

Elk Grove (3812143), Carmichael (3812153)

Sources:

KOF92U0001	KOFORD, E.J. (EBASCO) - LETTER TO USFWS REGARDING ADDITIONAL LOCALITIES OF FAIRY SHRIMP IN SACRAMENTO: BRANCHINECTA LYNCHI, LINDERIELLA OCCIDENTALIS & LEPIDURUS PACKARDI. 1992-04-XX
SUG93U0001	SUGNET & ASSOCIATES - PRINTOUT OF LOCATION (T-R-S) OF FAIRY SHRIMP SAMPLING. (OBTAINED FROM THE U.S. FISH AND WILDLIFE SERVICE) 1993-XX-XX



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	82532	EO Index:	30611
Key Quad:	Carmichael (3812153)	Element Code:	ICBRA10010
Occurrence Number:	94	Occurrence Last Updated:	2011-05-10

Scientific Name:	<i>Lepidurus packardii</i>	Common Name:	vernal pool tadpole shrimp
Listing Status:	Federal: Endangered State: None	Rare Plant Rank:	
CNDDB Element Ranks:	Global: G3 State: S2S3	Other Lists:	IUCN_EN-Endangered

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed:	1998-01-28	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1998-01-28	Occurrence Rank:	Excellent
Owner/Manager:	PVT-CONSERVATION RESOURCES	Trend:	Unknown
Presence:	Presumed Extant		

Location:

ARROYO SECO SITE, AREA 0.8 MILES ENE OF FLORIN ROAD AT EXCELSIOR ROAD, SACRAMENTO COUNTY.

Detailed Location:

ARROYO SECO MITIGATION BANK SITE. NORTH OF FLORIN ROAD AND SOUTH OF ROLLING MEADOWS DR. MAPPED TO MAP PROVIDED (WHI98F0006). SUGNET REPORT: VERNAL POOL SOMEWHERE IN SECTION 35.

Ecological:

NATURAL VERNAL POOL COMMUNITY.

Threats:

General:

LEPIDURUS PACKARDI OBSERVED ON 2 APR 1992 IN A NATURAL VERNAL POOL (SUGNET #150). 100'S OBS IN 7 LOCATIONS DURING 28 JAN 1998 SURVEY.

PLSS:	T08N, R06E, Sec. 35 (M)	Accuracy:	nonspecific area	Area (acres):	27
UTM:	Zone-10 N4262694 E649653	Latitude/Longitude:	38.50005 / -121.28380	Elevation (feet):	120

County Summary:

Sacramento

Quad Summary:

Elk Grove (3812143), Carmichael (3812153)

Sources:

SUG93U0001	SUGNET & ASSOCIATES - PRINTOUT OF LOCATION (T-R-S) OF FAIRY SHRIMP SAMPLING. (OBTAINED FROM THE U.S. FISH AND WILDLIFE SERVICE) 1993-XX-XX
WHI98F0006	WHITNEY, K. - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI (VERNAL POOL TADPOLE SHRIMP) 1998-01-28



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number:	82549	EO Index:	31890
Key Quad:	Carmichael (3812153)	Element Code:	ICBRA10010
Occurrence Number:	113	Occurrence Last Updated:	2011-06-06

Scientific Name:	<i>Lepidurus packardii</i>	Common Name:	vernal pool tadpole shrimp
Listing Status:	Federal: Endangered State: None	Rare Plant Rank:	
CNDDB Element Ranks:	Global: G3 State: S2S3	Other Lists:	IUCN_EN-Endangered

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed:	2000-03-15	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2000-03-15	Occurrence Rank:	Good
Owner/Manager:	PVT	Trend:	Unknown
Presence:	Presumed Extant		

Location:

SOUTHWEST CORNER OF EAGLES NEST RD & JACKSON RD (HWY 16), INTERSECTED BY FRYE CREEK, SOUTH OF MATHER AFB.

Detailed Location:

1996: EAST 1/2 OF NE 1/4 SECTION 36. 2000: WEST 1/2 OF NE 1/4 SECTION 36.

Ecological:

HABITAT CONSISTS OF NORTHERN HARDPAN VERNAL POOLS SURROUNDED BY NON-NATIVE GRASSLAND. LINDERIELLA OCCIDENTALIS & BRANCHINECTA LYNCHI WERE ALSO OBSERVED IN POOLS HERE.

Threats:

THREATENED BY GRAVEL MINING.

General:

10-50+ ADULTS OBSERVED IN 5 POOLS DURING SURVEYS IN SPRING 1996. 20+ ADULTS OBSERVED IN POOLS DURING 24 FEB & 15 MAR 2000 SURVEYS CONDUCTED IN WESTERN HALF OF POLYGON.

PLSS:	T08N, R06E, Sec. 36 (M)	Accuracy:	nonspecific area	Area (acres):	158
UTM:	Zone-10 N4263557 E651209	Latitude/Longitude:	38.50756 / -121.26578	Elevation (feet):	125

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153)

Sources:

MUT00F0007	MUTH, D. - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI (VERNAL POOL TADPOLE SHRIMP) 2000-03-15
MUT00F0019	MUTH, D. - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI 2000-03-15
MUT96F0001	MUTH, D. (LSA ASSOCIATES, INC.) - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI 1996-XX-XX
MUT96F0002	MUTH, D. (LSA ASSOCIATES, INC.) - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI 1996-XX-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 41009

Key Quad: Carmichael (3812153)

Occurrence Number: 131

EO Index: 41009

Element Code: ICBRA10010

Occurrence Last Updated: 2011-07-06

Scientific Name: *Lepidurus packardii*

Common Name: vernal pool tadpole shrimp

Listing Status: Federal: Endangered

Rare Plant Rank:

State: None

Other Lists: IUCN_EN-Endangered

CNDDDB Element Ranks: Global: G3

State: S2S3

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed: 2006-05-05

Occurrence Type: Natural/Native occurrence

Last Survey Date: 2006-05-05

Occurrence Rank: Good

Owner/Manager: SAC COUNTY

Trend: Unknown

Presence: Presumed Extant

Location:

MATHER FIELD VERNAL POOL PRESERVE, S OF OLD MATHER AIRPORT RUNWAY AND E OF THE WATER TREATMENT PONDS, N OF KIEFER BLVD.

Detailed Location:

1993: EXACT LOCATIONS NOT PROVIDED - FOUND IN 9 POOLS AT THE MATHER REDEVELOPMENT PLAN AREA. 1996-96: FOUND IN 49 POOLS TOTAL FOR THE MATHER FIELD SPECIFIC PLAN SURVEY.

Ecological:

FOUND IN VERNAL POOLS, VERNAL SWALES, SEASONAL WETLANDS, AND FRESHWATER MARSH. LINDERIELLA OCCIDENTALIS ALSO OBSERVED.

Threats:

DEVELOPMENT.

General:

OBSERVED DURING SURVEYS CONDUCTED APR AND JUL 1993, FEB - MAR 1996, AND JAN 1997. OBSERVED IN 4 OF 19 SAMPLED POOLS BETWEEN 14 FEB AND 5 MAY 2006.

PLSS: T08N, R06E, Sec. 14 (M)

Accuracy: specific area

Area (acres): 84

UTM: Zone-10 N4267843 E648624

Latitude/Longitude: 38.54660 / -121.29451

Elevation (feet): 80

County Summary:

Quad Summary:

Sacramento

Carmichael (3812153)

Sources:

- | | |
|------------|---|
| JSA93R0002 | JONES & STOKES ASSOCIATES, INC. - SPECIAL STATUS PLANT AND WILDLIFE SURVEY RESULTS FOR THE MATHER REDEVELOPMENT PLAN AREA, SACRAMENTO COUNTY. PREPARED FOR: SAC HOUSING & REDEVELOPMENT AGENCY. 1993-08-03 |
| JSA97R0002 | JONES & STOKES ASSOCIATES, INC. - SPECIAL STATUS SPECIES SURVEY CONDUCTED FOR THE MATHER FIELD SPECIFIC PLAN AND MATHER SINGLE-FAMILY HOUSING PROJECT. INCLUDES REPORT + MAPS. PREPARED FOR: COUNTY OF SACRAMENTO. 1997-06-XX |
| WIT06F0003 | WITHAM, C.W. - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI (VERNAL POOL TADPOLE SHRIMP) 2006-04-11 |



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 41018
Key Quad: Carmichael (3812153)
Occurrence Number: 132
EO Index: 41018
Element Code: ICBRA10010
Occurrence Last Updated: 1999-05-04

Scientific Name: *Lepidurus packardii*
Common Name: vernal pool tadpole shrimp
Listing Status: **Federal:** Endangered
State: None
Rare Plant Rank:
Other Lists: IUCN_EN-Endangered
CNDDB Element Ranks: **Global:** G3
State: S2S3

General Habitat:
INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.
Micro Habitat:
POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed: 1997-01-XX
Last Survey Date: 1997-01-XX
Owner/Manager: SAC COUNTY
Presence: Presumed Extant
Occurrence Type: Natural/Native occurrence
Occurrence Rank: Unknown
Trend: Unknown

Location:
0.75 MILES SOUTH FROM JCT OLD PLACERVILLE AND ROUTIER ROADS, NORTH OF WEST END OF SACRAMENTO MATHER AIRPORT RUNWAYS.

Detailed Location:
IN POOLS NUMBERED 1291 AND 1291.1

Ecological:
FOUND IN TWO VERNAL POOLS, AT THE OLD MATHER AIR FORCE BASE.

Threats:
DEVELOPMENT.

General:
OBSERVED IN 1993 AND 1996-97. ALSO LINDERIELLA OCCIDENTALIS OBSERVED.

PLSS: T08N, R06E, Sec. 16 (M) **Accuracy:** 80 meters **Area (acres):** 0
UTM: Zone-10 N4268173 E646586 **Latitude/Longitude:** 38.54991 / -121.31781 **Elevation (feet):** 75

County Summary: Sacramento
Quad Summary: Carmichael (3812153)

Sources:
JSA93R0002 JONES & STOKES ASSOCIATES, INC. - SPECIAL STATUS PLANT AND WILDLIFE SURVEY RESULTS FOR THE MATHER REDEVELOPMENT PLAN AREA, SACRAMENTO COUNTY. PREPARED FOR: SAC HOUSING & REDEVELOPMENT AGENCY. 1993-08-03
JSA97R0002 JONES & STOKES ASSOCIATES, INC. - SPECIAL STATUS SPECIES SURVEY CONDUCTED FOR THE MATHER FIELD SPECIFIC PLAN AND MATHER SINGLE-FAMILY HOUSING PROJECT. INCLUDES REPORT + MAPS. PREPARED FOR: COUNTY OF SACRAMENTO. 1997-06-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 41024

Key Quad: Carmichael (3812153)

Occurrence Number: 133

EO Index: 41024

Element Code: ICBRA10010

Occurrence Last Updated: 1999-05-11

Scientific Name: *Lepidurus packardii*

Common Name: vernal pool tadpole shrimp

Listing Status: Federal: Endangered

Rare Plant Rank:

State: None

Other Lists: IUCN_EN-Endangered

CNDDDB Element Ranks: Global: G3

State: S2S3

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed: 1997-01-XX

Occurrence Type: Natural/Native occurrence

Last Survey Date: 1997-01-XX

Occurrence Rank: Unknown

Owner/Manager: SAC COUNTY

Trend: Unknown

Presence: Presumed Extant

Location:

0.1 MILE EAST OF JUNCTION OF KIEFER BLVD AND EAGLES NEST ROAD, MATHER REGIONAL PARK (6 FEATURES, ALONG KIEFER BLVD).

Detailed Location:

PART OF THE MORRISON CREEK DRAINAGE, IN THE OLD MATHER AIR FORCE BASE.

Ecological:

6 FEATURES THAT ARE EITHER, VERNAL POOLS, VERNAL SWALES, OR A BRANCH OF MORRISON CREEK.

Threats:

IMPACTED BY HUMANS.

General:

OBSERVED IN 1993 AND 1996-97 IN 5 OF THE 6 FEATURES MAPPED. LINDERIELLA OCCIDENTALIS ALSO OBSERVED.

PLSS: T08N, R07E, Sec. 19 (M)

Accuracy: specific area

Area (acres): 11

UTM: Zone-10 N4265728 E652010

Latitude/Longitude: 38.52698 / -121.25613

Elevation (feet): 125

County Summary:

Sacramento

Quad Summary:

Buffalo Creek (3812152), Carmichael (3812153)

Sources:

JSA93R0002 JONES & STOKES ASSOCIATES, INC. - SPECIAL STATUS PLANT AND WILDLIFE SURVEY RESULTS FOR THE MATHER REDEVELOPMENT PLAN AREA, SACRAMENTO COUNTY. PREPARED FOR: SAC HOUSING & REDEVELOPMENT AGENCY. 1993-08-03

JSA97R0002 JONES & STOKES ASSOCIATES, INC. - SPECIAL STATUS SPECIES SURVEY CONDUCTED FOR THE MATHER FIELD SPECIFIC PLAN AND MATHER SINGLE-FAMILY HOUSING PROJECT. INCLUDES REPORT + MAPS. PREPARED FOR: COUNTY OF SACRAMENTO. 1997-06-XX



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	41025	EO Index:	41025
Key Quad:	Carmichael (3812153)	Element Code:	ICBRA10010
Occurrence Number:	134	Occurrence Last Updated:	1999-05-10

Scientific Name:	<i>Lepidurus packardii</i>	Common Name:	vernal pool tadpole shrimp
Listing Status:	Federal: Endangered State: None	Rare Plant Rank:	
CNDDB Element Ranks:	Global: G3 State: S2S3	Other Lists:	IUCN_EN-Endangered

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed:	1997-01-XX	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1997-01-XX	Occurrence Rank:	Unknown
Owner/Manager:	SAC COUNTY	Trend:	Unknown
Presence:	Presumed Extant		

Location:

0.4 MILE NNW OF JUNCTION OF KIEFER BLVD AND EAGLES NEST ROAD, MATHER REGIONAL PARK.

Detailed Location:

8 VERNAL POOLS IN THIS PORTION OF THE COMPLEX CONTAIN VERNAL POOL TADPOLE SHRIMP (VPTS). PART OF THE OLD MATHER AIR FORCE BASE.

Ecological:

VERNAL POOLS, AND DISTURBED VERNAL POOLS.

Threats:

IMPACTED BY HUMANS.

General:

OBSERVED IN 1993 AND 1996-97. LINDERIELLA OCCIDENTALIS ALSO OBSERVED.

PLSS:	T08N, R06E, Sec. 24 (M)	Accuracy:	specific area	Area (acres):	10
UTM:	Zone-10 N4266445 E651135	Latitude/Longitude:	38.53359 / -121.26601	Elevation (feet):	140

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153)

Sources:

JSA93R0002	JONES & STOKES ASSOCIATES, INC. - SPECIAL STATUS PLANT AND WILDLIFE SURVEY RESULTS FOR THE MATHER REDEVELOPMENT PLAN AREA, SACRAMENTO COUNTY. PREPARED FOR: SAC HOUSING & REDEVELOPMENT AGENCY. 1993-08-03
JSA97R0002	JONES & STOKES ASSOCIATES, INC. - SPECIAL STATUS SPECIES SURVEY CONDUCTED FOR THE MATHER FIELD SPECIFIC PLAN AND MATHER SINGLE-FAMILY HOUSING PROJECT. INCLUDES REPORT + MAPS. PREPARED FOR: COUNTY OF SACRAMENTO. 1997-06-XX



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 41041

Key Quad: Carmichael (3812153)

Occurrence Number: 137

EO Index: 41041

Element Code: ICBRA10010

Occurrence Last Updated: 1999-05-11

Scientific Name: *Lepidurus packardii*

Common Name: vernal pool tadpole shrimp

Listing Status: Federal: Endangered

Rare Plant Rank:

State: None

Other Lists: IUCN_EN-Endangered

CNDDDB Element Ranks: Global: G3

State: S2S3

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed: 1997-01-XX

Occurrence Type: Natural/Native occurrence

Last Survey Date: 1997-01-XX

Occurrence Rank: Unknown

Owner/Manager: SAC COUNTY

Trend: Unknown

Presence: Presumed Extant

Location:

0.6 MILE EAST OF JUNCTION OF KIEFER BLVD AND EXCELSIO ROAD (MATHER PARK WAY), MATHER REGIONAL PARK.

Detailed Location:

1 VERNAL POOL IN THIS PORTION OF THE COMPLEX, WITH VERNAL POOL TADPOLE SHRIMP (VPTS). PART OF THE OLD MATHER AIR FORCE BASE.

Ecological:

VERNAL POOL.

Threats:

General:

OBSERVED IN 1996-97.

PLSS: T08N, R06E, Sec. 23 (M)

Accuracy: specific area

Area (acres): 1

UTM: Zone-10 N4266540 E649650

Latitude/Longitude: 38.53469 / -121.28301

Elevation (feet): 110

County Summary:

Quad Summary:

Sacramento

Carmichael (3812153)

Sources:

JSA97R0002 JONES & STOKES ASSOCIATES, INC. - SPECIAL STATUS SPECIES SURVEY CONDUCTED FOR THE MATHER FIELD SPECIFIC PLAN AND MATHER SINGLE-FAMILY HOUSING PROJECT. INCLUDES REPORT + MAPS. PREPARED FOR: COUNTY OF SACRAMENTO. 1997-06-XX



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	41142	EO Index:	41142
Key Quad:	Carmichael (3812153)	Element Code:	ICBRA10010
Occurrence Number:	138	Occurrence Last Updated:	1999-06-02

Scientific Name:	<i>Lepidurus packardii</i>	Common Name:	vernal pool tadpole shrimp
Listing Status:	Federal: Endangered State: None	Rare Plant Rank:	
CNDDDB Element Ranks:	Global: G3 State: S2S3	Other Lists:	IUCN_EN-Endangered

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed:	1999-02-27	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1999-02-27	Occurrence Rank:	Good
Owner/Manager:	SAC COUNTY-PARKS & REC	Trend:	Unknown
Presence:	Presumed Extant		

Location:

0.6 MILE SW OF MATHER LAKE, (FORMER) MATHER AIR FORCE BASE, RANCHO CORDOVA.

Detailed Location:

Ecological:

HABITAT CONSISTS OF A LARGE VERNAL POOL WITH A GRASSY SUBSTRATE.

Threats:

THREATENED BY DEVELOPMENT & INVASION BY NON-NATIVE SPECIES.

General:

15 TADPOLE SHRIMP OBSERVED ON 27 FEB 1999; ESTIMATED ONE TADPOLE SHRIMP CAPTURED WITH EACH DIP OF THE NET.

PLSS:	T08N, R06E, Sec. 13 (M)	Accuracy:	80 meters	Area (acres):	0
UTM:	Zone-10 N4268233 E650956	Latitude/Longitude:	38.54972 / -121.26767	Elevation (feet):	125

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153)

Sources:

HUB99F0001 HUBER, A. (JONES AND STOKES ASSOCIATES) - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI (VERNAL POOL TADPOLE SHRIMP) 1999-02-27



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 53920

Key Quad: Carmichael (3812153)

Occurrence Number: 178

EO Index: 53923

Element Code: ICBRA10010

Occurrence Last Updated: 2011-06-24

Scientific Name: *Lepidurus packardii*

Common Name: vernal pool tadpole shrimp

Listing Status: Federal: Endangered

Rare Plant Rank:

State: None

Other Lists: IUCN_EN-Endangered

CNDDDB Element Ranks: Global: G3

State: S2S3

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed: 2002-03-15

Occurrence Type: Natural/Native occurrence

Last Survey Date: 2002-03-15

Occurrence Rank: Excellent

Owner/Manager: PVT-GRANITE CONSTRUCTION CO

Trend: Unknown

Presence: Presumed Extant

Location:

GRANITE I PRESERVE, JUST S OF KIEFER BLVD AT HAPPY LN, SW END OF OLD MATHER AFB.

Detailed Location:

VERNAL POOL PRESERVE WITHIN THE GRANITE-TEICHERT PROJECT SITE. CONSISTS OF 38 VERNAL POOLS ON 10.04 ACRES. MAPPED TO PROVIDED MAP.

Ecological:

HABITAT CONSISTS OF VERNAL POOL PRESERVE, DOMINATED BY PLAGIOBOTHRYUS STIPITATUS, LASTHENIA FREMONTII, NAVARRETIA LEUCOCEPHALA, DOWNINGIA BICORNUTA, DESCHAMPSIA DANTHONIOIDES. SURROUNDED BY NON-NATIVE GRASSLANDS, AGGREGATE MINING ACTIVITIES.

Threats:

General:

1000'S OBSERVED ON 24 JAN 1997, WITH UNKNOWN NUMBER OF SPECIMENS COLLECTED & DEPOSITED INTO CAS. 100'S OBS IN JAN 1998. 1000'S OBS ON 23 FEB 1999. 1000'S OBSERVED 15 MAR 2002.

PLSS: T08N, R06E, Sec. 16 (M)

Accuracy: specific area

Area (acres): 44

UTM: Zone-10 N4267058 E646210

Latitude/Longitude: 38.53993 / -121.32235

Elevation (feet): 65

County Summary:

Quad Summary:

Sacramento

Carmichael (3812153)

Sources:

FAR02F0003 FARMER, M. - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI 2002-03-15

WHI97F0004 WHITNEY, K. - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI (VERNAL POOL TADPOLE SHRIMP) 1997-01-24

WHI98F0007 WHITNEY, K. - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI (VERNAL POOL TADPOLE SHRIMP) 1998-01-XX

WHI99F0004 WHITNEY, K. - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI (VERNAL POOL TADPOLE SHRIMP) 1999-02-23



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	82470	EO Index:	64432
Key Quad:	Elk Grove (3812143)	Element Code:	ICBRA10010
Occurrence Number:	238	Occurrence Last Updated:	2011-05-04

Scientific Name:	<i>Lepidurus packardii</i>	Common Name:	vernal pool tadpole shrimp
Listing Status:	Federal: Endangered	Rare Plant Rank:	
	State: None	Other Lists:	IUCN_EN-Endangered
CNDDDB Element Ranks:	Global: G3		
	State: S2S3		

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed:	2008-02-18	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2008-02-18	Occurrence Rank:	Excellent
Owner/Manager:	PVT-SACRAMENTO VLY CONSERVANCY	Trend:	Unknown
Presence:	Presumed Extant		

Location:

SYLVA PARCEL, JUST N OF FLORIN RD, W OF EAGLES NEST RD AND S OF JACKSON HWY (SR 16), ABOUT 4 MILES SOUTH OF MATHER AFB.

Detailed Location:

WEST OF FRYE CREEK; PART OF SACRAMENTO PRAIRIE VERNAL POOL PRESERVE. LOCATED IN THE SW 1/4 OF SECTION 36. MAPPED TO PROVIDED MAPS.

Ecological:

VERNAL POOLS WITHIN A CALIFORNIA ANNUAL GRASSLAND MATRIX. MOST POOLS DID NOT FULLY POND AND WERE AT ABOUT 1/2 OF NORMAL CAPACITY IN 2008. LINDERIELLA OCCIDENTALIS, BRANCHINECTA LYNCHI, AND B. MESOVALLENSIS ALSO OBSERVED HERE.

Threats:

THE GRASS GLYCERIA DECLINATA IS BECOMING PROBLEMATIC IN THE GENERAL AREA (2005).

General:

"LOTS" OF INDIVIDUALS FOUND IN 8 POOLS ON 20 FEB 2005, W/AN UNKNOWN NUMBER COLLECTED FOR SACRAMENTO FISH & WILDLIFE OFFICE. LOW ABUNDANCE OF ADULTS (<1 PER STANDARD DIP NET SWEEP) OBSERVED IN 21 POOLS DURING 18 FEB 2008 SURVEYS.

PLSS:	T08N, R06E, Sec. 36 (M)	Accuracy:	nonspecific area	Area (acres):	43
UTM:	Zone-10 N4262627 E650622	Latitude/Longitude:	38.49927 / -121.27271	Elevation (feet):	120

County Summary:

Sacramento

Quad Summary:

Elk Grove (3812143), Carmichael (3812153)

Sources:

WIT05F0002	WITHAM, C. - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI (VERNAL POOL TADPOLE SHRIMP) 2005-02-20
WIT05R0001	WITHAM, C. - SACRAMENTO PRAIRIE VERNAL POOL PRESERVE, SPECIAL STATUS CRUSTACEAN LOCATIONS. 2005-05-17
WIT08F0006	WITHAM, C. - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI & BRANCHINECTA MESOVALLENSIS & LINDERIELLA OCCIDENTALIS & LEPIDURUS PACKARDI 2008-02-18



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 64351

Key Quad: Carmichael (3812153)

Occurrence Number: 239

EO Index: 64433

Element Code: ICBRA10010

Occurrence Last Updated: 2011-05-12

Scientific Name: *Lepidurus packardii*

Common Name: vernal pool tadpole shrimp

Listing Status: Federal: Endangered

Rare Plant Rank:

State: None

Other Lists: IUCN_EN-Endangered

CNDDDB Element Ranks: Global: G3

State: S2S3

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed: 2008-02-18

Occurrence Type: Natural/Native occurrence

Last Survey Date: 2008-02-18

Occurrence Rank: Excellent

Owner/Manager: PVT-SACRAMENTO VLY CONSERVANCY

Trend: Unknown

Presence: Presumed Extant

Location:

EAST END OF KASSIS PARCEL, AT THE END OF ROLLING MEADOW DR, 1.2 MI NW OF FLORIN RD AT EAGLES NEST RD, SACRAMENTO COUNTY.

Detailed Location:

SACRAMENTO PRAIRIE VERNAL POOL PRESERVE. MAPPED TO MAPS PROVIDED.

Ecological:

VERNAL POOLS WITHIN A CALIFORNIA ANNUAL GRASSLAND MATRIX. MOST POOLS DID NOT FULLY POND AND WERE AT ABOUT 1/2 OF NORMAL CAPACITY IN 2008. BRANCHINECTA LYNCHI, LINDERIALLA OCCIDENTALIS ALSO OBS IN AREA. SURROUNDING LAND USE: CATTLE GRAZING

Threats:

THE GRASS GLYCERIA DECLINATA IS BECOMING PROBLEMATIC IN THE GENERAL AREA (2005).

General:

"LOTS" OF INDIVIDUALS OBSERVED ON 20 FEB 2005, W/AN UNKNOWN NUMBER COLLECTED FOR SACRAMENTO FISH & WILDLIFE OFFICE. LOW ABUNDANCE OF ADULTS (<1 PER STANDARD DIP NET SWEEP) OBSERVED IN TWO POOLS ON 18 FEB 2008.

PLSS: T08N, R06E, Sec. 35 (M)

Accuracy: specific area

Area (acres): 9

UTM: Zone-10 N4263279 E649975

Latitude/Longitude: 38.50526 / -121.27999

Elevation (feet): 120

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153)

Sources:

WIT05F0002 WITHAM, C. - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI (VERNAL POOL TADPOLE SHRIMP) 2005-02-20

WIT05R0001 WITHAM, C. - SACRAMENTO PRAIRIE VERNAL POOL PRESERVE, SPECIAL STATUS CRUSTACEAN LOCATIONS. 2005-05-17

WIT08F0006 WITHAM, C. - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI & BRANCHINECTA MESOVALLENSIS & LINDERIELLA OCCIDENTALIS & LEPIDURUS PACKARDI 2008-02-18



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 64902 **EO Index:** 64438
Key Quad: Buffalo Creek (3812152) **Element Code:** ICBRA10010
Occurrence Number: 240 **Occurrence Last Updated:** 2011-06-27

Scientific Name: *Lepidurus packardii* **Common Name:** vernal pool tadpole shrimp
Listing Status: **Federal:** Endangered **Rare Plant Rank:**
State: None **Other Lists:** IUCN_EN-Endangered
CNDDB Element Ranks: **Global:** G3
State: S2S3

General Habitat: **Micro Habitat:**
INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER. POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed: 2006-05-05 **Occurrence Type:** Natural/Native occurrence
Last Survey Date: 2006-05-05 **Occurrence Rank:** Good
Owner/Manager: SAC COUNTY **Trend:** Unknown
Presence: Presumed Extant

Location:
1 MI NE OF JCT OF EAGLES NEST RD & KEIFER BLVD ND 0.4 MI W OF SUNRISE BLVD, S OF MATHER GOLF COURSE.

Detailed Location:
POOL AT THE NE END OF UNNAMED LOOP ROAD, JUST EAST OF MATHER VERNAL POOL PRESERVE. MAPPED TO PROVIDED MAP.

Ecological:
VERNAL POOLS IN CALIFORNIA GRASSLAND MATRIX, SURROUNDED BY UNGRAZED PASTURES. LIGHT RECREATION IN AREA.

Threats:
General:
FOUND IN LOW NUMBERS (NO-TO-FEW INDIVIDUALS PER DIP NET SWEEP) DURING SURVEYS BETWEEN 24 FEB AND 14 APR 2005. OBSERVED IN LOW ABUNDANCE IN POOL DURING SURVEYS CONDUCTED BETWEEN 28 FEB AND 5 MAY 2006.

PLSS: T08N, R07E, Sec. 18 (M) **Accuracy:** 80 meters **Area (acres):** 0
UTM: Zone-10 N4267216 E652451 **Latitude/Longitude:** 38.54030 / -121.25074 **Elevation (feet):** 158

County Summary: **Quad Summary:**
Sacramento Buffalo Creek (3812152), Carmichael (3812153)

Sources:
WIT05F0005 WITHAM, C. - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI (VERNAL POOL TADPOLE SHRIMP) 2005-XX-XX
WIT05R0002 WITHAM, C.W. - MATHER FIELD VERNAL POOLS, SPECIAL STATUS CRUSTACEAN LOCATIONS. 2005-05-17
WIT06F0003 WITHAM, C.W. - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI (VERNAL POOL TADPOLE SHRIMP) 2006-04-11



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	82856	EO Index:	83856
Key Quad:	Carmichael (3812153)	Element Code:	ICBRA10010
Occurrence Number:	277	Occurrence Last Updated:	2011-06-09

Scientific Name:	<i>Lepidurus packardii</i>	Common Name:	vernal pool tadpole shrimp
Listing Status:	Federal: Endangered State: None	Rare Plant Rank:	
CNDDB Element Ranks:	Global: G3 State: S2S3	Other Lists:	IUCN_EN-Endangered

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed:	2005-04-14	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2005-04-14	Occurrence Rank:	Good
Owner/Manager:	SAC COUNTY	Trend:	Unknown
Presence:	Presumed Extant		

Location:

MATHER FIELD VERNAL POOL PRESERVE, 0.6 MI NNW OF KIEFER BLVD AT EAGLES NEST ROAD, SSW OF MATHER GOLF COURSE, MATHER.

Detailed Location:

IN GRASSLAND ABOUT 0.85 MI SE OF MATHER HEIGHTS ELEMENTARY SCHOOL. MAPPED TO PROVIDED MAP.

Ecological:

VERNAL POOLS IN CALIFORNIA GRASSLAND MATRIX, SURROUNDED BY UNGRAZED PASTURES. LIGHT RECREATION IN AREA.

Threats:

General:

OBSERVED IN LOW ABUNDANCE IN POOL DURING SURVEYS CONDUCTED BETWEEN 24 FEB AND 14 APR 2006.

PLSS:	T08N, R06E, Sec. 24 (M)	Accuracy:	80 meters	Area (acres):	0
UTM:	Zone-10 N4266783 E651202	Latitude/Longitude:	38.53662 / -121.26516	Elevation (feet):	140

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153)

Sources:

WIT05F0005	WITHAM, C. - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI (VERNAL POOL TADPOLE SHRIMP) 2005-XX-XX
WIT05R0002	WITHAM, C.W. - MATHER FIELD VERNAL POOLS, SPECIAL STATUS CRUSTACEAN LOCATIONS. 2005-05-17



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	82476	EO Index:	83495
Key Quad:	Carmichael (3812153)	Element Code:	ICBRA10010
Occurrence Number:	280	Occurrence Last Updated:	2011-06-08

Scientific Name:	<i>Lepidurus packardii</i>	Common Name:	vernal pool tadpole shrimp
Listing Status:	Federal: Endangered State: None	Rare Plant Rank:	
CNDDDB Element Ranks:	Global: G3 State: S2S3	Other Lists:	IUCN_EN-Endangered

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed:	2008-07-01	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2008-07-01	Occurrence Rank:	Fair
Owner/Manager:	UNKNOWN	Trend:	Unknown
Presence:	Presumed Extant		

Location:

HEDGE SUBSTATION, 0.5 MILE FROM ELDER CREEK RD AT HEDGE AVE, 2 MILES SE THE SACRAMENTO ARMY DEPOT, SACRAMENTO CO.

Detailed Location:

PARCEL B OF SMUD HEDGE SUBSTATION PROJECT SITE. 2008: L. PACKARDI OBS IN SW1, SW2, SW3, SW4, SW8, SW9 & OW1 BASINS.

Ecological:

SEASONAL WETLANDS AND SWALES. BRANCHINECTA SP. AND LINDERIELLA OCCIDENTALIS OBSERVED IN AREA. NO LEPIDURUS FOUND IN "PARCEL A" LOCATED JUST TO THE NW DURING 2008 SURVEYS.

Threats:

General:

OBSERVED IN 5 POOLS DURING WET-SEASON SAMPLING CONDUCTED BETWEEN 20 DEC 2007 AND 9 APR 2008. LEPIDURUS CYSTS OBSERVED IN 7 POOLS DURING DRY SEASON SAMPLING CONDUCTED ON 1 JUL 2008.

PLSS:	T08N, R06E, Sec. 31 (M)	Accuracy:	nonspecific area	Area (acres):	6
UTM:	Zone-10 N4263181 E643333	Latitude/Longitude:	38.50547 / -121.35615	Elevation (feet):	55

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153)

Sources:

HEL08F0018	HELM, B. (HELM BIOLOGICAL CONSULTING) - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI 2008-01-17
HEL09R0001	HELM, B. & T. WOOD (HELM BIOLOGICAL CONSULTING) - DRY-SEASON SAMPLING FOR FEDERALLY-LISTED LARGE BRANCHIOPODS AT THE SMUD HEDGE TRAINING FACILITY 2009-03-25
ROZ08R0001	ROZUMOWICZ, B. & B. HELM (HELM BIOLOGICAL CONSULTING) - WET SEASON SAMPLING FOR FEDERALLY-LISTED LARGE BRANCHIOPODS AT THE SMUD HEDGE SUBSTATION TRAINING FACILITY 2008-07-XX



Occurrence Report
California Department of Fish and Game
California Natural Diversity Database



Map Index Number:	82536	EO Index:	83547
Key Quad:	Carmichael (3812153)	Element Code:	ICBRA10010
Occurrence Number:	281	Occurrence Last Updated:	2011-05-10

Scientific Name:	<i>Lepidurus packardii</i>	Common Name:	vernal pool tadpole shrimp
Listing Status:	Federal: Endangered State: None	Rare Plant Rank:	
CNDDDB Element Ranks:	Global: G3 State: S2S3	Other Lists:	IUCN_EN-Endangered

General Habitat:

INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.

Micro Habitat:

POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed:	2008-02-18	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2008-02-18	Occurrence Rank:	Excellent
Owner/Manager:	PVT-SACRAMENTO VLY CONSERVANCY	Trend:	Unknown
Presence:	Presumed Extant		

Location:

KASSIS PARCEL, N & S OF ROLLING MEADOWS DR, 0.9 MI NNE OF FLORIN RD AT EXCELSIOR RD, 3 MI S OF OLD MATHER AFB, SAC CO.

Detailed Location:

KASSIS PARCEL IS PART OF THE SACRAMENTO VERNAL POOL PRESERVE AREA. ABOUT 0.9 MI WSW OF TWELVEMILE HOUSE (HISTORICAL) ALONG JACKSON RD (SR 16). MAPPED ACCORDING TO PROVIDED MAP. 1993 SUGNET REPORT: VERNAL POOL SOMEWHERE IN SEC 35.

Ecological:

VERNAL POOLS IN A MATRIX OF CALIFORNIA ANNUAL GRASSLAND. MOST POOLS DID NOT FULLY POND AND WERE AT ABOUT 1/2 OF NORMAL CAPACITY IN 2008. SURROUNDING LAND USE: CATTLE GRAZING. BRANCHINECTA LYNCHI & LINDERIELLA OCCIDENTALIS ALSO ON PARCEL.

Threats:

General:

OBSERVED 2 APR 1992 IN VERNAL POOL, SUGNET RECORD #150. INDIVIDUALS FOUND IN LOW ABUNDANCE IN 6 POOLS ON SURVEYS CONDUCTED 5 & 18 FEB 2008.

PLSS:	T08N, R06E, Sec. 35 (M)	Accuracy:	specific area	Area (acres):	30
UTM:	Zone-10 N4263451 E649046	Latitude/Longitude:	38.50697 / -121.29060	Elevation (feet):	120

County Summary:

Sacramento

Quad Summary:

Carmichael (3812153)

Sources:

SUG93U0001	SUGNET & ASSOCIATES - PRINTOUT OF LOCATION (T-R-S) OF FAIRY SHRIMP SAMPLING. (OBTAINED FROM THE U.S. FISH AND WILDLIFE SERVICE) 1993-XX-XX
WIT08F0006	WITHAM, C. - FIELD SURVEY FORM FOR BRANCHINECTA LYNCHI & BRANCHINECTA MESOVALLENSIS & LINDERIELLA OCCIDENTALIS & LEPIDURUS PACKARDI 2008-02-18



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 82859 **EO Index:** 83860
Key Quad: Carmichael (3812153) **Element Code:** ICBRA10010
Occurrence Number: 282 **Occurrence Last Updated:** 2011-06-27

Scientific Name: *Lepidurus packardii* **Common Name:** vernal pool tadpole shrimp
Listing Status: **Federal:** Endangered **Rare Plant Rank:**
State: None **Other Lists:** IUCN_EN-Endangered
CNDDDB Element Ranks: **Global:** G3
State: S2S3

General Habitat: INHABITS VERNAL POOLS AND SWALES IN THE SACRAMENTO VALLEY CONTAINING CLEAR TO HIGHLY TURBID WATER.
Micro Habitat: POOLS COMMONLY FOUND IN GRASS BOTTOMED SWALES OF UNPLOWED GRASSLANDS. SOME POOLS ARE MUD-BOTTOMED & HIGHLY TURBID.

Last Date Observed: 2006-05-05 **Occurrence Type:** Natural/Native occurrence
Last Survey Date: 2006-05-05 **Occurrence Rank:** Good
Owner/Manager: SAC COUNTY **Trend:** Unknown
Presence: Presumed Extant

Location: MATHER FIELD VERNAL POOL PRESERVE, 0.5 MI NE OF KIEFER BLVD AT EXCELSIOR ROAD, S END OF DECOMMISSIONED MATHER AFB.

Detailed Location: MAPPED TO PROVIDED MAP.

Ecological: VERNAL POOLS IN CALIFORNIA ANNUAL GRASSLAND MATRIX, SURROUNDED BY UNGRAZED PASTURES.

Threats:

General:

BREEDING ADULTS OBSERVED IN POOL DURING SURVEYS CONDUCTED BETWEEN 14 FEB & 5 MAY 2006.

PLSS: T08N, R06E, Sec. 14 (M) **Accuracy:** specific area **Area (acres):** 10
UTM: Zone-10 N4267118 E649467 **Latitude/Longitude:** 38.53993 / -121.28499 **Elevation (feet):** 95

County Summary: Sacramento **Quad Summary:** Carmichael (3812153)

Sources:

WIT06F0003 WITHAM, C.W. - FIELD SURVEY FORM FOR LEPIDURUS PACKARDI (VERNAL POOL TADPOLE SHRIMP) 2006-04-11



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number: 11640
Key Quad: Carmichael (3812153)
Occurrence Number: 1

EO Index: 14459
Element Code: IICOL48011
Occurrence Last Updated: 2009-01-16

Scientific Name: *Desmocerus californicus dimorphus*
Common Name: valley elderberry longhorn beetle

Listing Status: **Federal:** Threatened
State: None
Rare Plant Rank:
Other Lists:

CNDDDB Element Ranks: **Global:** G3T2
State: S2

General Habitat:
OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).

Micro Habitat:
PREFERS TO LAY EGGS IN ELDERBERRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Last Date Observed: 2008-04-18
Last Survey Date: 2008-04-18
Owner/Manager: SAC COUNTY, DPR
Presence: Presumed Extant

Occurrence Type: Natural/Native occurrence
Occurrence Rank: Unknown
Trend: Unknown

Location:
ALONG THE AMERICAN RIVER, FROM NIMBUS FLAT AREA OF LAKE NATOMA SOUTH TO DOWNSTREAM END OF RIVER BEND PARK (GOETHE PARK).

Detailed Location:
FOUND ALONG AMERICAN R PKWY TO LOWER SE SHORE OF LAKE NATOMA; INCLUDES CRITICAL & ESSENTIAL HABITAT AREAS. 2008: OBS AT MITIGATION SITE DEVELOPED NEAR RIVER BEND PARK. SHRUBS TRANSPLANTED FROM NEAR FOLSOM DAM, FOR FOLSOM BRIDGE CONSTRUCTION

Ecological:
LARVAE ARE STEM AND ROOT BORERS OF ELDERBERRY; EXIT HOLES ARE ROUND. BUPRESTID LARVAE ALSO BORE INTO ELDERBERRY; EXIT HOLES ARE OVAL. ADULTS FEED ON FOLIAGE AND FLOWERS.

Threats:
POPULATIONS OF VELB ARE REDUCED AS ELDERBERRY GROVES ARE REDUCED IN NUMBER.

General:
3 MAY 1982: 1-10 OBS AT ROSSMOOR BAR. 23 APR 1987: SURVEY OF NIMBUS FLATS FOUND BOTH OLD & NEW EXIT HOLES. 18 APR 2008: 2 FEMALES OBS ON SHRUB & FLYING TO THE GROUND AT RIVER BEND PARK.

PLSS: T09N, R06E, Sec. 23 (M) **Accuracy:** nonspecific area **Area (acres):** 1,517
UTM: Zone-10 N4276403 E649674 **Latitude/Longitude:** 38.62353 / -121.28062 **Elevation (feet):** 60

County Summary: Sacramento
Quad Summary: Carmichael (3812153), Folsom (3812162), Citrus Heights (3812163)



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Sources:

ARN82F0001	ARNOLD, R.A. - FIELD SURVEY FORM FOR DESMOCERUS CALIFORNICUS DIMORPHUS 1982-XX-XX
ARN85U0001	ARNOLD, R.A. (ENTOMOLOGICAL CONSULTING SERVICES) - LETTER TO JACK PARNELL, DIRECTOR, DFG PROVIDING COLLECTION DATA FOR VELB. 1985-09-18
EYA76R0001	EYA, B.K. - REPORT ON THE DISTRIBUTION & STATUS OF A LONGHORN BEETLE, DESMOCERUS CALIFORNICUS DIMORPHUS (COLEOPTERA: CERAMBYCIDAE). OBTAINED THROUGH DR. LARRY ENG. 1976-XX-XX
FED78R0001	FEDERAL REGISTER - VOL. 43 NO. 155 PAGE 35643. 1978-08-10
FWS84R0002	U.S. FISH & WILDLIFE SERVICE - RECOVERY PLAN FOR THE VALLEY ELDERBERRY LONGHORN BEETLE. 1984-XX-XX
RIC08F0052	RICKABAUGH, S. (U.S. FISH AND WILDLIFE SERVICE) - FIELD SURVEY FORM FOR DESMOCERUS CALIFORNICUS DIMORPHUS 2008-04-18
SEE85R0001	LARRY SEEMAN & ASSOCIATES, INC. - AMERICAN RIVER CORRIDOR BEETLE STUDY 1985-08-XX
SHA80U0001	SHAPIRO, A. (UNIVERSITY OF CALIFORNIA, DAVIS) - PHONE CONVERSATION WITH BLAIR CSUTI (CNDDB). 1980-05-19
SHO87U0003	SHOWERS, M.A. (CALIFORNIA DEPARTMENT OF PARKS AND RECREATION) - MEMO: SURVEY FOR VALLEY ELDERBERRY AT NIMBUS FLATS, FOLSOM LAKE STATE RECREATION AREA. 1987-04-23
SIN87F0001	SINGLETON, J. (U.S. FISH AND WILDLIFE SERVICE-SACRAMENTO) - FIELD SURVEY FORM FOR DESMOCERUS CALIFORNICUS DIMORPHUS 1987-04-23



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number:	43542	EO Index:	43542
Key Quad:	Carmichael (3812153)	Element Code:	PDSCR0R060
Occurrence Number:	84	Occurrence Last Updated:	2010-05-11

Scientific Name:	<i>Gratiola heterosepala</i>	Common Name:	Boggs Lake hedge-hyssop
Listing Status:	Federal: None State: Endangered	Rare Plant Rank:	1B.2
CNDDB Element Ranks:	Global: G2 State: S2	Other Lists:	BLM_S-Sensitive

General Habitat:	Micro Habitat:
MARSHES AND SWAMPS (FRESHWATER), VERNAL POOLS.	CLAY SOILS; USUALLY IN VERNAL POOLS, SOMETIMES ON LAKE MARGINS. 5-2400M.

Last Date Observed:	2000-05-17	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	2000-05-17	Occurrence Rank:	Excellent
Owner/Manager:	SAC COUNTY	Trend:	Unknown
Presence:	Presumed Extant		

Location:
MATHER FIELD, WEST OF EAGLES NEST ROAD ABOUT 1.8 MILES SOUTH OF JCT WITH DOUGLAS BLVD, SOUTH OF RANCHO CORDOVA.

Detailed Location:
PLANTS FOUND IN VERNAL POOLS ABOUT 0.2 MILES WEST OF EAGLES NEST ROAD, ACROSS FROM THE MODEL AIRPLANE FLYERS CLUB. MAPPED WITHIN THE SE 1/4 OF THE NE 1/4 OF SECTION 24.

Ecological:
GROWING IN DEEP VERNAL POOLS, IN THE WATER AND AT THE WATER'S EDGE WITH ISOETES ORCUTTII. POOLS DOMINATED BY ELEOCHARIS MACROSTACHYA, PLAGIOBOTHRYIS STIPITATUS VAR. MICRANTHUS, AND LASTHENIA GLABERRIMA.

Threats:
SITE HAS BEEN PROPOSED FOR AN AGGREGATE MINE.

General:
THOUSANDS OF PLANTS OBSERVED IN 2000. THE RARE JUNCUS LEIOSPERMUS VAR. AHARTII OCCURS IN NEARBY POOLS AND SWALES.

PLSS:	T08N, R06E, Sec. 24 (M)	Accuracy:	specific area	Area (acres):	2
UTM:	Zone-10 N4266458 E651215	Latitude/Longitude:	38.53369 / -121.26508	Elevation (feet):	135

County Summary:	Quad Summary:
Sacramento	Carmichael (3812153)

Sources:
WIT00F0004 WITHAM, C. - FIELD SURVEY FORM FOR GRATIOLA HETEROSEPALA 2000-05-17



Occurrence Report

California Department of Fish and Game

California Natural Diversity Database



Map Index Number:	34802	EO Index:	63059
Key Quad:	Elk Grove (3812143)	Element Code:	PMPOA4G070
Occurrence Number:	20	Occurrence Last Updated:	2005-10-28

Scientific Name:	<i>Orcuttia viscida</i>	Common Name:	Sacramento Orcutt grass
Listing Status:	Federal: Endangered State: Endangered	Rare Plant Rank:	1B.1
CNDDDB Element Ranks:	Global: G1 State: S1	Other Lists:	
General Habitat:	VERNAL POOLS.	Micro Habitat:	30-100M.

Last Date Observed:	1998-07-30	Occurrence Type:	Natural/Native occurrence
Last Survey Date:	1998-07-30	Occurrence Rank:	Unknown
Owner/Manager:	UNKNOWN	Trend:	Unknown
Presence:	Presumed Extant		
Location:	ON THE NORTH SIDE OF FLORIN RD, CIRCA 1/4 MILE EAST OF EXCELSIOR AVE.		
Detailed Location:			
Ecological:	IN MUDFLOW VERNAL POOLS WITH ROCKY BOTTOMS.		
Threats:			
General:	ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1998 COLLECTION BY HRUSA. NEEDS FIELDWORK.		
PLSS:	T08N, R06E, Sec. 35 (M)	Accuracy:	1/5 mile
UTM:	Zone-10 N4262458 E648688	Latitude/Longitude:	38.49808 / -121.29492
Area (acres):	0		
Elevation (feet):	50		
County Summary:	Quad Summary:		
Sacramento	Elk Grove (3812143), Carmichael (3812153)		
Sources:			
HRU98S0001 HRUSA, G.F. - HRUSA #14764 UCR #115049 CDA #107716 RSA #670135 1998-07-30			

Appendix B

Construction Emissions Estimates using the Road Construction Emissions Model Version 5.2

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> NEMDC Upstream Seg.				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	
Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)	PM2.5 (lbs/day)	PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	2.9	13.3	28.2	41.2	1.2	40.0	9.4	1.1	8.3	3,855.2
Grading/Excavation	12.1	96.1	88.7	43.9	3.9	40.0	11.8	3.5	8.3	12,389.2
Drainage/Utilities/Sub-Grade	-	-	-	0.0	0.0	-	-	-	-	-
Paving	1.7	8.2	9.7	0.7	0.7	-	0.6	0.6	-	1,197.5
Maximum (pounds/day)	12.1	96.1	88.7	43.9	3.9	40.0	11.8	3.5	8.3	12,389.2
Total (tons/construction project)	0.4	3.3	3.1	1.0	0.1	0.9	0.3	0.1	0.2	429.1

Notes:	Project Start Year ->	2013
	Project Length (months) ->	4
	Total Project Area (acres) ->	10
	Maximum Area Disturbed/Day (acres) ->	4
	Total Soil Imported/Exported (yd ³ /day)->	1100

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.


Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> NEMDC Upstream Seg.				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	
Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	PM10 (kgs/day)	PM10 (kgs/day)	PM10 (kgs/day)	PM2.5 (kgs/day)	PM2.5 (kgs/day)	PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	1.3	6.0	12.8	18.7	0.5	18.2	4.3	0.5	3.8	1,752.4
Grading/Excavation	5.5	43.7	40.3	20.0	1.8	18.2	5.4	1.6	3.8	5,631.4
Drainage/Utilities/Sub-Grade	-	-	-	0.0	0.0	-	-	-	-	-
Paving	0.8	3.7	4.4	0.3	0.3	-	0.3	0.3	-	544.3
Maximum (kilograms/day)	5.5	43.7	40.3	20.0	1.8	18.2	5.4	1.6	3.8	5,631.4
Total (megagrams/construction project)	0.4	3.0	2.8	0.9	0.1	0.8	0.3	0.1	0.2	389.2

Notes:	Project Start Year ->	2013
	Project Length (months) ->	4
	Total Project Area (hectares) ->	4
	Maximum Area Disturbed/Day (hectares) ->	2
	Total Soil Imported/Exported (meters ³ /day)->	841

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Road Construction Emissions Model						Version 6.3.2									
Data Entry Worksheet															
Note: Required data input sections have a yellow background.															
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.															
The user is required to enter information in cells C10 through C25.															
Input Type															
Project Name		NEMDC Upstream Seg.													
Construction Start Year		2013		Enter a Year between 2005 and 2025 (inclusive)											
Project Type		1		1 New Road Construction 2 Road Widening 3 Bridge/Overpass Construction				To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.							
Project Construction Time		4.0		months											
Predominant Soil/Site Type: Enter 1, 2, or 3		2		1. Sand Gravel 2. Weathered Rock-Earth 3. Blasted Rock											
Project Length		0.6		miles											
Total Project Area		10.0		acres											
Maximum Area Disturbed/Day		4.0		acres											
Water Trucks Used?		1		1. Yes No 2.											
Soil Imported		540.0		yd ³ /day											
Soil Exported		560.0		yd ³ /day											
Average Truck Capacity		17.0		yd ³ (assume 20 if unknown)											
The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.															
Note: The program's estimates of construction period phase length can be overridden in cells C34 through C37.															
Program Calculated															
User Override of															
Construction Months															
Months															
2005 %															
2006 %															
2007 %															
2008 %															
2009 %															
2010 %															
2011 %															
2012 %															
2013 %															
Grubbing/Land Clearing															
Grading/Excavation															
Drainage/Utilities/Sub-Grade															
Paving															
Totals															

	Default																				
Grading/Excavation	Number of Vehicles		ROG	CO	NOx	PM10	PM2.5	CO2													
Override of Default Number of Vehicles	Program-estimate	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day													
		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00													
		Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00													
		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00													
		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00													
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00													
		0 Cranes	0.00	0.00	0.00	0.00	0.00	0.00													
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00													
	2.00	1 Excavators	0.92	5.04	6.77	0.39	0.36	848.41													
	0.00	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00													
	1.00	Generator Sets	1.26	4.92	16.68	0.47	0.43	2336.15													
	2.00	1 Graders	0.81	4.03	6.16	0.35	0.32	680.26													
		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00													
		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00													
		0 Other Construction Equipment	0.01	0.05	0.06	0.01	0.00	7.19													
		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00													
		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00													
		Pavers	0.00	0.00	0.00	0.00	0.00	0.00													
		Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00													
		Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00													
		Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00													
	2.00	Pumps	0.65	2.89	4.41	0.35	0.32	454.78													
	1.00	Rollers	0.28	1.14	1.75	0.15	0.14	164.92													
	1.00	Rough Terrain Forklifts	0.41	1.84	2.55	0.23	0.21	265.42													
	1.00	Rubber Tired Dozers	0.98	4.34	8.34	0.35	0.32	809.76													
	0.00	1 Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00													
	2.00	1 Scrapers	0.88	3.36	7.86	0.31	0.28	893.07													
	0.00	1 Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00													
	2.00	Skid Steer Loaders	0.49	2.12	2.14	0.15	0.14	239.42													
		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00													
		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00													
		Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00													
		Trenchers	0.00	0.00	0.00	0.00	0.00	0.00													
		Welders	0.00	0.00	0.00	0.00	0.00	0.00													
		Grading/Excavation	pounds per day	6.7	29.7	56.7	2.7	2.5	6699.4												
		Grading	tons per phase	0.2	1.0	1.9	0.1	0.1	221.1												

[illegible]

[illegible]

[illegible]

Greenhouse Gas Emissions Inventory and Calculation							
	Project Name - WRDA 99 NEMDC Upstream Segment						
Construction Equipment Emissions							
Type of Equipment	Maximum Number Per Day	Total Operation Days	Total Operation Hours (8 hr work day)	Fuel Consumption Per Hour	Total Fuel Consumption (gal. diesel)	CO2e/gal Diesel	Total CO2 Equivalent Emissions (metric tons)
Backhoes	0	0	0	3	0	0.010391	0.0000
Bobcats	0	0	0	2	0	0.010391	0.0000
Bulldozers	1	39	311	13	4043	0.010391	42.0108
Compactors	0	3	0	18	0	0.010391	0.0000
Cranes	1	2	16		0	0.010391	0.0000
Drill Rig	0	20	0	10	0	0.010391	0.0000
Dump Trucks	0	0	0	30	0	0.010391	0.0000
Earth Mover	0	0	0	57	0	0.010391	0.0000
Excavators	2	66	825	9	7425	0.010391	77.1532
Forklifts	1	88	406	3	1218	0.010391	12.6562
Generators	1	40	370	16	5920	0.010391	61.5147
Grader	2	24	385	9	3465	0.010391	36.0048
Loaders	2	50	662	10	6620	0.010391	68.7884
Off-road Trucks	2	88	898	28	25144	0.010391	261.2713
Pavers	1	17	150	7	1050	0.010391	10.9106
Pile Drivers			0	4	0	0.010391	0.0000
Roller	1	49	389	11	4279	0.010391	44.4631
Scrapers	2	10	133	21	2793	0.010391	29.0221
Side Boom Pipe Handler Tractor			0	5	0	0.010391	0.0000
Highway Truck	2	88	672	10	6720	0.010391	69.8275
			0				
			0				
			0				
TOTAL							713.6227
Construction Workforce Transportation Emissions							
Average Number of Workers Per Day	Total Number of Workdays	Average Distance Travelled	Total Miles Travelled	Average Passenger Fuel Efficiency	Total Fuel Consumption (gal. gasoline)	CO2e/gal Gasoline	Total CO2 Equivalent Emissions (metric tons)
10	30	20	6000	20.8	288.4615385	0.00901	2.5990
TOTAL							2.5990
Construction Materials Transportation Emissions							
Trip Type	Total Number of Trips	Average Trip Distance	Total Miles Travelled	Average Semi-truck Fuel Efficiency	Total Fuel Consumption (gal. diesel)	CO2e/gal Diesel	Total CO2 Equivalent Emissions (metric tons)
Delivery	2100	20	42000	8	5250	0.010391	54.5528
Spoils	2175	20	43500	8	5437.5	0.010391	56.5011
TOTAL							111.0538

Maintenance Emissions							
	Total Number of Trips	Average Trip Distance	Total Miles Travelled	Average Fuel Efficiency	Total Fuel Consumption	CO2e/gal	Total CO2 Equivalent Emissions (metric tons)
Mowers	10	30	300	10	30	0.010391	0.3117
sprayers	10	30	300	10	30	0.010391	0.3117
inspection vehicles	30	30	900	20.8	43.26923077	0.010391	0.4496
Worker commute emissions	50	30	1500	20.8	72.11538462	0.010391	0.7494
Operational Emissions							
	MWH of electricity	MT CO2/MWH	CO2e emissions				
Average Annual Electricity Needed	none	0.329858					
TOTAL							1.8224
Greenhouse Gas	Average Annual Production Emissions (MT)	Global Warming Potential	CO2e emissions				
CO2		1					
CH4		23					
N2O		296					
SF6		22000					
Others as necessary							
Construction Equipment Emissions							713.6227
Workforce Transportation Emissions							2.5990
Construction Materials Emissions							111.0538
Maintenance and Operational Emissions							1.8224
Total Project Greenhouse Gas Emissions (Metric Tons)							829.0980
				convert to US tons		x	1.1000
							912.0078

Road Construction Emissions Model, Version 6.3.2

Emission Estimates for -> NEMDC Downstream Seg				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	
Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)	PM2.5 (lbs/day)	PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	2.7	12.3	25.7	21.1	1.1	20.0	5.1	1.0	4.2	3,776.8
Grading/Excavation	8.6	57.5	66.1	23.0	3.0	20.0	6.9	2.7	4.2	9,465.7
Drainage/Utilities/Sub-Grade	-	-	-	0.0	0.0	-	-	-	-	-
Paving	1.5	7.5	9.1	0.6	0.6	-	0.6	0.6	-	1,194.2
Maximum (pounds/day)	8.6	57.5	66.1	23.0	3.0	20.0	6.9	2.7	4.2	9,465.7
Total (tons/construction project)	0.2	1.4	1.6	0.4	0.1	0.3	0.1	0.1	0.1	235.6

Notes:	Project Start Year ->	2014
	Project Length (months) ->	3
	Total Project Area (acres) ->	4
	Maximum Area Disturbed/Day (acres) ->	2
	Total Soil Imported/Exported (yd ³ /day)->	520

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> NEMDC Downstream Seg				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	
Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	PM10 (kgs/day)	PM10 (kgs/day)	PM10 (kgs/day)	PM2.5 (kgs/day)	PM2.5 (kgs/day)	PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	1.2	5.6	11.7	9.6	0.5	9.1	2.3	0.4	1.9	1,716.7
Grading/Excavation	3.9	26.1	30.0	10.5	1.4	9.1	3.1	1.2	1.9	4,302.6
Drainage/Utilities/Sub-Grade	-	-	-	0.0	0.0	-	-	-	-	-
Paving	0.7	3.4	4.1	0.3	0.3	-	0.3	0.3	-	542.8
Maximum (kilograms/day)	3.9	26.1	30.0	10.5	1.4	9.1	3.1	1.2	1.9	4,302.6
Total (megagrams/construction project)	0.2	1.3	1.5	0.4	0.1	0.3	0.1	0.1	0.1	213.7

Notes:	Project Start Year ->	2014
	Project Length (months) ->	3
	Total Project Area (hectares) ->	1
	Maximum Area Disturbed/Day (hectares) ->	1
	Total Soil Imported/Exported (meters ³ /day)->	398

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Greenhouse Gas Emissions Inventory and Calculation							
	Project Name - WRDA 99 NEMDC Downstream Segment						
Construction Equipment Emissions							
Type of Equipment	Maximum Number Per Day	Total Operation Days	Total Operation Hours (8 hr work day)	Fuel Consumption Per Hour	Total Fuel Consumption (gal. diesel)	CO2e/gal Diesel	Total CO2 Equivalent Emissions (metric tons)
Backhoes	0	0	0	3	0	0.010391	0.0000
Bobcats	0	0	0	2	0	0.010391	0.0000
Bulldozers	1	39	133	13	1729	0.010391	17.9660
Compactors	0	3	0	18	0	0.010391	0.0000
Cranes	1	2	16		0	0.010391	0.0000
Drill Rig	0	20	0	10	0	0.010391	0.0000
Dump Trucks	0	0	0	30	0	0.010391	0.0000
Earth Mover	0	0	0	57	0	0.010391	0.0000
Excavators	2	46	353	9	3177	0.010391	33.0122
Forklifts	1	50	174	3	522	0.010391	5.4241
Generators	1	50	118	16	1888	0.010391	19.6182
Grader	2	40	165	9	1485	0.010391	15.4306
Loaders	2	46	284	10	2840	0.010391	29.5104
Off-road Trucks	2	66	384	28	10752	0.010391	111.7240
Pavers	1	13	64	7	448	0.010391	4.6552
Pile Drivers			0	4	0	0.010391	0.0000
Roller	1	40	166	11	1826	0.010391	18.9740
Scrapers	2	10	57	21	1197	0.010391	12.4380
Side Boom Pipe Handler Tractor			0	5	0	0.010391	0.0000
Highway Truck	2	66	288	10	2880	0.010391	29.9261
			0				
			0				
			0				
TOTAL							298.6789
Construction Workforce Transportation Emissions							
Average Number of Workers Per Day	Total Number of Workdays	Average Distance Travelled	Total Miles Travelled	Average Passenger Fuel Efficiency	Total Fuel Consumption (gal. gasoline)	CO2e/gal Gasoline	Total CO2 Equivalent Emissions (metric tons)
10	30	20	6000	20.8	288.4615385	0.00901	2.5990
TOTAL							2.5990
Construction Materials Transportation Emissions							
Trip Type	Total Number of Trips	Average Trip Distance	Total Miles Travelled	Average Semi-truck Fuel Efficiency	Total Fuel Consumption (gal. diesel)	CO2e/gal Diesel	Total CO2 Equivalent Emissions (metric tons)
Delivery	745	20	14900	8	1862.5	0.010391	19.3532
Spoils	665	20	13300	8	1662.5	0.010391	17.2750
TOTAL							36.6283

Maintenance Emissions							
	Total Number of Trips	Average Trip Distance	Total Miles Travelled	Average Fuel Efficiency	Total Fuel Consumption	CO2e/gal	Total CO2 Equivalent Emissions (metric tons)
Mowers	10	30	300	10	30	0.010391	0.3117
sprayers	10	30	300	10	30	0.010391	0.3117
inspection vehicles	30	30	900	20.8	43.26923077	0.010391	0.4496
Worker commute emissions	50	30	1500	20.8	72.11538462	0.010391	0.7494
Operational Emissions							
	MWH of electricity	MT CO2/MWH	CO2e emissions				
Average Annual Electricity Needed	none	0.329858					
TOTAL							
							1.8224
Greenhouse Gas	Average Annual Production Emissions (MT)	Global Warming Potential	CO2e emissions				
CO2		1					
CH4		23					
N2O		296					
SF6		22000					
Others as necessary							
Construction Equipment Emissions							298.6789
Workforce Transportation Emissions							2.5990
Construction Materials Emissions							36.6283
Maintenance and Operational Emissions							1.8224
Total Project Greenhouse Gas Emissions (Metric Tons)							339.7286
				convert to US tons	x		1.1000
							373.7015

National Ambient Air Quality Standards (NAAQS)

The Clean Air Act, which was last amended in 1990, requires EPA to set National Ambient Air Quality Standards (40 CFR part 50) for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards.

Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. *Secondary standards* set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

The EPA Office of Air Quality Planning and Standards (OAQPS) has set National Ambient Air Quality Standards for six principal pollutants, which are called "criteria" pollutants. They are listed below. Units of measure for the standards are parts per million (ppm) by volume, milligrams per cubic meter of air (mg/m^3), and micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$).

National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Carbon Monoxide	9 ppm (10 mg/m^3)	8-hour ⁽¹⁾	None	
	35 ppm (40 mg/m^3)	1-hour ⁽¹⁾		
Lead	0.15 $\mu\text{g}/\text{m}^3$ ⁽²⁾	Rolling 3-Month Average	Same as Primary	
	1.5 $\mu\text{g}/\text{m}^3$	Quarterly Average	Same as Primary	
Nitrogen Dioxide	0.053 ppm (100 $\mu\text{g}/\text{m}^3$)	Annual (Arithmetic Mean)	Same as Primary	
Particulate Matter (PM ₁₀)	150 $\mu\text{g}/\text{m}^3$	24-hour ⁽³⁾	Same as Primary	
Particulate Matter (PM _{2.5})	15.0 $\mu\text{g}/\text{m}^3$	Annual ⁽⁴⁾ (Arithmetic Mean)	Same as Primary	
	35 $\mu\text{g}/\text{m}^3$	24-hour ⁽⁵⁾	Same as Primary	
Ozone	0.075 ppm (2008 std)	8-hour ⁽⁶⁾	Same as Primary	
	0.08 ppm (1997 std)	8-hour ⁽⁷⁾	Same as Primary	
	0.12 ppm	1-hour ⁽⁸⁾ (Applies only in limited areas)	Same as Primary	
Sulfur Dioxide	0.03 ppm	Annual (Arithmetic Mean)	0.5 ppm (1300 $\mu\text{g}/\text{m}^3$)	3-hour ⁽¹⁾
	0.14 ppm	24-hour ⁽¹⁾		

⁽¹⁾ Not to be exceeded more than once per year.

⁽²⁾ Final rule signed October 15, 2008.

⁽³⁾ Not to be exceeded more than once per year on average over 3 years.

⁽⁴⁾ To attain this standard, the 3-year average of the weighted annual mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.

⁽⁵⁾ To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³ (effective December 17, 2006).

⁽⁶⁾ To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008)

⁽⁷⁾ (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

(b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.

⁽⁸⁾ (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is < 1.

(b) As of June 15, 2005 EPA revoked the 1-hour ozone standard in all areas except the 8-hour ozone nonattainment Early Action Compact (EAC) Areas.

California Ambient Air Quality Standards¹		
Pollutant	Averaging Time	Concentration²
Ozone (O ₃)	1 Hour	0.09 ppm (180 µg/m ³)
Respirable Particulate Matter (PM ₁₀)	Annual Geometric Mean	30 µg/m ³
	24 Hour	50 µg/m ³
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m ³)
	1 Hour	20 ppm (23 mg/m ³)
	1 Hour (Lake Tahoe)	6 ppm (7 mg/m ³)
Nitrogen Dioxide (NO ₂)	1 Hour	0.25 ppm (470 µg/m ³)
Lead	30 Days Average	1.5 µg/m ³
Sulfur Dioxide (SO ₂)	24 Hour	0.04 ppm (105 µg/m ³)
	1 Hour	0.25 ppm (655 µg/m ³)
Visibility Reducing Particles	8 Hour (10am-6pm, PST)	10 Miles (30 Miles Lake Tahoe) or more ³
Sulfates	24 Hour	25 µg/m ³
Vinyl Chloride ⁴	24 Hour	0.01 ppm (26 µg/m ³)
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m ³)

Footnotes:

- Standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter-PM₁₀, and visibility reducing particles are values not to be exceeded. All others are not to be equaled or exceeded. (Table of Standards, Section 70200, Title 17, California Code of Regulations)
- Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are bases upon a reference temperature of 25° C and a reference pressure of 760 mm of mercury. Most measurements of air quality are to be corrected to a reference temperature of 25° C and a reference pressure of 760 mm of mercury (1,013.2 millibar). ppm = parts per million; µg/m³ = micrograms per cubic meter; mg/m³ = milligrams per cubic meter.
- In sufficient amount to produce an extinction coefficient of 0.23 per kilometer – visibility of ten miles or more (0.07-30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70 percent.
- The standard notes that vinyl chloride is a “known human and animal carcinogen” and that “low level effects are undefined, but are potentially serious. Level specified is lowest level at which violation can be reliably detected by the method specified. Ambient concentrations at or above the standard constitute an endangerment to the health of the public.

SMAQMD Recommended Mitigation for Reducing Emissions from Heavy-Duty Construction Vehicles

Apply only to projects with construction emissions above the CEQA Threshold of Significance.

Revised December 1, 2008

Category 1: Reducing NOx emissions from off-road diesel powered equipment

The project shall provide a plan, for approval by the lead agency and SMAQMD, demonstrating that the heavy-duty (> 50 horsepower) self-propelled off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project wide fleet-average 20 percent NOx reduction and 45 percent particulate reduction¹ compared to the most recent CARB fleet average at time of construction; and

The project representative shall submit to the lead agency and SMAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of the construction project. The inventory shall include the horsepower rating, engine production year, and projected hours of use for each piece of equipment. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs. At least 48 hours prior to the use of subject heavy-duty off-road equipment, the project representative shall provide SMAQMD with the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman.

and:

Category 2: Controlling visible emissions from off-road diesel powered equipment

The project shall ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40 percent opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately, and the lead agency and SMAQMD shall be notified within 48 hours of identification of non-compliant equipment. A visual survey of all in-operation equipment shall be made at least weekly, and a monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey. The SMAQMD and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this section shall supercede other SMAQMD or state rules or regulations.

and/or:

If at the time of construction, the SMAQMD has adopted a regulation applicable to construction emissions, compliance with the regulation may completely or partially replace this mitigation. Consultation with SMAQMD prior to construction will be necessary to make this determination.

¹Acceptable options for reducing emissions may include use of newer model year engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.

SMAQMD Rules & Regulations Statement (revised 1/07)

*The following statement is recommended as standard condition of approval or construction document language for **all** development projects within the Sacramento Metropolitan Air Quality Management District (SMAQMD):*

All projects are subject to SMAQMD rules and regulations in effect at the time of construction. A complete listing of current rules is available at www.airquality.org or by calling 916.874.4800. Specific rules that may relate to construction activities or building design may include, but are not limited to:

Rule 201: General Permit Requirements. Any project that includes the use of equipment capable of releasing emissions to the atmosphere may require permit(s) from SMAQMD prior to equipment operation. The applicant, developer, or operator of a project that includes an emergency generator, boiler, or heater should contact the District early to determine if a permit is required, and to begin the permit application process. Portable construction equipment (e.g. generators, compressors, pile drivers, lighting equipment, etc) with an internal combustion engine over 50 horsepower are required to have a SMAQMD permit or a California Air Resources Board portable equipment registration.

Rule 403: Fugitive Dust. The developer or contractor is required to control dust emissions from earth moving activities or any other construction activity to prevent airborne dust from leaving the project site.

Rule 417: Wood Burning Appliances. Effective October 26, 2007, this rule prohibits the installation of any new, permanently installed, indoor or outdoor, uncontrolled fireplaces in new or existing developments.

Rule 442: Architectural Coatings. The developer or contractor is required to use coatings that comply with the volatile organic compound content limits specified in the rule.

Rule 902: Asbestos. The developer or contractor is required to notify SMAQMD of any regulated renovation or demolition activity. Rule 902 contains specific requirements for surveying, notification, removal, and disposal of asbestos containing material.

Other general types of uses that require a permit include dry cleaners, gasoline stations, spray booths, and operations that generate airborne particulate emissions.

Appendix C

Correspondence Regarding Cultural Resources



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

REPLY TO
ATTENTION OF

Environmental Resources Branch

MAR 29 2012

Milford Wayne Donaldson
State Historic Preservation Officer
Office of Historic Preservation
California State Department of Parks and Recreation
P.O. Box 942896
Sacramento, California 94296-0001

Dear Mr. Donaldson:

We are writing you with regard to an environmental assessment the U.S. Army Corps of Engineers, Sacramento District (Corps), is preparing for the proposed strengthening of approximately 5,200 feet of the levee along the American River adjacent to the Natomas East Main Drainage Canal for the American River Common Features Project in Sacramento County. This work is authorized by the Water Resources Development Act of 1999 (WRDA 99). Your file number for the Common Features Project is COE900711G.

We are initiating consultation under Section 106 of the National Historic Preservation Act by notifying you of the proposed undertaking pursuant to 36 CFR 800.3 (a); that we have determined and documented the area of potential effects (APE) pursuant to 36 CFR 800.4(a); and that we have determined that the project qualifies for a finding of no historic properties affected pursuant to 36 CFR 800.4 (d)(1).

Enclosure 1 is a memorandum in which we define and describe the APE, and discuss our efforts to locate and evaluate any potential historic properties. The record search and survey resulted in the location of only one cultural resource in the APE. CA-SAC-481H, the American River right bank levee. The levee was recorded as a historical site during the 1995 Dames & Moore American River Survey. During a subsequent survey Herbert and Blosser updated the CA-SAC-481H site report and provided a very detailed and thorough history of the levee; they determined that the levee was ineligible for inclusion to the National Register of Historic Places (NRHP). These site forms are appended to the enclosed memorandum.

Regarding the significance of CA-SAC-481H we refer you to our earlier Section 106 consultation from July, 2009 in which you concurred with our determination of non-eligibility for the levee, site CA-SAC-481H in a letter dated July 7, 2008. In light of this, we find that the proposed work will affect no historic properties (36 CFR 800.4[d][1]).

A copy of the enclosed memorandum was also sent to all the potentially interested Native American groups and individuals identified by the Native American Heritage Commission. No replies have been received to date, but the Corps remains open to their consultation and is sensitive to the interests of Native groups.

We request that you concur with our determinations of the APE, NRHP eligibility, and finding of no historic properties affected for the proposed work. Please review the enclosed information and provide your comments if any, and concurrence with our determinations. We are looking forward to your reply.

If you have any questions or comments please contact Mr. S. Joe Griffin, Archaeologist at (916) 557-7897 or by email at s.joe.griffin@usace.army.mil. Please contact Mr. John Hoge, Project Manager at (916) 557-5304 with any project specific questions.

A handwritten signature in black ink, appearing to read "Alicia E. Kirchner". The signature is fluid and cursive, with a large, stylized initial "A".

Alicia E. Kirchner
Chief, Planning Division

Enclosures



REPLY TO
ATTENTION OF

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

Environmental Resources Branch

Ms. Rose Enos
15310 Bancroft Road
Auburn, CA 95603

MAR 29 2012

Dear Ms. Enos:

We are writing you with regard to an environmental assessment the U.S. Army Corps of Engineers, Sacramento District (Corps), is preparing for the proposed strengthening of approximately 5,200 feet of the levee along the American River adjacent to the Natomas East Main Drainage Canal for the American River Common Features Project in Sacramento County. This work is authorized by the Water Resources Development Act of 1999 (WRDA 99).

We would like to invite your consultation under Section 106 of the National Historic Preservation Act, to provide you with our determination and documentation of the area of potential effects (APE), and to justify our finding that the project would not affect any cultural resources that are eligible for inclusion in the National Register of Historic Places.

Enclosure 1 is a memorandum in which we define and described the APE, and discuss our efforts to locate and evaluate any potential historic properties. The record search and survey resulted in the location of only one cultural resource in the APE. CA-SAC-481H, the American River right bank levee. The levee was recorded as a historical site during the 1995 Dames & Moore American River Survey. During a subsequent survey Herbert and Blosser updated the CA-SAC-481H site report and provided a very detailed and thorough history of the levee; they determined that the levee was ineligible for inclusion to the National Register of Historic Places (NRHP). These site forms are appended to the enclosed memorandum.

Please let us know if you have knowledge of locations of archaeological sites or areas of traditional cultural value or concern in or near the project APE. If you have any other comments, suggestions, or questions, please do not hesitate to contact Corps archaeologist Mr. S. Joe Griffin, at (916) 557-7897 or by email at s.joe.griffin@usace.army.mil. Please contact Mr. John Hoge, Project Manager at (916) 557-5304 with any project specific questions.

Alicia E. Kirchner
Chief, Planning Division

Enclosures



REPLY TO
ATTENTION OF

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

Environmental Resources Branch

April Wallace Moore
19630 Placer Hills Road
Colfax, CA 95713

MAR 29 2012

Dear Ms. Moore:

We are writing you with regard to an environmental assessment the U.S. Army Corps of Engineers, Sacramento District (Corps), is preparing for the proposed strengthening of approximately 5,200 feet of the levee along the American River adjacent to the Natomas East Main Drainage Canal for the American River Common Features Project in Sacramento County. This work is authorized by the Water Resources Development Act of 1999 (WRDA 99).

We would like to invite your consultation under Section 106 of the National Historic Preservation Act, to provide you with our determination and documentation of the area of potential effects (APE), and to justify our finding that the project would not affect any cultural resources that are eligible for inclusion in the National Register of Historic Places.

Enclosure 1 is a memorandum in which we define and described the APE, and discuss our efforts to locate and evaluate any potential historic properties. The record search and survey resulted in the location of only one cultural resource in the APE. CA-SAC-481H, the American River right bank levee. The levee was recorded as a historical site during the 1995 Dames & Moore American River Survey. During a subsequent survey Herbert and Blosser updated the CA-SAC-481H site report and provided a very detailed and thorough history of the levee; they determined that the levee was ineligible for inclusion to the National Register of Historic Places (NRHP). These site forms are appended to the enclosed memorandum.

Please let us know if you have knowledge of locations of archaeological sites or areas of traditional cultural value or concern in or near the project APE. If you have any other comments, suggestions, or questions, please do not hesitate to contact Corps archaeologist Mr. S. Joe Griffin, at (916) 557-7897 or by email at s.joe.griffin@usace.army.mil. Please contact Mr. John Hoge, Project Manager at (916) 557-5304 with any project specific questions.

Alicia E. Kirchner
Chief, Planning Division

Enclosures



REPLY TO
ATTENTION OF

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

Environmental Resources Branch

Eileen Moon
Vice Chairperson
Tsi-Akim Maidu
1239 East Main Street
Grass Valley, CA 95945

MAR 29 2012

Dear Ms. Moon:

We are writing you with regard to an environmental assessment the U.S. Army Corps of Engineers, Sacramento District (Corps), is preparing for the proposed strengthening of approximately 5,200 feet of the levee along the American River adjacent to the Natomas East Main Drainage Canal for the American River Common Features Project in Sacramento County. This work is authorized by the Water Resources Development Act of 1999 (WRDA 99).

We would like to invite your consultation under Section 106 of the National Historic Preservation Act, to provide you with our determination and documentation of the area of potential effects (APE), and to justify our finding that the project would not affect any cultural resources that are eligible for inclusion in the National Register of Historic Places.

Enclosure 1 is a memorandum in which we define and described the APE, and discuss our efforts to locate and evaluate any potential historic properties. The record search and survey resulted in the location of only one cultural resource in the APE. CA-SAC-481H, the American River right bank levee. The levee was recorded as a historical site during the 1995 Dames & Moore American River Survey. During a subsequent survey Herbert and Blosser updated the CA-SAC-481H site report and provided a very detailed and thorough history of the levee; they determined that the levee was ineligible for inclusion to the National Register of Historic Places (NRHP). These site forms are appended to the enclosed memorandum.

Please let us know if you have knowledge of locations of archaeological sites or areas of traditional cultural value or concern in or near the project APE. If you have any other comments, suggestions, or questions, please do not hesitate to contact Corps archaeologist Mr. S. Joe Griffin, at (916) 557-7897 or by email at s.joe.griffin@usace.army.mil. Please contact Mr. John Hoge, Project Manager at (916) 557-5304 with any project specific questions.

Alicia E. Kirchner
Chief, Planning Division

Enclosures



REPLY TO
ATTENTION OF

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

Environmental Resources Branch

Sam Daniels
Vice Chairperson
Shingle Springs Band of Miwok Indians
P.O. Box 1340
Shingle Springs, CA 95682

MAR 29 2012

Dear Mr. Daniels:

We are writing you with regard to an environmental assessment the U.S. Army Corps of Engineers, Sacramento District (Corps), is preparing for the proposed strengthening of approximately 5,200 feet of the levee along the American River adjacent to the Natomas East Main Drainage Canal for the American River Common Features Project in Sacramento County. This work is authorized by the Water Resources Development Act of 1999 (WRDA 99).

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Environmental Resources Branch

Nicholas Fonseca
Chairperson
Shingle Springs Band of Miwok Indians
P.O. Box 1340
Shingle Springs, CA 95682

MAR 29 2012

Dear Mr. Fonseca:

We are writing you with regard to an environmental assessment the U.S. Army Corps of Engineers, Sacramento District (Corps), is preparing for the proposed strengthening of approximately 5,200 feet of the levee along the American River adjacent to the Natomas East Main Drainage Canal for the American River Common Features Project in Sacramento County. This work is authorized by the Water Resources Development Act of 1999 (WRDA 99).

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Chief, Planning Division

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Environmental Resources Branch

Mr. Daniel Fonseca
Shingle Springs Band of Miwok Indians
P.O. Box 1340
Shingle Springs, CA 95682

MAR 29 2012

Dear Mr. Fonseca:

We are writing you with regard to an environmental assessment the U.S. Army Corps of Engineers, Sacramento District (Corps), is preparing for the proposed strengthening of approximately 5,200 feet of the levee along the American River adjacent to the Natomas East Main Drainage Canal for the American River Common Features Project in Sacramento County. This work is authorized by the Water Resources Development Act of 1999 (WRDA 99).

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Environmental Resources Branch

Mr. David Keyser
Chairperson
United Auburn Indian Community of the Auburn Rancheria
10720 Indian Hill Road
Auburn, CA 95603

MAR 29 2012

Dear Mr. Keyser:

We are writing you with regard to an environmental assessment the U.S. Army Corps of Engineers, Sacramento District (Corps), is preparing for the proposed strengthening of approximately 5,200 feet of the levee along the American River adjacent to the Natomas East Main Drainage Canal for the American River Common Features Project in Sacramento County. This work is authorized by the Water Resources Development Act of 1999 (WRDA 99).

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Alicia E. Kirchner
Chief, Planning Division

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SACRAMENTO, CALIFORNIA, 95814-2922

Environmental Resources Branch

Marcos Guerrero
Tribal Preservation Committee
United Auburn Indian Community of the Auburn Rancheria
10720 Indian Hill Road
Auburn, CA 95603

MAR 29 2012

Dear Mr. Guerrero:

We are writing you with regard to an environmental assessment the U.S. Army Corps of Engineers, Sacramento District (Corps), is preparing for the proposed strengthening of approximately 5,200 feet of the levee along the American River adjacent to the Natomas East Main Drainage Canal for the American River Common Features Project in Sacramento County. This work is authorized by the Water Resources Development Act of 1999 (WRDA 99).

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Alicia E. Kirchner
Chief, Planning Division

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SACRAMENTO, CALIFORNIA, 95814-2922

Environmental Resources Branch

Gregory S. Baker
Tribal Administrator
United Auburn Indian Community of the Auburn Rancheria
10720 Indian Hill Road
Auburn, CA 95603

MAR 29 2012

Dear Mr. Baker:

We are writing you with regard to an environmental assessment the U.S. Army Corps of Engineers, Sacramento District (Corps), is preparing for the proposed strengthening of approximately 5,200 feet of the levee along the American River adjacent to the Natomas East Main Drainage Canal for the American River Common Features Project in Sacramento County. This work is authorized by the Water Resources Development Act of 1999 (WRDA 99).

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Alicia E. Kirchner
Chief, Planning Division

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Appendix D

Fish and Wildlife Coordination Act Report



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846



In Reply Refer To:
08ESMF00-2012-CPA-0109

JUN 4 2012

Alicia Kirchner
Chief, Planning Division
Corps of Engineers, Sacramento District
1325 J Street
Sacramento, California 95825-2922

Dear Ms. Kirchner:

The Corps of Engineers (Corps) has requested supplemental coordination under the Fish and Wildlife Coordination Act (FWCA) for the American River Watershed Investigation (Common Features) Natomas East Main Drain Canal Levee Improvement Project. The proposed levee improvements would occur on the north levee of the American River, Sacramento County, California. This letter constitutes the Fish and Wildlife Service's (Service) supplemental FWCA report for the proposed project.

By copy of this letter we are requesting the agencies listed below to provide any review comments to the Service so that they can be incorporated into a final report for inclusion in the Corps' environmental documents.

If you have any questions regarding this report please contact Doug Weinrich at (916) 414-6563.

Sincerely,

Daniel Welsh
Assistant Field Supervisor

cc:

John Suazo, COE, Sacramento, CA
Howard Brown, NOAA Fisheries, Sacramento, CA
Reg. Mgr., CDFG, North Central Region, Rancho Cordova, CA

DRAFT SUPPLEMENT FISH AND WILDLIFE COORDINATION ACT REPORT
WRDA 99-AMERICAN RIVER COMMON FEATURES PROJECT
NATOMAS EAST MAIN DRAIN CANAL

June 2012

BACKGROUND

The American River Watershed Investigation Common Features Project (Common Features Project) is a cooperative effort among local, State of California, and Federal agencies to increase the level of flood protection for the city of Sacramento and surrounding areas. The Common Features Project encompasses several actions under two Water Resources Development Act (WRDA) authorizations (WRDA 96 and WRDA 99) located along both banks of the lower American River within the American River Parkway, as well as sections along the Sacramento River. The major features of this project have been constructed by the Corps and the Central Valley Flood Protection Board (Board) of the State of California, and are currently maintained by the American River Flood Control District.

The Service previously coordinated with the Corps on the various aspects the Common Features Project. The proposed work addressed in this report is specific to the repairs at the Natomas East Main Drain Canal (NEMDC) site.

PROJECT DESCRIPTION

The proposed project is located upstream of the confluence of the Sacramento and American Rivers along the right (north) levee of the lower American River between River Mile (RM) 2.0 and 3.6 (Figure 1). The project reach is bisected by the Union Pacific Railroad tracks and Del Paso Boulevard. The downstream end of the reach terminates at the NEMDC. Highway 160 divides the project reach into upstream and downstream segments (Figure 2). The upstream segment (from the upstream terminus to Highway 160) would require installation of 3,300 linear feet (lf) of seepage cutoff wall. The downstream segment of the project is divided into two sections based on the requirements of each section of levee: the section from the UPRR tracks to Del Paso Boulevard would require landside levee slope repairs and slope flattening (about 120 lf); the section from Del Paso Boulevard to terminus would require installation of 1,380 lf of seepage cutoff wall.

The levees are currently designed to hold a flow of 160,000 cubic feet per second (cfs), however, during a design event the levee does not meet the Corps criteria for seepage and slope stability. Current levee standards require levees on the American River be capable of safely passing an emergency release of 160,000 cfs, plus 3 feet of freeboard, for a total flow capacity of 192,000 cfs. Specifically, the deficiency is through-seepage and the work would involve installing a seepage cutoff wall in about 4,680 feet of levee to a depth of 40 feet below the levee crown, over a distance of about 5,500 lf, as well as incorporating some slope stability (slope flattening) corrections. In order to implement these project features a total of seven utilities located in the project area or passing through the levee would require relocation or abandonment. Due to logistical, environmental and construction constraints, the NEMDC project would be implemented over two construction seasons: the upstream segment is scheduled to be constructed in 2013 and the downstream segment is scheduled to be constructed in 2014.

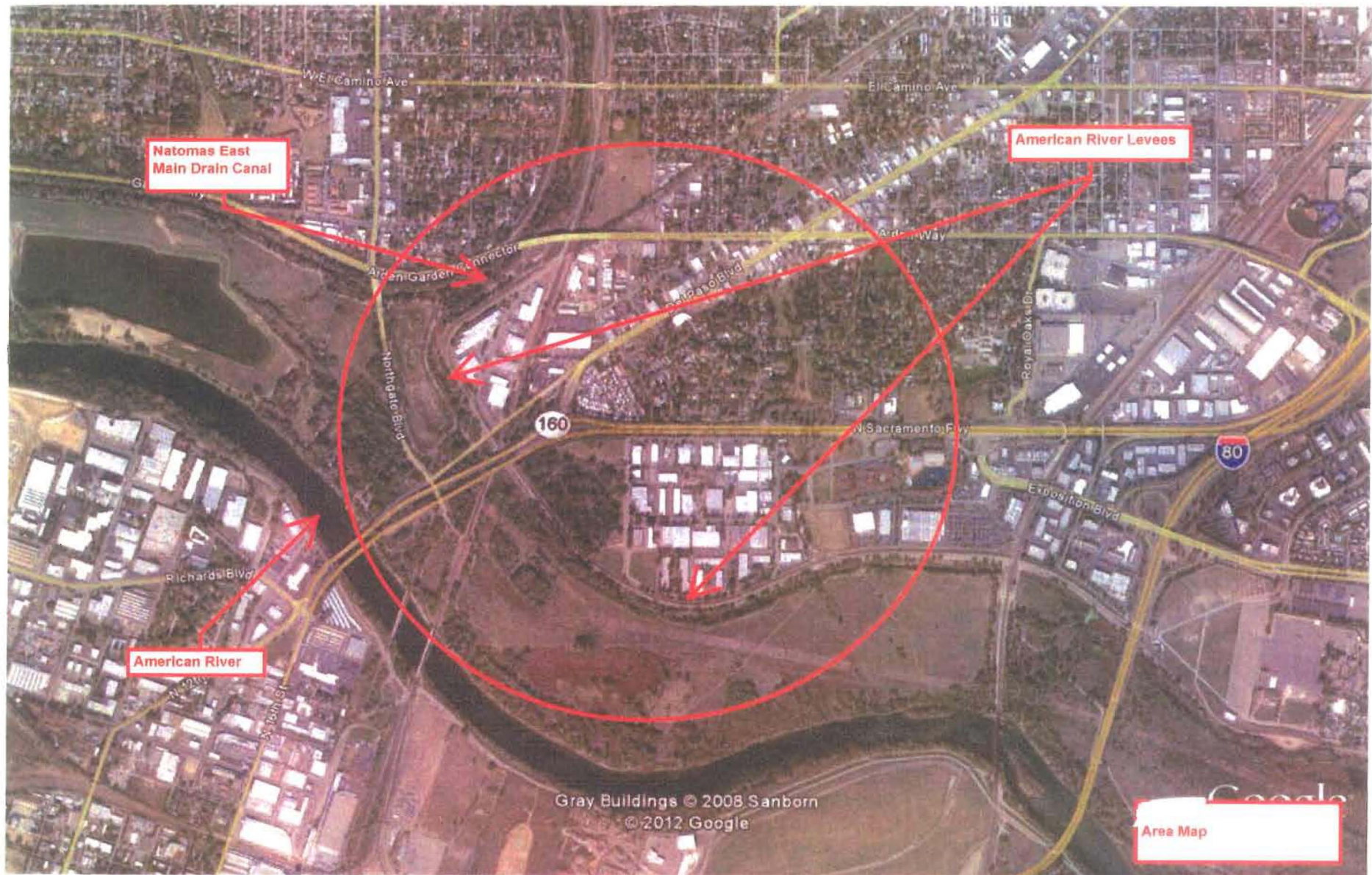


Figure 1. Natomas East Main Drain Canal Project Location
Source: Corps of Engineers



Figure 2. Natomas East Main Drain Canal Project Reach
Source: Corps of Engineers

A combination of existing ramps and temporary ramps would be used during the construction of the project. An existing access ramp at Lathrop Way, along with two proposed temporary ramps, would be the upstream access for construction. All three ramps are located on the landside of the levee. One proposed temporary ramp would be located on the landside of the levee along the middle section of the project, adjacent to a heavily wooded privately-owned property. One temporary waterside ramp and three temporary landside ramps are proposed for construction at the downstream section of the project.

The project would use a total of three staging areas during construction. The primary staging area is proposed to be located at the upstream end of the reach adjacent to the west end of Lathrop Way. It encompasses two parcels directly across from each other on Lathrop Way. Two smaller staging areas are proposed for the downstream end of the project. One is located in the strip of land between Del Paso Boulevard and Highway 160, just east of the Union Pacific Railroad tracks. The last staging area is proposed for the west side of Railroad Drive from Del Paso Boulevard, north for about 500 feet. This staging area would narrow Railroad Drive to one lane in the area near Del Paso Boulevard and would require a flagger and signage to safely manage traffic entering and exiting Railroad Drive.

Three haul routes are proposed for the project during construction. The primary function of the haul routes is to concentrate truck movement within close proximity to the construction areas when soil is excavated from the levee and is being transferred to the staging areas. The haul routes would also be used when the construction of the slurry cutoff walls has been completed and the levees are being reconstructed. The haul routes would be used to import suitable material as well as transport spoils for disposition. The upstream haul route would be located along the landside toe of the levee, adjacent to Lathrop Way. Trucks moving material would deposit the excavated soil in the staging area at the west end of Lathrop Way. The trucks would continue in a clockwise direction, north on Lathrop Way to Commerce Circle, east on Commerce Circle to Lathrop Way and return to the levee toe. Construction in this section would work from upstream toward downstream.

The haul route in the middle section of the project would also be located along the landside levee toe and would shuttle between the primary upstream staging area and the downstream staging area. The maintenance road along the landside toe would accommodate two-way traffic. Trucks would deposit excavated soil at the upstream staging area and would use the downstream staging area as a turnaround.

Due to logistical constraints on both the waterside and landside of the levee, the downstream section haul route would require a loop that would operate on both sides of the levee. A maintenance road along the waterside toe of the levee would allow trucks to be loaded with excavated material and travel in a downstream direction. The trucks would follow the levee and eventually travel up a temporary ramp on top of the levee and exit the construction area where Railroad Drive meets the levee. Trucks would continue down Railroad Drive and turn left (east) to the staging area along Del Paso Boulevard. Once the trucks have left the staging area they would exit via an access road adjacent to the Highway 160 exit ramp. Trucks would exit left (west) onto Del Paso Boulevard and return to the access point on the waterside of the levee.

The Jedediah Smith Recreation Trail (bike trail) would remain open during the entire project, but may be used occasionally for movement or repositioning of equipment. This is expected to

occur infrequently. The Sacramento Northern Bike Trail would be closed from the existing Del Paso Boulevard access, north to where the end of Railroad Drive meets the levee. This is due to the fact that the bike trail is on top of the levee in this section and this is where the levee repairs would take place. Access to the Sacramento Northern Bike Trail would be detoured east along Del Paso Boulevard to Acoma Street, then north to the bike trail. This closure/detour would be required during the entire time of construction in this section. That construction period is about 3 months long, and would be the last section to be completed. It is currently scheduled for 2014.

Before the start of construction, all construction areas would be fenced off to limit access, including the staging areas. Construction fencing would be installed on the landside of the project site adjacent to the commercial property lines and along the boundary of the access/haul road at the landside toe for site safety and security. In any areas where the bike trail is in the vicinity of the project footprint, water-filled barriers would be installed along the edge of the trail in order to separate recreationists from the construction area. A 15-20 foot wide corridor for construction equipment would be established along the landside toe of the levee.

Construction of the slurry wall would require that the levee crown and 6 feet of the levee slopes be cleared and grubbed of all vegetation and surface material. This would total about 2,150 cubic yards (cys) of removed material and would be disposed by the contractor at an approved licensed and permitted facility.

Preparation of all staging areas would require: a) clearing and grubbing of the top 6 inches of soil and vegetation which would total 810 cys of removed material and would be disposed by the contractor at an approved licensed and permitted facility. Slurry batch plants would be located in the upstream staging area on the west side of Lathrop Way and the downstream staging area on Railroad Drive.

There are seven locations where utilities would require relocation in order to implement the project. In five of these locations, the project would relocate the utility during the course of construction. However, two utilities must be relocated prior to construction in order to ensure that utility service is not interrupted and that the utility does not restrict the movement of equipment and the completion of the construction feature. Both of these utilities are located in the downstream section of the project.

In the area delineated by the UPRR tracks, the project levee, and Del Paso Boulevard, an electrical power pole is located within 10 feet of the current location of the levee toe. The seepage and slope stability deficiencies in this section would be corrected by repairs to the landside levee toe and slope flattening, which would also act as a seepage berm. The location of the utility pole is a levee safety concern and will require relocation. However, because the corrections involve earthwork, the utility pole must be relocated a minimum of 15 feet further landward from the levee and all vegetation in this area must be removed, prior to construction. The Corps is coordinating with the utility provider, and they will relocate the utility pole. Downstream of Del Paso Boulevard there is a 12-inch natural gas pipeline that currently passes through this levee section. Although some information, based on limited potholing data, indicates that the pipeline passes through the prism of the levee within the depth where the cutoff wall would be installed, this has not yet been confirmed. Some anecdotal information would support the theory that the pipeline follows the prism of the levee within the top 3 to 4 feet of soil on the levee slopes and crown. The Corps has coordinated with Pacific Gas & Electric to relocate the pipeline.

Construction is scheduled to begin in summer 2013, with the upstream segment of the reach. The duration of the construction period for the upstream segment should last about 4 months; construction of the downstream segment should last about 3 months in 2014. After each segment of the reach has been cleared and grubbed, the levee would be degraded by 6 feet. The material removed during this process would be off-hauled as spoils. It is estimated that 37,690 cys of material would be removed from the levee through degrading and excavation: 29,030 cys for the upstream segment; 8,660 cys for the downstream segment. Due to the limited space in the staging areas, and the proposed slurry wall construction methodology, all soil removed during clearing and grubbing, levee degrade and excavation would be disposed as spoils.

Once the levee has been degraded, the slurry cutoff wall would be constructed. The conventional "slot trench" method would be used where a long reach, or "long-stick", excavator would dig the trench as deep as 45 feet, in order for the wall to tie into an impervious layer of soil. The wall would be constructed of cement and bentonite. The cement and bentonite method would result in a greater amount of soil to be disposed, and generally takes longer to construct, however this process is less expensive. Slurry batch plants would be located at one of the upstream and downstream staging areas.

The section of levee between the UPRR tracks and Del Paso Boulevard would require flattening of the landside levee slope to stabilize the levee and to act as a type of seepage berm. This section, although short (~150 feet), is complicated by several site factors that the "low-tech" earthwork would address: the short length of the reach restricts the use of equipment on top of the levee to install a cutoff wall; the wing walls associated with the Del Paso Boulevard flood gates and the UPRR tracks restrict the ability to degrade the levee crown; several utilities passing through the levee also restrict incursion through the center of the levee; the landside toe of the levee has been severely altered by a long-standing homeless encampment; significant growth of woody vegetation at the landside levee toe and an existing power pole are levee safety concerns that must be addressed. The repairs would first require removal of the vegetation and relocation of the power pole. Once the levee toe is repaired to its' designed configuration, the slope would be extended further landward and flattened. This would serve the dual purpose of stabilizing the levee and extending the seepage path to reduce the seepage risk. All earthwork activities would be conducted from the landside of the levee.

Once the levee work is completed, all equipment and excess materials would be transported offsite via neighborhood streets and regional highways. The barren earthen and levee slopes would be reseeded with native grasses to promote re-vegetation and minimize soil erosion. The levee crown and access ramps would be restored to pre-project conditions and the staging areas would be reseeded. Any damage to the residential streets and bike trails from construction activities would be repaired. Finally, the work sites and staging areas would be cleaned of all rubbish, and all parts of the work area would be left in a safe and neat condition suitable to the setting of the area.

After construction is completed, responsibility for the project would be turned over to the Board, the non-Federal sponsor for the project. This would include operation, maintenance, repair, rehabilitation, and replacement of all project features. The Board would transfer these responsibilities to Sacramento Area Flood Control Agency, who would contract the American River Flood Control District to operate and maintain the levee. Regular maintenance activities

include mowing and herbicide treatments of the levee slopes, controlling rodents, clearing the maintenance road, and inspecting the levee.

BIOLOGICAL RESOURCES

The lower American River, although highly modified from conditions of 150 years ago, supports a diverse and highly valuable area for biological resources. The 23-mile-long reach of the American River Parkway encompasses about 4,000 acres, the majority of which are in State designated floodway and contain large areas of annual grasslands, riparian forest and scrub-shrub, oak woodlands, bare sand and gravel, and surface waters of the river and its associated sloughs and dredge ponds (USFWS 2003).

Vegetation

The project area supports annual grassland, oak woodland, and riparian habitat. The annual grassland is characterized by species such as ripgut brome, wild oat, and various forbs. The levees within the project area and adjacent fields support annual grasses which are mowed as part of a maintenance program to reduce wildfire danger.

The oak woodland in the project area occurs as block of habitat on the landside of the levee roughly between Highway 160 and Lathrop Way. Typically the understory is dominated by annual grass and other forbs and shrubs such as elderberry.

Riparian habitat occurs on the waterside of the levee along the entire reach of the project.

Wildlife

The lower American River corridor provides a mosaic of riparian, riverine, grassland, and oak woodland habitat. These diverse habitats support a corresponding diversity of wildlife.

The lower American River provides feeding, resting, and/or nesting habitat for many bird species, many of which require the aquatic areas of the river and backwaters, or the riparian vegetation of the ecosystem. Riparian areas are known to support a species-rich songbird community (Gaines 1977), and the lower American River also provides habitat for many raptors, including Swainson's hawks, red-shouldered hawks, Cooper's hawks, and great-horned owls, all of which require or are closely associated with riparian vegetation. Bald eagles, which are more common around Folsom Reservoir, occasionally use the lower river, which provides roosting and foraging habitat. Waterfowl, particularly mallards and Canada geese, also use the area extensively.

More than 50 species of mammals have been recorded for the area (USFWS 1986). Common species include beaver, black-tailed jackrabbit, striped skunk, Virginia opossum, raccoon, California ground squirrel, gophers, and many small rodents and insectivores including voles, moles, shrews, deer mice, and pocket gophers. Uncommon species include several carnivores, such as badger, long-tailed weasel, river otter, gray fox, coyote, bobcat, and mink.

Reptile species of the lower American River include common kingsnake, western rattlesnake, Gilbert and western skinks, southern alligator lizard, western fence lizard, gopher snake, and several garter snakes. Common amphibians include Pacific treefrog, California newt, California slender salamander, western toad, and the introduced bullfrog.

Relatively little is known about invertebrates of the lower American River, but elderberry plants are fairly common in areas, and provide habitat for the endangered valley elderberry longhorn beetle.

Fish

The lower American River supports a diverse and abundant fish community; altogether, at least 41 species of fish are known to inhabit the river (USFWS 1986). In recognition of its "outstanding and remarkable" fishery resources, the entire lower American River was included in the Wild and Scenic Rivers System in 1981, which provides some protection for these resources (USFWS 1991). Four anadromous species are important from a commercial and recreational perspective. The lower river supports a large run of fall-run Chinook salmon, a species with both commercial and recreational values. The salmon run is sustained by natural reproduction in the river, and by hatchery production at the Nimbus Salmon and Steelhead Hatchery, operated by CDFG. The average annual run of salmon in the American River is 25,948 (CDFG 2006).

Steelhead, a popular sport fish, are largely sustained in the river by production from the Nimbus Hatchery, because summer water temperatures often exceed the tolerances of juvenile steelhead, which typically spend about 1 year in the river. American shad and striped bass enter the river to spawn; these two species, introduced into the Sacramento River system in the late 1800s, now support popular sport fisheries. In addition to species of economic interest, the lower American River supports many nongame species, including Sacramento pikeminnow, Sacramento sucker, tule perch, and hardhead (USFWS 1994).

Endangered Species

Based on a search of the Sacramento East USGS quadrangle map there are several listed species which could occur within or near the project area. The species under the jurisdiction of the Service which may be affected by the project include the valley elderberry longhorn beetle. The other species (anadromous fish) are under the jurisdiction of National Marine Fisheries Service (NOAA fisheries). The complete list is included in Enclosure 1 as well as a summary of Federal agencies responsibilities under the Endangered Species Act of 1973, as amended.

Twelve elderberry shrubs were identified along the project reaches which would be affected by the proposed work. The Corps is currently consulting with the Service on project effects to the threatened valley elderberry longhorn beetle due to direct impacts to these shrubs, which are the sole host plant for the beetle, and to its designated critical habitat which is adjacent the proposed work.

DISCUSSION

Service Mitigation Policy

The recommendations provided herein for the protection of fish and wildlife resources are in accordance with the Service's Mitigation Policy as published in the Federal Register (46:15; January 23, 1981).

The Mitigation Policy provides Service personnel with guidance in making recommendations to protect or conserve fish and wildlife resources. The policy helps ensure consistent and effective Service recommendations, while allowing agencies and developers to anticipate Service recommendations and plan early for mitigation needs. The intent of the policy is to ensure

protection and conservation of the most important and valuable fish and wildlife resources, while allowing reasonable and balanced use of the Nation's natural resources.

Under the Mitigation Policy, resources are assigned to one of four distinct Resource Categories, each having a mitigation planning goal which is consistent with the fish and wildlife values involved. The Resource Categories cover a range of habitat values from those considered to be unique and irreplaceable to those believed to be much more common and of relatively lesser value to fish and wildlife. However, the Mitigation Policy does not apply to threatened and endangered species. Service recommendations for completed Federal projects or projects permitted or licensed prior to enactment of Service authorities, or Service recommendations related to the enhancement of fish and wildlife resources.

In applying the Mitigation Policy during an impact assessment, the Service first identifies each specific habitat or cover-type that may be impacted by the project. Evaluation species¹ which utilize each habitat or cover-type are then selected for Resource Category analysis. Selection of evaluation species can be based on several rationale, as follows: (1) species known to be sensitive to specific land- and water-use actions; (2) species that play a key role in nutrient cycling or energy flow; (3) species that utilize a common environmental resource; or (4) species that are associated with Important Resource Problems, such as anadromous fish and migratory birds, as designated by the Director or Regional Directors of the Fish and Wildlife Service. Based on the relative importance of each specific habitat to its selected evaluation species, and the habitat's relative abundance, the appropriate Resource Category and associated mitigation planning goal are determined.

Mitigation planning goals range from "no loss of existing habitat value" (i.e., Resource Category 1) to "minimize loss of habitat value" (i.e., Resource Category 4). The planning goal of Resource Category 2 is "no net loss of in-kind habitat value;" to achieve this goal, any unavoidable losses would need to be replaced in-kind. "In-kind replacement" means providing or managing substitute resources to replace the habitat value of the resources lost, where such substitute resources are physically and biologically the same or closely approximate those lost.

In addition to mitigation planning goals based on habitat values, Region 8 of the Service, which includes California, has a mitigation planning goal of no net loss of acreage and value for wetland habitat. This goal is applied in all impact analyses.

In recommending mitigation for adverse impacts to fish and wildlife habitat, the Service uses the same sequential mitigation steps recommended in the Council on Environmental Quality's regulations. These mitigation steps (in order of preference) are: avoidance, minimization, rectification of measures, measures to reduce or eliminate impacts over time, and compensation.

Four fish and/or wildlife habitats were identified in the project area which had potential for impacts from the project: oak woodland, riparian woodland, annual grassland; and "other." The resource categories, evaluation species, and mitigation planning goal for the habitats impacted by the project are summarized in Table 1.

¹ Note: Evaluation species used for Resource Category determinations may or may not be the same evaluation species used in a HEP application, if one is conducted.

Table 1. Resource categories, evaluation species, and mitigation planning goal for the habitats possibly impacted by the proposed Natomas East Main Drain Canal Project, Sacramento County, California.

COVER-TYPE	EVALUATION SPECIES	RESOURCE CATEGORY	MITIGATION GOAL
Oak woodland	Acorn woodpecker Turkey Deer	2	No net loss of in-kind habitat value or acreage.
Riparian woodland	Acorn woodpecker Turkey Deer	2	No net loss of in-kind habitat value or acreage.
Annual grassland	Red-tailed hawk	3	No net loss of habitat value while minimizing loss of in-kind habitat value.
Other	None	4	Minimize loss of habitat value

The evaluation species selected for the oak woodland and riparian woodland that may be impacted are acorn woodpecker, turkey, and mule deer. Acorn woodpeckers utilize these woodlands for nearly all their life requisites; 50-60 percent of the acorn woodpecker's annual diet consists of acorns. Acorn woodpeckers can also represent impacts to other canopy-dwelling species. Turkeys forage and breed in oak and riparian woodlands and are abundant in the project area. Mule deer also heavily depend on acorns as a dietary item in the fall and spring; the abundance of acorns and other browse influence the seasonal pattern of habitat use by deer. These latter species represent species which utilize the ground component of the habitat and both have important consumptive and non-consumptive human uses (i.e., hunting and bird watching). Based on the high value of oak and riparian woodlands to the evaluation species, and their declining abundance, the Service has determined the oak and riparian woodlands which may be affected by the project should be placed in Resource Category 2, with an associated mitigation planning goal of "no net loss of in-kind habitat value."

The evaluation species selected for the annual grassland cover-type is the red-tailed hawk, which utilizes these areas for foraging. This species was selected because of the Service's responsibility for their protection and management under the Migratory Bird Treaty Act, and their overall high non-consumptive values to humans. Annual grassland areas potentially impacted by the project vary in their relative values to the evaluation species, depending on the degree of human disturbance, plant species composition, and juxtaposition to other foraging and nesting areas. Therefore, the Service designates the annual grassland cover-type in the project area as Resource Category 3. Our associated mitigation planning goal for these areas is "no net loss of habitat value while minimizing loss of in-kind habitat value."

No evaluation species were identified for the "other" cover-type. The "other" cover-type encompasses those areas which do not fall within the other cover-types such as gravel and paved roads, parking areas, buildings, bare ground, riprap, etc. Generally this cover-type would not provide any significant habitat value for wildlife species. Therefore, the Service designates the "other" cover-type in the project area as Resource Category 4. Our associated mitigation planning goal for these areas is "minimize loss of in-kind habitat value."

Based on our review of the proposed project most of the impacts would be temporal losses of habitat value for species utilizing annual grasslands during construction on the affected levees and proposed staging areas. Much of this area is already highly disturbed by maintenance activities and recreation activities (hiking, biking, running, dog walking, etc). All disturbed areas would be reseeded with annual grasses at the completion of construction. There would be a minimal amount of removal of trees, including two oak trees (15 and 23-inch dbh), adjacent to the landside levee toe and 12 large elderberry shrubs. In addition, there would be some trimming of tree limbs to allow equipment to pass along the levee toe. Wildlife species utilizing these areas would be displaced during construction and there would be a temporal loss of habitat values while mitigation plantings develop. No direct impacts are expected to vegetation on the waterside of the levee although wildlife species may be temporarily displaced due to construction activity.

The proposed project would take place in a reach of the river where mature riparian and oak woodland occurs within and adjacent to the project area. If construction is occurs prior to August, measures should be included in the project description to avoid impacts to migratory birds which may be nesting in affected vegetation and nearby areas throughout the riparian corridor and adjacent oak woodland. Pre-construction surveys should be performed to determine if there are migratory birds nesting in the area. If nests are located, work should be deferred until any young have fledged the nest.

The project is located away from the American River and thus no direct impacts are anticipated for fish species.

RECOMMENDATIONS

The Service recommends:

1. Avoid impacts to native trees, shrubs, and aquatic vegetation. Any native trees or shrubs removed with a diameter at breast height of 2 inches or greater should be replaced on-site, in-kind with container plantings so that the combined diameter of the container plantings is equal to the combined diameter of the trees removed. These replacement plantings should be monitored for 5 years or until they are determined to be established and self-sustaining. The planting site(s) should be protected in perpetuity.
2. Avoid future impacts to the site by ensuring all fill material is free of contaminants.
3. Avoid impacts to migratory birds nesting in trees along the access routes and adjacent to the proposed repair sites by conducting pre-construction surveys for active nests along proposed haul roads, staging areas, and construction sites. This would especially apply if construction begins in the spring of 2013 or 2014. Work activity around active nests should be avoided until the young have fledged. The following protocol from the California Department of Fish and Game for Swainson's hawk would suffice for the pre-construction survey for raptors.

A focused survey for Swainson's hawk nests will be conducted by a qualified biologist during the nesting season (February 1 to August 31) to identify active nests within 0.25 miles of the project area. The survey will be conducted no less than 14 days and no more than 30 days prior to the beginning of construction. If nesting Swainson's hawks are found within 0.25 miles of the project area, no construction will occur during the active nesting season of

February 1 to August 31, or until the young have fledged (as determined by a qualified biologist), unless otherwise negotiated with the California Department of Fish and Game. If work is begun and completed between September 1 and February 28, a survey is not required.

4. Minimize project impacts by reseeding all disturbed areas at the completion of construction with forbs and grasses.
5. Minimize the impact of removal and trimming of all trees and shrubs by having these activities supervised and or completed by a certified arborist.
6. Compensate for the loss of the two oak trees known to be lost by the project by planting 152 oak seedlings on a 0.65 acre site(s) coordinated with the Service and California Department of Fish and Game. These plantings should be monitored for 5 years or until they are determined to be established and self-sustaining. The planting site(s) should be protected in perpetuity.

Note: The compensation identified in Recommendation #6 above was derived by totaling the dbh of the two impacted trees (38 inches) and multiplying it by 4 (assumes each seedling is 1/4-inch in diameter) to get 152 trees. The area for plantings was based on information provided by the Corps on planting densities used for oak woodland (235 acre) on other projects.

7. Complete consultation with the Service on project effects on the valley elderberry longhorn beetle and its critical habitat.
8. Contact the California Department of Fish and Game regarding possible effects of the project on State listed species.

REFERENCES

- CDFG (California Department of Fish and Game). 2006. Nimbus Hatchery Salmon (Online)
Available: <http://www.dfg.ca.gov/lands/fh/nimbus/salmon.html>, September 29, 2006.
- Gaines, D.A. 1977. The valley riparian forests of California: their importance to bird populations. Pages 57-85 *in* Riparian Forests in California: their ecology and conservation. A. Sands. ed. University of California, Davis. Inst of Ecology Publ. no. 15.
- USFWS (U.S. Fish and Wildlife Service). 1986. Potential impacts to fish and wildlife from alternative actions for increasing flood control along the lower American River, California. U.S. Fish and Wildlife Service, Sacramento, California.
- _____. 1991. American River Watershed Investigation, Auburn Area, Substantiating Report. U.S. Fish and Wildlife Service, Sacramento, California.
- _____. 1994. Planning Aid Report for the American River Watershed Investigation, Raising of Folsom Dam Alternative. U.S. Fish and Wildlife Service, Sacramento, California.
- _____. 2003. Fish and Wildlife Coordination Act Report for the American River Watershed Investigation Long-Term Evaluation. U.S. Fish and Wildlife Service, Sacramento, California.

ENDANGERED SPECIES CONSULTATION

U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Federal Endangered and Threatened Species that Occur in
or may be Affected by Projects in the Counties and/or
U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 120531093918

Database Last Updated: September 18, 2011

Quad Lists

SACRAMENTO EAST (512C)

Listed Species

Invertebrates

Branchinecta lynchi

vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus

Critical habitat, valley elderberry longhorn beetle (X)

valley elderberry longhorn beetle (T)

Lepidurus packardii

vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris

green sturgeon (T) (NMFS)

Hypomesus transpacificus

delta smelt (T)

Oncorhynchus mykiss

Central Valley steelhead (T) (NMFS)

Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha

Central Valley spring-run chinook salmon (T) (NMFS)

Critical Habitat, Central Valley spring-run chinook (X) (NMFS)

winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense

California tiger salamander, central population (T)

Rana draytonii

California red-legged frog (T)

Reptiles

Thamnophis gigas

giant garter snake (T)

County Lists

No county species lists requested.

Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue,

hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. [More info](#)

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be August 29, 2012.