

**DEPARTMENT OF WATER RESOURCES**

3310 El Camino Avenue, Suite 114  
SACRAMENTO, CA 95821  
(916) 574-1302



Proposed Mitigated Negative Declaration  
and Draft Initial Study

Cherokee Canal Corridor Management Strategy Pilot Project:  
Phase I Sediment Removal

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Prepared by:  
Division of Flood Management  
Flood Maintenance Office  
3310 El Camino Avenue, Suite 110  
Sacramento, California 95821



# PROPOSED MITIGATED NEGATIVE DECLARATION

**Project:** Cherokee Canal Corridor Management Strategy Pilot Project:  
Phase I Sediment Removal

**Lead Agency:** Department of Water Resources, Flood Maintenance Office

## PROJECT DESCRIPTION

This initial study and mitigated negative declaration (IS/MND) evaluates the environmental effects of the proposed Cherokee Canal Corridor Management Strategy (CMS) Pilot Project: Phase I Sediment Removal (proposed project). Sediment removal within Cherokee Canal is proposed to rehabilitate the channel to its 25-year flood design capacity. The design flood carrying capacity is not being met from Cottonwood Creek to the Union Pacific Railroad (UPRR) crossing. Studies indicate that the canal segment between the Richvale Highway and the UPRR crossing can pass only approximately two-thirds of the 25-year design flow of 11,500 cubic feet per second (cfs) (without encroaching on the design freeboard). The Department of Water Resources (DWR) is proposing to remove accumulated sediment and address potential erosion issues in a 4-mile section of the Cherokee Canal. Estimates indicate that approximately 750,000 cubic yards of sediment may be removed to restore the channel to its 25-year flood design capacity.

## FINDINGS

An IS/MND has been prepared to assess the project's potential effects on the environment and the significance of those effects. Based on the IS/MND, it has been determined that the proposed project would not have any significant or potentially significant effects on the environment after implementation of mitigation measures. This conclusion is supported by the following findings:

1. The proposed project would have no effect related to land use, mineral resources, population and housing, recreation, or public services.
2. The proposed project would have a less-than-significant impact on aesthetics, agricultural resources, and noise.
3. Mitigation is required to reduce potentially significant impacts related to air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, transportation/traffic, and utilities and service systems.

The following mitigation measures will be implemented to avoid or minimize environmental impacts of the proposed project to a less-than-significant level.

## AIR QUALITY

### **Mitigation Measure AQ-1: Implement Butte County Air Quality Management District (BCAQMD)-recommended emission reduction measures (BCAQMD 2008).**

To prevent and control dust emissions, and reduce impacts from project-generated emissions of criteria air pollutants and precursors to less-than-significant levels, DWR will implement the following mitigation:

- ▶ Maintain all construction equipment according to manufacturer's specifications.
- ▶ Maximize the use of diesel construction equipment that meets California Air Resources Board (ARB) 1996 or newer certification standard for off-road heavy-duty diesel engines.
- ▶ Maximize use of electric equipment where feasible.
- ▶ Maximize use of gasoline-powered equipment in lieu of diesel-powered equipment where feasible.
- ▶ Maximize use of alternatively fueled construction equipment on-site, such as compressed natural gas, liquefied natural gas, propane, or biodiesel, where feasible.
- ▶ Use equipment that has pre-chamber diesel engines.
- ▶ A water truck will be on-site at all times. Water will be applied to disturbed areas a minimum of twice per day or more frequently as necessary. Water may be applied by means of truck(s), hoses, or sprinklers as needed, prior to any land clearing or earth movement to minimize dust emission. All visibly dry and disturbed soil surface areas of operation will be watered to minimize dust emissions. Unpaved roads may be graveled in lieu of watering to reduce dust emissions.
- ▶ Haul roads will be sprayed down at the end of the work shift and throughout each work shift as needed, to form a thin crust. This application of water will be in addition to the minimum rate of application.
- ▶ Haul vehicles transporting soil into or out of the project area will be covered, or haul trucks will be loaded such that the freeboard is not less than 2 feet when material is transported across any paved public-access road, or enough water will be applied to the top of the load to limit visible dust emissions to 20 percent opacity.
- ▶ On-site vehicles will be limited to a speed that minimizes dust emissions on unpaved roads, and all project entry points.
- ▶ Post a publicly visible sign with the telephone number and person to contact regarding dust complaints. This person will respond and take corrective action by contacting the general contractor and BCAQMD Air Pollution Control Officer within 24 hours.
- ▶ The telephone number of the BCAQMD will also be visible to ensure compliance with District Rule 200 & 205 (*Nuisance and Fugitive Dust Emissions*).

- ▶ Existing roads and streets adjacent to the project will be cleaned at least once per day unless conditions warrant a greater frequency.
- ▶ Construction workers will park in designated parking areas(s) to reduce dust emissions.
- ▶ Soil pile surfaces will be moistened if dust is being emitted from the pile(s). Adequately secured tarps, made of plastic or other material, may be required when watering is insufficient or wind speeds exceed 25 miles per hour to further reduce dust emissions.

## **BIOLOGICAL RESOURCES**

### **Mitigation Measure BIO-1: Actions to Avoid Take of Giant Garter Snake.**

- ▶ To the extent practicable, construction activity within giant garter snake habitat will be conducted within the snake's active season (May 1 through October 1). Because work is expected to continue past October 1, U.S. Fish and Wildlife Service (USFWS) and Department of Fish and Game (DFG) will be consulted and written approval requested from these agencies to allow continuation of work.
- ▶ A worker awareness training program for construction personnel will be conducted by a qualified biologist before construction activities begin. The program will inform all construction personnel about the life history and status of the snake, the need to avoid damaging suitable habitat and snake mortality, and the possible penalties for not complying with these requirements. Written documentation of the training will be submitted to USFWS and DFG within 30 days of the completion of training.
- ▶ Within 24 hours of the commencement of ground-disturbing activities, the project site will be inspected for giant garter snakes by a qualified USFWS-approved biologist. The biologist will provide USFWS written documentation of the monitoring efforts no later than 48 hours after the inspection is completed. The project area will be re-inspected by the monitoring biologist whenever a lapse in construction activity of 2 weeks or greater has occurred.
- ▶ A monitoring biologist will be present on-site during initial ground-disturbance activities, including clearing and grubbing/stripping, and will be available for monitoring throughout all phases of construction within giant garter snake habitat. If a giant garter snake is encountered during construction, the on-site monitoring biologist will have the authority to stop construction activities until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed. The biologist will conduct a monitoring visit at least once per week to ensure avoidance and minimization measures are being properly implemented.
- ▶ Before beginning construction activities, high-visibility fencing will be erected to protect areas of aquatic habitat outside of the construction area from encroachment. These areas will be avoided by all construction personnel. The fencing will be inspected before the start of each work day and will be maintained until all construction activities are completed.
- ▶ Jute, hemp, or similar erosion control matting will be used to prevent snake entanglement and mortality. Plastic monofilament erosion control matting will not be used at any time.

- ▶ The number of access routes, number and size of staging areas, and the total area of the proposed project activity will be limited to the minimum necessary. Movement of heavy equipment to and from the project site will be restricted to established roadways, designated construction areas/routes, and designated staging areas to minimize habitat disturbance. Project-related vehicles will observe a 20-mile-per-hour speed limit within construction areas, except on county roads and on state and federal highways.
- ▶ During construction operations, stockpiling of construction materials, portable equipment, vehicles, and supplies will be restricted to the designated construction staging areas. To eliminate attracting predators of the snake, all food-related trash items, such as wrappers, cans, bottles, and food scraps will be disposed of in closed containers.
- ▶ The new low-flow channel will be constructed and operational before existing canals are filled. In addition, existing channels will be dewatered for at least 15 days before excavating or filling of the dewatered habitat. If channels are unable to be dewatered, DWR will consult with USFWS and DFG to identify and implement appropriate measures to avoid attracting snakes to the construction area.
- ▶ After completion of construction activities, any temporary fill and construction debris will be removed and the area will be restored using a native grass and forb mixture.
- ▶ Measures consistent with the current construction-site best management practices, including the storm water pollution prevention plan and water pollution control program (WPCP), will be implemented to minimize effects to adjacent giant garter snake aquatic habitat (e.g., siltation) during construction.
- ▶ A WPCP will be prepared by the contractor in accordance with typical provisions associated with a Regional General Permit for Construction (on file with the Central Valley Regional Water Quality Control Board [RWQCB]). The WPCP will contain a spill Response Plan with instructions and procedures for reporting spills, the use and location of spill containment equipment, and the use and location of spill collection materials.
- ▶ USFWS and DFG will be consulted regarding avoidance and minimization measures and additional measures to be developed, if necessary. Authorization for take of giant garter snake under the Endangered Species Act (ESA) or California Endangered Species Act (CESA) will be obtained if it is determined that project implementation is likely to result in take, despite implementation of avoidance and minimization measures.

**Mitigation Measure BIO-2: Actions to Avoid Take of Northwestern Pond Turtle.**

- ▶ A qualified biologist will conduct surveys in aquatic habitats to be dewatered and/or filled during project construction. Surveys will be conducted immediately after any dewatering and before any fill of aquatic habitat.
- ▶ If pond turtles are found, the biologist will capture them and move them to nearby areas of suitable habitat that would not be disturbed by project construction.

### **Mitigation Measure BIO-3: Conduct Pre-Construction Surveys for Special-Status Birds and Nesting Raptors and Implement Protection Measures.**

The following measures would reduce potentially significant impacts on Swainson's hawk, northern harrier, white-tailed kite, loggerhead shrike and common raptors to a less-than-significant level:

- ▶ If project activity is scheduled to occur during the nesting season (March 1–September 15), a focused survey for raptors and loggerhead shrike will be conducted by a qualified biologist before commencement of activities to identify active nests at and in the vicinity of the project site. Surveys for Swainson's hawk nests will include all areas of suitable nesting habitat within 0.25 mile of the project site. Surveys for other raptors and loggerhead shrike will include suitable nesting habitat within 500 feet of the areas where construction would occur. The inspection will be conducted 14 days before commencement of project activity. If no active nests are found, then no further mitigation will be required.
- ▶ If active nests are found during the surveys, impacts will be avoided by establishment appropriate buffers to minimize impacts. The size of the buffers may be adjusted, depending on the project activity and stage of the nest, if a qualified biologist determines that activity within a reduced buffer would not be likely to adversely affect the adults or their young. No trees with an active nest will be removed until a qualified biologist confirms that the nest is no longer active.

The following measures would reduce potentially significant impacts on tricolored blackbird to a less-than-significant level:

- ▶ If project activity is scheduled to occur during the breeding season for tricolored blackbirds (March 1–July 31), a preconstruction survey will be conducted by a qualified biologist in any areas of potentially suitable nesting habitat located within a 0.25 mile of the project site. If no nesting tricolored blackbirds are observed during the preconstruction surveys, then no further mitigation is required.
- ▶ If tricolored blackbirds are observed nesting on the project site, project-related construction impacts will be avoided and minimized by establishment of an appropriately-sized buffer around the colony during the nesting period (March 1–July 31) for all project-related construction activities. The size of the buffer will be determined in consultation with DFG to avoid adverse affects to tricolored blackbirds.

### **Mitigation Measure BIO-4: Maintain a 100-Foot Buffer Around Elderberry Shrubs.**

- ▶ Buffers of at least 100 feet will be established around all elderberry shrubs with stems measuring at least 1 inch in diameter at ground level. If maintenance of a 100-foot buffer is not feasible, a request to reduce the buffer to 20 feet from the dripline will be submitted to USFWS for approval.
- ▶ Buffer areas will be clearly marked in the field with brightly colored, temporary construction fencing and flagging. No project activity will occur within the buffer areas.

- ▶ No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant will be used within 100 feet of elderberry shrubs during or following project implementation. If maintenance of a 100-foot buffer for chemical application is not feasible, a request to reduce the buffer will be submitted to USFWS for approval.
- ▶ Dirt roadways and other areas of disturbed bare ground within 100 feet of elderberry shrubs will be watered at least twice a day to minimize dust emissions.
- ▶ Following USFWS guidelines (USFWS 1999b), construction crews will be informed about the status of the beetle and the need to protect its elderberry host plant. If requested by USFWS, a qualified biologist will monitor construction activities to ensure that the buffers remain protected throughout the construction period.
- ▶ If the establishment of an appropriate buffer is not feasible, then USFWS will be consulted. It is anticipated that shrubs that cannot be adequately protected will need to be transplanted to a protected on-site area before construction begins, in accordance with USFWS guidelines (USFWS 1999b).

**Mitigation Measure BIO-5: Avoid Impacts on High-Quality Riparian Habitat, Where Possible**

- ▶ Buffers will be established around all areas of high-quality riparian vegetation to be avoided during project construction. The buffer will encompass the entire crown area of all vegetation to be avoided wherever possible. If a buffer of this size is not feasible, a minimum buffer of 20 feet from the trees or shrubs to be preserved will be established.
- ▶ Buffers will be clearly marked in the field with brightly colored, temporary construction fencing and flagging. No project activity will occur within the buffer areas.

**Mitigation Measure BIO-6: Obtain a Streambed Alteration Agreement and Implement Required Mitigation Measures for Habitat that Cannot Be Avoided During Project Activities**

DWR will obtain a streambed alteration agreement from DFG. The acreage of riparian habitat that would be removed will be replaced or rehabilitated on a “no-net-loss” basis, in accordance with DFG regulations and as specified in the streambed alteration agreement. Habitat restoration, rehabilitation, or replacement will take place on the project site. A qualified restoration specialist will prepare a restoration plan to guide the restoration of riparian habitat. The restoration plan will be approved by DFG before project implementation.

**Mitigation Measure BIO-7: Complete the Section 404 Permitting Process and Implement Required Mitigation Measures**

- ▶ The acreage of jurisdictional wetland affected will be replaced in accordance with U.S. Army Corps of Engineers (Corps) regulations. Habitat restoration, rehabilitation, or replacement will take place on the project site as part of project implementation, resulting in no-net-loss of wetland acreage and aquatic ecosystem functions and values.

- ▶ DWR will secure authorization for fill of wetlands and alteration of waters of the United States from the Corps through the Section 404 permitting process before project implementation. DWR will ensure the avoidance of any net loss of wetland function and values for wetlands subject to federal or state jurisdiction, and will secure applicable permits and regulatory approvals described below and will implement all permit conditions.
- ▶ The acreage of jurisdictional wetlands affected will be replaced so as to ensure no net loss of functions and values, in accordance with Corps regulations. The range of compensation for fill of jurisdictional waters could be less than 1:1 or more than 1:1, depending on the timing, functions, and values of the jurisdictional waters created for compensation. The final compensatory range will be negotiated with the Corps and specified in regulatory permits issued for that particular phase of the project.
- ▶ Habitat restoration, rehabilitation, and/or replacement will be at a location and will be conducted by feasible methods agreeable to the Corps. Agreement by the Corps will be obtained before the start of any grading activities that could affect wetland features. Methods for designing and implementing restored, rehabilitated, and replacement wetlands will be determined by qualified restoration ecologists and geomorphologists to ensure that the desired results are achievable. The design will include features to maximize the long-term maintenance of functions and values and success criteria. Specifics regarding restoration design, monitoring, and maintenance will be included in the Habitat Mitigation Monitoring Plan to be prepared as part of the 404 permitting process.
- ▶ Water quality certification pursuant to Section 401 of the Clean Water Act (CWA) will be obtained as required for unavoidable impacts on waters of the state under RWQCB jurisdiction. Any measures required as part of the issuance of water quality certification will be implemented.

## **CULTURAL RESOURCES**

### **Mitigation Measure CULT-1: Immediately Halt Construction if Cultural Resources are Discovered.**

Should any cultural resources, such as structural features, unusual amounts of bone or shell, artifacts, human remains, or architectural remains, be encountered during any construction activities, work will be suspended immediately at the location of the find and within an appropriate radius. A qualified DWR archaeologist will conduct a field investigation of the specific site and recommend mitigation deemed necessary for the protection or recovery of any cultural resource concluded by the archaeologist to represent historical resources or unique archaeological resources. DWR will be responsible for approval of recommended mitigation if it is determined feasible in light of approved land uses, and will implement the approved mitigation before resuming construction activities at the archaeological site. Discoveries of human remains will be treated as described below for Mitigation Measure CULT-2.

## **Mitigation Measure CULT-2: Immediately Halt Construction if Human Remains are Discovered.**

In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, the contractor or DWR will immediately halt potentially damaging excavation in the area of the burial and notify the Butte County Coroner, a professional archaeologist, and a DWR in-house cultural resource specialist, to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). The Most Likely Descendant (MLD) designated by the NAHC will determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed as provided for in California Public Resources Code Section 5097.98, in consultation with DWR and the landowner, subject to the limitations provided in Section 5097.98.

DWR will ensure that the immediate vicinity (according to generally accepted cultural or archaeological standards and practices) is not damaged or disturbed by further development activity until consultation with the MLD has taken place. The MLD will have 48 hours to complete a site inspection and make recommendations after being granted access to the site. A range of possible treatments for the remains, including nondestructive removal and analysis, preservation in place, relinquishment of the remains and associated items to the descendants, or other culturally appropriate treatment may be discussed. State Assembly Bill (AB) 2641 suggests that the concerned parties may extend discussions beyond the initial 48 hours to allow for the discovery of additional remains. AB 2641(e) includes a list of site protection measures and states that DWR will comply with one or more of the following:

- (1) Record the site with the NAHC or the appropriate Information Center
- (2) Utilize an open-space or conservation zoning designation or easement
- (3) Record a document with the county in which the property is located

On behalf of the property owner, DWR or its authorized representative will rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance if the NAHC is unable to identify a MLD or the MLD fails to make a recommendation within 48 hours after being granted access to the site. DWR or its authorized representative may also re-inter the remains in a location not subject to further disturbance if DWR rejects the recommendation of the MLD and if mediation by the NAHC fails to provide measures acceptable to the landowner. Adherence to these procedures and other provisions of the California Health and Safety Code and AB 2641(e) will reduce potential impacts on human remains to a less-than-significant level.

## GEOLOGY AND SOILS

### **Mitigation Measure GEO-1: Prepare and Implement Dewatering, Erosion Control, and Monitoring Plans as Part of a Storm Water Pollution Prevention Plan.**

The contractor will prepare a storm water pollution prevention plan (SWPPP) that identifies best management practices (BMPs) for preventing or minimizing the discharge of sediments and other contaminants that have the potential to affect beneficial uses or lead to a violation of water quality objectives. The SWPPP will also include the following components:

- ▶ *Dewatering Plan.* A dewatering plan will be developed and designed so that discharges to surface water meet water quality objectives provided in the *Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region* (Central Valley RWQCB 2007) to satisfy the requirements of the State of California's General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Storm Water Permit). Construction dewatering activities that discharge to surface waters require National Pollutant Discharge Elimination System (NPDES) authorization under the Waste Discharge Requirements for Dewatering and Other Low Threat Discharges to Surface Waters (Order No. R5-2008-0081 NPDES NO. CAG995001). The dewatering plan is required to include details on the approach to season the channel before reestablishing flows so that flushing flows do not cause surging of sediments downstream. The General NPDES permit contains terms and conditions for discharge prohibitions, specific limits related to effluent and receiving-water quality, solids disposal activities, and water quality monitoring protocols.
- ▶ *Erosion Control Plan.* An erosion control plan will be developed for the proposed project and designed to meet the water quality objectives provided in the Basin Plan to satisfy the requirements of the General Storm Water Permit. The erosion control plan will identify specific measures for construction, long-term management, and stabilizing soils before the onset of winter. BMPs for erosion control, as set forth in the erosion control plan and further defined by DWR, will be implemented. Such BMPs may include the careful use of grading management techniques, silt fences, silt curtains, berms, sandbags, and revegetation.
- ▶ *Monitoring Plan.* A monitoring plan will be developed that includes a proposed inspection, monitoring, and reporting program for the proposed project. The monitoring plan will demonstrate the means by which water quality objectives provided in the Basin Plan will be met during construction and long-term management. BMPs are expected to be fully effective. Notwithstanding, DWR or its contractor will evaluate BMP effectiveness during construction. If the quantity or quality of BMPs needs to be addressed, DWR or its contractor will implement improvements within 24 hours after the initial discovery or before the onset of an expected storm event.

## HAZARDS AND HAZARDOUS MATERIALS

### **Mitigation Measure HAZ-1: Determine the Presence or Extent of Soil Contamination within the Project Area, Implement Required Measures, and Create a Site Management Plan**

DWR will implement the following measures before ground-disturbing activities to reduce health hazards associated with potential exposure to hazardous substances:

- ▶ DWR will retain an appropriately licensed professional to maintain responsible charge for collecting and analyzing soil and sediment samples for potential sources of contamination. Recommendations to address any contamination found will be implemented before initiating ground-disturbing activities in the project area.
- ▶ If soil contamination is found on-site, DWR or its contractor will prepare a site plan that identifies any necessary remediation activities, including excavation and removal of on-site contaminated soils and sediments within the project area. The plan will include measures that ensure the safe transport and disposal of contaminated materials. In the event that evidence of contaminated soil (e.g., stained, odiferous) is discovered during construction activities, the contractor will notify the appropriate federal, state, and local agencies. Any contaminated areas will be cleaned up in accordance with recommendations made by the Butte County Public Health Department, Central Valley RWQCB, California Department of Toxic Substances Control, and other appropriate federal, state, and local regulatory agencies, as generally described above.

## HYDROLOGY AND WATER QUALITY

See Mitigation Measure GEO-1 above.

## TRANSPORTATION/TRAFFIC

### **Mitigation Measure TRAFFIC-1: Prepare and Implement a Traffic Safety and Control Plan for Construction-Related Truck Trips**

The construction contractor will coordinate with Butte County to prepare and implement a traffic control plan. This traffic control plan will include measures to ensure that emergency access is maintained at all times. The plan may include, but is not limited to, the following measures:

- ▶ Access will be maintained for private roads, and residences that would be affected by construction traffic will be notified of project construction.
- ▶ Construction warning signs will be posted about the potential presence of slow-moving vehicles in advance of construction in the area and at any intersection that provides access to the construction area.
- ▶ Traffic control personnel will be used to direct traffic, if necessary.

- ▶ The contractor will train construction personnel in appropriate safety measures as described in the plan and will implement the plan. The plan will include the locations for staging equipment and parking trucks and vehicles.
- ▶ Before project construction begins, DWR will notify all appropriate emergency service providers in Butte County of project construction and will coordinate with providers throughout the construction period to ensure that emergency access through construction areas is maintained.

## **UTILITIES AND SERVICE SYSTEMS**

See Mitigation Measure GEO-1 above.

## **CONCLUSION**

It is determined that with the incorporation of the mitigation measures described above, potentially significant impacts to air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, transportation/traffic, and utilities and service systems will be reduced to a less-than-significant level.

Questions or comments regarding this IS/MND may be addressed to:

Stephanie Chun  
Department of Water Resources  
Flood Maintenance Office  
3310 El Camino Avenue, Suite 110  
Sacramento, California 95821  
(916) 574-0361

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Keith E. Swanson, Chief  
Flood Maintenance Office,  
Division of Flood Management  
Department of Water Resources  
California Natural Resources Agency

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[Date]



# TABLE OF CONTENTS

Section	Page
<b>ACRONYMS AND ABBREVIATIONS .....</b>	<b>iii</b>
<b>1 INTRODUCTION.....</b>	<b>1-1</b>
1.1 Introduction and Regulatory Guidance .....	1-1
1.2 Purpose of the Initial Study .....	1-1
1.3 Summary of Findings .....	1-2
1.4 Environmental Permits .....	1-3
1.5 Document Organization.....	1-3
<b>2 PROJECT DESCRIPTION.....</b>	<b>2-1</b>
2.1 Introduction .....	2-1
2.2 Proposed Project Location .....	2-1
2.3 Project History.....	2-1
2.4 Project Need and Goals .....	2-5
2.5 Summary of Proposed Project .....	2-6
2.6 Description of Work.....	2-7
<b>3 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES .....</b>	<b>3-1</b>
3.1 Aesthetics.....	3-4
3.2 Agricultural Resources .....	3-6
3.3 Air Quality.....	3-10
3.4 Biological Resources.....	3-21
3.5 Cultural Resources.....	3-48
3.6 Geology and Soils .....	3-56
3.7 Hazards and Hazardous Materials .....	3-60
3.8 Hydrology and Water Quality .....	3-65
3.9 Land Use and Planning.....	3-71
3.10 Mineral Resources .....	3-73
3.11 Noise .....	3-74
3.12 Population and Housing .....	3-82
3.13 Public Services.....	3-83
3.14 Recreation.....	3-85
3.15 Transportation/Traffic .....	3-87
3.16 Utilities and Service Systems .....	3-93
3.17 Mandatory Findings of Significance .....	3-96
<b>4 REFERENCES.....</b>	<b>4-1</b>
<b>5 LIST OF PREPARERS .....</b>	<b>5-1</b>

# TABLE OF CONTENTS

Section	Page
<b>Appendices</b>	
A	Air Quality
B	Noise
<b>Exhibits</b>	
2-1	Project Vicinity Map ..... 2-2
2-2	Project Location Map ..... 2-3
2-3	Potential Spoils Sites and Haul Routes..... 2-4
3.2-1	Important Farmland with Spoils Sites, Cherokee Canal..... 3-8
3.4-1	Cherokee Canal Habitats ..... 3-23
3.4-2	Important Riparian Habitat ..... 3-25
3.4-3	Spoil Site Habitats..... 3-29
3.4-4	Special Status Species Occurrences within 2-Miles of Project Features ..... 3-34
<b>Tables</b>	
3.3-1	Summary of Annual Ambient Air Quality Data (2006–2008) ..... 3-11
3.3-2	Summary of Modeled Maximum Short-Term Construction-Generated Emissions .. 3-15
3.3-3	Summary of Modeled Construction-Generated Emissions of Greenhouse Gases.. 3-18
3.4-1	Special-Status Wildlife with Potential to Occur on or Adjacent to the Project Site... 3-31
3.4-2	Special-Status Plant Species with Potential to Occur in the Project Area ..... 3-39
3.11-1	Modeled Existing Vehicular Traffic-Noise Levels ..... 3-75
3.11-2	Construction Equipment Noise Emission Levels ..... 3-76
3.11-3	Predicted Haul Truck Traffic Noise Levels ..... 3-78
3.11-4	Predicted Traffic Noise Levels..... 3-79
3.11-5	Representative Vibration Source Levels for Construction Equipment ..... 3-80
3.15-1	Level of Service Based on Roadway Capacity Level of Service ..... 3-89

## ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
ADT	average daily traffic
APE	area of potential effect
ARB	California Air Resources Board
B.P.	before present
Basin Plan	water quality control plan for the Central Valley region
BCAQMD	Butte County Air Quality Management District
BCFD	Butte County Fire Department
BMP	best management practice
CAA	federal Clean Air Act
CAAA	federal Clean Air Act Amendments of 1990
CAAQS	California ambient air quality standards
Caltrans	California Department of Transportation
CCAA	California Clean Air Act
CESA	California Endangered Species Act
CFS	cubic feet per second
CGS	California Geological Survey
cm	centimeters
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CORPS	U.S. Army Corps of Engineers
County General Plan	Butte County General Plan
DB	decibel
dB/dd	dB per doubling of distance
DBA	A-weighted sound levels
DES	Division of Environmental Services
DFG	Department of Fish and Game
DFM	Division of Flood Management
District	Richvale Recreation and Park District
DOC	California Department of Conservation
EPA	U.S. Environmental Protection Agency
ESA	federal Endangered Species Act
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
General Storm Water Permit	General Permit for Discharges of Storm Water Runoff Associated with Construction Activity
GHG	greenhouse gas
Great Valley Province	Great Valley Geologic Province of California

HCP	Butte County Habitat Conservation Plan
IN/SEC	inch per second
lb/day	pounds per day
L <sub>dn</sub>	day-night noise levels
L <sub>eq</sub>	equivalent noise level
L <sub>max</sub>	maximum noise level
L <sub>n</sub>	statistical descriptor
LOS	Level of Service
MLD	Most Likely Descendent
NAHC	Native American Heritage Commission
NEIC	Northeast Information Center
NOX	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NSVPA	Northern Sacramento Valley Planning Area
OFC	Orchard & Field Crop
PG&E	Pacific Gas and Electric Company
Plan	NSVPA Air Quality Attainment Plan
PM	particulate matter
PM <sub>10</sub>	respirable particulate matter with an aerodynamic diameter of 10 micrometers or less
PM <sub>2.5</sub>	fine particulate matter
PPV	peak particle velocity
ROG	reactive organic gases
SB	senate bill
SIP	state implementation plan
SOX	oxides of sulfur
SR	State Route
SWPPP	storm water pollution prevention plan
TAC	toxic air contaminant
UPRR	Union Pacific Railroad
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VDB	velocity decibels
VMT	vehicle miles traveled
WPCP	water pollution control program

# 1 INTRODUCTION

## 1.1 INTRODUCTION AND REGULATORY GUIDANCE

This initial study/mitigated negative declaration (IS/MND) has been prepared by the Department of Water Resources, Flood Maintenance Office (DWR) to evaluate the potential environmental effects of the proposed Cherokee Canal Corridor Management Strategy (CMS) Pilot Project: Phase I Sediment Removal (proposed project), located in Butte County. This document has been prepared in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations Section 15000 et seq.).

An initial study is prepared by a lead agency to determine if a project may have a significant effect on the environment (State CEQA Guidelines Section 15063[a]), and thus to determine the appropriate environmental document. In accordance with State CEQA Guidelines Section 15070, a “public agency shall prepare...a proposed negative declaration or mitigated negative declaration...when: (a) The initial study shows that there is no substantial evidence...that the project may have a significant impact on the environment, or (b) The initial study identifies potentially significant effects but revisions to the project plans or proposal are agreed to by the applicant and such revisions would reduce potentially significant effects to a less-than-significant level.” In this circumstance, the lead agency has prepared a written statement describing its reasons for concluding that the proposed project would not have a significant effect on the environment and, therefore, implementing this project does not require the preparation of an environmental impact report (EIR). This IS/MND conforms to these requirements and to the content requirements of State CEQA Guidelines Section 15071.

## 1.2 PURPOSE OF THE INITIAL STUDY

DWR has authority to approve and implement the proposed project; therefore, DWR is the lead agency under CEQA. The purpose of this IS/MND is to present to the decision makers of the Central Valley Flood Protection Board, other agencies and the public the environmental consequences of implementing the proposed project and describe the mitigation measures adopted to reduce potentially significant impacts. The IS/MND is available for public review during a 30-day period from June 24, 2009, to July 23, 2009. If you wish to mail written comments, they must be postmarked by July 23, 2009. If comments are sent via e-mail, they must be received by July 23, 2009.

Comments should be addressed to:

Stephanie Chun  
Department of Water Resources  
Flood Maintenance Office  
3310 El Camino Avenue, Suite 110  
Sacramento, California 95821

E-mail comments may be addressed to Stephanie Chun at [schun@water.ca.gov](mailto:schun@water.ca.gov).

After comments are received from the public and reviewing agencies, DWR will consider the IS/MND and public comments and may (1) adopt the negative declaration and approve the proposed project; (2) undertake additional environmental studies; or (3) not adopt the project.

This IS/MND is available for public review at the following locations:

Oroville Branch Library  
1820 Mitchell Avenue  
Oroville, California 95966

Butte County Clerk-Recorder's Office  
25 County Center Drive  
Oroville, California 95965

Biggs Branch Library  
464A B Street  
Biggs, California 95917

### **1.3 SUMMARY OF FINDINGS**

Chapter 3 of this document contains the analysis and discussion of potential environmental impacts of the proposed project. Based on the issues evaluated in that chapter, it was determined that the proposed project would have no impact related to the following issue areas:

- ▶ land use,
- ▶ mineral resources,
- ▶ population and housing,
- ▶ public services, and
- ▶ recreation.

Impacts of the proposed project would be less than significant for the following issue areas:

- ▶ aesthetics,
- ▶ noise, and
- ▶ agricultural resources.

Impacts of the proposed project on the following issue areas would be less than significant with the incorporation of the mitigation measures described in Chapter 3:

- ▶ air quality,
- ▶ biological resources,
- ▶ cultural resources,
- ▶ geology and soils,
- ▶ hazards and hazardous materials,
- ▶ hydrology and water quality,
- ▶ transportation/traffic, and
- ▶ utilities and service systems.

DWR will adopt each of the mitigation measures described in Chapter 3. A mitigation monitoring and reporting plan will be prepared that will include these mitigation measures. Implementation of the mitigation monitoring and reporting plan would reduce the environmental impacts on the resource areas stated above.

After incorporation of the mitigation measures described in Chapter 3, the proposed project would not result in any significant or potentially significant effects on the environment.

## 1.4 ENVIRONMENTAL PERMITS

The proposed project may require the following permits, and DWR would be required to comply with the following federal, state, and local regulations:

- ▶ Erosion and Surface Water Quality—Regional Water Quality Control Board National Pollutant Discharge Elimination System permit, storm water pollution prevention plan and associated best management practices, Section 401 permit, and waste discharge requirements (WDRs) or a waiver of WDRs.
- ▶ Section 404 Permit—U.S. Army Corps of Engineers Federal Clean Water Act.
- ▶ Section 7 Consultation—U.S. Fish and Wildlife Service Federal Endangered Species Act.
- ▶ Streambed Alteration Agreement—Department of Fish and Game Section 1602 of the Fish and Game Code.
- ▶ Encroachment Permit—Central Valley Flood Protection Board.

## 1.5 DOCUMENT ORGANIZATION

This initial study is organized as follows:

**Chapter 1: Introduction.** This chapter provides an introduction and describes the purpose and organization of this document.

**Chapter 2: Project Description.** This chapter describes the purpose of and need for the proposed project, identifies project objectives, and provides a detailed description of the proposed project.

**Chapter 3: Environmental Setting, Impacts, and Mitigation Measures.** This chapter presents an analysis of a range of environmental issues identified in the CEQA Environmental Checklist and determines if each of a range of impacts would result in no impact, a less-than-significant impact, a less-than-significant impact with mitigation incorporated, or a potentially significant impact. If any impacts were determined to be potentially significant, an EIR would be required. For this project, however, mitigation measures have been incorporated where needed, to reduce all potentially significant impacts to a less-than-significant level.

**Chapter 4: References.** This chapter lists the references used in preparation of this IS/MND.

**Chapter 5: List of Preparers.** This chapter identifies report preparers.



## 2 PROJECT DESCRIPTION

### 2.1 INTRODUCTION

The Department of Water Resources (DWR) Office of Flood Maintenance proposes to implement the Cherokee Canal Corridor Management Strategy (CMS) Pilot Project: Phase I Sediment Removal (proposed project). The proposed project would remove up to 750,000 cubic yards of sediment and associated vegetation from an approximately 4-mile-long stretch of Cherokee Canal in south-central Butte County in an effort to restore the canal's designed floodwater capacity and maintenance baseline and reduce future maintenance needs. The proposed project would also protect and restore sensitive habitats within the canal to maintain or improve habitat conditions for a variety of wildlife, including the giant garter snake (*Thamnophis couchii gigas*), a species listed as threatened under both the federal and California Endangered Species Acts.

DWR, which maintains the canal in accordance with Water Code section 8361, is the lead agency for the project under the California Environmental Quality Act (CEQA).

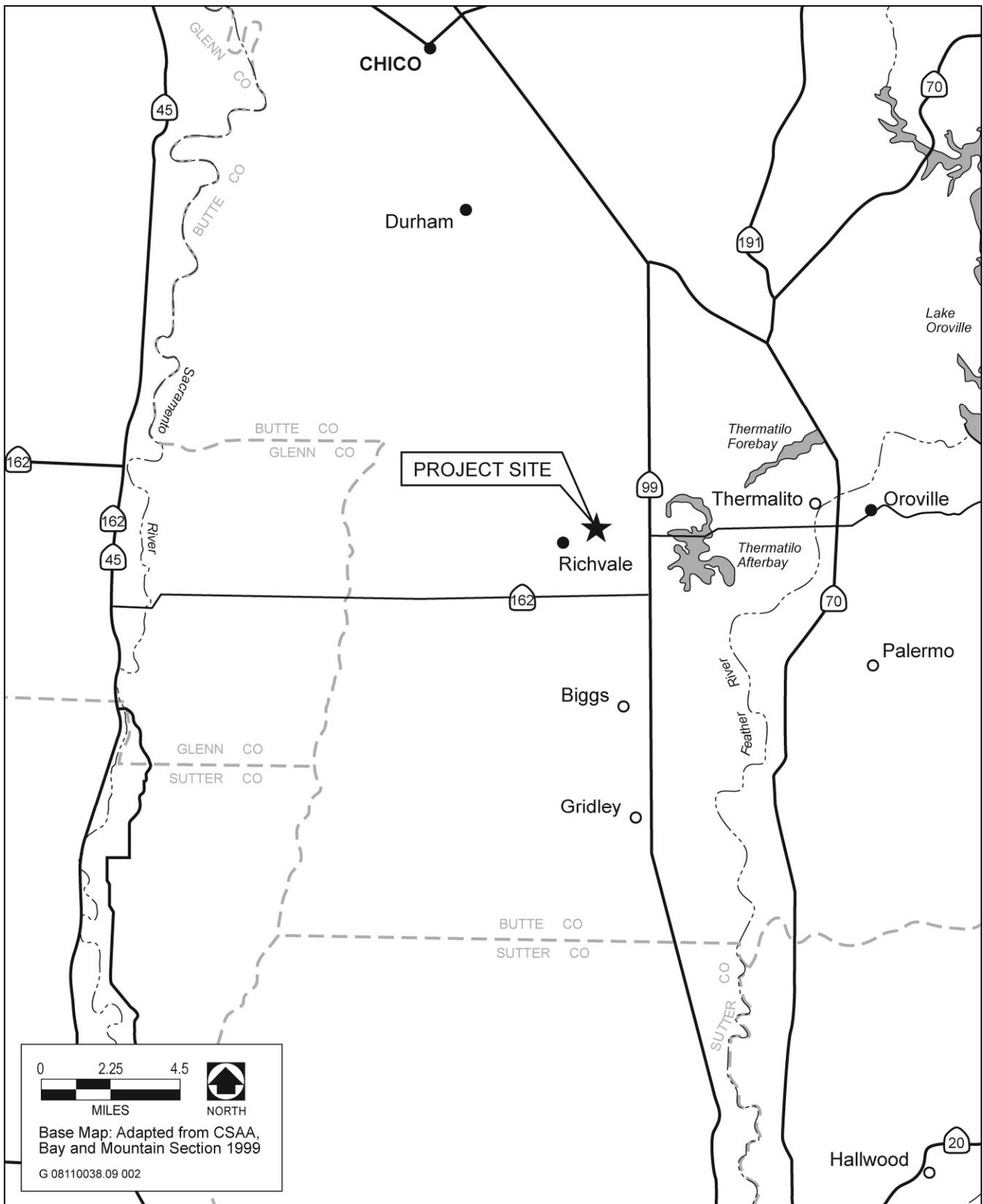
### 2.2 PROPOSED PROJECT LOCATION

Cherokee Canal is located in Butte County, California in the general vicinity of the towns of Richvale (Exhibit 2-1). The canal begins where levees were constructed along the northernmost stream, Dry Creek, near the intersection of State Routes (SR) 99 and 149. Continuing from the initial levees along Dry Creek, Cherokee Canal flows for approximately 23 more miles and terminates in the Lower Butte Basin. Aside from Dry Creek, Gold Run and Cottonwood Creeks are major tributaries to Cherokee Canal. The location of the Cherokee Canal is shown on the Shippee and Biggs 7.5-minute U.S. Geological Survey quadrangle maps in a portion of Sections 11, 12, 14, 22, and 27, Township 19 North, Range 2 East. Elevation above mean sea level ranges from approximately 70 feet at the lower end near the Butte Sink to approximately 175 feet at the upper end of the project near SR 99.

The proposed project would take place along an approximately 4-mile section of Cherokee Canal stretching from the Western Canal inverted siphon crossing at the northern end of the project site to the Union Pacific Railroad (previously Southern Pacific Railroad) crossing at the southern end (Exhibit 2-2). This reach of Cherokee Canal lies approximately 1 mile to the east of Richvale and is roughly bisected by the Richvale Highway. The surrounding area is dominated by rice fields with scattered rural residences. In addition to the main project site, seven spoils sites have been identified as potential locations for deposition of sediment excavated from the canal (Exhibit 2-3).

### 2.3 PROJECT HISTORY

The Cherokee Canal project was built by the U.S. Army Corps of Engineers (Corps) in 1960 to provide surrounding communities, farmland, and infrastructure with a 25-year level of flood protection. Specifically, Cherokee Canal provides flood protection to about 35,000 acres of adjacent agricultural lands, related buildings and homes, several highways, a railroad, and several irrigation canals. These protected features within the floodplain are subject to potential



Source: Data provided by EDAW in 2009

**Project Vicinity Map**

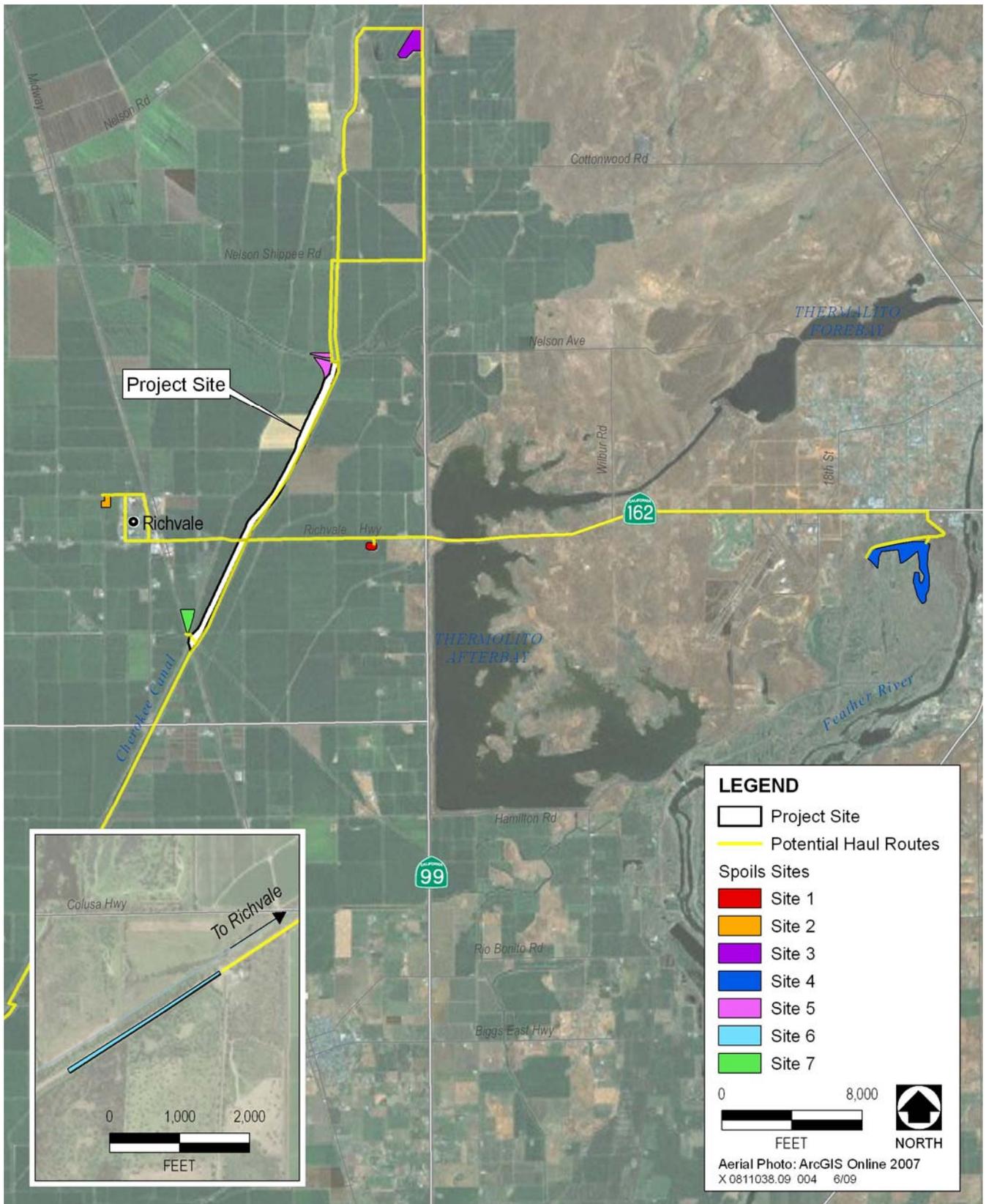
**Exhibit 2-1**



Source: Data provided by EDAW in 2009

### Project Location Map

### Exhibit 2-2



Source: Data provided by DWR in 2009

### Potential Spoils Sites and Haul Routes

### Exhibit 2-3

interruption in service and physical damage during flooding. Protection is also provided to chemical storage facilities (structures that store fertilizers and chemicals for the Butte County Rice Growers association) and the U.S. Department of Agriculture rice storage warehouses. The consequences of flooding in these storage facilities would be extensive, as floodwater would mix with the chemicals stored in these facilities and potentially release chemicals into surface water, groundwater, and the surrounding areas, which would create a serious public health concern (Butte County Office of Emergency Services 2006).

Following initial construction of the Cherokee Canal levees, sediment from historic hydraulic mining within the upper reaches of the Dry Creek Watershed began to accumulate within the canal, and flows in Cherokee Canal reached or exceeded flood stage on numerous occasions between 1961 and 1968. During 1968, the local landowners notified the Reclamation Board (now the Central Valley Flood Protection Board) and the Corps that sediment accumulation was adversely affecting the flood-carrying capacity of the canal. Investigations by DWR determined that the canal could safely pass its design flow with the prescribed 3 feet of freeboard in all reaches except for the 2-mile section between the Western Canal crossing and the Richvale Highway Bridge.

In 1974, DWR restored this section of the canal to its flood-carrying design capacity (11,500 cubic feet per second [cfs]) by removing 91,400 cubic yards of sediment and raising the levees by almost 3 feet between the Western Canal and the Richvale Highway. Similar sediment removal projects continued over the next 20 years within this reach and adjacent reaches to maintain the canal's design capacity. Approximately 525,000 cubic yards of sediment was removed by four separate projects between 1988 and 1996, with the most recent project including the southern portion of this project's reach.

## **2.4 PROJECT NEED AND GOALS**

The proposed project is considered to be a first phase for the Cherokee Canal CMS Pilot Project. The CMS is an approach for developing long-term, integrated plans for managing flood control projects. It entails, for a given channel, assessing existing channel habitat and geomorphology and identifying how the channel could be better managed in terms of flood operations, flood maintenance, and the ecosystem. The outcome of applying the CMS to a channel would be a long-term plan for a channel that provides for a functioning corridor where all three concerns are integrated and addressed. Under the current condition, none of these three components are functioning properly within the project reach of Cherokee Canal.

From a flood operations standpoint, channel capacity within the project reach, where sediment removal has not occurred since 1988 to 1990, has been reduced between 37 percent and 44 percent relative to the 11,500 cfs design capacity (DWR 2007). Sediment deposition within the project reach is exacerbated by very low channel gradient. This is particularly true for the section below Richvale Highway, where the difference in elevation between the canal at the Richvale Highway Bridge and the canal at the Union Pacific Railroad crossing (a distance of approximately 6,000 feet) is approximately 3 feet.

From a flood maintenance perspective, the depositional nature of this stretch of the canal creates ideal conditions for the recruitment and growth of woody vegetation, particularly willow (*Salix* spp) and cottonwood (*Populus fremontii*), which restricts channel capacity. DWR, under

a memorandum of understanding (MOU) with the Department of Fish and Game (DFG), is currently required to maintain a 15-foot riparian vegetation buffer along either side of the low-flow channel within the project site. Approximately half of the project site contains a separate diversion channel (created during a sediment removal project in 1990), requiring the maintenance of a second 15-foot riparian buffer (i.e., an additional 30 feet of riparian vegetation). Both the low-flow and diversion channels have developed natural meanders over time, increasing the cross-sectional area of riparian vegetation, further encouraging sediment deposition, reducing channel capacity, and increasing maintenance requirements.

Finally, from an ecosystem perspective, the need for ongoing maintenance throughout the entirety of the project site results in annual disturbances to riparian vegetation and other sensitive habitats within the canal. These disturbances may reduce habitat quality for species such as nesting songbirds and raptors. Additionally, the growth of woody vegetation throughout large portions of the project site has greatly reduced habitat quality for giant garter snake; and necessary sediment removal, beaver dam removal, and similar maintenance activities have the potential to further negatively affect the quality of giant garter snake habitat.

The proposed project would address each of these needs in an integrative fashion. The proposed project would not only remove accumulated sediment and riparian vegetation (where required) to return the canal to its design capacity but also re-design Cherokee Canal within the project site to reduce ongoing maintenance requirements, maintain high-quality riparian habitat where possible throughout the channel, integrate habitat elements in defined segments of the channel for the benefit of giant garter snake, and restore riparian habitat at different successional stages, where feasible, to benefit a wide variety of riparian-dependent species. Specific project goals include:

- ▶ restore the design channel capacity of 11,500 cfs between the Western Canal inverted siphon and the Union Pacific Railroad Bridge;
- ▶ reduce ongoing maintenance requirements and habitat disturbance in segments of the channel with high habitat values by concentrating maintenance activities in defined segments of the project reach;
- ▶ minimize the amount of high-value riparian vegetation removed during project construction (where possible) and restore riparian vegetation within defined segments of the project site where additional riparian growth does not reduce floodwater conveyance or negatively affect maintenance requirements;
- ▶ increase designated access points within the project site to facilitate ongoing maintenance and reduce the potential for adverse environmental affects; and,
- ▶ increase the quantity and quality of giant garter snake habitat within defined segments of the project site and facilitate low-impact maintenance of these habitats, when necessary.

## **2.5 SUMMARY OF PROPOSED PROJECT**

Upstream of Richvale Highway, the proposed project would retain the existing low-flow channel between the Western Canal inverted siphon and the northern Richvale Irrigation District (RID) inverted siphon. Between the northern RID inverted siphon and the Richvale

Highway Bridge, a single channel would be retained or constructed. The exception is at the Richvale Highway crossing itself, where the single channel that splits under the two bridge spans would be retained. Downstream of Richvale Highway to the Union Pacific Railroad crossing, the existing low flow channel and diversion channel would either be merged into a new channel, or, depending on location, be placed into one of the two existing channels. Topography would be revised as appropriate to meet the project's flow conveyance goal. Large trees and dense riparian patches in the channel would be retained wherever possible, and a 15-foot vegetative buffer would be retained, planted, or allowed to reestablish itself in alternating bands along one side of the new low-flow channel.

Within defined segments of the channel downstream of the Richvale Highway Bridge, discrete areas of habitat would be designed to specifically benefit giant garter snake. These areas would be constructed adjacent to the low-flow channel with wide, shallowly flooded benches (approximately 50 feet to 100 feet wide). Drop weir, flashboard structures, and low-flow maintenance access routes would be constructed to manage flooding and drying of the habitat as needed to benefit the snake during its active season or facilitate maintenance of these areas as needed to remove accumulated sediment or woody vegetation. Appropriate hydrology would be maintained within these habitats to discourage stagnant water, encourage growth of tule (*Scirpus* spp.), and discourage growth of woody plants, particularly willow.

At least two, and potentially three, sediment management areas would be established within the project site. These areas would be located within relatively short, clearly defined segments of the canal where slope and levee-width expansion suggest that sediment has a tendency to deposit under existing conditions (e.g., 1,000 feet downstream of the Western Canal crossing and downstream of the Richvale Highway Bridge). Within these sediment management areas, channel morphology would be slightly deepened, gradient would be locally reduced, and downstream vegetation increased to slow flow and encourage concentrated sediment deposition in these locations. Vegetation such as native grasses or other species capable of tolerating frequent disturbance would be planted in these areas to facilitate ongoing maintenance in these sediment management areas. Following completion of grading activities, disturbed areas in the floodway would be revegetated as appropriate to restore habitat functions and meet the requirements of regulatory agency permits. DWR's Sutter Maintenance Yard would assume responsibility for ongoing maintenance of the project site once revegetation activities were completed and the success of revegetation efforts was verified.

## **2.6 DESCRIPTION OF WORK**

Construction equipment used for project construction would include pickup trucks, dozers, graders, loaders, scrapers, excavators, tractor trailers, and water trucks. It is estimated that completion of channel excavation would take 3 to 4 months assuming 5-day work weeks and 10-hour work shifts. If needed, the work week may be extended and may include night work.

Beginning on or after July 1, 2010 (or subsequent years if funding, permitting, or other project-related issues arise), the contractor would mobilize equipment to the project site. The contractor would begin clearing and grubbing at the site. Only areas to be re-graded would be cleared of vegetation. Existing riparian vegetation, particularly larger trees and stands of riparian vegetation with high wildlife habitat values, would be retained wherever possible, and

these areas would be delineated with temporary construction fencing or k-rail fencing to prevent unintended damage. The staging areas would be graded and certain primary haul roads may be improved. Earthen ramps or localized access paths would be constructed to allow access to designated spoil sites. Vegetation may be removed from the vicinity of the ramps to allow access. Biomass generated from the clearing process would either be removed, chipped, or burned onsite or hauled to an offsite disposal facility. On-site burning would be conducted in compliance with Butte County air quality and controlled burning regulations.

Some portions of the channel would be re-graded and improved while a new channel would be constructed and existing channels abandoned in other portions of the channel. In areas where the existing channel alignment would be retained and improved, a temporary diversion channel would be constructed and flow would be diverted into this channel while work is conducted on the existing low-flow channel. Once work on the low-flow channel was completed, flow would be diverted back into the low-flow channel and the diversion channel would be abandoned and re-graded. In areas where a new low-flow channel would be constructed, the new low-flow channel would be constructed and flow from the channel(s) to be abandoned would be diverted into this new low-flow channel, by first blocking the upstream and then the downstream ends of the channel to be abandoned. Construction activities would proceed from the downstream to upstream end of the channel. Dewatering procedures for work within the channel would be coordinated with DFG, Central Valley Regional Water Quality Control Board (RWQCB), and/or other regulatory agencies so that feasible and effective solutions for the specific dewatered areas can be implemented, if needed. These interagency discussions and coordination efforts would begin during the permitting process so dewatering measures could be established prior to the project start date. Excess material would be hauled to designated spoils sites using designated haul routes. Water trucks would be used to minimize dust generated by the project.

When channel construction is completed, the temporary ramps over the levees would be removed and the levees returned to original design grade. Excavated areas and other parts of the floodway would be revegetated with native species as appropriate. Work would be completed by November 15<sup>th</sup> of the given year. Habitat restoration and revegetation may be completed in a subsequent year and season if work cannot be completed and if approved by the federal and state agencies.

Specific project components are described in more detail below.

## **SEDIMENT REMOVAL**

As previously described, DWR would remove up to 750,000 cubic yards of accumulated sediment from the Cherokee Canal channel. This material would be removed in required locations by using either rubber-tired scrapers or tracked excavators. The typical cuts within the project reach would range from zero depth up to a maximum of approximately 5 feet. After sediment removal, the invert elevation of the channel would approximate that of the original design.

## SPOILS DISPOSAL

Seven potential spoils sites have been identified for the project along with accompanying haul routes (Exhibit 2-3).

**Spoils Site 1 (portion of APN 029-170-012):** Up to 50,000 cubic yards of sediment would be taken from Cherokee Canal by truck 1.4 miles to Spoils Site 1. The most likely route is east from the canal on Richvale Highway to the spoils site. Trucks would deliver sediment to the property for re-use by the property owner.

**Spoils Site 2 (portion of APN 029-110-001):** Up to 50,000 cubic yards of sediment would be taken from Cherokee Canal by truck 1.9 miles to Spoils Site 2. The most likely route is west from the canal on Richvale Highway, north on Midway, and west on Fruitvale Avenue to the property. Trucks would deliver sediment to the property for re-use by the property owner.

**Spoils Site 3 (portion of APN 038-240-034):** Up to 300,000 cubic yards of sediment would be taken from Cherokee Canal by truck 4.3 miles to Spoils Site 3. The most likely route to the spoils site is north via the levee crown roads and/or levee toe roads to the property. An alternative route would be Nelson Road and SR 99. Trucks would deliver sediment to the property for re-use by the property owner.

**Spoils Site 4 (portion of APNs 030-270-083, 030-270-006, 030-270-010, and 030-270-009):** Up to 150,000 cubic yards of sediment would be taken from Cherokee Canal by truck 8.0 miles to Spoils Site 4. The most likely route is east on Richvale Highway to the property. Trucks would deliver sediment to the property for re-use by the property owner.

**Spoils Site 5 (portion of APN 029-070-022):** Up to 150,000 cubic yards of sediment would be taken from Cherokee Canal and placed at Spoils Site 5, if necessary. The Spoil Site 5 property is located at the north end of the project site on the west side of Cherokee Canal. The site is currently used for equipment staging and would continue to be devoted to this use. Spoils would be transported to the site along the levee crown roads.

**Spoils Site 6 (portion of APN 021-020-016):** Up to 10,000 cubic yards of sediment would be taken from Cherokee Canal by truck approximately 10 miles south to Spoils Site 6. The most likely route is south using the levee crown roads. The sediment would be used to reinforce the Cherokee Canal levee at this location.

**Spoils Site 7 (APN 029-180-018):** Up to 150,000 cubic yards of sediment would be taken from Cherokee Canal and placed on the property located at the southern end of the project site on the west side of the canal. Spoils would be re-used by the property owner and transported to the site along the levee crown roads.

## EQUIPMENT STAGING

Equipment would be staged at up to three possible locations. Two of the potential locations are identified as the Spoils Site 5 and Spoils Site 7. If allowed by permitting agencies, the third equipment staging area would be located on existing elevated banks within the Cherokee Canal excavation area. Equipment may also be temporarily staged at spoils locations while grading of spoil material is taking place (Spoils Site 3 and Spoils Site 4).

## LEEVE REPAIRS

Within the project site, small sections of levees have eroded as much as 6 inches since initial construction in 1960. Construction equipment used during the project may cause minor surface deterioration of the levees, crown roads, and waterside toe roads. The levees, waterside toe roads, and levee crown roads within the project site would be returned to their original design grade at the close of the project.

## HABITAT RESTORATION

Areas where sediment is removed or vegetation is disturbed to facilitate construction activities (i.e., temporary access roads) would be revegetated with native riparian species pursuant to federal and state regulatory agency requirements. Additionally, areas not disturbed during project construction would potentially be enhanced to satisfy regulatory agency mitigation requirements by planting native riparian species where additional vegetation would not reduce floodwater conveyance below design capacity. If necessary, standard farm equipment would be used to prepare the area for planting by removing weeds (through mechanical means or herbicide application) and creating planting rows. Plants would be installed by hand (container plants) or by a drill seeder or broadcast seeder. A temporary, above-grade drip irrigation system may be installed, if needed, to supply plants with supplemental water during the first 2 to 3 years following planting. Once plants were established, the irrigation system would be removed from the project site. Herbicides similar to those already applied to control unwanted vegetation within the canal may be applied around plants to reduce weed competition during plant establishment.

## POST-PROJECT MAINTENANCE

After the proposed project is completed, DWR would continue ongoing maintenance of the channel as required by the Corps Operations and Maintenance Manual and in accordance with its memorandum of understanding (MOU) with the DFG. It is expected that, as a result of project implementation, ongoing maintenance activities would be more efficient and may be reduced both in frequency and intensity relative to current conditions. Ongoing maintenance would involve:

- ▶ **Levee maintenance** including debris removal, herbicide spraying, mowing, grazing, and/or burning of vegetation on levee slopes, dragging of levee slopes, rodent control using rodenticides, grouting of rodent holes or other voids in levees, and minor erosion repair.
- ▶ **Targeted vegetation management**, including maintenance of trees and vegetation only where required to maintain flow and only in designated areas. This would include selective cutting, pruning, and spraying of young trees and the pruning of lower branches on mature trees to maintain channel capacity and allow visual inspection of levees.
- ▶ **Toe road maintenance**, including grading, compacting, and/or disking of toe roads, adding road base material to maintain levee roadways, and replacing and repairing gates and minor structures as needed.

- ▶ **Targeted channel maintenance**, including disking, compacting, mowing, burning and dozing. Vegetation and debris outside designated riparian zones that is hindering high-water flows within the channel would be removed, piled and burned. Compacting may be done to keep toe roads usable. Dozing would be done to eliminate holes and depressions.
- ▶ **Maintenance of sediment management areas**, including sediment removal using dozers or scrapers and/or vegetation management using methods described above.
- ▶ **Maintenance of giant garter snake habitat** when required and following established protocols to restore capacity in the low-flow channel by removing accumulated sediment and/or to manage woody vegetation that may be encroaching on the edges of designated habitat areas.
- ▶ **Beaver dam removal** will continue as needed to maintain flood system integrity in accordance with the Corps Operation and Maintenance Manual and DWR's flood maintenance MOU with DFG using methods approved by DFG.



### 3 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

<b>PROJECT INFORMATION</b>		
1. Project Title:	Cherokee Canal Corridor Management Strategy Pilot Project: Phase I Sediment Removal	
2. Lead Agency Name and Address:	Department of Water Resources, Office of Flood Maintenance 3310 El Camino Avenue, Suite 110 Sacramento, California 95821	
3. Contact Person and Phone Number:	Stephanie Chun, Environmental Scientist (916) 574-0361	
4. Project Location:	Cherokee Canal, Butte County, California	
5. Project Sponsor's Name and Address:	Same as above	
6. General Plan Designation:	OFC (Orchard & Field Crop), Public	
7. Zoning:	A-40 (Agriculture), R-C (Resource Conservation)	
8. Description of Project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.) See Chapter 2, "Project Description."		
9. Surrounding Land Uses and Setting: (Briefly describe the project's surroundings)	Rural agriculture, Department of Fish and Game Oroville Wildlife Area. See Chapter 2, "Project Description."	
10: Other public agencies whose approval is required: (e.g., permits, financing approval, or participation agreement)	Department of Fish and Game, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, Central Valley Water Quality Control Board, Central Valley Flood Protection Board	
<b>ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:</b>		
The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.		
<input type="checkbox"/> Aesthetics	<input type="checkbox"/> Agriculture Resources	<input type="checkbox"/> Air Quality
<input type="checkbox"/> Biological Resources	<input type="checkbox"/> Cultural Resources	<input type="checkbox"/> Geology / Soils
<input type="checkbox"/> Hazards & Hazardous Materials	<input type="checkbox"/> Hydrology / Water Quality	<input type="checkbox"/> Land Use / Planning
<input type="checkbox"/> Mineral Resources	<input type="checkbox"/> Noise	<input type="checkbox"/> Population / Housing
<input type="checkbox"/> Public Services	<input type="checkbox"/> Recreation	<input type="checkbox"/> Transportation / Traffic
<input type="checkbox"/> Utilities / Service Systems	<input type="checkbox"/> Mandatory Findings of Significance	<input checked="" type="checkbox"/> None With Mitigation

**DETERMINATION (To be completed by the Lead Agency)**

On the basis of this initial evaluation:

- I find that the proposed project **COULD NOT** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.
- I find that although the proposed project **COULD** have a significant effect on the environment, there **WILL NOT** be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **MITIGATED NEGATIVE DECLARATION** will be prepared.
- I find that the proposed project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.
- I find that the proposed project **MAY** have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier **EIR** or **NEGATIVE DECLARATION** pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier **EIR** or **NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

\_\_\_\_\_  
Keith E. Swanson, Chief  
Flood Maintenance Office,  
Division of Flood Management  
Department of Water Resources  
California Natural Resources Agency

\_\_\_\_\_  
Date

## EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except “No Impact” answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A “No Impact” answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A “No Impact” answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. “Potentially Significant Impact” is appropriate if there is substantial evidence that an effect may be significant. If there are one or more “Potentially Significant Impact” entries when the determination is made, an EIR is required.
4. “Negative Declaration: Less Than Significant With Mitigation Incorporated” applies where the incorporation of mitigation measures has reduced an effect from “Potentially Significant Impact” to a “Less Than Significant Impact.” The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from “Earlier Analyses,” as described in (5) below, may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
  - a) Earlier Analysis Used. Identify and state where they are available for review.
  - b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
  - c) Mitigation Measures. For effects that are “Less than Significant with Mitigation Measures Incorporated,” describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project’s environmental effects in whatever format is selected.
9. The explanation of each issue should identify: the significance criteria or threshold, if any, used to evaluate each question and the mitigation measure identified, if any, to reduce the impact to less than significance.

### 3.1 AESTHETICS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>I. Aesthetics. Would the project:</b>				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### ENVIRONMENTAL SETTING

Butte County has an outstanding variety of scenic landscapes and natural corridors. Although no officially designated scenic vistas are found in the project area, Table Mountain, the Cascade Range, and Sierra Nevada are visible east of the project site. Other mountain ranges visible from the project site include the northern Coast Range, including views of Saint John Mountain and Snow Mountain, to the west and the Sutter Buttes to the south. On clear days, Mt. Shasta and Mt. Lassen are both visible to the north. Aside from scenic vistas of surrounding mountains, the riparian corridor within Cherokee Canal provides a natural vista of cottonwoods, willows, and alders. Although most of these features are visible from Richvale Highway, a major transportation corridor through Butte County, it is not a designated or eligible scenic highway and is not identified as a scenic resource (Caltrans 2008).

The project site is located in a rural area zoned for agriculture. Orchards, field crops, and a few homes and businesses surround the site. The project site is not located within a designated scenic area or adjacent to or near a scenic highway; however, Spoils Site 4 is located in the Oroville Wildlife Area, which is considered a scenic resource.

### DISCUSSION

#### a) Have a substantial adverse effect on a scenic vista?

**Less-Than-Significant Impact.** Although the riparian corridor along Cherokee Canal is partially visible from Richvale Highway, construction activities in this area would be somewhat isolated and possibly screened by trees that would be left in the channel during project construction. Construction activities would also be temporary. Vegetation removal may result in changes in views; however, Department of Water Resources (DWR) would leave as many native tree species as possible and would make every effort to avoid impacts on trees and the

riparian corridor within the channel. In addition, vegetation would be relocated or replaced to the extent possible, which would further reduce visual impacts associated with vegetation removal.

No scenic vistas with views of the proposed spoils locations exist. However, Spoils Site 4 at the Department of Fish and Game (DFG) Oroville Wildlife Area is considered a scenic resource. Sediment would be spread evenly over a disturbed area in the northern corner of the wildlife area. Therefore, use of this area as a spoils site would not result in a substantial adverse effect on a scenic vista.

**b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?**

**Less-Than-Significant Impact.** Although the proposed project would remove sediment, grasses, shrubs, and trees, post-construction revegetation and natural recruitment would restore much of this vegetation within the canal. As discussed above in a), implementation of the proposed project would not substantially degrade views from a state scenic highway or damage scenic resources. No buildings, scenic outcroppings, or large rocks would be removed.

**c) Substantially degrade the existing visual character or quality of the site and its surroundings?**

**Less-Than-Significant Impact.** Riparian habitat would be removed from within Cherokee Canal as part of the proposed project to restore the channel to flood carrying capacity. Existing vegetation would be left in the channel to the extent possible. Vegetation would also be replaced to the extent possible, which would further help to off-set visual impacts associated with loss of riparian habitat. Sediment placed at the spoils sites would not degrade the visual character of those areas because the spoils sites are all either currently being farmed or otherwise disturbed areas and spreading sediment over the ground would not result in a noticeable visual change to these areas. Therefore, the proposed project would not substantially degrade the existing visual character or quality of the project site or its surroundings.

**d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?**

**Less-Than-Significant Impact.** The project site may be temporarily lit during the construction period if construction work needs to be conducted at night. However, there are no residences in the immediate area and views of the project site would be largely obscured by intervening distance, topography, and/or vegetation. If construction lighting is needed, contractors would be required to shield lighting and direct lights downward onto the work site. In addition, nighttime lighting related to construction would be temporary.

No new facilities would be constructed of materials that would create a new source of substantial light or glare or skyglow that would affect daytime or nighttime views in the area. No new permanent lighting would be installed as part of the proposed project.

### 3.2 AGRICULTURAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>II. Agricultural Resources.</b> In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997, as updated) prepared by the Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### ENVIRONMENTAL SETTING

The Department of Conservation (DOC), Office of Land Conservation, maintains a statewide inventory of farmlands. These lands are mapped by the Division of Land Resource Protection as part of the Farmland Mapping and Monitoring Program (FMMP). The maps are updated every 2 years with the use of aerial photographs, a computer mapping system, public review, and field reconnaissance. Farmlands are divided into the following five categories based on their suitability for agriculture:

- ▶ **Prime Farmland**—land that has the best combination of physical and chemical characteristics for crop production. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed.
- ▶ **Farmland of Statewide Importance**—land other than Prime Farmland that has a good combination of physical and chemical characteristics for crop production.
- ▶ **Unique Farmland**—land that does not meet the criteria for Prime Farmland or Farmland of Statewide Importance, but that has been used for the production of specific crops with high economic value.

- ▶ **Farmland of Local Importance**—land that either is currently producing crops or has the capability of production, but that does not meet the criteria of the categories above.
- ▶ **Grazing Land**—land on which the vegetation is suited to the grazing of livestock.

These categories are sometimes referred to as Important Farmland. Other categories used in the FMMP mapping system are “urban and built-up lands,” “lands committed to nonagricultural use,” and “other lands” (land that does not meet the criteria of any of the other categories).

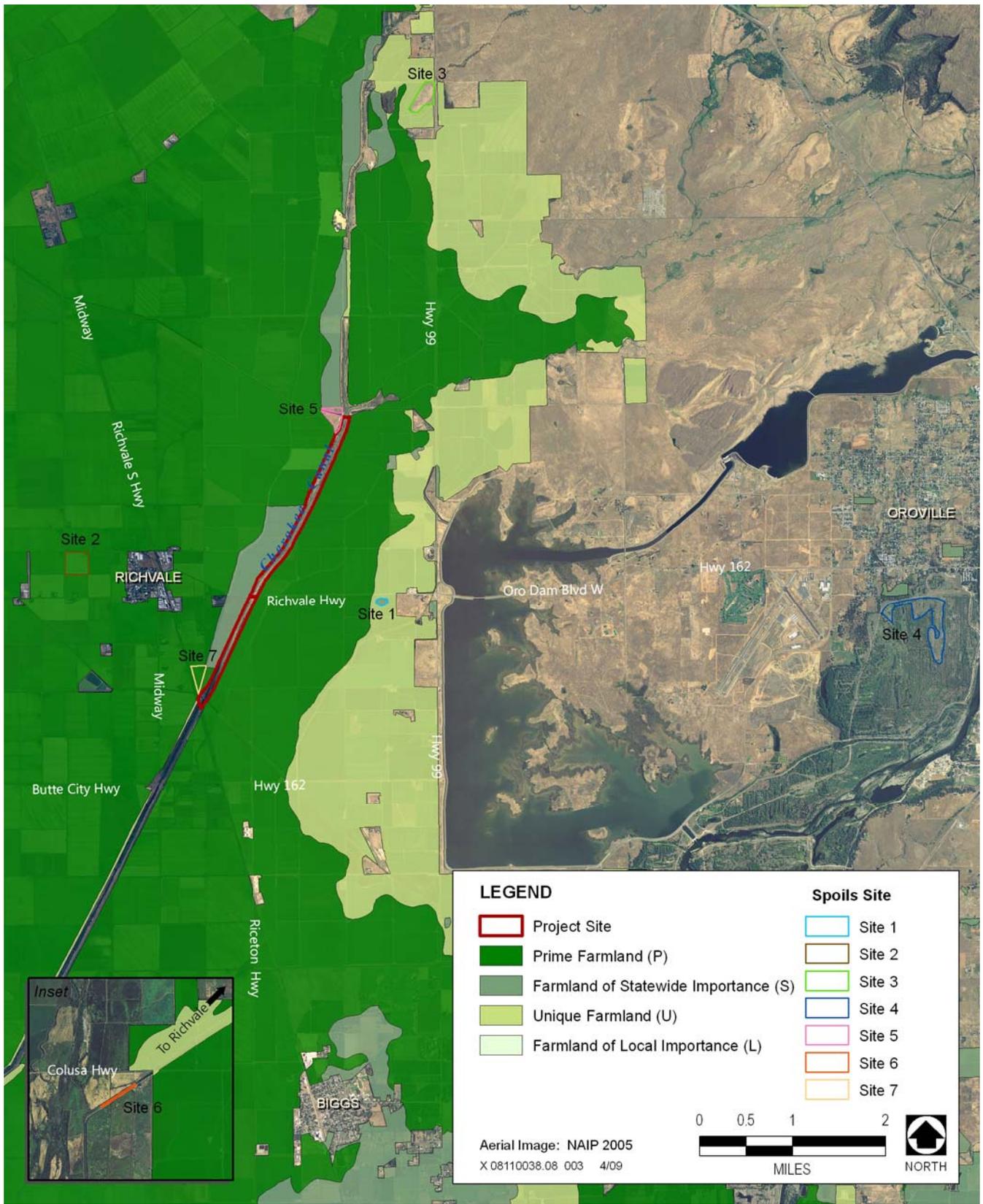
Butte County’s agricultural resources represent the largest land use in unincorporated areas and provide the principal economic base for Butte County, accounting for 65 percent of jobs in the unincorporated portion of the county (Butte County 2007:2-13) and contributing approximately \$439 million to the local economy in 2005 (Butte County 2007:18-4). The fertile soils, long growing season, and ample water resources provide conditions conducive to a broad range of crops and ranching opportunities. Of the 517,000 acres in Butte County classified by the DOC as Important Farmland, approximately 215,000 acres are enrolled in Williamson Act contracts (DOC 2007, cited in Butte County 2007:18-9).

Cherokee Canal provides flood protection to approximately 35,000 acres of adjacent land, which is used primarily for agriculture and agricultural-related facilities. Rice is the principal crop grown in the vicinity of the project site and spoils sites, and Richvale to the west is a major rice processing center for the northern Central Valley. As shown in Exhibit 3.2-1, the project site, which encompasses the Cherokee Canal channel within the Cherokee Canal levees, is not considered Important Farmland. Of the seven spoils sites, two are denoted as Prime Farmland (Sites 2 and 7), one is noted as Farmland of Statewide Importance (Site 1), and the remaining four sites (Sites 3, 4, 5 and 6) are not considered Important Farmland and do not have Important Farmland designations. Current uses for the spoils sites include active rice farming on Site 7 (14.5 acres), staging for rice farming equipment on Site 1 (5 acres), miscellaneous equipment staging on Site 5 (17 acres), and fallow land (no existing rice farming) on Site 2 (6.5 acres) and Site 3 (30 acres). Site 3 has been fallow for at least 10 years. Site 4 (60 acres) contains spoils and cobbles from historic mining and has not been used for agriculture.

## DISCUSSION

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?**

**Less-than-Significant Impact.** The project site is not considered Important Farmland and sediment removal from Cherokee Canal would not convert any Important Farmland to non-agricultural uses. In addition, restoring flood capacity of Cherokee Canal would provide increased flood protection for Important Farmlands surrounding the project site. Therefore, there would be no impact to Important Farmland within Cherokee Canal.



Source: Department of Conservation 2006

**Important Farmland with Spoils Sites, Cherokee Canal**

**Exhibit 3.2-1**

Spoils Sites 1, 2, and 7 are mapped as Important Farmland by DOC. The area where spoils would be deposited at Spoils Site 1 is a small, elevated, disturbed area currently used for equipment staging. Spoils deposited as Sites 2 and 7 would be spread across the sites and re-used by the landowners for continued agricultural uses to the extent feasible. This may result in the loss of approximately 27 acres of Important Farmland. However, implementation of the proposed project would provide flood protection for over 35,000 acres of Important Farmland surrounding Cherokee Canal and facilitate continued agricultural use on these lands. The proposed project would also provide flood protection for adjoining facilities that support rice processing, agricultural chemical storage, and agricultural research. The loss of up to 27 acres would represent a loss of only 0.005 percent of Butte County's Important Farmland. Because the benefits of the proposed project to agricultural production in Butte County outweigh the potential loss of Important Farmland that may result from implementation of the proposed project, this impact is considered to be less-than-significant.

**b) Conflict with existing zoning for agricultural use or a Williamson Act contract?**

**No Impact.** The proposed project would not conflict with existing agricultural zoning or existing Williamson Act contracts because the project would not introduce new uses incompatible with continued farming in the project area. Therefore, there would be no impact.

**c) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?**

**No Impact.** The proposed project would not include changes in the environment that would result in future conversion of farmlands to non-agricultural use. In addition, restoring the ability of Cherokee Canal to contain and convey floodwater would provide increased flood protection for Important Farmlands surrounding the project site.

### 3.3 AIR QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>III. Air Quality.</b>				
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the following determinations.				
Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?				
Short-Term Emissions	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Long-Term Emissions	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?				
Short-Term Emissions	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Long-Term Emissions	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?				
Short-Term Emissions	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Long-Term Emissions	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?				
Short-Term Emissions	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Long-Term Emissions	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### ENVIRONMENTAL SETTING

The proposed project is located in Butte County, east of the community of Richvale, which is under the jurisdiction of the Butte County Air Quality Management District (BCAQMD). Butte County is currently designated as a nonattainment area for the state 1-hour and national 8-hour ozone standards (ARB 2009a), as a nonattainment area for the state PM<sub>10</sub> (i.e.,

respirable particulate matter with an aerodynamic diameter of 10 micrometers or less) standard, and as a nonattainment area for the state PM<sub>2.5</sub> (i.e., fine particulate matter).

At the federal level, the U.S. Environmental Protection Agency (EPA) implements national air quality programs. EPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1970 and most recently amended in 1990.

Criteria air pollutant concentrations are measured at several monitoring stations in Butte County. The Paradise and Chico stations are the closest to the proposed project with recent data for ozone and particulate matter (PM). In general, the ambient air quality measurements from these stations are representative of the air quality in the vicinity of the project site.

Table 3.3-1 summarizes the air quality data from the last three years.

<b>Table 3.3-1 Summary of Annual Ambient Air Quality Data (2006–2008)</b>			
	<b>2006</b>	<b>2007</b>	<b>2008</b>
<b>OZONE</b>			
<b>4405 Airport Road Station—Paradise, CA</b>			
Maximum concentration (1-hour/8-hour average, ppm)	0.104/0.095	0.102/0.096	0.125/0.108
Number of days state 1-hour/8-hour standard exceeded	8/59	1/30	3/23
Number of days national 8-hour standard exceeded	33	12	16
<b>Manzanita Avenue Station—Chico, CA</b>			
Maximum concentration (1-hour/8-hour average, ppm)	0.090/0.080	0.094/0.084	0.111/0.097
Number of days state 1-hour/8-hour standard exceeded	0/19	0/10	2/14
Number of days national 8-hour standard exceeded	4	3	6
<b>RESPIRABLE PARTICULATE MATTER (PM<sub>10</sub>)</b>			
<b>Manzanita Avenue Station—Chico, CA</b>			
Maximum concentration (µg/m <sup>3</sup> )	81.0	66.1	140.8
Number of days state standard exceeded (measured/estimated <sup>1</sup> )	7/41	2/12	6/37
Number of days national standard exceeded (measured/estimated <sup>a</sup> )	0/0	0/0	0/0
<b>FINE PARTICULATE MATTER (PM<sub>2.5</sub>)</b>			
<b>Manzanita Avenue Station—Chico, CA</b>			
Maximum concentration (µg/m <sup>3</sup> )	76.1	83.7	190.9
Number of days national standard exceeded (measured/estimated <sup>a</sup> )	5/29	4/24	6/37
Source: ARB 2009b			
Notes:			
µg/m <sup>3</sup> = micrograms per cubic meter			
PM <sub>2.5</sub> = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less			
PM <sub>10</sub> = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less			
ppm = parts per million			
<sup>a</sup> Measurements are usually collected every 6 days. Measured days counts the days that a measurement was greater than the level of the standard. Estimated days mathematically estimates how many days concentrations would have been greater than the level of the			

standard had each day been monitored.

According to Butte County's emissions inventory, mobile sources are the largest contributor to the estimated annual average air pollutant levels of reactive organic gases (ROG), carbon monoxide (CO), oxides of nitrogen (NO<sub>x</sub>), and oxides of sulfur (SO<sub>x</sub>). Areawide sources are the largest contributor of Butte County's PM<sub>10</sub> and PM<sub>2.5</sub> emissions, respectively (ARB 2009c).

All projects with potential to cause air emissions are subject to adopted BCAQMD rules and regulations in effect at the time of construction. Specific rules applicable to the construction of the proposed project may include Rules 202, "Particulate Matter Concentration," and 205, "Fugitive Dust Emissions."

The air pollution control and air quality management districts for Shasta, Tehama, Glenn, Butte, Colusa, Sutter, and Yuba Counties located in the northern portion of the Sacramento Valley together comprise the Northern Sacramento Valley Planning Area (NSVPA). These NSVPA districts have committed to jointly prepare and adopt a uniform air quality attainment plan for the purpose of achieving and maintaining healthful air quality throughout the air basin. This triennial update of the NSVPA Air Quality Attainment Plan (Plan) addresses the progress made in implementing the 2003 Plan and proposes modifications to the strategies necessary to attain the 1-hour ozone California Ambient Air Quality Standards (CAAQS) at the earliest practicable date. The 2006 Plan identifies those portions of the NSVPA designated as "nonattainment" for the CAAQS and discusses the health effects related to the various air pollutants. The Plan identifies the air pollution problems to be cooperatively addressed on as many fronts as possible to make the region a healthier place to live now and in the future. As with the 1994, 1997, 2000, and 2003 Plans, the 2006 Plan focuses on the adoption and implementation of control measures for stationary sources, areawide sources, and indirect sources, and addresses public education and information programs. The 2006 Plan also addresses the effect that pollutant transport has on the ability of the NSVPA to meet and attain the CAAQS (NSVPA 2006).

## **THRESHOLDS OF SIGNIFICANCE**

The thresholds for determining the significance of impacts for this analysis are based on the environmental checklist in Appendix G of the State CEQA Guidelines as presented above, and the recommendations of the BCAQMD. BCAQMD has set quantitative significance thresholds for long-term emissions of projects in Butte County, but not for short-term, construction-related emissions (BCAQMD 2008). Long-term project emissions are considered significant by the BCAQMD if they exceed:

- ▶ 25 pounds per day (lb/day) of ROG
- ▶ 25 lb/day of NO<sub>x</sub>
- ▶ 80 lb/day of PM<sub>10</sub>

## **EMISSIONS OF GREENHOUSE GASES**

At the time of this analysis, no state or local air quality regulatory agency in California, including the BCAQMD, has adopted a significance threshold for greenhouse gas (GHG) emissions generated by any non-industrial project. However, by adopting Assembly Bill (AB) 32 (2006) and Senate Bill (SB) 97 (2007), the State of California has established GHG

reduction targets and has determined that GHG emissions, as they relate to global climate change, are a source of adverse environmental impacts in California that should be addressed under CEQA (see also the discussion of AB 32 below).

CEQA requires that lead agencies consider the reasonably foreseeable adverse environmental effects of projects they are considering for approval. GHGs have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. In turn, global climate change has the potential to result in rising sea levels, which can inundate low-lying areas, and reduced snowpack, which may lead to less overall water storage in the Sierra Nevada. Other potential effects involve rainfall, which may lead to changes in water supply, increased frequency and severity of droughts, and increased wildfire risk. Wildlife habitat and agricultural land may also be at risk, with adverse effects on biological and agricultural resources.

Cumulative impacts are the collective impacts of one or more past, present, and future projects that, when combined, result in adverse changes to the environment. When the adverse change is substantial and the project's contribution to the impact is considerable, the cumulative impact would be significant. The cumulative project list for this issue (global climate change) comprises anthropogenic (i.e., human-made) GHG emission sources across the entire planet. No project alone would contribute to a noticeable incremental change to the global climate. However, legislation and executive orders on the subject of climate change in California have established a statewide context for GHG emissions, and an enforceable statewide cap on GHG emissions. Given the nature of environmental consequences from GHGs and global climate change, CEQA requires that the cumulative impacts of GHGs, even additions that are relatively small on a global basis, need to be considered. Because of the cumulative nature of the climate change problem, even relatively small contributions may be potentially considerable and therefore, significant.

In September 2006, Governor Arnold Schwarzenegger signed AB 32, the California Global Warming Solutions Act of 2006 (Chapter 488, Statutes of 2006, enacting Health and Safety Code Sections 38500–38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. In October 2008, ARB published its *Climate Change AB 32 Scoping Plan*, which is the state's plan to achieve GHG reductions in California required by AB 32 (ARB 2008a). The scoping plan was approved by ARB on December 11, 2008.

In addition to the scoping plan, ARB has also released the *Preliminary Draft Staff Proposal: Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act*. The proposal recommends adhering to interim performance standards for project types and emissions sources, including construction, energy, water use, waste, transportation, and total mass GHG emissions (ARB 2008b). Specific thresholds and performance criteria for these categories have yet to be developed.

On April 13, 2009, the California Office of Planning and Research submitted to the Secretary for Natural Resources its proposed amendments to the state CEQA Guidelines for GHG emissions, as required by SB 97. These proposed CEQA Guideline amendments would provide guidance to public agencies regarding the analysis and mitigation of the effects of

greenhouse gas emissions in draft CEQA documents. The Natural Resources Agency will conduct formal rulemaking in 2009, prior to certifying and adopting the amendments, as required by SB 97.

For the purposes of this analysis, if the proposed project would substantially conflict with the GHG reduction goals mandated in AB 32, this impact would be significant.

## DISCUSSION

- a) **Conflict with or obstruct implementation of the applicable air quality plan?**
- b) **Violate any air quality standard or contribute substantially to an existing or projected air quality violation?**
- c) **Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?**

### ***Construction-Related Emissions of Criteria Air Pollutants and Precursors***

**Less than Significant with Mitigation Incorporated.** Construction emissions are short-term and have the potential to represent a temporary significant impact with respect to air quality, especially fugitive dust emissions (PM<sub>10</sub>). Fugitive dust emissions are primarily associated with site preparation and vary as a function of such parameters as soil characteristics, soil moisture, wind speed, acreage of disturbance area, and use of construction vehicles. ROG and NO<sub>x</sub> emissions are primarily associated with gas and diesel equipment exhaust.

Construction of the proposed project would result in the temporary generation of ROG, NO<sub>x</sub>, and PM<sub>10</sub> emissions from site preparation (e.g., excavation, grading, and clearing), materials transport, channel excavation, channel realignment, habitat restoration, and other associated activities. Emission sources would include heavy-duty equipment exhaust and ground disturbance activities. Additional off-site emissions would be related to truck trips associated with material delivery, equipment delivery, and worker commute trips.

Short-term construction-generated emissions of ROG, NO<sub>x</sub>, and PM<sub>10</sub> were modeled using the BCAQMD-recommended URBEMIS 2007, Version 9.2.4, computer program. Input parameters were based on default model setting and information from the project description (e.g., number and type of equipment, amount of material transport). The modeled maximum daily construction emissions are summarized in Table 3.3-2 and described in more detail below and in Appendix A.

Based on the modeling conducted, project construction would result in worst-case maximum unmitigated daily emissions of approximately 44 lbs/day of ROG, 624 lbs/day of NO<sub>x</sub>, and 776 lbs/day of PM<sub>10</sub>. As stated above, BCAQMD has not set significance thresholds for short-term construction emissions. However, BCAQMD requires that all construction projects implement their recommended emission reduction measures to reduce impacts below significance levels. Without such measures, construction-generated emissions could violate the air quality standards set by the BCAQMD, and thus could contribute substantially to an

<b>Table 3.3-2 Summary of Modeled Maximum Short-Term Construction-Generated Emissions</b>			
<b>Source</b>	<b>ROG (pounds/day)</b>	<b>NO<sub>x</sub> (pounds/day)</b>	<b>PM<sub>10</sub> (pounds/day)</b>
<b>Construction Actions (2010)</b>			
Mobile Equipment Exhaust <sup>a</sup>	44.1	623.6	23.8
Fugitive Dust	-	-	752.6
<b>Total Maximum Daily Unmitigated</b>	<b>44.1</b>	<b>623.6</b>	<b>776.4</b>
<b>Total Maximum Daily Mitigated</b>	<b>41.9</b>	<b>498.9</b>	<b>194.1</b>
<b>BCAQMD Significance Threshold<sup>b</sup></b>	-	-	-
Notes: <sup>a</sup> Accounts for employee commute trips, on-site heavy-duty construction equipment, and material transport (e.g., soil and aggregate base) <sup>b</sup> BCAQMD does not currently have thresholds for short-term construction emissions See Appendix A for modeling results and assumptions. Source: Data provided by EDAW 2009 based on modeling using URBEMIS 2007, Version 9.2.4			

existing or projected air quality violation. Consequently, short-term emissions could result in a cumulatively considerable net increase of criteria pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard or conflict with or obstruct implementation of the applicable air quality plan. Emissions from the proposed project would be reduced to the levels required by BCAQMD for determining a less-than-significant impact, with implementation of the BCAQMD-recommended control measures presented in Mitigation Measure AQ-1 below.

**Mitigation Measure AQ-1: Implement BCAQMD-recommended emission reduction measures (BCAQMD 2008).**

To prevent and control dust emissions, and reduce impacts from project-generated emissions of criteria air pollutants and precursors to less-than-significant levels, DWR will implement the following mitigation:

- ▶ Maintain all construction equipment according to manufacturer’s specifications.
- ▶ Maximize the use of diesel construction equipment that meets ARB 1996 or newer certification standard for off-road heavy-duty diesel engines.
- ▶ Maximize use of electric equipment where feasible.
- ▶ Maximize use of gasoline-powered equipment in lieu of diesel-powered equipment where feasible.
- ▶ Maximize use of alternatively fueled construction equipment on-site, such as compressed natural gas, liquefied natural gas, propane, or biodiesel, where feasible.

- ▶ Use equipment that has pre-chamber diesel engines.
- ▶ A water truck will be on-site at all times. Water will be applied to disturbed areas a minimum of twice per day or more frequently as necessary. Water may be applied by means of truck(s), hoses, or sprinklers as needed, prior to any land clearing or earth movement to minimize dust emission. All visibly dry and disturbed soil surface areas of operation will be watered to minimize dust emissions. Unpaved roads may be graveled in lieu of watering to reduce dust emissions.
- ▶ Haul roads will be sprayed down at the end of the work shift and throughout each work shift as needed, to form a thin crust. This application of water will be in addition to the minimum rate of application.
- ▶ Haul vehicles transporting soil into or out of the project area will be covered, or haul trucks will be loaded such that the freeboard is not less than 2 feet when material is transported across any paved public-access road, or enough water will be applied to the top of the load to limit visible dust emissions to 20 percent opacity.
- ▶ On-site vehicles will be limited to a speed that minimizes dust emissions on unpaved roads, and all project entry points.
- ▶ Post a publicly visible sign with the telephone number and person to contact regarding dust complaints. This person will respond and take corrective action by contacting the general contractor and BCAQMD Air Pollution Control Officer within 24 hours.
- ▶ The telephone number of the BCAQMD will also be visible to ensure compliance with District Rule 200 and 205 (*Nuisance and Fugitive Dust Emissions*).
- ▶ Existing roads and streets adjacent to the project will be cleaned at least once per day unless conditions warrant a greater frequency.
- ▶ Construction workers will park in designated parking areas(s) to reduce dust emissions.
- ▶ Soil pile surfaces will be moistened if dust is being emitted from the pile(s). Adequately secured tarps, made of plastic or other material, may be required when watering is insufficient or wind speeds exceed 25 miles per hour to further reduce dust emissions.

### ***Long-term Operational Emissions***

The long-term operation of the proposed project would not increase vehicle traffic on Richvale Highway and operation of the proposed project would result in a negligible amount of long-term regional ROG, NO<sub>x</sub>, and PM<sub>10</sub> or local CO emissions associated with increases in mobile sources. In addition, implementation of the proposed project would not substantially increase vehicle miles traveled (VMT) and, consequently, would not conflict with or obstruct implementation of BCAQMD's air planning efforts, violate an air quality standard or contribute substantially to an existing or projected air quality violation, nor result in a cumulatively considerable net increase of a criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard. As a result, this impact would be less than significant.

## ***Global Climate Change***

GHG emissions generated by the proposed project would be primarily in the form of carbon dioxide (CO<sub>2</sub>) from construction equipment exhaust. Although emissions of other GHGs such as methane and nitrous oxide are important with respect to global climate change, the emissions levels of these GHGs for the sources associated with project construction are nominal compared with CO<sub>2</sub> emissions, even considering their higher global warming potential. Therefore, all GHG emissions for construction and operation are reported as CO<sub>2</sub>.

Emissions factors and calculation methods for estimating GHG emissions associated with infrastructure projects have not been formally adopted for use by the state, BCAQMD, or any other air district. The construction-related GHG emissions associated with project implementation were calculated using URBEMIS 2007, Version 9.2.4.

Construction activities associated with the proposed project would occur over an approximately 3- to 4-month period in 2010. During this time, a net increase in GHG emissions would result from various construction activities. Construction-related GHG emissions would be associated with engine exhaust from heavy-duty construction equipment, transport trucks hauling materials (e.g., soil and aggregate), and worker commute trips. Although any increase in GHG emissions would add to the quantity of emissions that contribute to global climate change, emissions associated with construction of the proposed project would occur over a finite period of time (i.e., 4 months). After project completion, all construction emissions would cease.

To establish additional context in which to consider the order of magnitude of project-generated construction GHG emissions, facilities (i.e., stationary, continuous sources of GHG emissions) that generate greater than 25,000 metric tons of CO<sub>2</sub> per year are mandated to report their GHG emissions to ARB pursuant to AB 32. In addition, ARB has released a preliminary draft staff proposal that recommends 7,000 metric tons of CO<sub>2</sub> per year be used as the baseline threshold for impacts. As shown in Table 3.3-3, estimated GHG emissions associated with construction of the entire project would be approximately 1,982 metric tons of CO<sub>2</sub> over a 4-month period. Absent any threshold for GHG emissions adopted by an air quality regulatory agency, the proposed project would generate substantially fewer emissions than 25,000 and 7,000 metric tons of CO<sub>2</sub> per year. This information is presented for informational purposes only, and it is not the intention of the lead agency to adopt 25,000 or 7,000 metric tons of CO<sub>2</sub> per year as a numeric threshold. Rather, the intention is to put project-generated GHG emissions in the appropriate statewide context to evaluate whether the proposed project's contribution to the global impact of climate change would be substantial. Mitigation measures included in Mitigation Measure AQ-1, above, are consistent with the recommendations for reducing construction emissions by the technical advisory documents published by the California Association of Air Pollution Control Officers (CAPCOA 2008), the AB 32 Scoping Plan (ARB 2008a), and the California Office of Planning and Research Technical Advisory on Climate Change (OPR 2008). Mitigation Measure AQ-1 would lower GHG-emission levels to the extent feasible by reducing exhaust emissions from construction equipment.

**Table 3.3-3  
Summary of Modeled Construction-Generated Emissions of Greenhouse Gases**

Source	Total Mass CO <sub>2</sub> Emissions (metric tons)
Construction Emissions <sup>a</sup>	
2009 Totals	1,982
<b>Total Construction Emissions (2009)</b>	<b>1,982</b>

Notes:

CO<sub>2</sub> = carbon dioxide

<sup>a</sup> Construction emissions were modeled with the URBEMIS 2007 computer model, which does not account for embedded CO<sub>2</sub> emissions associated with the manufacture of construction equipment or production of concrete or other building materials used in project construction. Other than CO<sub>2</sub>, URBEMIS does not estimate such greenhouse gas emissions as methane and nitrous oxide, as these levels are expected to be nominal in comparison to the estimated CO<sub>2</sub> levels despite their higher global warming potential.

See Appendix A for detailed model input, assumptions, and threshold calculations.

Source: Data provided by EDAW 2009 based on modeling using URBEMIS 2007, Version 9.2.4

In addition, as stated in the project objectives, once project construction is completed water flow and sediment fall out would function at a more efficient level than under existing conditions. As a result, maintenance and future sediment removal from the channel would be less after the project is implemented than if existing conditions were allowed to continue. Reducing maintenance and sediment removal activities would result in less GHG emitted in the long-term compared with existing conditions. While quantification of the net reduction of GHG is not quantifiable with the information available, because maintenance and sediment removal frequency would be reduced, it is reasonable to assume that the GHG emissions associated with these actions would also be reduced, resulting in a net benefit on GHG levels as a result of project implementation. Habitat and wetland features would be enhanced over existing conditions, possibly resulting in greater carbon sequestration than existing conditions. The most recent GHG analysis recommendations call for quantifying GHG emissions related to electricity generation and water conveyance resulting from project implementation. However, no additional electricity, water, or long-term emission sources would be related to the proposed project, and thus specific calculations were not conducted and no long-term effect on GHG levels would result from project implementation. Thus, because short-term construction emissions of GHG would be finite and reduced to the extent feasible with implementation of Mitigation Measure AQ-1, and because there would be no long-term GHG emissions sources, the proposed project would not conflict with AB 32 or other planning efforts. Therefore, project-generated GHG's would not result in considerable contribution to the cumulative impact of global climate change. This impact would be less than significant.

**d) Expose sensitive receptors to substantial pollutant concentrations?**

***Criteria Air Pollutant and Precursor Emissions***

**Less than Significant with Mitigation Incorporated.** The nearest sensitive receptors in the vicinity of the proposed project include rural residences to the east and west of the canal, the nearest of which is approximately 1,500 feet west of the project area. As discussed above in item "a" under short-term construction related emissions, project implementation would result

in emissions of criteria air pollutants and precursors. Thus, project-generated emissions of criteria air pollutants and precursors could expose sensitive receptors to substantial criteria pollutant concentrations. This potential impact would be reduced to a less-than-significant level with implementation of Mitigation Measure AQ-1.

### ***Toxic Air Contaminant Emissions***

#### **Short-Term Construction-Related Emissions**

Project construction, including site preparations, sediment removal, channel realignment, and habitat restoration would result in short-term generation of diesel exhaust emissions from the use of off-road diesel equipment required for construction activities. Particulate exhaust emissions from diesel fueled engines (diesel PM) were identified as a toxic air contaminant (TAC) by ARB in 1998. The potential cancer risk from the inhalation of diesel PM, as discussed below, outweighs the potential for all other health impacts (ARB 2003). The dose to which the receptors are exposed (a function of concentration and duration of exposure) is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). According to the Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period. However, such assessments should be limited to the period/duration of activities associated with the project (Salinas, pers. comm., 2004).

The possible sensitive receptor exposure period for the project is short (4 months or less) and mobile equipment would not operate near (within approximately 500 feet of) any sensitive receptor. BCAQMD does not provide guidance on TAC emissions from mobile equipment or a threshold of significance for exposure to emissions from this equipment. In addition, diesel PM is highly dispersive and studies have shown measured concentrations of vehicle-related pollutants, including ultra-fine particles, decrease dramatically within approximately 300 feet of the source (Zhu et al. 2002, ARB 2005). Thus, because the use of mobilized equipment would be temporary in combination with the dispersive properties of diesel PM, and because the distance to the closest sensitive receptor to the project area is greater than 500 feet (approximately 1,500 feet), construction-related emissions would not be anticipated to expose sensitive receptors to substantial pollutant concentrations. As a result, this impact would be less than significant.

#### **Long-Term Operation-Related Emissions**

Implementation of the proposed project would not result in an increase of long-term operation-related TAC emissions from existing conditions. Specifically, the long-term operation of the proposed project would result in negligible commute-trip TAC emissions from VMT. Furthermore, project implementation would not result in the operation of any new major stationary emission sources. Thus, project-generated operation-related TAC emissions would not expose sensitive receptors to substantial pollutant concentrations. As a result, this impact would be less than significant.

**e) Create objectionable odors affecting a substantial number of people?**

**Less-Than-Significant Impact.** Construction of the proposed project would result in diesel exhaust emissions from on-site construction equipment. The diesel exhaust emissions would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance. No other existing odor sources are located in the vicinity of the project area and the project would not include the long-term operation of any new sources. Thus, operation of the proposed project would not create, further, or change existing objectionable odors that would affect a substantial number of people. As a result, this impact would be less than significant.

### 3.4 BIOLOGICAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>IV. Biological Resources. Would the project:</b>				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the Department of Fish and Game or the U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the Department of Fish and Game or the U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### ENVIRONMENTAL SETTING

The biological resources of Cherokee Canal are influenced by the land use history of the watershed, by local and regional hydrology, and by local topography. Much of the Cherokee Watershed experienced hydraulic mining in the late 1800s. Large amounts of sediment that remain from this period occasionally wash into Cherokee Canal during rainfall events, creating a constant supply of fresh, mineral soil for the channel bed. This constant supply of mineral soil is accompanied by an almost complete lack of topography within the project site and by regular inflows of water, both from rainfall events and from agricultural return water and seepage from surrounding rice fields. The combination of mineral soil, topography, and water has created ideal conditions for the germination and growth of riparian vegetation. In addition to extensive riparian vegetation, the entirety of Cherokee Canal from levee to levee is

considered to be wetlands or other waters of the United States, subject to the jurisdiction of the U.S. Army Corps of Engineers (Corps) (DWR 2006).

Aside from Cherokee Canal, the proposed project would potentially affect as many as seven different spoils sites. These sites are generally disturbed as a result of current or past agricultural or mining activities, and the plants and wildlife found on these sites are largely a reflection of these past disturbances.

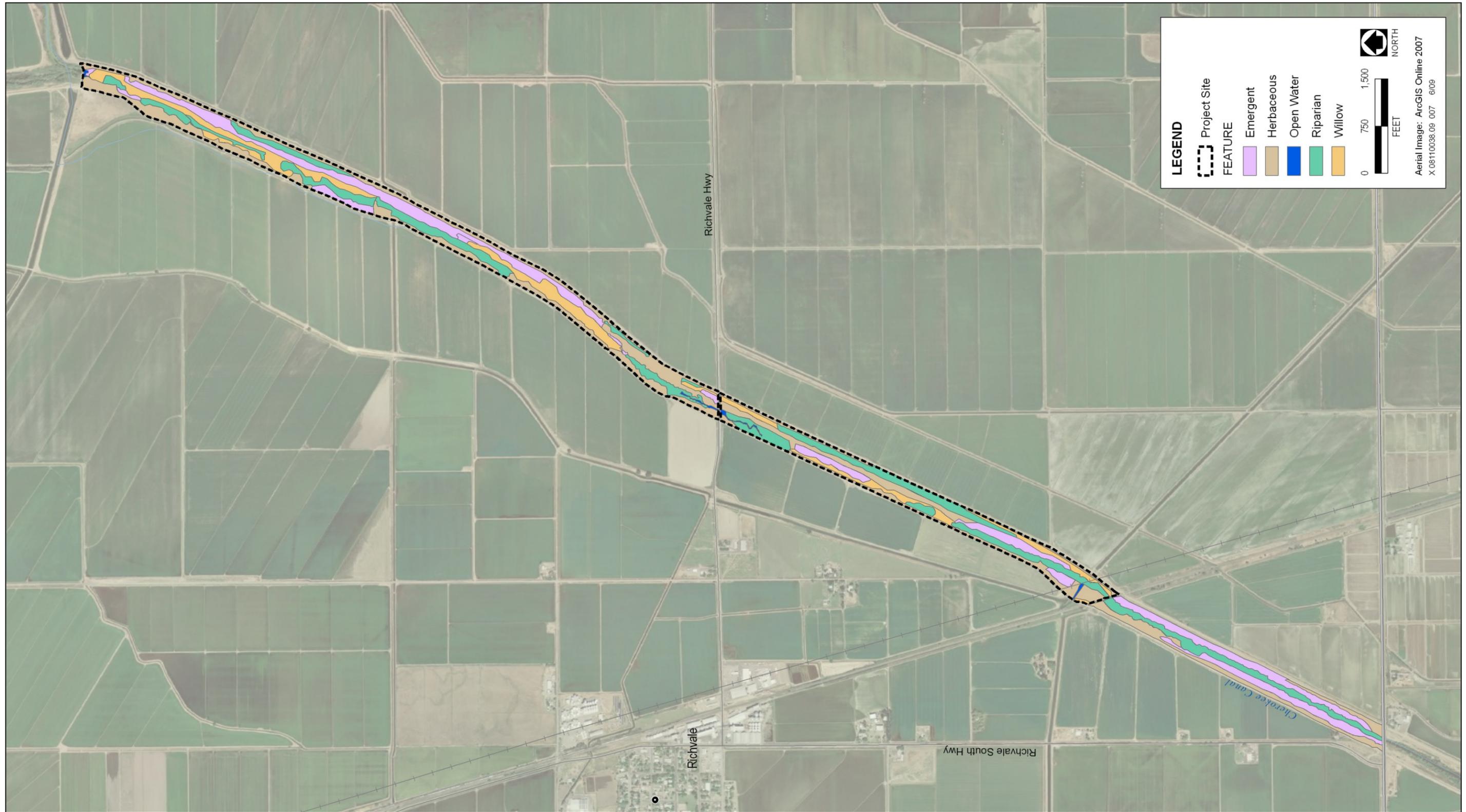
The biological characteristics of Cherokee Canal and the spoils sites are described in more detail below.

### **CHEROKEE CANAL HABITATS**

As described above, regular drainage from adjacent agricultural practices combined with a constant source of mineral soil and a lack of topography have created favorable conditions for the development of riparian and wetland habitats within Cherokee Canal. Habitats within the project area consist of willow riparian scrub, mixed riparian forest, and disturbed herbaceous vegetation (Exhibit 3.4-1). Woody riparian species present include cottonwood (*Populus fremontii*), white alder (*Alnus rhombifolia*), Oregon ash (*Fraxinus latifolia*), willows (*Salix* spp.), and box elder (*Acer negundo* var. *californicum*). Valley oaks (*Quercus lobata*) are occasionally found on drier benches. Areas of standing water support assorted emergent wetland species, such as water primrose (*Ludwigia peploides* ssp. *montevidensis*), various species of rush (*Juncus* spp.), bulrush (*Scirpus acutus*), and cattail (*Typha domingensis*). Patches of bulrush, cattail, and other emergent wetland species also occur in open areas along the edges of the water. Open areas within the channel bed are dominated by Bermuda grass (*Cynodon dactylon*), knotweed (*Polygonum* spp.), verbena (*Verbena* spp.), dallis grass (*Paspalum dilatatum*), and similar herbaceous species commonly found in disturbed, moist habitats. Levees and drier areas above the ordinary high water mark are dominated by annual weedy herbaceous species, such as nonnative grasses and yellow star thistle (*Centaurea solstitialis*).

To help prioritize riparian areas that may be retained during project construction, these habitats were surveyed and mapped by EDAW in 2008 (Exhibit 3.4-2). The overall rationale for determining biological value was based on the following ecological principles:

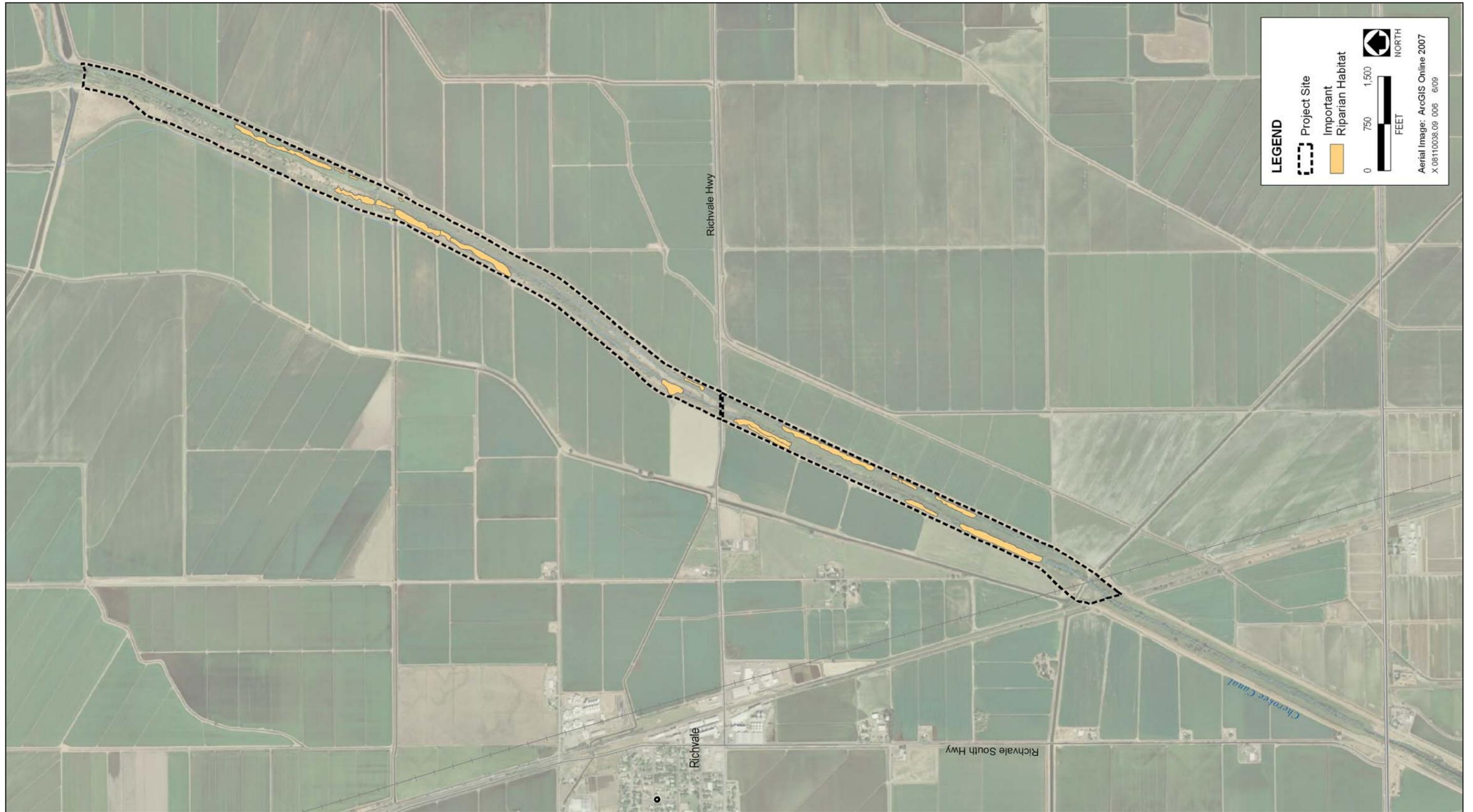
- ▶ Large trees (i.e., trees over 30 feet tall) should be preserved wherever possible, as these provide the most suitable nesting habitat for raptors and are widely used by other species of birds, such as great blue heron (*Ardea herodias*). Also, relative to shrubs and smaller trees, it can take several years or even decades for these habitat elements to be replaced.
- ▶ Snags (i.e., dead trees) should be preserved wherever possible. Snags provide breeding habitat for cavity-nesting birds and are widely used by other guilds of birds. Snags also provide a source of dead and downed wood, which helps maintain and enhance understory structural diversity. Similar to large trees, snags tend to be fairly uncommon on a landscape scale and regenerate slowly. If snags are removed, the habitat elements they provide are not easily replaced.



Source: DWR 2009

**Cherokee Canal Habitats**

**Exhibit 3.4-1**



Source: DWR 2009; EDAW|AECOM 2009

**Important Riparian Habitat**

**Exhibit 3.4-2**

- ▶ Larger stands of riparian vegetation are more biologically valuable than small stands. Large stands have the potential to provide some isolation from edge effects and result in larger habitat patches that potentially provide for more habitat niches.
- ▶ Stands with greater structural diversity (i.e., layers of tall trees, smaller trees, shrubs, vines, and herbaceous vegetation, combined with brush piles or brambles) are more biologically valuable than stands with only one or two layers because they provide habitat elements for the widest possible suite of wildlife. Like snags and larger trees, structurally diverse stands are not easy to replace over the short term.
- ▶ Stands with greater native species diversity are more biologically valuable than stands dominated by only one or two species. Many stands within the study project area were dominated by some mixture of sandbar willow (*Salix exigua*) or arroyo willow (*Salix lasiolepis*), occasionally with a sparse cottonwood or black willow (*Salix gooddingii*) overstory. Such stands generally have less biological value than stands containing these and other native riparian species, including California grape (*Vitis californica*), Oregon ash, white alder, mugwort (*Artemisia douglasiana*), and buttonwillow (*Cephalanthus occidentalis*).

Mapped stands encompassed the majority of large trees and snags within the project area and include the largest, most structurally diverse, and most species-diverse stands. Areas of riparian vegetation not mapped were generally characterized by less species diversity (i.e., stands dominated by two or three species), shrubs, and smaller trees.

Cherokee Canal's ability to support a diversity of native plants, fish, and wildlife, including rare or sensitive species, has been compromised by construction of flood control projects and routine maintenance, as well as by agriculture and development around the canal. However, the canal, the low-flow channel, and the adjacent wetlands and woody riparian vegetation area do support common reptiles, amphibians, birds, and mammals. DWR conducted surveys for wildlife and plants along the entire canal (DWR 2008a, 2007). These surveys found 116 species of wildlife and 66 species of plants within the project area. Most of these were species commonly encountered in wetland and riparian habitats within the northern Central Valley. The results of specific surveys for special-status species are described in detail below under Special-Status Wildlife Species and Special-Status Plant Species.

## **SPOILS SITES HABITATS**

Four of the seven locations proposed as potential spoils sites are generally dominated by weedy, ruderal vegetation or nonnative grasslands (Exhibit 3.4-3). Dominant species in these habitats include wild oats (*Avena fatua*), yellow starthistle, milk thistle (*Silybum maritimum*), prickly lettuce (*Lactuca serriola*), soft chess (*Bromus hordeaceus*),

foxtail fescue (*Vulpia myuros*), foxtail barley (*Hordeum murinum* ssp. *leporinum*), and similar weedy species. Patches of Himalayan blackberry (*Rubus discolor*), verbena, knotweed, and cattail may occasionally be found in moist locations. Two of the sites are used for agriculture (i.e., rice cultivation) and are generally devoid of vegetation. The seventh site is dominated by nonnative grassland with scattered areas of willow, cottonwood, and blue elderberry (*Sambucus mexicana*). Because these areas are generally small in size and disturbed by

past agricultural activities or from prior spoils deposition they support only a small assortment of wildlife commonly observed in the surrounding areas.

## **SENSITIVE BIOLOGICAL RESOURCES**

Sensitive biological resources include plants, animals, and habitats that have been afforded special recognition by federal, state, or local resource agencies and organizations. Special-status plant and wildlife species are generally defined as those species legally protected or otherwise considered sensitive by federal, state, or local resource conservation agencies and organizations. This includes species covered under the federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA), as well as species identified in the California Native Plant Society's (CNPS's) Inventory of Rare and Endangered Vascular Plants in California (CNPS 2009), particularly those included on Lists 1A, 1B, or 2.

### **Special-Status Wildlife Species**

A list of species to be evaluated for their potential to occur in the project area (Table 3.4-1) was compiled based on the following:

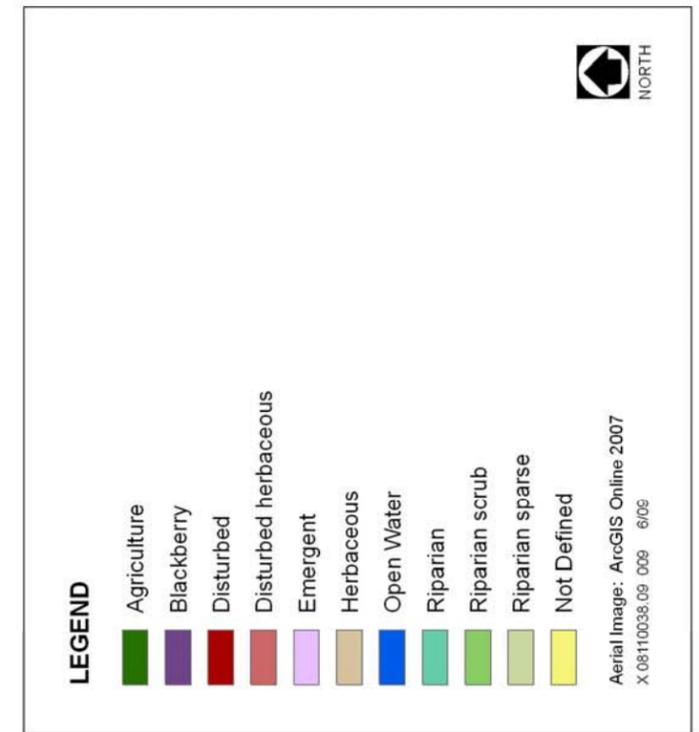
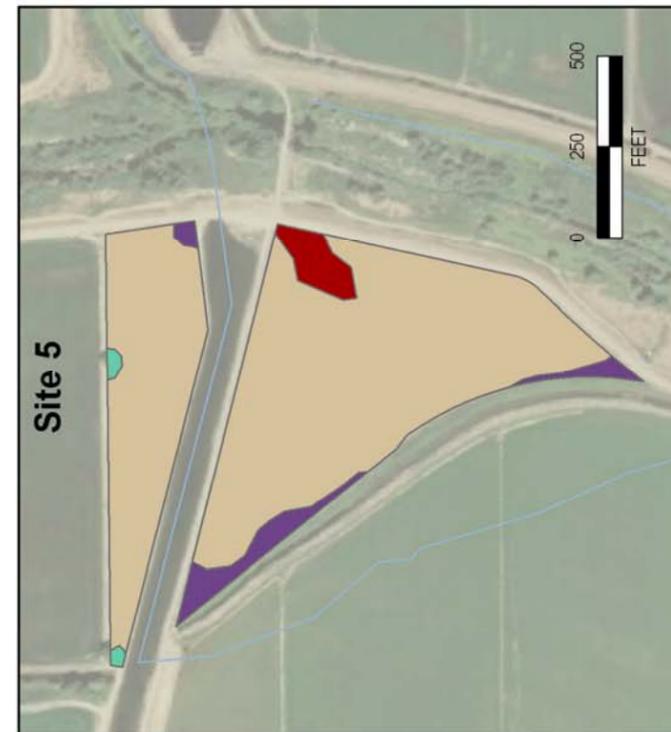
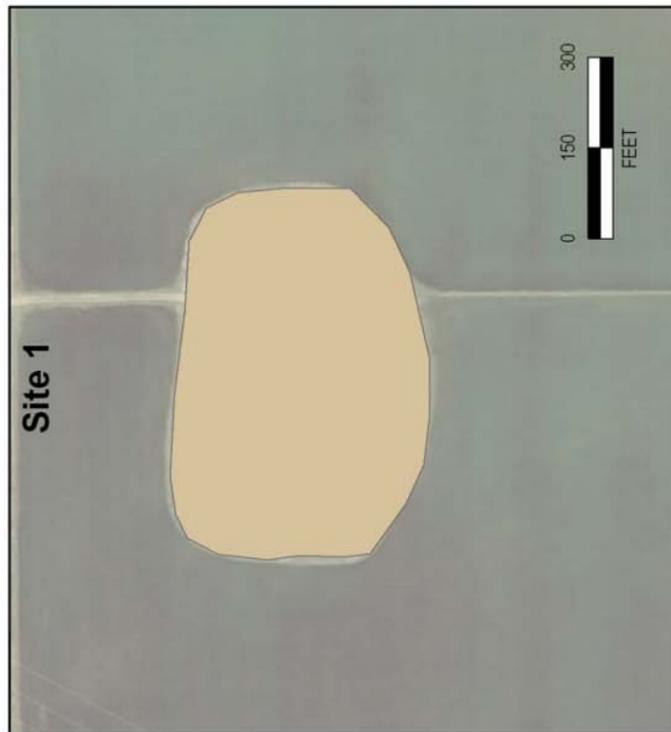
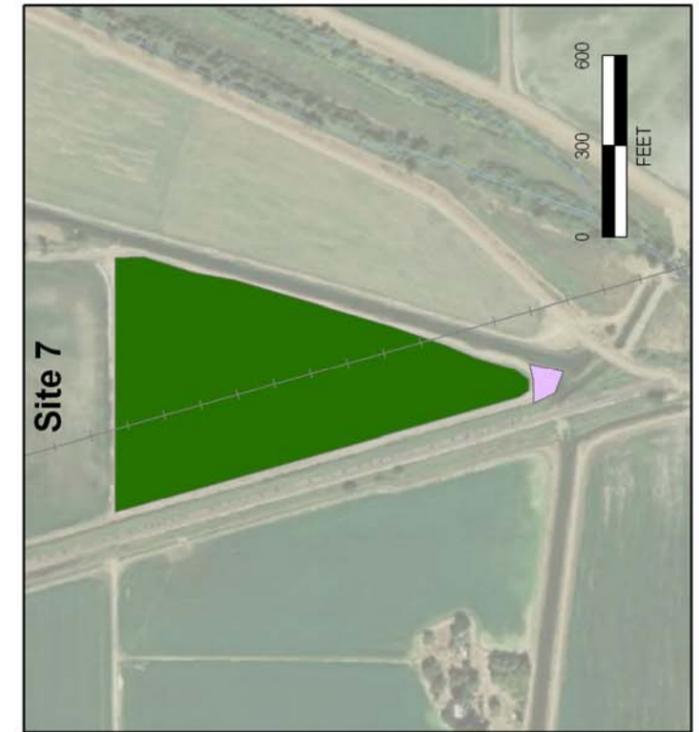
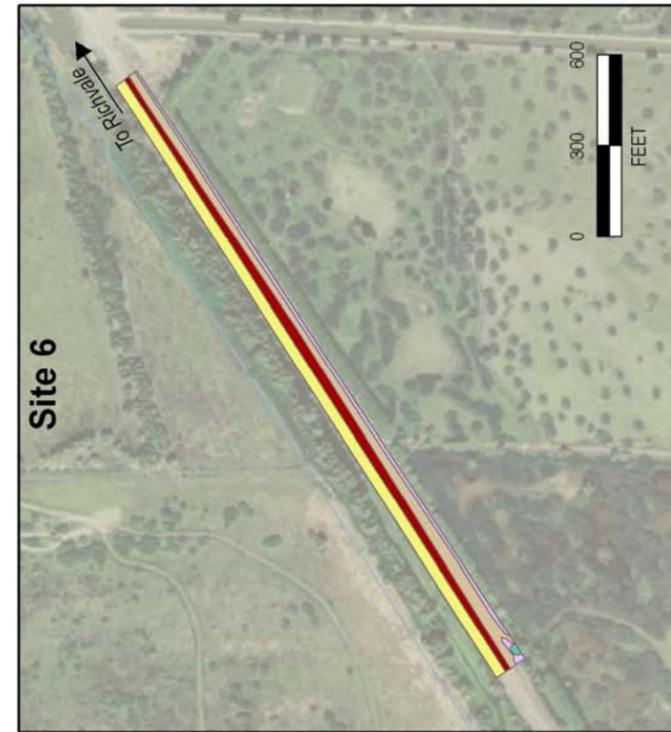
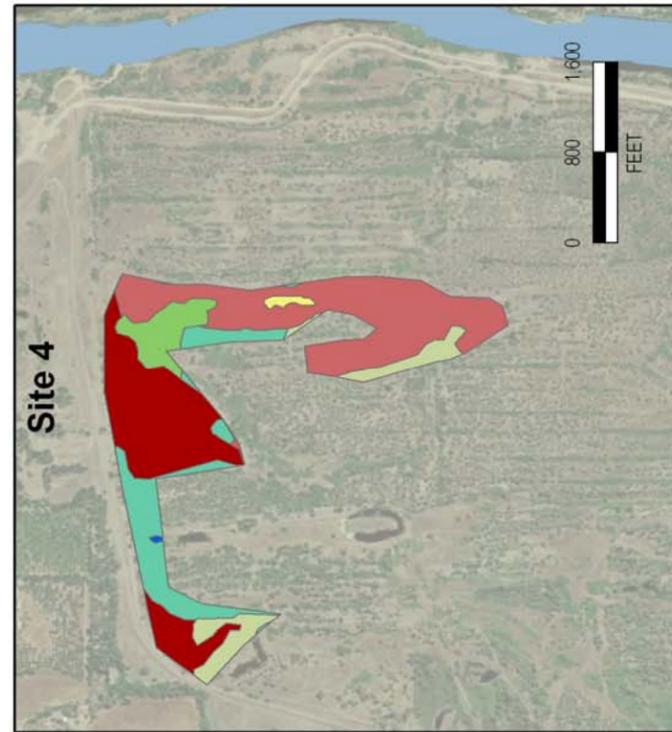
- ▶ DFG California Natural Diversity Database (CNDDDB) search, which encompassed a 2-mile radius of the project area and spoils sites (CNDDDB 2009) (Exhibit 3.4-4);
- ▶ U.S. Fish and Wildlife Service (USFWS) database list for the Shippee, Biggs, and Oroville Dam 7.5 Minute U.S. Geological Survey (USGS) quadrangles (USFWS 2009);
- ▶ results of surveys of the project area conducted by DWR; and
- ▶ habitat conditions in the project area.

DWR environmental scientists conducted rare plant surveys of Cherokee Canal between July and September of 2006. Focused surveys for special-status wildlife within Cherokee Canal were conducted by DWR on July 24 and August 4, 2006. Additional wildlife surveys were conducted between March 28 and April 17, 2007 (four surveys), on December 17, 2007 (one survey), and between March 25 and June 17 of 2008 (five surveys). The seven spoils sites were surveyed for rare plants and wildlife in May 2009.

Species determined to have potential to occur in the project area and to be affected by project construction are discussed further below. The remaining species are not addressed further because either the project area does not support the habitats in which they occur or the potential for their occurrence is very low.

### ***Giant Garter Snake***

Giant garter snake (GGS) is federally listed and state listed as threatened. Critical habitat has not been designated for this species. GGS inhabit agricultural wetlands and other waterways, such as irrigation and drainage canals, rice lands, marshes, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands. GGS are highly aquatic, relying on the aquatic environment for both food and shelter from predators (Hansen 1988). Aquatic habitats typically contain permanent to seasonal water, usually still or slow-moving, with mud



Source: DWR 2009

**Spoil Site Habitats**

**Exhibit 3.4-3**

**Table 3.4-1  
Special-Status Wildlife with Potential to Occur on or Adjacent to the Project Site**

Species	Status <sup>a</sup>		Habitat	Potential for Occurrence in Project Area
	USFWS	DFG		
<b>Invertebrates</b>				
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	E	–	Generally turbid vernal pools with long ponding durations in annual grasslands	No vernal pool habitat is present in project area.
Vernal pool fairy shrimp <i>Branchineta lynchi</i>	T	–	Vernal pools, sandstone rock outcrop pools	No vernal pool habitat is present in project area.
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	T	–	Elderberry shrubs, primarily in riparian woodlands	No elderberry shrubs are present along Cherokee Canal in the project area. Shrubs are present Spoils Site 4.
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	E	–	Vernal pools and ephemeral stock ponds	No vernal pool habitat is present in project area.
<b>Fish</b>				
Green sturgeon <i>Acipenser medirostris</i>	T	T	Usually channel bottoms in river systems	No suitable habitat is present in project area.
Delta smelt <i>Hypomesus transpacificus</i>	T	T	Wide range of salinity and typically rears in shallow, fresh or slightly brackish waters	No suitable habitat is present in project area.
Central Valley steelhead <i>Oncorhynchus mykiss</i>	T	–	Cold, freshwater streams with suitable gravel for spawning.	No suitable habitat is present in project area.
Sacramento winter-run Chinook salmon <i>Oncorhynchus tshawytscha</i>	E	E	Cold, freshwater streams with suitable gravel for spawning.	No suitable habitat is present in project area.
Central Valley spring-run Chinook salmon <i>Oncorhynchus tshawytscha</i>	T	T	Cold, freshwater streams with suitable gravel for spawning	No suitable habitat is present in project area.
<b>Amphibians</b>				
California tiger salamander <i>Ambystoma californiense</i>	T	SSC	Vernal pools and other seasonal ponds in valley and foothill grasslands; upland habitat of grasslands and oak savannah	Low. Limited suitable habitat occurs in project area, and no occurrences are reported in the project vicinity in >40 years.
California red-legged frog <i>Rana aurora</i>	T	SSC	Aquatic habitats, such as creeks, streams, and ponds	Low. Suitable habitat occurs in the canal; however, species is believed to be extirpated from the floor of the Sacramento Valley.
<b>Reptiles</b>				
Western pond turtle <i>Actinemys marmorata</i>	–	SSC	Ponds, marshes, rivers, streams, sloughs; nest in nearby uplands with suitable soils	Moderate. Canal provides suitable habitat.

**Table 3.4-1  
Special-Status Wildlife with Potential to Occur on or Adjacent to the Project Site**

Species	Status <sup>a</sup>		Habitat	Potential for Occurrence in Project Area
	USFWS	DFG		
Giant garter snake <i>Thamnophis gigas</i>	T	T	Slow-moving streams, sloughs, ponds, marshes, flooded rice fields, and irrigation and drainage ditches with mud substrate, emergent aquatic vegetation, protected basking areas, and access to upland hibernaculæ above the high-water line	High. Cherokee Canal and surrounding rice fields provide suitable habitat. Giant garter snakes have been observed in and near Cherokee Canal.
<b>Mammals</b>				
Silver-haired bat <i>Lasionycteris noctivagans</i>	–	SSC	Typically roosts in hollow trees, snags, buildings, rock crevices, caves, and under bark; primarily associated with coniferous or mixed coniferous and deciduous forest; prefers old growth; forages over streams, ponds, and open brushy areas	Low. Could forage in project area but is unlikely to roost there.
American badger <i>Taxidea taxus</i>	–	SSC	Grassland, shrub, and woodland habitats with friable soils	Low. Limited suitable habitat occurs in project area.
<b>Birds</b>				
Tricolored blackbird <i>Agelaius tricolor</i>	–	SSC	Nests colonially in cattails, tules, willows, blackberries, nettles, mustards, thistles, and other dense vegetation; forages in grasslands and agricultural fields	High. Suitable nesting and foraging habitat is present, and nesting colonies have been observed in the canal and at Spoils Site 5.
Burrowing owl <i>Athene cunicularia</i>	–	SSC	Nests and forages in grasslands, shrublands, deserts, and agricultural fields, especially where ground squirrel burrows are present	Low. Habitat with Cherokee Canal is too dense and burrow sites are limited. Habitat within spoils sites heavily disturbed or soils are not suitable. Focused surveys have not detected species along Cherokee Canal.
Swainson's hawk <i>Buteo swainsoni</i>	–	T	Nests in riparian woodlands and isolated trees; forages in grasslands, shrublands, and agricultural fields	Moderate. Suitable nesting habitat is present along canal, and limited foraging habitat occurs adjacent to the canal and within spoils sites.
Northern harrier <i>Circus cyaneus</i>	–	SSC	Nests and forages in a variety of open habitats, including marshes, grasslands, shrublands, and agricultural fields	High. Suitable nesting and foraging habitat is present within the canal and at some of the spoils sites, and species has been observed in project area.

**Table 3.4-1  
Special-Status Wildlife with Potential to Occur on or Adjacent to the Project Site**

Species	Status <sup>a</sup>		Habitat	Potential for Occurrence in Project Area
	USFWS	DFG		
White-tailed kite <i>Elanus leucurus</i>	–	FP	Nests in woodlands and isolated trees; forages in grasslands, shrublands, and agricultural fields	Moderate. Suitable nesting and foraging habitat is present on and adjacent to the canal and within the Oroville Wildlife Area.
Willow flycatcher <i>Empidonax traillii</i>	–	E	Breeds in montane riparian areas and large wet meadows with abundant willows; usually found in riparian habitats during migration	Low to Moderate. Could occur during migration, but is unlikely to breed in project area.
American peregrine falcon <i>Falco peregrinus anatum</i>	–	E, FP	Forages in a variety of open habitats, particularly marshes and other wetlands	High. Could occasionally forage in the project area, but no suitable nesting habitat is present. Species has been observed at Cherokee Canal.
Greater sandhill crane <i>Grus Canadensis tabida</i>	–	T	Nests in open meadows near shallow lakes or freshwater marshes; winter habitat includes plains, agricultural fields, and valleys near bodies of fresh water	High. Could occur in project area during fall/winter migration, although species is unlikely to breed in project area. Species has been observed at Cherokee Canal.
Bald eagle <i>Haliaeetus leucocephalus</i>	–	E	Inland waters with adjacent large, old-growth trees or snags	High. Could occur in project area in winter, although species is unlikely to breed in project area. Species has been observed at Cherokee Canal.
Loggerhead shrike <i>Lanius ludovicianus</i>	–	SSC	Forages in grasslands and agricultural fields; nests in scattered shrubs and trees	High. Suitable nesting and foraging habitat is present on and adjacent to the canal and Oroville Wildlife Area. Species has been observed in project area.
California black rail <i>Laterallus jamaicensis coturniculus</i>	–	T	Tidal salt marshes associated with heavy growth of pickleweed; also occurs in brackish or freshwater marshes at low elevations	No suitable habitat is present in project area.
Western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	C	E	Dense riparian forests with a thick understory of willows for nesting; sites with a dominant cottonwood overstory preferred for foraging	Low. Limited suitable habitat occurs in project area.

Notes:

<sup>a</sup> **Legal Status Definitions:**

U.S. Fish and Wildlife Service (USFWS)

E Endangered

T Threatened

C Candidate for listing

Source: CNDDDB 2009, USFWS 2008

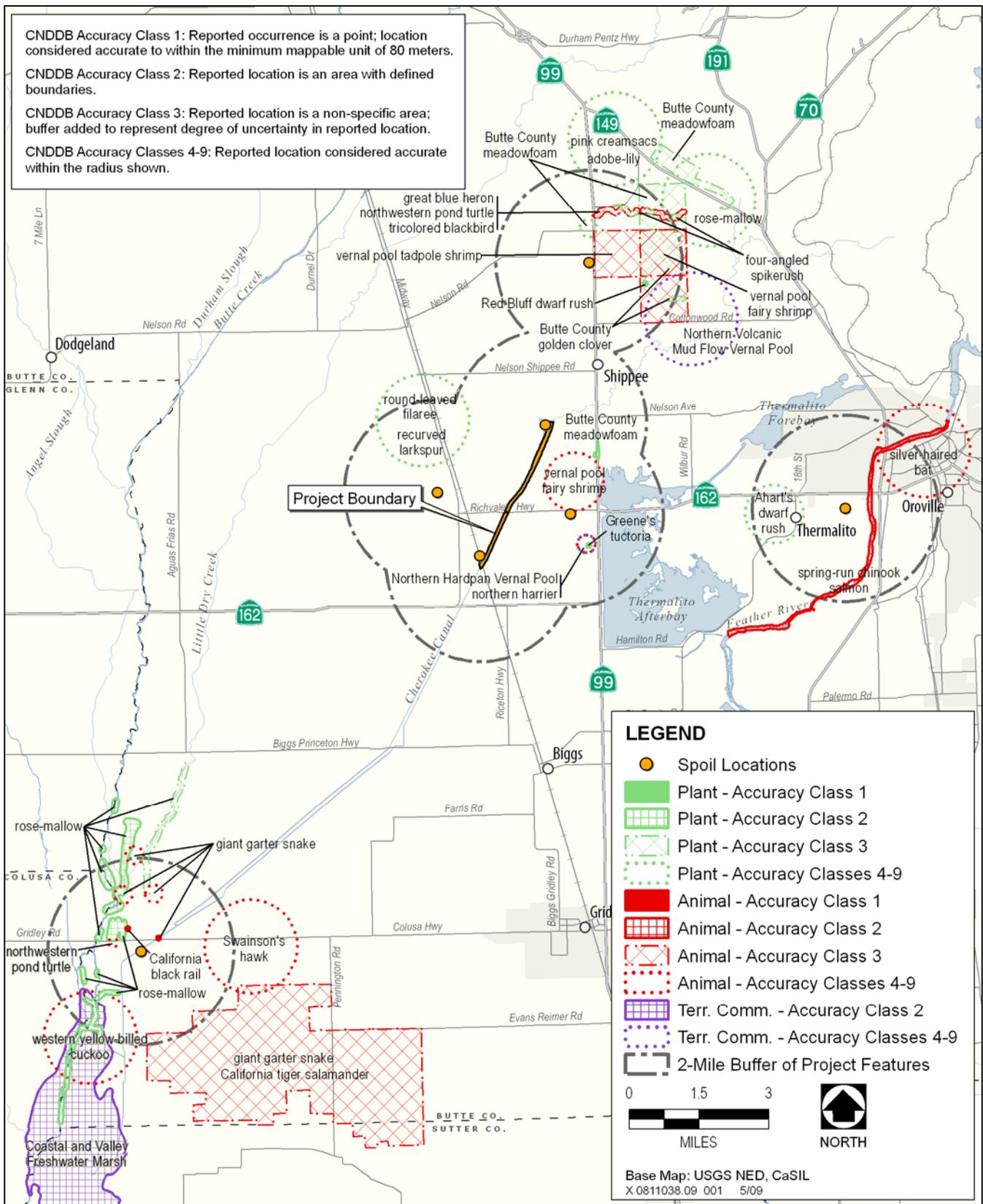
Department of Fish and Game (DFG)

E Endangered

T Threatened

FP Fully Protected

SSC Species of Special Concern



Source: CNDDB 2009

**Special Status Species Occurrences within 2-Miles of Project Features**

**Exhibit 3.4-4**

bottoms and dirt banks (Hansen 1988). Essential habitat components for GGS consist of the following:

- ▶ adequate water during the snake's active season (early spring through mid fall) to maintain dense populations of food organisms, such as fish and amphibians;
- ▶ emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover during the active season;
- ▶ upland habitat with grassy banks and openings in waterside vegetation for basking; and
- ▶ higher elevation upland habitats for cover and refuge from flood waters during the snake's inactive season in the winter (Hansen 1988, Brode and Hansen 1992, Hansen and Brode 1993).

Because of habitat destruction, the snake now relies largely on rice fields and irrigation canals to provide aquatic habitat in the Sacramento Valley.

GGS typically emerge from overwintering hibernacula in March. Soon after emergence, males begin searching for mates; breeding continues through May and resumes briefly in September. Females brood young internally, and give birth to live young from late July through early September (USFWS 1999a).

Cherokee Canal, its associated low-flow channel, and surrounding rice fields, including two of the potential spoils locations, provide suitable GGS habitat. Focused protocol-level surveys for GGS have not been conducted for this project. However, during several field surveys conducted in the area from July to September 2006, March to April 2007, and March to July 2008, no GGS were observed within or adjacent to the project area. Eric Hansen, a GGS expert, has also reviewed Cherokee Canal within the project area and determined that the vast majority of the canal does not provide suitable habitat (Hansen, pers. comm., 2009). The CNDDDB, however, reports records of GGS in the project vicinity, and protocol surveys completed in the mid-1990s for a previous Cherokee Canal sediment removal project found GGS in and near the Cherokee Canal (Hansen 1994, 1998). Because suitable habitat for GGS is found in the project area and GGS have been documented in the project vicinity, it is assumed that GGS occur in the project area, including spoils sites where suitable habitat is present.

### ***Western Pond Turtle***

The western pond turtle is a California species of special concern. Western pond turtles are generally associated with permanent or near-permanent aquatic habitats, such as lakes, ponds, streams, freshwater marshes, and agricultural ditches. They require still or slow-moving water with instream emergent woody debris, rocks, or similar features for basking sites. Pond turtles are highly aquatic but can venture far from water for egg-laying. Nests are typically located on unshaded upland slopes in dry substrates with clay or silt soils (Jennings and Hayes 1994). Although northwestern pond turtles have not been documented at the Cherokee Canal, the canal provides suitable foraging habitat for the species. Suitable breeding habitat is limited in the project area. Suitable habitat for western pond turtle is not found at any of the spoils sites.

### ***Tricolored Blackbird***

Tricolored blackbird is a California species of special concern. Tricolored blackbirds nest in dense colonies that range from less than 25 individuals to more than 80,000. Tricolored blackbirds nest in dense cattail patches, but they also utilize blackberry and other patches of dense vegetation. They forage in grasslands and agricultural fields. Suitable nesting habitat is present within the project area reach of Cherokee Canal and adjacent managed wetland habitats. In June 2008, two colonies of tricolored blackbirds were observed nesting within the Cherokee Canal project area downstream of Richvale Highway bridge. One colony of approximately 400 birds was observed in riparian habitat along the right-bank of the canal, extending from the bridge to approximately 0.25 mile downstream. The second colony of approximately 4,000 birds was observed in riparian habitat along the right-bank from approximately 0.50 mile downstream of the bridge to 0.86 mile downstream. In June 2009, a single colony of approximately 5,000 nesting tricolored blackbirds was also observed within Himalayan blackberry on Spoils Site 5. Other spoils sites do not contain suitable tricolored blackbird habitat.

### ***Swainson's Hawk***

Swainson's hawk is state-listed as threatened. Swainson's hawks most commonly occur in grasslands, low shrublands, and agricultural habitats that include large trees for nesting. Nests are found in riparian woodlands, roadside trees, trees along field borders, and isolated trees. Corridors of remnant riparian forest along drainages contain the majority of known nests in the Central Valley. Nesting pairs frequently return to the same nest site for multiple years if not decades.

Swainson's hawks feed primarily on small rodents but also consume insects and birds. Prey abundance and accessibility are the most important features determining the suitability of Swainson's hawk foraging habitat. Crops that are tall and dense enough to preclude the capture of prey do not provide suitable habitat except around field margins, but a variety of prey in these habitats are accessible during and soon after harvest. Agricultural operations (e.g., mowing, flood irrigation) have a substantial influence on the accessibility of prey and thus create important foraging opportunities.

Riparian woodlands in the project area provide suitable nesting habitat for Swainson's hawk. However, agricultural lands adjacent to the canal primarily support land uses that provide marginal or unsuitable foraging habitat for Swainson's hawk, including rice fields and mature almond orchards. In 2007 and 2008, surveys for Swainson's hawk were conducted in accordance with the Swainson's Hawk Technical Advisory Committee's methodology (DFG 2000). Two adult Swainson's hawks were observed foraging within Cherokee Canal immediately south of Richvale Road in April 2007, but no Swainson's hawk nests were detected. Swainson's hawks were not observed during 2008 bird surveys or during a reconnaissance visit to the project area conducted on May 14, 2009. Swainson's hawks were also not observed at any of the spoils areas during reconnaissance surveys in May 2009, and the spoils sites contain limited amounts of suitable nesting habitat.

### ***Northern Harrier***

Northern harrier is a California species of special concern that occurs in a variety of open habitats, including agricultural lands, grasslands, and marshlands. Unlike many other raptors, which nest in trees, harriers nest on the ground in areas of dense grassland or other low-growing vegetation. They often nest in active agricultural crops, such as wheat, as well as fallow agricultural fields and other ruderal habitats.

Northern harriers have been observed within the Cherokee Canal, and suitable nesting and foraging habitat is present within and surrounding the canal. Fallow agricultural fields and marshlands in the project area, including two of the potential spoils locations, provide suitable foraging habitat for northern harriers and could provide suitable nesting habitat where vegetation grows to a suitable height and density.

### ***White-tailed kite***

White-tailed kite is a fully protected species under California law. It nests in trees, particularly oak and cottonwood, and forages in grasslands, low shrublands, and fields of short agricultural crops, such as alfalfa and tomato. This species inhabits the Central Valley throughout the year. White-tailed kites could use the project area, including spoils sites, as the area provides suitable nesting and foraging habitat.

### ***Loggerhead Shrike***

The loggerhead shrike is a California species of special concern that is present year-round in California. Loggerhead shrikes nest in shrubs and small trees in shrublands and open woodlands, and typically forage in grasslands and agricultural fields (Shuford and Gradali 2008). Loggerhead shrikes could nest in riparian habitat along the canal or in orchards adjacent to the project site, and could use orchards, agricultural fields, or grassland adjacent to the canal for foraging. Additionally, the Oroville Wildlife Area provides suitable nesting and foraging habitat for shrikes. Loggerhead shrikes were observed in Cherokee Canal during surveys.

### ***Other Special-Status Bird Species***

Five additional special-status bird species have limited potential to occur on the project area. These include peregrine falcon (state listed as endangered), bald eagle (state listed as endangered), greater sandhill crane (state listed as threatened), burrowing owl (California species of concern), and willow flycatcher (state listed as endangered). These species could occur in the project area during spring/fall migration or over the winter season, but the project area does not provide breeding habitat and is unlikely to provide important foraging or migration habitat for these species. Peregrine falcons usually forage in areas that provide large prey populations (e.g., high densities of shorebirds or waterfowl). Bald eagles typically winter in coastal areas, along large rivers, and large unfrozen lakes. Greater sandhill cranes winter almost entirely in agricultural fields and forage primarily on grain crops. Burrowing owls require relatively undisturbed areas of open grassland and suitable burrow sites (e.g., rodent burrows, friable soils). Although willow flycatchers use riparian habitat during migration, they nest only rarely at lower elevations and the CNDDDB reports only one occurrence of willow flycatcher in Butte County (reported at an elevation above 5,000 feet) (CNDDDB 2009).

### **Valley Elderberry Longhorn Beetle**

Valley elderberry longhorn beetle is federally listed as threatened. Valley elderberry longhorn beetles require elderberry shrubs for reproduction and survival, and are usually associated with riparian habitats. To function as habitat for the valley elderberry longhorn beetle, host elderberry shrubs must have stems that are 1 inch or greater in diameter at ground level. Valley elderberry longhorn beetles are rarely seen because they spend most of their life cycle as larvae within the stems of the shrubs.

All potential habitat for valley elderberry longhorn beetle within the Cherokee Canal project area was surveyed by DWR per USFWS guidelines (USFWS 1999b). No elderberry shrubs were found within the project area. However, numerous elderberry shrubs were found within Spoils Site 4.

### **Special-Status Plant Species**

A search of the CNPS Inventory of Rare and Endangered Plants for the Biggs and eight surrounding 7.5-minute quadrangles (CNPS 2009) was conducted. Thirteen special-status plant species were identified as potentially occurring within the project area (Table 3.4-2). Focused surveys for these species (with the exception of Sanford's arrowhead) within Cherokee Canal were conducted by DWR over the summer of 2006 (DWR 2007). Sanford's arrowhead was not listed in the four-quad CNDDDB inquiry covering the channel area, but it was found in a larger query covering ten-quads in and around the channel in 2006. Sanford's arrowhead was considered during the focused surveys and appropriate habitat was surveyed for the species (DWR 2009a). Protocol-level surveys of the spoils sites were conducted by DWR in May 2009 (DWR 2009b, 2009c). Although no special-status species were encountered during those surveys, suitable habitat for rose-mallow and Sanford's arrowhead does exist within the scattered locations of the canal and some of the spoils sites. The remaining species are not addressed further because the project area does not support the habitats in which they occur or the potential for their occurrence is unlikely.

### **Rose-Mallow**

Rose-mallow (*Hibiscus lasiocarpus*) is on CNPS List 2.2. This species is not state-listed or federally-listed, so no critical habitat is designated.

Rose-mallow occurs in Sacramento Valley and the northern part of San Joaquin Valley (San Joaquin and Contra Costa Counties). It is widespread in the central and southeastern United States (Hickman 1993). It is known from numerous occurrences in the Sacramento–San Joaquin Delta. There are 24 occurrences in Butte County, including several occurrences along Butte Creek near the project site (DFG 2009).

Rose-mallow is an erect, rhizomatous perennial herb in the mallow family that flowers from June through September. Its hairy stems are 1–2 meters tall and may be prostrate or erect. The heart-shaped leaves are 6–10 centimeters (cm) long with toothed margins. The large, showy flowers (petals 6–10 cm) are white or rose, with a red base (Hickman 1993). This species grows in freshwater marshes, and is generally found on wet riverbanks and low peat islands in sloughs. It blooms from June through September (Hickman 1993).

**Table 3.4-2  
Special-Status Plant Species with Potential to Occur in the Project Area**

Species/common name	Status Federal/State/ CNPS <sup>a</sup>	Habitat	Flowering Period
<b>Federally Listed and State-Listed Species</b>			
<i>Limnanthes floccosa</i> ssp. <i>californica</i> Butte County Meadowfoam	FE/SE/1B	Vernal pools in valley and foothill grassland; most often in wet or flowing drainages and depressions; often not in discrete vernal pools; soils usually Redding Clay with rocks (50–930m)	Mar—May
<i>Tuctoria greenei</i> Greene's tuctoria	FE/SR/1B	Vernal pools in valley and foothill grasslands; dry bottoms of vernal pools in open grasslands (30–1065m)	May–Sep
<b>CNPS Additional Special-Status Species</b>			
<i>Astragalus tener</i> var. <i>ferrisiae</i> Ferris's milk-vetch	-/-1B	Subalkaline flats on overflow land in the Central Valley, usually in dry, adobe soil in meadows and valley or foothill grassland (5–75m)	April–May
<i>Castilleja rubicundula</i> ssp. <i>rubicundula</i> Pink creamsacs	-/-1B	Openings in chaparral or grasslands, on serpentine and in meadows and seeps in valley and foothill grassland (20–900m)	Apr–Jun
<i>Centromadia parryi</i> ssp. <i>parryi</i> Pappose tarplant	-/-1B	Vernally moist, often alkaline sites in coastal prairies, coastal salt marsh, and valley and foothill grassland (2–420 m)	
<i>Delphinium recurvatum</i> Recurved larkspur	-/-1B	On alkaline soils; often in valley saltbush or valley chenopod scrub; also valley and foothill grassland and cismontane woodland (3–750m)	Mar–May
<i>Erodium macrophyllum</i> Round-leaved filaree	-/-2	Clay soils in cismontane woodland and valley and foothill grassland (15–1200m)	Mar–May
<i>Fritillaria pluriflora</i> Adobe-lily	-/-1B	Usually on clay soils; sometimes serpentine in chaparral, cismontane woodland, and foothill grassland (60–705)	Feb–Apr
<i>Hibiscus lasiocarpus</i> Rose-mallow	-/-2	Moist, freshwater-soaked river banks and low peat islands in sloughs (0–120m)	Jun–Sep
<i>Juncus leiospermus</i> var. <i>ahartii</i> Ahart's dwarf rush	-/-1B	Restricted to edges of vernal pools (30–100m)	Mar–May
<i>Juncus leiospermus</i> var. <i>leiospermus</i> Red Bluff dwarf rush	-/-1B	Vernally mesic sites, sometimes on edges of vernal pools in chaparral, valley and foothill grassland, and cismontane woodlands (30–1020m)	Mar–May
<i>Sagittaria sanfordii</i> Sanford's arrowhead	-/-1B	Marshes, swamps, irrigation ditches, and other slow-moving waterways (0–650 m)	May–Oct
<i>Trifolium jokerstii</i> Butte County golden clover	-/-1B	Valley and foothill grassland, vernal pools; in grassland and swales near oak woodland (50–385m)	Apr–May

Notes:

<sup>a</sup> Fed—United States Fish and Wildlife Service: FE = federally endangered, FT = federally threatened, SC = federal species of concern (not a formal listing)

State—Department of Fish and Game: SE = State endangered, SR = State rare

CNPS (California Native Plant Society): List 1B = plants rare, threatened, or endangered in California and elsewhere; List 2 = plants rare, threatened, or endangered in California but more common elsewhere

Source: CNPS 2009

Rose-mallow is threatened by riverbank alteration; stream channelization; recreation, including boating that creates wakes that erode the shoreline; agricultural conversion; and development (Hickman 1993).

### **Sanford's Arrowhead**

Sanford's arrowhead is on CNPS List 1B.2. This species is not state- or federally listed, so no critical habitat is designated.

This is an emergent (i.e., rooted in water but emerging above the water surface) perennial herb species in the water plantain family (Alismataceae). The flowers have three white petals each, and the blooming period is from May through October. This species grows in shallow freshwater marsh habitat in ponds, ditches, and other standing or slow-moving waters.

The distribution of Sanford's arrowhead is disjunct across many regions, including the Sacramento and San Joaquin Valleys, northwestern California, and the south coast at elevations between 950 and 7,050 feet. There are five documented occurrences in Butte County, with one population located near Thermalito Forebay (CNDDDB 2009).

### **Sensitive Habitats**

Sensitive habitats include sensitive natural communities listed by DFG in the CNDDDB, as well as wetlands and other waters of the United States subject to the jurisdiction of the Corps and lakes, rivers, and streams subject to the jurisdiction of DFG. Riparian habitats within Cherokee Canal are considered to be sensitive and are tracked in the CNDDDB. The entire canal within the project area is considered to be a wetland or other waters of the United States. Small areas within the potential spoils sites also exhibit characteristics indicative of wetlands. These areas may be subject to the jurisdiction of the Corps. Cherokee Canal, as a flowing stream, is subject to the jurisdiction of DFG under its streambed alteration program.

## **DISCUSSION**

- a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the Department of Fish and Game or the U.S. Fish and Wildlife Service?**

### **Special-Status Wildlife**

**Less Than Significant with Mitigation Incorporated.** The proposed project could have a substantial adverse effect on two special-status reptile species (giant garter snake and northwestern pond turtle), four special-status bird species (Swainson's hawk, tricolored blackbird, northern harrier, and loggerhead shrike), and one invertebrate species (valley elderberry longhorn beetle). Impacts to other special-status species would be less than significant for one or more of the following reasons: 1) they have low potential to occur in the project area; 2) the project site is unlikely to provide important habitat for the species; and 3) project implementation will not affect habitat quality for the species.

Construction activities, including channel excavation, equipment staging, and spoiling of sediment could result in injury or mortality of giant garter snakes and northwestern pond turtles should they occur in the project area during initial ground disturbance or if they move into the project area during construction. The new low-flow channel would be created before fill of the old channel. Canal dewatering and relocation could also result in temporary loss of habitat, which could reduce connectivity between adjacent parts of the canal with more suitable habitat, and result in a temporary reduction in habitat quality while vegetation becomes established. These impacts would be potentially significant. However, the proposed project would also improve aquatic habitat for these two species by creating a new low-flow channel with graded slopes that will add significant suitable wetland habitat within the channel, resulting in an overall increase in suitable aquatic habitat for the snake and the turtle. As part of the proposed project, ongoing maintenance needs will be reduced and concentrated in specific segments of the canal that are isolated from western pond turtle and giant garter snake habitat, minimizing the potential for habitat disturbance. This reduction in ongoing maintenance would be another benefit for both species. Implementation of Mitigation Measures BIO-1 and BIO-2 would reduce impacts on giant garter snake and northwestern pond turtle to a less-than-significant level.

Project implementation could also result in loss or disturbance of active nests of special-status bird species. Special-status birds that could nest within or adjacent to the project area include Swainson's hawk, white-tailed kite, northern harrier, tricolored blackbird, and loggerhead shrike. In addition to these special-status species, a number of common raptor species could nest in the project vicinity. The nests of all raptor species are protected under Section 3503.5 of the California Fish and Game Code. Nest disturbance resulting from project construction has the potential to cause nest abandonment or the loss of eggs or chicks as a result of reduced parental care, and removal of riparian vegetation could result in loss of nesting sites for these species. Although preservation of high-quality riparian habitat and compensatory mitigation provided for removal of riparian vegetation is intended to result in no net loss of habitat nesting habitat for these species, the loss or disturbance of active nests would be potentially significant. Implementation of Mitigation Measure BIO-3 would reduce impacts on special-status birds to a less-than-significant level.

Elderberry shrubs have been documented at the Oroville Wildlife Area. Potential damage and mortality to shrubs from construction activities associated with the proposed project would be a potentially significant impact on valley elderberry longhorn beetle. Implementation of Mitigation measure BIO-4 would reduce adverse impacts to valley elderberry longhorn beetle to a less-than-significant level.

### **Mitigation Measure BIO-1: Actions to Avoid Take of Giant Garter Snake.**

- ▶ To the extent practicable, construction activity within giant garter snake habitat will be conducted within the snake's active season (May 1 through October 1). Since work is expected to continue past October 1, USFWS and DFG will be consulted and written approval requested from these agencies to allow continuation of work.
- ▶ A worker awareness training program for construction personnel will be conducted by a qualified biologist before construction activities begin. The program will inform all construction personnel about the life history and status of the snake, the need to avoid

damaging suitable habitat and snake mortality, and the possible penalties for not complying with these requirements. Written documentation of the training will be submitted to USFWS and DFG within 30 days of the completion of training.

- ▶ Within 24 hours of the commencement of ground-disturbing activities, the project site will be inspected for giant garter snakes by a qualified USFWS-approved biologist. The biologist will provide USFWS written documentation of the monitoring efforts no later than 48 hours after the inspection is completed. The project area will be re-inspected by the monitoring biologist whenever a lapse in construction activity of 2 weeks or greater has occurred.
- ▶ A monitoring biologist will be present on-site during initial ground-disturbance activities, including clearing and grubbing/stripping, and will be available for monitoring throughout all phases of construction within giant garter snake habitat. If a giant garter snake is encountered during construction, the on-site monitoring biologist will have the authority to stop construction activities until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed. The biologist will conduct a monitoring visit at least once per week to ensure avoidance and minimization measures are being properly implemented.
- ▶ Before beginning construction activities, high-visibility fencing will be erected to protect areas of aquatic habitat outside of the construction area from encroachment. These areas will be avoided by all construction personnel. The fencing will be inspected before the start of each work day and will be maintained until all construction activities are completed.
- ▶ Jute, hemp, or similar erosion control matting will be used to prevent snake entanglement and mortality. Plastic monofilament erosion control matting will not be used at any time.
- ▶ The number of access routes, number and size of staging areas, and the total area of the proposed project activity will be limited to the minimum necessary. Movement of heavy equipment to and from the project site will be restricted to established roadways, designated construction areas/routes, and designated staging areas to minimize habitat disturbance. Project-related vehicles will observe a 20-mile-per-hour speed limit within construction areas, except on county roads and on state and federal highways.
- ▶ During construction operations, stockpiling of construction materials, portable equipment, vehicles, and supplies will be restricted to the designated construction staging areas. To eliminate attracting predators of the snake, all food-related trash items, such as wrappers, cans, bottles, and food scraps will be disposed of in closed containers.
- ▶ The new low-flow channel will be constructed and operational before existing canals are filled. In addition, existing channels will be dewatered for at least 15 days before excavating or filling of the dewatered habitat. If channels are unable to be dewatered, DWR will consult with USFWS and DFG to identify and implement appropriate measures to avoid attracting snakes to the construction area.
- ▶ After completion of construction activities, any temporary fill and construction debris will be removed and the area will be restored using a native grass and forb mixture.

- ▶ Measures consistent with the current construction-site best management practices (BMPs), including the storm water pollution prevention plan and water pollution control program (WPCP), will be implemented to minimize effects to adjacent giant garter snake aquatic habitat (e.g., siltation) during construction.
- ▶ A WPCP will be prepared by the contractor in accordance with typical provisions associated with a Regional General Permit for Construction (on file with the Central Valley Regional Water Quality Control Board [RWQCB]). The WPCP will contain a spill Response Plan with instructions and procedures for reporting spills, the use and location of spill containment equipment, and the use and location of spill collection materials.
- ▶ USFWS and DFG will be consulted regarding avoidance and minimization measures and additional measures to be developed, if necessary. Authorization for take of giant garter snake under the Endangered Species Act (ESA) or California Endangered Species Act (CESA) will be obtained if it is determined that project implementation is likely to result in take, despite implementation of avoidance and minimization measures.

**Mitigation Measure BIO-2: Actions to Avoid Take of Northwestern Pond Turtle.**

- ▶ A qualified biologist will conduct surveys in aquatic habitats to be dewatered and/or filled during project construction. Surveys will be conducted immediately after any dewatering and before any fill of aquatic habitat.
- ▶ If pond turtles are found, the biologist will capture them and move them to nearby areas of suitable habitat that would not be disturbed by project construction.

**Mitigation Measure BIO-3: Conduct Pre-Construction Surveys for Special-Status Birds and Nesting Raptors and Implement Protection Measures.**

The following measures would reduce potentially significant impacts on Swainson’s hawk, northern harrier, white-tailed kite, loggerhead shrike and common raptors to a less-than-significant level:

- ▶ If project activity is scheduled to occur during the nesting season (March 1–September 15), a focused survey for raptors and loggerhead shrike will be conducted by a qualified biologist before commencement of activities to identify active nests at and in the vicinity of the project site. Surveys for Swainson’s hawk nests will include all areas of suitable nesting habitat within 0.25 mile of the project site. Surveys for other raptors and loggerhead shrike will include suitable nesting habitat within 500 feet of the areas where construction would occur. The inspection will be conducted 14 days before commencement of project activity. If no active nests are found, then no further mitigation will be required.
- ▶ If active nests are found during the surveys, impacts will be avoided by establishment appropriate buffers to minimize impacts. The size of the buffers may be adjusted, depending on the project activity and stage of the nest, if a qualified biologist determines that activity within a reduced buffer would not be likely to adversely affect the adults or their

young. No trees with an active nest will be removed until a qualified biologist confirms that the nest is no longer active.

The following measures would reduce potentially significant impacts on tricolored blackbird to a less-than-significant level:

- ▶ If project activity is scheduled to occur during the breeding season for tricolored blackbirds (March 1–July 31), a preconstruction survey will be conducted by a qualified biologist in any areas of potentially suitable nesting habitat located within a 0.25 mile of the project site. If no nesting tricolored blackbirds are observed during the preconstruction surveys, then no further mitigation is required.
- ▶ If tricolored blackbirds are observed nesting on the project site, project-related construction impacts will be avoided and minimized by establishment of an appropriately-sized buffer around the colony during the nesting period (March 1–July 31) for all project-related construction activities. The size of the buffer will be determined in consultation with DFG to avoid adverse affects on adults or their young.

#### **Mitigation Measure BIO-4: Maintain a 100-Foot Buffer Around Elderberry Shrubs.**

- ▶ Buffers of at least 100 feet will be established around all elderberry shrubs with stems measuring at least 1 inch in diameter at ground level. If maintenance of a 100-foot buffer is not feasible, a request to reduce the buffer to 20 feet from the dripline will be submitted to USFWS for approval.
- ▶ Buffer areas will be clearly marked in the field with brightly colored, temporary construction fencing and flagging. No project activity will occur within the buffer areas.
- ▶ No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant will be used within 100 feet of elderberry shrubs during or following project implementation. If maintenance of a 100-foot buffer for chemical application is not feasible, a request to reduce the buffer will be submitted to USFWS for approval.
- ▶ Dirt roadways and other areas of disturbed bare ground within 100 feet of elderberry shrubs will be watered at least twice a day to minimize dust emissions.
- ▶ Following USFWS guidelines (USFWS 1999b), construction crews will be informed about the status of the beetle and the need to protect its elderberry host plant. If requested by USFWS, a qualified biologist will monitor construction activities to ensure that the buffers remain protected throughout the construction period.
- ▶ If the establishment of an appropriate buffer is not feasible, then USFWS will be consulted. It is anticipated that shrubs that cannot be adequately protected will need to be transplanted to a protected on-site area before construction begins, in accordance with USFWS guidelines (USFWS 1999b).

## Special-Status Plants

Special-status plant surveys to DFG protocols were completed for Cherokee Canal within the project area in 2006 and within the project reach of Cherokee Canal and spoils sites in May 2009. These surveys did not locate any special-status plants within the canal or spoils areas (DWR 2007, 2009a, 2009b, 2009c). There would be no impact.

- b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the Department of Fish and Game or the U.S. Fish and Wildlife Service?**

**Less Than Significant with Mitigation Incorporated.** Cherokee Canal contains bands of riparian habitat through portions of the channel. As described above, these habitats were surveyed to identify areas of riparian habitat with the highest potential habitat values. These areas will be avoided during project construction wherever possible. However, other areas of riparian habitat would be removed as part of project implementation to restore floodwater conveyance capacity to the canal. Implementation of Mitigation Measures BIO-5 and BIO-6 would reduce adverse effects on riparian habitat and riparian-dependent species to a less-than-significant level.

### **Mitigation Measure BIO-5: Avoid Impacts on High-Quality Riparian Habitat, Where Possible**

- ▶ Buffers will be established around all areas of high-quality riparian vegetation to be avoided during project construction. The buffer will encompass the entire crown area of all vegetation to be avoided wherever possible. If a buffer of this size is not feasible, a minimum buffer of 20 feet from the trees or shrubs to be preserved will be established.
- ▶ Buffers will be clearly marked in the field with brightly colored, temporary construction fencing and flagging. No project activity will occur within the buffer areas.

### **Mitigation Measure BIO-6: Obtain a Streambed Alteration Agreement and Implement Required Mitigation Measures for Habitat that Cannot Be Avoided During Project Activities**

DWR will obtain a streambed alteration agreement from DFG. The acreage of riparian habitat that would be removed will be replaced or rehabilitated on a “no-net-loss” basis, in accordance with DFG regulations and as specified in the streambed alteration agreement. Habitat restoration, rehabilitation, or replacement will take place on the project site. A qualified restoration specialist will prepare a restoration plan to guide the restoration of riparian habitat. The restoration plan will be approved by DFG before project implementation.

- c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

**Less Than Significant with Mitigation Incorporated.** A wetland delineation in accordance with Corps standards has been completed by DWR for Cherokee Canal (DWR 2006). The delineation report indicated that the entire project area, with the exception of the levee sides, (approximately 170 acres) is a wetland or other waters of the United States subject to Corps jurisdiction. While proposed project activities would disturb a potentially significant percentage of this habitat, the disturbance would be temporary in nature. And, the wetland habitat that would result following project implementation would be identical in acreage (i.e., the entire channel between the levees) and should provide superior aquatic functions and values relative to current conditions. Additionally, wetland delineations have been completed for the seven spoils sites (DWR 2008b, 2009c). Small wetlands or other potentially jurisdictional waters (< 1 acre) were found in scattered locations within two of the spoils sites. Sediment removal and sediment spoiling associated with the project would potentially affect these habitats. Implementation of Mitigation Measure BIO-7 would reduce impacts on wetlands and other jurisdictional waters to less-than-significant levels.

### **Mitigation Measure BIO-7: Complete the Section 404 Permitting Process and Implement Required Mitigation Measures**

- ▶ The acreage of jurisdictional wetland affected will be replaced in accordance with Corps regulations. Habitat restoration, rehabilitation, or replacement will take place on the project site as part of project implementation, resulting in no-net-loss of wetland acreage and aquatic ecosystem functions and values.
- ▶ DWR will secure authorization for fill of wetlands and alteration of waters of the United States from the Corps through the Section 404 permitting process before project implementation. DWR will ensure the avoidance of any net loss of wetland function and values for wetlands subject to federal or state jurisdiction, and will secure applicable permits and regulatory approvals described below and will implement all permit conditions.
- ▶ The acreage of jurisdictional wetlands affected will be replaced so as to ensure no net loss of functions and values, in accordance with Corps regulations. The range of compensation for fill of jurisdictional waters could be less than 1:1 or more than 1:1, depending on the timing, functions, and values of the jurisdictional waters created for compensation. The final compensatory range will be negotiated with the Corps and specified in regulatory permits issued for that particular phase of the project.
- ▶ Habitat restoration, rehabilitation, and/or replacement will be at a location and will be conducted by feasible methods agreeable to the Corps. Agreement by the Corps will be obtained before the start of any grading activities that could affect wetland features. Methods for designing and implementing restored, rehabilitated, and replacement wetlands will be determined by qualified restoration ecologists and geomorphologists to ensure that the desired results are achievable. The design will include features to maximize the long-term maintenance of functions and values and success criteria. Specifics regarding restoration design, monitoring, and maintenance will be included in the Habitat Mitigation Monitoring Plan to be prepared as part of the 404 permitting process.
- ▶ Water quality certification pursuant to Section 401 of the Clean Water Act (CWA) will be obtained as required for unavoidable impacts on waters of the state under RWQCB

jurisdiction. Any measures required as part of the issuance of water quality certification will be implemented.

- d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

**Less-Than-Significant Impact.** Cherokee Canal provides nesting and migration habitat for numerous native resident and migratory bird species and could provide a movement corridor for common resident wildlife species. Because construction would begin in mid-July after many avian species have completed their nesting season, impacts to nesting migratory birds would be less than significant. Cherokee Canal does not provide habitat for migratory fish.

Although project implementation would include removal of riparian vegetation that provides habitat for migratory wildlife species, higher-quality riparian habitat will be retained wherever possible and riparian habitat that is removed will be mitigated according to appropriate regulations (see Mitigation Measures BIO-6 and BIO-7). These efforts are intended to result in the project area supporting riparian habitat of similar quality before and after project completion. Creation of aquatic habitat for giant garter snake on-site would enhance existing habitat, resulting in an increase in habitat values for the snake. Additionally, reductions in ongoing maintenance requirements should improve the overall habitat quality for riparian-dependent species and giant garter snake by reducing the frequency and intensity of maintenance-related disturbance. Therefore, the project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors.

- e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

**No Impact.** No policies regarding biological resources in the Butte County General Plan or in Butte County ordinances are applicable to the proposed project. Therefore, the proposed project will not conflict with any local policies or ordinances.

- f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?**

**No Impact.** Butte County's Natural Community Conservation Plan/Habitat Conservation Plan is currently in preparation with approval expected in 2011. Because there is no adopted plan that covers the project area, the proposed project does not conflict with any local natural community conservation plan or habitat conservation plan.

### 3.5 CULTURAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>V. Cultural Resources. Would the project:</b>				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### ENVIRONMENTAL SETTING

#### ARCHAEOLOGICAL CONTEXT

Limited archaeological data related to the northern Sacramento Valley necessitates that a reconstruction of the prehistory rely on studies that have taken place to the south of, and in the vicinity of, Sacramento. Despite implications of Central California habitation dating back 10,000 years, evidence supports occupation of the Sacramento Valley only to about 3,500 years ago. This apparent lack of evidence is likely the result of the frequent flooding the valley endures and the resulting sedimentation (Elsasser 1978, Moratto 2004, Wallace 1978).

During the 1930s, Sacramento Junior College, in conjunction with the University of California, Berkeley, was the first to begin systematic investigations of Sacramento Valley archaeological sites. Included in these early investigations were several sites along the Cosumnes River in the northern Sacramento–San Joaquin Delta and Colusa County. As the result of those efforts and subsequent studies in the region, three cultural horizons were delineated: the Early, the Middle, and the Late, with respective initial dates of 2,500 B.C., 1,500 B.C., and 500 A.D. (Elsasser 1978).

Subsequent research has yielded a refinement of dates along with the realization that basic socioeconomic and technical trends or patterns occurred over a broad region. It has also been determined that these patterns could last for different lengths of time in localized areas and that they were distinguished by unique expressions of material culture. The revised cultural chronology is currently identified by the Windmill Pattern, the Berkeley Pattern, and the Augustine Pattern (Moratto 2004).

The Windmill Pattern predominated the region from approximately 2,000 B.C. to 500 B.C. Relative to subsequent periods, Windmill subsistence appears to have focused largely on hunting, as evidenced by large quantities of faunal remains and projectile points in the archaeological record. However, fishing and seed procurement are also evident. With regard

to tool technology, both flaked-stone and ground-stone industries are well represented. A vast trade network facilitated the acquisition of materials for tool and ornament production, where obsidian was obtained from North Coast Range and eastern Sierran sources, shell beads from the coast, and quartz and alabaster from the Sierra foothills. The Windmill Pattern is also characterized by distinctive burial patterns, with bodies typically buried fully extended, face down, with the head oriented toward the west, and the placement of funerary objects (Moratto 2004, Wallace 1978).

The Berkeley Pattern was present in the Central Valley from approximately 500 B.C. to 500 A.D. This pattern is represented by an apparent increase in the use of pestles and mortars, indicative of an intensified reliance on acorns as a principal dietary staple. In addition, the Berkeley Pattern exemplifies a well-developed bone industry, distinctive diagonal flaking of large concave-base points, and marked forms of shell beads and ornaments. In contrast to the Windmill pattern, Berkeley burials are found in a flexed position with variable orientation and fewer funerary artifacts (Moratto 2004).

The Augustine Pattern occurred in the Central Valley from approximately A.D. 500 to contact. This pattern is distinguished by large populations with complex social systems that depended heavily on fishing, hunting, and gathering. Tool technology is represented by shaped pestles and mortars, bone awls, the bow and arrow, and in some cases pottery. There was considerable variation in mortuary practices, including flexed burials, cremation, and funerary object differentiation (Moratto 2004).

## **ETHNOGRAPHIC CONTEXT**

The project area lies within territory historically occupied by the Konkow Maidu (Kroeber 1925, 1932, McCarthy 2004, Riddell 1978). The Konkow speak one of three Maidu languages. The other two related languages are spoken by the Northeast or Mountain Maidu who live in the mountains south of Mount Lassen, primarily around the headwaters of the North Fork Feather River and Susanville, and the Nisenan who live to the south in the mountains and foothills of the Yuba River and American River watersheds. The Konkow once held lands in the lower mountains and foothill elevations of the Feather River and Honcutt Creek watersheds, and into the Central Valley, including portions of the Sacramento River around Chico and downstream along the Feather River to the vicinity of the Sutter Buttes. Throughout this territory the Konkow were organized in village communities that consisted of a large, primary village and numerous smaller satellite villages

The ethnographies identify several large village sites located along the right bank of the Feather River, approximately 10 miles to the east of Cherokee Canal. However, archaeological remnants of these villages seem to be entirely lacking today as the result of early historic mining, dam construction, and development of Oroville.

The Konkow traditionally practiced a mixed economy of fishing, hunting, and gathering. Economic resources were obtained by seasonally traveling to productive locations throughout the territory. The Feather River provided plentiful salmon, lamprey eel, and other desirable fish species. Resources that were not available within village community lands were obtained through trade with other village communities, their Mountain Maidu or Nisenan relatives, or others such as the Patwin to the west.

## HISTORIC CONTEXT

The first report of Europeans venturing into the project area was the 1820–1821 expedition led by Luis Arguello that included portions of the Feather River. Arguello reportedly assigned the river its present name, *Rio de las Plumas*. A series of trapping parties up the Sacramento Valley followed in the late 1820s and 1830s, including that of Jedediah Smith and various Hudson’s Bay Company associates. It was during this time that one of these parties transmitted a lethal disease to the Native American population, causing the demise of up to 75 percent of the indigenous population. Thus, when the Mexican government began granting tracts of land to loyal Californios, large portions of northern California appeared to be largely unpopulated (Selverston et al. 2005).

Gold was discovered shortly thereafter in 1848, which led to the Gold Rush and the vast migration of peoples to the foothills of the Sierra Nevada Mountains of California. Thousands of miners descended upon the area and set up transitory encampments, such as Bidwell Bar, Long Bar and Hamilton, along the Feather River where some gold was discovered. This onslaught brought further decimation to the indigenous populations and severely degraded the natural landscape of the region. After hydraulic mining was prohibited in 1884, the mining industry went into decline. However, mining again became important to the local economy with the development of the dredge. Dredge mining on the Feather River below Oroville first began in 1898 and became a dominant form of mining by the early part of the 20th century. Dredge mining declined after 1916 when deposits were depleted. Gold mining continued to be of minor importance to the local economy until World War II (Selverston et al. 2005).

Cherokee Canal is a major tributary to Butte Creek, and is part of the upper Sacramento River Flood Control Project. The headwaters of Cherokee Canal originate in Dry Creek, Cottonwood Creek, and Gold Run Creek. Cherokee Canal, originally known as the Spring Valley Canal, was constructed in 1874 by the Spring Valley Mining Company and the Cherokee Hydraulic Company. The canal was originally constructed to channel waste mining water and dredge materials from mining sites in Cherokee to the Sacramento Valley for agricultural use. Wanton Allen Shippee was an early agricultural land owner who likely benefited from the construction of Cherokee Canal. Shippee purchased 1,700 acres of land in the region and established a prune orchard in 1896. The United States Department of Agriculture began experimenting with rice cultivation in the northern Sacramento Valley in the early 1900s and, by 1921, the first large-scale rice production had begun in Butte County, with 30,000 acres of rice planted just outside of Richvale (Bailey 2004, Minor 1996). The Corps constructed the levees associated with Cherokee Canal in 1959 and 1960. Today the canal serves as flood protection for about 35,000 acres of adjacent agricultural lands and their related buildings and homes. It also protects a portion of the Union Pacific Railroad, as well as several highways and irrigation canals.

## PALEONTOLOGICAL CONTEXT

The project site is located in the Sacramento Valley portion of the Great Valley Geologic Province of California (Great Valley Province), located between the Sierra Nevada Mountains to the east and the Coast Range Mountains to the west. Most of the surface of the Great Valley Province is covered with Recent (Holocene, or 10,000 years before present [B.P.] to present day) and Pleistocene (10,000–1,800,000 years B.P.) alluvium. This alluvium is

composed of sediments from the Sierra Nevada to the east and the Coast Range to the west that were carried by water and deposited on the valley floor. Siltstone, claystone, and sandstone are the primary types of sedimentary deposits.

## **DESCRIPTION OF FIELD WORK**

Field work in support of the current project was conducted on April 21, 2008, October 29, 2008, May 11, 2009, and May 18, 2009.

The April 21, 2008, survey focused on the sediment removal area within the Cherokee Canal. The sediments within the canal were previously removed to accommodate new deposition as the result of flooding. Because the present ground surface reflects recent sediment deposits, a systematic survey was not conducted in the area targeted for sediment removal. Instead, a drive-by reconnaissance was used to survey this portion of the project.

Spoils Site 6 was surveyed on October 29, 2008. Most of the site was viewed from the levee crown, although some elements of the waterside slope were walked.

Four potential spoils sites were inventoried on May 11, 2009, including Spoils Site 2, 3, 5, and 7, as well as the haul route for Spoils Site 3. Ten-meter pedestrian transects were used to survey all of these project components. Ground surface visibility was excellent at all of the spoils sites with the exception of the Spoils Site 5. Despite the thick vegetation on Spoils Site 5, some insight into the ground surface below was obtained as a result of rodent holes and an access road that encircled the property.

Spoils Site 4 was surveyed on May 18, 2009. Fifteen-meter pedestrian transects were used to survey this site. With rare exception, ground surface visibility was excellent throughout the parcel.

Access issues have precluded Spoils Site 7 and the haul route for Spoils Site 6 from being surveyed for cultural resources. If Spoils Site 7 and Spoils Site 6 are selected to receive sediment from the project, these locations will be surveyed for cultural resources before project initiation. However, the records search for these areas (see below) did not identify the presence of previously recorded cultural resources at or near either location.

## **NATIVE AMERICAN CONSULTATION**

The Native American Heritage Commission (NAHC) was contacted on April 15, 2007, regarding the potential for sacred lands within the project area. The NAHC conducted a search of the Sacred Lands File on August 28, 2007, and reported that no Native American cultural resources are known to exist within the project area.

The NAHC provided a list of local Native American representatives who could be contacted regarding their possible knowledge of resources within the project area. On September 10, 2007, letters of inquiry were sent to the Butte Tribal Council, Enterprise Rancheria of Maidu Indians, the Konkow Valley Band of Maidu Indians, the Berry Creek Rancheria of Maidu Indians, and the Mechoopda Indian Tribe of Chico Rancheria, requesting any information they might have on the project area. One response was received from

Mr. Ren Reynolds of the Butte Tribal Council/Enterprise Rancheria, dated May 22, 2007, and it did not identify the presence of any cultural resources or heritage sites in the project area.

An updated letter of inquiry, outlining the newly identified spoils sites, was sent to the entities noted above on May 21, 2009. One response was received from Mr. Michael DeSpain of the Mechoopda Indian Tribe of Chico Rancheria, dated May 26, 2007, reporting that he was unaware of any heritage sites within the project area.

#### **CULTURAL RESOURCES LOCATED ON THE PROJECT SITE**

Sonoma State University, Anthropological Studies Center, under contract with DWR, conducted a records search for the Oroville Facilities relicensing project at the Northeast Information Center (NEIC) of the California Historical Resources Information System, California State University, Chico in 2001. The search encompassed a 5-mile radius around the project area for the Oroville Facilities relicensing project. This existing records search overlaps part of the project area, including Spoils Site 1 and Spoils Site 4. The only additional work conducted in the area since the original 2001 records search was the Oroville Facilities survey (Selverston et al. 2005), and thus another search of the NEIC records was not conducted for Spoils Site 1 and Spoils Site 4. The records search indicated that Spoils Site 4 is located within the boundaries of CA-BUT-465H, a single-component historic site consisting of 19 loci that contain the dredge fields within the Oroville Wildlife Area. The dredge fields within the particular area selected for spoils for the current project, however, were not included in the loci considered for eligibility to the National Register of Historic Places or the California Register of Historical Resources (Stevens and Newland 2006). Therefore, the proposed project would not have a substantial adverse change to CA-BUT-465H.

A records search for the project site, as well as Spoils Site 7 and Spoils Site 5, was conducted by NEIC staff on November 26, 2007. The search encompassed a 0.5-mile radius around these sites. The records search failed to identify any previously recorded cultural resources within the area of potential effects; however, the 1944 Gridley and Oroville 15' USGS topographic quadrangle maps indicate that several historic structures are located within the project area. None of these features would be affected by project construction.

Additional spoils sites were added after the November 26, 2007 records search. Thus, an additional records search was requested for Spoils Site 2, 3, and 6. A records search was conducted by NEIC staff on May 22, 2009. The search encompassed a 0.5-mile radius of the proposed spoils sites. The search indicated that there were no cultural resources within the three potential spoils sites. There were, however, three resources within the 0.5-mile radius surrounding these sites, including a segment of the Gold Run Canal (P04-002894), a segment of the Rice Canal/Main Ditch B (CA-BUT-3120H), and a segment of Cherokee Canal (CA-BUT-3121H). In addition, the 1954 Butte City, 1949 Chico, 1952 Gridley, and 1942 Oroville 15' USGS topographic quadrangles indicate that numerous historic structures are located within the project area. None of these resources would be affected by construction activities. Lastly, 10 cultural resources studies have been conducted within 0.5-mile of the project, four of which overlap small portions of the project area.

Additional cultural resources, including Cherokee Canal, the existing levee along Spoils Site 6, and the existing roads that would be used as haul routes were observed within the project

area. These structures have been continually maintained and modified. The proposed project would continue these practices and the function of these structures would not change; therefore, there would not be a substantial adverse change to these resources.

#### **PALEONTOLOGICAL RESOURCES LOCATED ON THE PROJECT SITE**

Sediments adjacent to the Sacramento River in the project area are composed primarily of recent (Holocene) (10,000 years B.P. and younger) alluvial channel and basin deposits (Wagner et al. 1987). These deposits consist primarily of unconsolidated sand and silt. Holocene alluvial deposits overlie an older alluvial fan system composed of Pleistocene-age sediments. By definition, to be considered a fossil, an object must be more than 10,000 years old; therefore, parts of the project site mapped in Holocene deposits are not considered sensitive for the presence of paleontological resources.

#### **DISCUSSION**

**a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?**

**No Impact.** As discussed above, cultural resources investigations conducted by DWR did not result in the discovery of cultural resources within the project site or spoils sites. Therefore, there would be no impact on cultural resources.

**b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?**

**Less Than Significant with Mitigation Incorporated.** While archaeological investigations have not located archaeological resources in the project vicinity or on the project site or spoils sites, unique archaeological resources or historical resources could be discovered and damaged during project implementation. Because of the potential for the discovery and damage of these resources this impact is potentially significant. Implementation of Mitigation Measure CULT-1 would reduce this impact to a less-than-significant level.

**Mitigation Measure CULT-1: Immediately Halt Construction if Cultural Resources are Discovered.**

Should any cultural resources, such as structural features, unusual amounts of bone or shell, artifacts, human remains, or architectural remains, be encountered during any construction activities, work will be suspended immediately at the location of the find and within an appropriate radius. A qualified DWR archaeologist will conduct a field investigation of the specific site and recommend mitigation deemed necessary for the protection or recovery of any cultural resource concluded by the archaeologist to represent historical resources or unique archaeological resources. DWR will be responsible for approval of recommended mitigation if it is determined feasible in light of approved land uses, and will implement the approved mitigation before resuming construction activities at the archaeological site. Discoveries of human remains will be treated as described below for Mitigation Measure CULT-2.

**c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

**No Impact.** Sediments on the project site are Holocene-age alluvium, which by definition are too young to contain paleontologically sensitive resources. Therefore, construction activities would not have an impact on paleontological resources.

**d) Disturb any human remains, including those interred outside of formal cemeteries?**

**Less Than Significant with Mitigation Incorporated.** While evidence for the presence of human remains has not been located within the project site, the potential exists for human remains to be encountered and disturbed during ground-disturbing activities associated with project implementation. This would be a potentially significant impact. Implementation of Mitigation Measure CULT-2 would reduce this impact to a less-than-significant level.

**Mitigation Measure CULT-2: Immediately Halt Construction if Human Remains are Discovered.**

In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, the contractor or DWR will immediately halt potentially damaging excavation in the area of the burial and notify the Butte County Coroner, a DWR in-house cultural resource specialist, and a professional archaeologist to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). The Most Likely Descendant (MLD) designated by the NAHC will determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed as provided for in California Public Resources Code Section 5097.98, in consultation with DWR and the landowner, subject to the limitations provided in Section 5097.98.

DWR will ensure that the immediate vicinity (according to generally accepted cultural or archaeological standards and practices) is not damaged or disturbed by further development activity until consultation with the MLD has taken place. The MLD will have 48 hours to complete a site inspection and make recommendations after being granted access to the site. A range of possible treatments for the remains, including nondestructive removal and analysis, preservation in place, relinquishment of the remains and associated items to the descendants, or other culturally appropriate treatment may be discussed. State Assembly Bill (AB) 2641 suggests that the concerned parties may extend discussions beyond the initial 48 hours to allow for the discovery of additional remains. AB 2641(e) includes a list of site protection measures and states that DWR will comply with one or more of the following:

- (1) Record the site with the NAHC or the appropriate Information Center
- (2) Utilize an open-space or conservation zoning designation or easement
- (3) Record a document with the county in which the property is located

On behalf of the property owner, DWR or its authorized representative will rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance if the NAHC is unable to identify a MLD or the MLD fails to make a recommendation within 48 hours after being granted access to the site. DWR or its authorized representative may also re-inter the remains in a location not subject to further disturbance if DWR rejects the recommendation of the MLD and if mediation by the NAHC fails to provide measures acceptable to the landowner. Adherence to these procedures and other provisions of the California Health and Safety Code and AB 2641(e) will reduce potential impacts on human remains to a less-than-significant level.

### 3.6 GEOLOGY AND SOILS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>VI. Geology and Soils. Would the project:</b>				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### ENVIRONMENTAL SETTING

The elevation of the project site is approximately 100 feet above mean sea level and the topography is generally a flat valley bottom sloping slightly to the southeast. Adjacent land uses consist almost entirely of agricultural fields including rice production. Other nearby land uses include wheat and orchard crops, rural residential development, grain storage facilities, hunting clubs, transportation corridors, and gravel mining operations.

According to the California Geological Survey’s (CGS’s) *Geologic Map of California, Chico Sheet* (CGS 1962), the project site is in an area mapped as Quaternary aged alluvial fan deposits, part of the Great Valley Sequence. These alluvial fan deposits overlie the Pliocene

volcanic Tuscan Formation, which consists of volcanic ash, mudflows, conglomerates, sandstones, and siltstones of volcanic origin.

The soils in this vicinity are identified by the Natural Resource Conservation Service (NRCS) (2007) *Soil Survey of Butte Area, California, Parts of Butte and Plumas Counties*, which documents soils as Oxyaquic Xerofluvents sandy and silty loam, 0 to 1 percent slopes, frequently flooded. Soils in this area are poorly drained, surface runoff is very low, and the shrink-swell potential is low.

The project site is within the transition area between the Sacramento Valley and the southernmost extension of the Cascade Range. The change in gradient causes the project to be in a depositional environment and the entire canal is overlain by sediments from historic hydraulic mining activities in the upper watershed. The parent material is composed of silty and coarse-loamy alluvium that is derived from sedimentary rocks.

## DISCUSSION

- a) **Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:**
- i) **Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)**
  - ii) **Strong seismic ground shaking?**
  - iii) **Seismic-related ground failure, including liquefaction?**
  - iv) **Landslides?**

**No Impact.** The proposed project would not expose people or structures to substantial adverse effects from a rupture of a known earthquake fault, seismic-related ground shaking, failure, liquefaction, or landslides because the project is a canal rehabilitation and sediment removal project that does not propose housing or other new structures. The physical topography of this portion of the Cherokee Canal area is flat valley floor. The local elevation is approximately 100 feet above mean sea level. The stream gradient within the project reach approximately 1 foot per mile; thus, the potential for landslides is extremely low. In addition, the project is not located within an Alquist-Priolo Fault Zone (Department of Conservation 2006). The nearest mapped active fault to the project area is Cleveland Hills Fault located approximately 13 miles to the east. Rupture of the Cleveland Hills Fault could lead to a magnitude 6.5 to 6.7 earthquake (Butte County 2007:17-62). However, because of the nature of the project the potential risk of loss, injury, or death would not increase. Based on the dense, compacted nature of the underlying volcanics within the project site, the potential for landslides, subsidence, liquefaction, and lateral spreading is considered low.

**b) Result in substantial soil erosion or the loss of topsoil?**

**Less-than-Significant Impact with Mitigation Incorporated.** The project site is relatively flat; however, project grading and ground disturbance would result in temporary exposure of soil to potential wind and water erosion until the project site is effectively stabilized and revegetated. This impact would be potentially significant. Implementation of Mitigation Measure GEO-1 would reduce this impact to a less-than-significant level.

**Mitigation Measure GEO-1: Prepare and Implement Dewatering, Erosion Control, and Monitoring Plans as Part of a Storm Water Pollution Prevention Plan.**

The contractor will prepare a storm water pollution prevention plan (SWPPP) that identifies BMPs for preventing or minimizing the discharge of sediments and other contaminants that have the potential to affect beneficial uses or lead to a violation of water quality objectives. The SWPPP will also include the following components:

- ▶ *Dewatering Plan.* A dewatering plan will be developed and designed so that discharges to surface water meet water quality objectives provided in the *Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region* (Central Valley RWQCB 2007) to satisfy the requirements of the State of California's General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Storm Water Permit). Construction dewatering activities that discharge to surface waters require National Pollutant Discharge Elimination System (NPDES) authorization under the Waste Discharge Requirements for Dewatering and Other Low Threat Discharges to Surface Waters (Order No. R5-2008-0081 NPDES NO. CAG995001). The dewatering plan is required to include details on the approach to season the channel before reestablishing flows so that flushing flows do not cause surging of sediments downstream. The General NPDES permit contains terms and conditions for discharge prohibitions, specific limits related to effluent and receiving-water quality, solids disposal activities, and water quality monitoring protocols.
- ▶ *Erosion Control Plan.* An erosion control plan will be developed for the proposed project and designed to meet the water quality objectives provided in the Basin Plan to satisfy the requirements of the General Storm Water Permit. The erosion control plan will identify specific measures for construction, long-term management, and stabilizing soils before the onset of winter. BMPs for erosion control, as set forth in the erosion control plan and further defined by DWR, will be implemented. Such BMPs may include the careful use of grading management techniques, silt fences, silt curtains, berms, sandbags, and revegetation.
- ▶ *Monitoring Plan.* A monitoring plan will be developed that includes a proposed inspection, monitoring, and reporting program for the proposed project. The monitoring plan will demonstrate the means by which water quality objectives provided in the Basin Plan will be met during construction and long-term management. BMPs are expected to be fully effective. Notwithstanding, DWR or its contractor will evaluate BMP effectiveness during construction. If the quantity or quality of BMPs needs to be addressed, DWR or its contractor will implement improvements within 24 hours after the initial discovery or before the onset of an expected storm event.

- c) **Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?**

**No Impact.** See discussion a) i–iv) above.

- d) **Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial risks to life or property?**

**No Impact.** The proposed area is not located on expansive soils as defined in Table 18-1-B of the Uniform Building Code (1994, as updated); therefore, project activities would not create any risks associated with expansive soils.

- e) **Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?**

**No Impact.** The proposed project does not propose the construction of any septic tanks or wastewater disposal systems. Therefore, no impact related to septic systems would occur as a result of unstable soils.

### 3.7 HAZARDS AND HAZARDOUS MATERIALS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>VII. Hazards and Hazardous Materials. Would the project:</b>				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

## **ENVIRONMENTAL SETTING**

Agricultural land is located upstream from and surrounds the project site, and thus it is possible that residual pesticides and herbicides have contaminated the soil and surface water in the project vicinity. In addition, although the project area is not considered an area likely to contain naturally occurring asbestos, Cherokee Canal historically acted as a catch basin for hydraulic mining sediments. These sediments may have originated from areas within Butte and Plumas Counties considered likely to contain naturally occurring asbestos (Churchill and Hill 2000).

## **POTENTIAL SOURCES OF HAZARDOUS MATERIALS**

Based on a search of the federal Environmental Protection Agency's (EPA's) Envirostor database, no known sources of hazardous materials exist within the project area. However, several known sources of hazardous materials are located in the town of Richvale, approximately 1 mile to the west (EPA 2009). These sites, which are not expected to affect the project area, are identified as follows:

- ▶ Butte County Rice Growers Association, 1121 Richvale Highway, Richvale, California (currently under site remediation);
- ▶ Flying Farmers, 1764 Richvale Highway, Richvale, California (case closed); and
- ▶ Single Family Home, 5268 Church Street, Richvale, California (case closed).

## **SENSITIVE RECEPTORS IN THE PROJECT VICINITY**

CEQA requires consideration of project siting near schools and airports. The nearest school to the project area is Richvale Elementary School, located approximately 1 mile to the northwest in the town of Richvale. Two airports are located approximately 2 miles from the project area: Richvale Airport and Jones/Ag-Viation Airport, located to the northwest and southeast, respectively. In addition, Oroville Municipal Airport is approximately 1 mile from Spoils Site 4.

## **WILDLAND FIRE**

Public Resources Code 4201-4204 and Government Code 51175-51189 require identification of fire hazard severity zones in the state of California. Fire hazard severity zones are rated as moderate, high, and very high. Rating is qualitative, based on vegetation, topography, weather, crown fire potential (a fire's tendency to burn upwards into trees and tall brush), and ember production and movement within the area in question. Fire prevention areas under state jurisdiction are referred to as "state responsibility areas," whereas "local responsibility areas," which are under the jurisdiction of local entities (e.g., cities, counties), are only required to identify very high fire hazard severity zones.

The proposed project is located within a local responsibility area. Draft fire hazard severity zone maps, published in September 2007, indicate that the project area is generally unzoned. A small portion is considered to have a moderate fire hazard severity rating.

## DISCUSSION

- a) **Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

**Less-Than-Significant Impact.** Construction of the proposed project would include use and handling of small quantities of hazardous substances, such as diesel fuels, lubricants, herbicides, and solvents. Handling and transport of these materials could result in the exposure of workers to hazardous materials. However, the proposed project would comply with applicable federal, state, and local laws pertaining to the handling and transport of hazardous materials, including California Occupational Health and Safety Administration requirements. In addition, as discussed in Section 3.6 “Geology and Soils,” the applicant would be required to implement a SWPPP and BMPs that would minimize the potential for construction-related spills of hazardous wastes and would provide for appropriate and immediate cleanup of spills, if any were to occur. Therefore, this impact would be considered less than significant.

- b) **Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?**

**Less Than Significant with Mitigation Incorporated.** As noted above, construction of the proposed project would involve the use of heavy construction equipment, which uses small amounts of hazardous materials such as oils, fuels, and other potentially hazardous substances typically associated with construction activities. However, because the project contractor would comply with regulations related to the use and storage of hazardous materials, potential impacts from construction- and maintenance-related accidental spills of hazardous materials would be considered less than significant.

However, existing conditions and historical uses near the project area could potentially release hazardous materials into the environment. Sediment within the Cherokee Canal may contain naturally occurring asbestos from historical hydraulic mining deposits upstream of the canal and residues of persistent pesticides and herbicides from surrounding agricultural activities. Because project implementation includes excavation and deposition of soils from the project area that may contain hazardous materials at spoils sites, this impact is considered to be potentially significant. Implementation of Mitigation Measure HAZ-1 would reduce impacts to a less-than-significant level.

### **Mitigation Measure HAZ-1: Determine the Presence or Extent of Soil Contamination within the Project Area, Implement Required Measures, and Create a Site Management Plan**

DWR will implement the following measures before ground-disturbing activities to reduce health hazards associated with potential exposure to hazardous substances:

- ▶ DWR will retain an appropriately licensed professional to maintain responsible charge for collecting and analyzing soil and sediment samples for potential sources of contamination.

Recommendations to address any contamination found will be implemented before initiating ground-disturbing activities in the project area.

- ▶ If soil contamination is found on-site, DWR or its contractor will prepare a site plan that identifies any necessary remediation activities, including excavation and removal of on-site contaminated soils and sediments within the project area. The plan will include measures that ensure the safe transport and disposal of contaminated materials. In the event that evidence of contaminated soil (e.g., stained, odiferous) is discovered during construction activities, the contractor will notify the appropriate federal, state, and local agencies. Any contaminated areas will be cleaned up in accordance with recommendations made by the Butte County Public Health Department, Central Valley RWQCB, California Department of Toxic Substances Control, and other appropriate federal, state, and local regulatory agencies, as generally described above.

**c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?**

**No Impact.** There are no schools located within 0.25-mile of the project area or spoils sites. In addition, the proposed project would not emit any hazardous materials or require handling of acutely hazardous materials. There would be no impact.

**d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?**

**No Impact.** Neither the project area nor the project vicinity contains any sites included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. There would be no impact.

**e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?**

**f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?**

**Less-Than-Significant Impact.** There are two public airports approximately 2 miles from the project site and one airport approximately 1 mile from Spoils Site 4. However, the proposed project would not increase the number of people residing in the project area, and workers would be working in the project area or spoils locations for a relatively short period of time (i.e., approximately 4 months). Therefore, any increase in airport-related hazards for workers in the project area would be very low. In addition, the Federal Aviation Administration's (FAA's) Advisory Circular 150/5200-33b, *Hazardous Wildlife Attractants on or Near Airports*, recommends a separation distance of 10,000 feet between the Airport Critical Zone and any hazardous wildlife attractant (FAA 2007). However, habitat for birds and other wildlife currently exists within the project site and the spoils sites, and the project would not substantially

increases the acreage of habitat that would attract wildlife within the project site or spoils sites. Therefore, this impact would be less than significant.

**g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

**No Impact.** The proposed project does not propose any activities that would interfere with an existing or a proposed emergency response or emergency evacuation plan. There would be no impact.

**h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?**

**No Impact.** Although a small portion of the project area is considered to have moderate fire hazard severity, in general the proposed project and surrounding areas are not rated for fire hazard severity. Land uses in the area consist of agricultural uses and scattered rural residences. Because the project area is not located within a high or very high fire hazard severity zone, and primarily consists of regularly irrigated agricultural land, implementation of the proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires.

### 3.8 HYDROLOGY AND WATER QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>VIII. Hydrology and Water Quality. Would the project:</b>				
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j) Result in inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

## ENVIRONMENTAL SETTING

Cherokee Canal and the spoils sites lie in the Sacramento Valley in Butte County, California, near the towns of Richvale and Biggs. The climate in the project area is characterized by hot, dry summers and cool, moist winters. The average annual precipitation in the project area is between 20 and 30 inches (Butte County 2007:12-28). The project is located in the Lower Butte Hydrologic Unit Map Number 18020105. The Cherokee Canal watershed is a small northeast to southwest trending watershed, encompassing approximately 95 square miles and ranging in elevation from 65 to 2,000 feet (Cherokee Watershed Resources and Butte County Department of Water Resource Conservation 2005: 3). Cherokee Canal is a major tributary to Butte Creek, originating in the lower reaches of the Cherokee watershed, which includes the tributary streams of Dry Creek, Cottonwood Creek, Gold Run Creek, and Clear Creek, all of which drain into Cherokee Canal.

Cherokee Canal is a part of the Upper Sacramento River Flood Control Project. The Corps constructed approximately 23 miles of gently sloping levees for this canal, from Lower Butte Basin to high ground in 1959 and 1960. Elevations in Cherokee Canal range from approximately 175 feet in the foothills at the upper west end of the canal, north of Oroville to approximately 70 feet at the lower east end in the Butte Sink. The hydrology of the area is influenced by adjacent and upstream land uses. Upstream, historical hydraulic mining operations cause deposits of large amounts of sediment in the canal. Nearby, rice fields are kept flooded throughout the growing season, requiring water supply irrigation ditches and producing runoff when fields are drained in the late summer. During the growing season, water is conveyed from the “Shoo Fly” gate operated by Richvale Irrigation District into the low-flow channel of Cherokee Canal north of SR 162 for agricultural use. Stream gauges are located both up and downstream of the project area (USGS gauge numbers 11390210 and 39212612523701). The flow can range from a minimum of 20 cubic feet per second (cfs) to a maximum of 100 cfs (DWR in prep.). Hydrology in the canal may also be influenced by the Western Canal Water District’s operation and maintenance facilities (DWR in prep.). The gradient of the channel is very low, about 1 percent slope from the Western Canal inverted siphon to SR 162.

None of the spoils sites are within any waterways, and drainage for each of the sites is provided locally.

## DISCUSSION

### a) **Violate any water quality standards or waste discharge requirements?**

**Less Than Significant with Mitigation Incorporated.** During construction of the proposed project and for the first 2–3 years of vegetation reestablishment, short-term adverse water quality impacts could occur. The primary potential source of contamination would be the loosened soil materials, but other on-site sources of contamination during construction could include leaks or spills of fluids or fuels from vehicles and equipment, or miscellaneous construction materials and debris. Furthermore, initial flushing of the recontoured channel could result in sediment transport. If sediment and adhered nutrients or fluid contaminants are mobilized and transported to receiving waters, water quality standards could be violated. This impact would be potentially significant. Implementation of Mitigation Measure GEO-1, which

would require implementation of a dewatering/diversion, erosion control, and monitoring plan, would reduce this impact to a less-than-significant level.

As discussed in Mitigation Measure GEO-1 in Section 3.6, "Geology and Soils," the proposed project would be required to satisfy the requirements of the State of California's General Storm Water Permit. Construction activities that discharge to surface waters require NPDES authorization under the Waste Discharge Requirements (WDRs) for Dewatering and Other Low Threat Discharges to Surface Waters (Order No. R5-2008-0081 NPDES No. CAG995001). The NPDES permit contains terms and conditions for discharge prohibitions, specific limits related to effluent and receiving-water quality, solids disposal activities, and water quality monitoring protocols.

Because the proposed project would be larger than 1 acre, the contractor would be required to prepare and implement a SWPPP before the start of any construction work, site grading, or excavation. Plans proposed in Mitigation Measure GEO-1 would be included as part of the SWPPP. The SWPPP would require identification of grading and erosion-control BMPs and specifications that are necessary to avoid and minimize erosion-related impacts, to the extent practicable. Implementation of standard erosion-control measures (e.g., management, structural, and vegetative controls) would be required for all construction activities that expose soil. Grading operations would be required to eliminate direct routes for conveying potentially contaminated runoff to drainage channels. The SWPPP would also identify specific measures for stabilizing soils before the onset of winter. DWR or its contractor would be responsible for constructing or implementing, regularly inspecting, and maintaining the erosion-control and waste-discharge measures identified in the SWPPP.

**b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?**

**No Impact.** The proposed project would not draw any water from local groundwater, and thus would not interfere with groundwater recharge or lower the water table. There would be no impact on groundwater resources.

**c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation?**

**Less Than Significant with Mitigation Incorporated.** Topography within the project area would be modified along the canal and at the spoils sites. Although the topography at the spoils sites may change, drainage at these sites would not be substantially altered. Excavation in the canal would attempt to recreate the flood control project's original design. The width of the cut may vary depending on topography and in-channel environmental features, such as the existing low-flow channel and depositional berms that support riparian habitat. The actual depth of the excavated area would vary along the length of the cut to achieve a smooth, continuous gradient for drainage and to remove the volume of sediment needed to restore the original design configuration. Side slopes of the channel would be

designed to achieve positive drainage away from the levees and toward the low flow channel. To the extent possible, the path of the existing low-flow channel would be retained.

This impact would be potentially significant. Implementation of Mitigation Measure GEO-1, described above in Section 3.6, "Geology and Soils," which would require implementation of a dewatering, erosion control, and monitoring plan, would reduce this impact to a less-than-significant level.

**d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding?**

**No Impact.** The project would not alter the existing drainage pattern of the project area in a manner that would result in on- or off-site flooding. Although the topography at the spoils sites may change, drainage at these sites would not be substantially altered. In addition, the canal provides flood protection for more than 35,000 acres of farmland. The 25-year flood design capacity of 11,500 cfs with 3 feet of freeboard is currently not being met within the project reach of Cherokee Canal (Exhibit 2-2). Although much of the area is privately owned, DWR is responsible for channel maintenance. Studies conducted by DWR indicate that the canal segment between the Richvale Highway and the Union Pacific railroad crossing can pass roughly two-thirds of the 25-year design flow of 11,500 cfs without encroaching on the design freeboard. Hydraulic modeling indicates that a 25-year flow would currently approach or overtop the levee along most of this segment. Primary goals of this project are to improve the ability of the Cherokee Canal to transport sediments and improve channel capacity

The project area would be graded to reduce the risk of localized flooding compared with existing conditions, producing a net benefit. A long-term management plan would be prepared to evaluate and maintain post-project conditions. DWR would perform regular and ongoing inspection and maintenance activities along Cherokee Canal.

**e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?**

**Less Than Significant with Mitigation Incorporated.** The proposed project would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Runoff from the project area would drain to Cherokee Canal and would be conveyed off-site. The only potential sources of polluted runoff would be from construction equipment used on-site during project construction and long-term management. This potential source would not contribute substantial additional sources of polluted runoff. Mitigation Measure GEO-1 in Section 3.6, "Geology and Soils," would further decrease this potential source of pollution to a less-than-significant level.

**f) Otherwise substantially degrade water quality?**

**Less Than Significant with Mitigation incorporated.** As discussed in item a) above, implementation of Mitigation Measure GEO-1, which would require implementation of a dewatering, erosion control, and monitoring plan, would reduce this impact to a less-than-significant level.

- g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?**
- h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?**
- i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?**

**No Impact.** The proposed project would not involve construction or modification of any housing, and would not place any housing in a 100-year flood hazard area. The proposed project would provide improved flood protection for the surrounding areas and would have a beneficial effect on flooding in the project area.

Portions of the project area are located within the 100-year flood zone. However, no bridges, culverts, homes, or other structures are proposed as part of the project. In addition, the proposed project would remove sediment from Cherokee Canal, which is currently impeding flows in the channel and would improve flood conditions in the project area. Therefore, there would be no impact related to structures impeding or redirecting flood flows.

As discussed above, the existing canal provides flood protection for more than 35,000 acres of farmland. The 25-year flood design capacity is currently not being met. Initial modeling results indicate that proposed channel modifications would transport water more effectively during high flows than the existing channel, thereby reducing the chance of levees being overtopped or breached by floodwaters. The project area would be graded to reduce the risk of localized flooding compared with existing conditions, producing a net benefit. A long-term management plan would be prepared to evaluate and maintain post-project conditions. DWR would perform regular and ongoing inspection and maintenance activities along Cherokee Canal.

**j) Result in inundation by seiche, tsunami, or mudflow?**

**No Impact.** The project does not propose any new development or modifications that could be affected by a seiche, tsunami, or mudflow. Seiches are natural standing waves in a lake, reservoir, or bay. Tsunamis are a series of waves created when a large volume of a body of water, such as an ocean, is rapidly displaced. The project area is not located near the ocean, a lake, or a large body of water where there is potential for inundation by seiches or tsunamis. A mudflow is a rapid movement of a large mass of mud formed from loose earth and water, which flows downslope. The topography of the project area is generally a flat valley bottom, not conducive to mudflow. Therefore, the proposed project would have no impact related to

inundation by seiches, tsunamis, or mudflows and would not expose people or structures to any such hazards.

### 3.9 LAND USE AND PLANNING

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>IX. Land Use and Planning. Would the project:</b>				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### ENVIRONMENTAL SETTING

The project reach of Cherokee Canal and spoils sites are located in Butte County near the town of Richvale. The primary land use in the project area is agriculture, specifically cultivation and orchards. A few scattered rural residences are located in the project area; although, there are no residences within the project site or at any of the spoils sites. Richvale Highway roughly bisects the project site and the Union Pacific railroad crossing forms the southern end of the project boundary.

The Butte County General Plan’s land use designation for the project site is Orchard & Field Crop (OFC), which allows for cultivation, harvest, storage, processing, sale and distribution of all plant crops. The land use designation for all of the spoils sites is also OFC, except for Spoils Site 4, which is designated as Public (P). Allowable uses for the Public land use designation include large facilities owned and operated by government agencies, such as schools, airports, dams and reservoirs, disposal sites, and recreation facilities (Butte County 2007:1-8 through 1-10).

The project reach of Cherokee Canal lies in the Nelson/Richvale Zoning District and is zoned as A-40, a zoning designation that permits agricultural land uses with a minimum parcel size of 40 acres. All of the spoils sites are also in the Nelson/Richvale Zoning District and are zoned A-40, except for Spoils Site 4 and Spoils Site 6. Spoils Site 4 is in the Thermalito Zoning District and is zoned as Resource Conservation, and Spoils Site 6 is in the Gray Lodge Zoning District and is zoned as A-40 (Landsite 2007). The Cherokee Canal and spoils sites are within the planning area for the Butte County Habitat Conservation Plan (HCP) (Butte County 2006).

### DISCUSSION

#### a) Physically divide an established community?

**No Impact.** The project site is located in a rural area and is not located within an existing community. The nearest community is the town of Richvale, which is approximately 1 mile west of the project site. The proposed project is located along the existing Cherokee Canal and would not divide an established community. In addition, none of the spoils sites are located within an existing community and uses of these sites would not divide an established community. No impact would occur.

**b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?**

**No Impact.** Implementation of the proposed project would not cause changes in the project site or spoils sites that would conflict with any applicable land use plan, policy, or regulation. The project is not proposing any new land uses in the project area or spoils sites that would conflict with the Butte County General Plan's land use designations or zoning.

**c) Conflict with any applicable habitat conservation plan or natural community conservation plan?**

**No Impact.** Butte County's Natural Community Conservation Plan/Habitat Conservation Plan is currently in preparation with approval expected in 2011. Because there is no adopted plan that covers the project area, the proposed project does not conflict with any local natural community conservation plan or habitat conservation plan.

### 3.10 MINERAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>X. Mineral Resources. Would the project:</b>				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### ENVIRONMENTAL SETTING

Butte County contains 20 permitted mines for which the State of California has issued individual California mine identification numbers (Butte County 2007:11-8). While several of these mines are located in the upper watershed that drains into Cherokee Canal, no mines are located in the project site or within any of the spoils sites (Butte County 2007:11-6). Mineral resources within the vicinity of the project site are confined to sand and gravel deposits that occur in two regions, along the Sacramento River and within a band running from north to south down the center of the county.

### DISCUSSION

- a) **Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?**
- b) **Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?**

**No Impact.** No known mineral resources exist within the project site or spoils sites, and neither the project site nor the spoils sites are located in areas identified as important mineral recovery sites. Because no known mineral resources exist in these areas and the proposed project would not result in the loss of any known mineral resources, there would be no impact.

### 3.11 NOISE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>XI. Noise. Would the project result in:</b>				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### ENVIRONMENTAL SETTING

The project site is located north of SR 162 and west of SR 99 within Butte County. Existing noise-sensitive land uses in the vicinity include rural residences located to the west, the closest of which is approximately 1,200 feet away from the property line and approximately 1,300 feet away from the location of highest potential construction activity.

The existing noise environment within the proposed project area, including all of the spoils sites, is primarily influenced by surface-transportation noise emanating from vehicular traffic on Richvale Highway, SR 162, and SR 99 and from Union Pacific Railroad (UPRR) operations. Intermittent agricultural noise from adjacent agricultural uses and area airports also influence the existing noise environment. Traffic on SR 162 and SR 99 contribute the highest noise levels from this source in the project area. Thus, existing roadway-traffic noise levels were modeled for segments of Richvale Highway and SR 99 near the project site (Table 3.11-1), using the Federal Highway Administration (FHWA) Traffic Noise Prediction Model (RD-77-108, 1978).

<b>Table 3.11-1 Modeled Existing Vehicular Traffic-Noise Levels<sup>a</sup></b>				
Roadway Segment	Distance (feet) from Roadway Centerline to L <sub>dn</sub> Contour (dB)			L <sub>dn</sub> (dB) 100 Feet from Centerline
	70 L <sub>dn</sub>	65 L <sub>dn</sub>	60 L <sub>dn</sub>	
State Route 99 – Richvale Highway to the north	80	172	371	68.5
Richvale Highway – Junction 45 to the east	19	42	90	59.3
Midway – South of Durham Dayton Road	13	28	61	56.8
Notes:				
dB = A-weighted decibels				
Day-Night Level (L <sub>dn</sub> ) is the energy-average of the A-weighted noise levels during a 24-hour period with 10 dB added to the night (10 p.m. to 7 a.m.) hours.				
<sup>a</sup> Modeled noise levels do not consider any shielding or reflection of noise by existing structures or terrain features, or noise contribution from other sources.				
Refer to Appendix B for modeling input parameters and output results.				
Source: California Department of Transportation 2008:148, 214; data modeled by EDAW in 2009 using the Federal Highway Administration's Traffic Noise Prediction Model (RD-77-108, 1978)				

Table 3.11-1 presents the modeled Day-Night noise levels (L<sub>dn</sub>) at 100 feet from the roadway centerlines and the distance from the roadway centerline to the L<sub>dn</sub> contours of interest based on existing average daily traffic (ADT) volumes and heavy and medium truck mix percentages from the California Department of Transportation (Caltrans) (Caltrans 2008:148, 214). Details on traffic noise modeling results can be found in Appendix B.

### **BUTTE COUNTY GENERAL PLAN**

The Butte County General Plan Noise Element has established exterior criteria of 60 dB L<sub>dn</sub> for residential uses and 75 dB L<sub>dn</sub> for agricultural uses (Butte County 1977: Chart 4 of the General Plan Noise Element). Butte County does not have a noise ordinance.

For construction activities taking place in the vicinity of noise sensitive receptors, the Butte County Planning Department has recommended the following measures.

- ▶ Hours of operation will be limited to 6 a.m. to 7 p.m., Monday through Friday. No construction activities should occur on Sundays or holidays.
- ▶ Construction equipment will be properly maintained per manufacturers' specifications and fitted with the best available noise suppression devices (i.e. mufflers, silencers, wraps). All impact tools should be shrouded or shielded, and all intake and exhaust ports on power equipment should be muffled or shielded.
- ▶ Construction equipment will not be idled for long periods of time.
- ▶ Stationary equipment (e.g., generators, compressors, rock crushers, cement mixers) will be located as far as possible from noise sensitive receptors.
- ▶ A disturbance coordinator will be designated and contact information posted in a conspicuous location near the entrance, so that it is clearly visible to nearby receivers most

likely to be disturbed. The coordinator would manage complaints resulting from the construction noise. Reoccurring disturbances should be evaluated by a qualified acoustical consultant. The disturbance coordinator would be required to contact nearby noise sensitive receptors, advising them of the construction schedule.

**DISCUSSION**

- a) **Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?**

***Temporary Construction Noise***

**Less-Than-Significant Impact.** Construction generally occurs in several discrete phases; each phase requires a specific complement of equipment with varying equipment type, quantity, and intensity. These variations in the operational characteristics of the equipment change the effect they have on the noise environment in the project vicinity. The effect of construction noise largely depends on the construction activities being performed on a given day, noise levels generated by those activities, distances to noise-sensitive receptors, and the existing ambient noise environment at the receptors.

Construction equipment used during construction of the proposed project would include scrapers, excavators, loaders, rollers, dump trucks, and water trucks. Table 3.11-2 depicts the noise levels generated by various types of construction equipment.

<b>Table 3.11-2 Construction Equipment Noise Emission Levels</b>	
Equipment Type	Typical Noise Level (dB) at 50 feet
Excavator	85
Scraper	84
Roller	85
Front-end loader	79
Dump Truck	84
Water Truck	82

Notes:  
 dB = A-weighted decibels  
 The noise levels presented in this table assume that all the equipment is fitted with properly maintained and operational noise control devices, per manufacturer specifications.

Sources: Bolt, Beranek and Newman 1981; Federal Transit Administration 2006:12-6.

As indicated in Table 3.11-2, operational noise levels for typical construction activities would range from 79 dB to 85 dB at a distance of 50 feet. Continuous combined noise levels generated by the simultaneous operation of the loudest pieces of equipment would result in noise levels of 90 dB at 50 feet. Accounting for the usage factor of individual pieces of equipment, topographical shielding, and ground absorption effects, construction activities on

the project site would be expected to result in hourly average noise levels of 85.5 dB  $L_{eq}$  at a distance of 50 feet. Maximum noise levels generated by construction activities are not predicted to exceed 85 dB  $L_{max}$  at 50 feet.

The nearest noise-sensitive receptors in the project vicinity are several residents located 1,350 feet west of the project site, which would be 1,500 feet from the acoustical center of construction activities. There are no other noise sensitive receptors, such as schools, hospitals or healthcare facilities, libraries, or parks within the affected area of the proposed project site. The project area would include approximately 4 miles of Cherokee Canal, and the project duration would be 3–4 months. Therefore, for any specific receptor, the noise impact from the project would be short-term. Sediment removal activities would be conducted inside the canal between two levees, which could serve as sound barriers. Distance, landscape topography, and vegetation on the agricultural field would reduce noise intensities.

Noise from localized point sources (such as construction sites) typically decreases by 6 to 7.5 dB with each doubling of distance from source to receptor. It should be noted that recent field measurements conducted by EDAW of construction activities operating in predominantly agricultural land use environments exhibited excess ground attenuation for a 10 dB reduction in noise levels per doubling of distance. However, a conservative attenuation rate of 6 dB per doubling of distance is assumed. Construction operations and related activities are predicted to generate exterior hourly noise levels of 46.3 dB  $L_{eq}$  at the nearest off-site sensitive receptors when propagated from the acoustical center of construction operations. Continuous 24-hour construction operations are predicted to generate exterior 24-hour noise levels of 56.3 dB  $L_{dn}$  at the nearest off-site sensitive receptors when propagated from the acoustical center of construction operations. Refer to Appendix B of this IS/MND for complete modeling inputs and results.

Construction noise levels are predicted to comply with Butte County's land use compatibility standard for exterior noise levels and would not result in a substantial permanent increase in ambient noise levels (5 dB) in the project vicinity above levels existing without the project. As a result, this impact would be less than significant.

### ***Off-Site Traffic Noise***

**Less than Significant.** Short-term operation of the proposed project would result in an increase in ADT volumes on the local roadway network and, consequently, an increase in noise levels from haul trucks along affected segments. The proposed project timing would coincide with local agricultural rice harvesting season. Rice harvesting activities would produce additional heavy-truck usage along proposed project roadways and has been factored into this analysis. Spoils Site 7 and Spoils Site 5 are adjacent to the canal and would not require transport of spoils on the local roadway network. Spoils Site 1 is located along Richvale Highway; however, there are no sensitive receptors along the segment from the canal to the spoils site. Thus, Spoils Site 7, Spoils Site 5, and Spoils Site 1 are not associated with haul truck traffic noise impacts and will not be discussed further in this analysis. The remaining spoils sites, amount of respective sediment, haul route roadways, assumed haul truck speed, distance to the nearest noise sensitive receptor, and the modeled haul truck traffic noise levels at the nearest noise sensitive receptor is shown in Table 3.11-3. Haul truck

Spoils Site	Amount of Sediment (cubic yards)	Number of Hourly Two Way Trips	Roadway	Speed (mph)	Distance to Nearest Receptor (feet)	Resulting Haul Truck Traffic Noise Level (dB, L <sub>eq</sub> )
Spoils Site 2	50,000	21	Richvale Highway	40	50	56.9
			Midway/ Church Street	25	50	53.8
Spoils Site 3	300,000	125	SR 99	50	500	51.1
			Nelson-Shippee Road	35	75	61.2
Spoils Site 6	10,000	4	Cherokee Canal Road	20	130	39.2
Spoils Site 4	150,000	63	Richvale Highway/SR 162	40	75	59.1

Notes: dB = A-weighted decibels; L<sub>eq</sub> = equivalent noise level

traffic analyses assume a 16-week haul schedule, 10-hour work days, and 12 cubic yard haul truck size.

To examine the effect of project-generated traffic increases, traffic noise levels associated with the proposed project were calculated for roadway segments in the project area, using the FHWA Highway Noise Prediction Model (FHWA-RD-77-108). Traffic noise levels were modeled under existing plus project conditions. Table 3.11-4 summarizes the modeled traffic noise levels at 100 feet from the centerline of affected roadway segments in the project area. Additional input data included day/night percentages of automobiles and medium and heavy trucks, vehicle speeds, and ground attenuation factors. (Refer to Appendix B for complete modeling inputs and results.) For this analysis, a 5 dB increase in traffic noise level is considered significant because of existing ambient noise levels and the surrounding land uses. The roadway noise levels presented do not account for natural or artificial shielding between the roadway and the noise receptor.

As shown in Table 3.11-4, Richvale Highway is predicted to have the largest increase in traffic noise levels due to proposed project haul trips. The largest increase along Richvale Highway is evident along the segment to the east of Cherokee Canal to Spoils Site 1. There are no noise-sensitive receptors along this segment. No other affected segments would result in a noise standard exceedance or a substantial increase (+5 dB) as a result of project implementation.

To address interior noise levels, it is assumed that modern construction consistent with the Universal Building Code typically provides an exterior-to-interior noise level reduction of 25 dB with all exterior openings sealed. Thus, noise-sensitive receptors with exposure to exterior noise levels greater than 70 dB would experience interior noise levels exceeding 45 dB, a typical interior noise level standard. As shown in Table 3.11-4, predicted future traffic noise levels would incrementally exceed 70 dB at receptors located along SR 99 and be barely perceptible by existing residents. Assuming that modern construction practices are employed, interior traffic noise levels are expected to be less than 45 dB L<sub>dn</sub> at sensitive receptors along proposed project haul routes.

**Table 3.11-4  
Predicted Traffic Noise Levels**

Roadway	Segment	L <sub>dn</sub> at 100 Feet (dB)			
		Existing No Project	Existing Plus Project	Net Change	Impact
State Route 99	Nelson-Shippee Road to Spoils Site 3	68.1	70.4	+2.3	No
	Colony Road to Midway	60.0	63.0	+3.0	No
Richvale Highway	Midway to Cherokee Canal	60.0	63.0	+3.0	No
	Cherokee Canal to Spoils Site 1	60.0	65.0	+5.0	No <sup>1</sup>
	Spoils Site 1 to Spoils Site 4	65.7	69.8	+4.1	No
Midway	Richvale Highway to Fruitvale Avenue	56.5	59.5	+3.0	No

Notes:

dB = A-weighted decibels, L<sub>dn</sub> = day-night average noise level

Traffic noise levels are predicted at a standard distance of 100 feet from the roadway centerline and do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.

<sup>1</sup>There are no sensitive receptors located along roadway segment.

Source: Data provided by EDAW in 2009 based on modeling using Federal Highway Administration's Highway Noise Prediction Model (FHWA-RD-77-108)

The proposed project would not create a substantial increase in traffic noise levels above existing conditions effecting sensitive receptors in the project vicinity or generate noise that results in the direct violation of an applicable standard. This impact is less than significant.

**b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?**

**Less Than Significant Impact.** Construction activities have the potential to result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and operations involved. Vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. Although effects of ground vibration may be imperceptible at low levels, they may result in detectable vibrations and slight damage to nearby structures at moderate and high levels, respectively. At the highest levels of vibration, damage to structures is primarily architectural (e.g., loosening and cracking of plaster or stucco coatings) and rarely results in structural damage.

Caltrans recommends a standard of 0.2 inch per second (in/sec) peak particle velocity (PPV) for the protection of normal residential buildings and 0.08 in/sec PPV for the protection of old or historically significant structures (Caltrans 2004:15). With respect to human response for residential uses (i.e., annoyance), the Federal Transit Administration (FTA) recommends maximum acceptable vibration standard of 80 velocity decibels (VdB) (FTA 2006:12-12). Ground vibration levels associated with various types of construction equipment are summarized below in Table 3.11-5.

Table 3.11-5 Representative Vibration Source Levels for Construction Equipment			
Equipment		PPV at 25 feet (in/sec) <sup>a</sup>	Approximate L <sub>v</sub> (VdB) at 25 feet <sup>b</sup>
Pile driver (impact)	Upper range	1.518	112
	Typical	0.644	104
Pile driver (sonic)	Upper range	0.734	105
	Typical	0.170	93
Large bulldozer		0.089	87
Caisson drilling		0.089	87
Trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Notes:  
in/sec = inches per section; L<sub>v</sub> = velocity level in decibels (VdB) and is based on the root mean square velocity amplitude; PPV = peak particle velocity.  
<sup>1</sup>. Where PPV is the peak particle velocity  
<sup>2</sup>. Where L<sub>v</sub> is the RMS velocity expressed in vibration decibels (VdB), assuming a crest factor of 4.

Source: Federal Transit Administration 2006:12-12

The proposed project would not involve the use of any equipment or processes that would generate potentially high levels of ground vibration, such as pile drivers. Construction operations associated with the proposed project would include equipment such as scrapers, excavators, loaders, rollers, and trucks. Ground vibration generated during construction would be associated primarily with on-site truck activity and off-site haul truck routes. As shown in Table 3.11-4, trucks typically generate vibration levels of less than 0.08 in/sec PPV or 86 VdB at 25 feet. At the nearest structure, a single-family residence, this level would not exceed the Caltrans-recommended standards of 0.2 in/sec PPV or FTA vibration standards of 80 VdB; therefore, there would be no potential for structural damage or annoyance to persons. Temporary construction vibration associated with on-site equipment and off-site haul truck traffic would not be anticipated to generate or expose sensitive receptors to excessive groundborne vibration or groundborne noise levels. Therefore, this impact would be less than significant.

**c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?**

**No Impact.** As discussed in item “a”, the proposed project would be short-term and there would not long-be term operational activities associated with the proposed project.

In addition, as discussed in item “a”, the short-term operational noise associated with off-site traffic would result in a noticeable increase (5 dB) in average daily ambient noise levels, and implementing the proposed project would not result in a substantial contribution to traffic noise levels that would exceed the general plan land use compatibility standards for nearby land uses. Thus, no long-term operational noise would be associated with off-site traffic, and for

that reason the project is not anticipated to result in a substantial permanent increase in ambient noise levels in the project area. Therefore, there is no impact.

**d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?**

**Less-Than-Significant Impact.** As discussed in item “a”, temporary on-site construction operations would result in noise levels that would comply with applicable noise standards at the noise-sensitive receptor nearest to the project site. Traffic noise level increases are not predicted to generate a substantial temporary increase in existing traffic noise levels at existing noise-sensitive receptors along haul routes. This impact would be less than significant.

**e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?**

**f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?**

**Less-Than-Significant Impact.** The proposed project would be located within 2 miles of an airport. However, no new housing or businesses would be constructed as part of the project exposing people to excessive noise levels. Construction workers working in the project area would be in the area for very limited time and would not be exposed to excessive noise levels. This impact would be less than significant.

### 3.12 POPULATION AND HOUSING

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>XII. Population and Housing. Would the project:</b>				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### ENVIRONMENTAL SETTING

The project area is located in the unincorporated area of Butte County. In 2006, the population of Butte County was approximately 217,000 people, with approximately 90,000 of those residing within the unincorporated areas of the county. In addition, there were approximately 36,000 housing units within the unincorporated area of Butte County in 2006 (Butte County 2007:2-2). Richvale, a small farming community close to the project area, has an estimated population of 250 people.

### DISCUSSION

- a) **Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**
- b) **Displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?**
- c) **Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?**

**No Impact.** The proposed project would increase the number of jobs in the project area during construction, although the increase would be temporary. The project site runs along Cherokee Canal, and no houses or businesses currently exist within the project site. There is one existing residence near Spoils Site 3; however, the proposed project would have no effect on this residence. In addition, the proposed project would not induce substantial population growth either directly or indirectly, or displace any dwellings, businesses, or residences. No impact would occur with regard to population and housing.

### 3.13 PUBLIC SERVICES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>XIII. Public Services. Would the project:</b>				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### ENVIRONMENTAL SETTING

In cooperation with the California Department of Forestry and Fire Protection, Butte County Fire Department (BCFD) serves all of Butte County, with the exception of the cities of Chico and Oroville, the town of Paradise, and the El Medio Fire Protection District near Oroville (Butte County 2007:7-13). There are 12 BCFD stations, all of which are staffed with at least two fire fighters 24 hours per day (Butte County 2007:7-28). The California Highway Patrol and the Butte County Sheriff provide law enforcement services in the area. The Butte County Search and Rescue Team is an all-volunteer, non-profit auxiliary of the Butte County Sheriff's Office that provides skilled search and technical rescue services to the residents and visitors of Butte County.

Richvale Elementary School provides education to approximately 55 students from first through sixth grades in the community of Richvale. The school is more than 1 mile from the project area. There are no other schools in the vicinity of the project. There are no parks or other public facilities located in the vicinity of proposed project reach of Cherokee Canal or any of the spoils sites.

## DISCUSSION

- a) **Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:**

### Fire protection?

**No Impact.** The proposed project would not result in any changes to the projected population of the area and would not include the construction of any structures that would require additional fire protection services. The proposed project would not change the demand for fire protection services in the project area. Because there would not be an increased demand for fire protection services, there would be no impact on fire services.

### Police protection?

**No Impact.** The proposed project would not increase the population of the project area, and there would be no change in public access to the project area. The potential exists for unauthorized use of the project area; however, this potential would not increase as a result of the project. Therefore, the proposed project would not cause an increase in the demand for police services.

### Schools?

**No Impact.** The project would not increase the population or housing in the project area and, therefore, would not increase the number of students in the project area. In addition, there are no schools in the project area. The project would have no impact on schools.

### Parks?

**No Impact.** There are no parks within the project area or in the surrounding area, and the proposed project would not increase the demand for park facilities. Spoils Site 4 is located within a recreational area (the Oroville State Wildlife Area); however, the project would not affect recreational uses of this area. In addition, there are no parks or recreational facilities within any of the other spoils sites. Therefore, the proposed project would have no impact on parks.

### Other public facilities?

**No Impact.** The proposed project would have no impact on other public facilities because there are no other public facilities in the project area that would be affected by the project, and no additional residences or businesses would be constructed that could lead to increased demand on public facilities.

### 3.14 RECREATION

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>XIV. Recreation. Would the project:</b>				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### ENVIRONMENTAL SETTING

Five special independent districts maintain many of the parks and recreational facilities in Butte County. The proposed project reach of Cherokee Canal is primarily within the Richvale Recreation and Park District (District) (Butte County 2007: 8-2 through 8-3). No neighborhood or regional parks are found within the project site, and the project site is not designated for recreational or open space uses. Cherokee Canal is privately owned; therefore, no public recreational facilities are located along the canal.

One of the spoils locations (Spoils Site 4) is within the Oroville State Wildlife Area, which is a recreational area managed by DFG. Recreational uses at the wildlife area include hunting, camping, and fishing. No recreational facilities are found at any of the other spoils locations.

### DISCUSSION

- a) **Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**
- b) **Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?**

**No Impact.** The proposed project would not increase the use of existing neighborhood or regional parks or other recreational facilities. In addition, the project would not include recreational facilities that could have an adverse physical effect on the environment. No additional residences would be constructed; therefore, the proposed project would not increase the demand for parks or require expansion of recreational facilities. No parks or recreational facilities are found within the project site, and only one of the spoils sites is used for recreation (Spoils Site 4). However, sediment would be spread in a portion of the wildlife area where spoils from the construction of Oroville Dam were previously deposited; therefore, disposing of

sediment in this area would not cause any permanent impacts on recreational uses in the area. None of the other spoils sites have recreational facilities or are used for recreational purposes. Therefore, there would be no impact.

### 3.15 TRANSPORTATION/TRAFFIC

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>XV. Transportation/Traffic. Would the project:</b>				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Exceed, individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Result in inadequate parking capacity?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### ENVIRONMENTAL SETTING

#### REGIONAL SETTING

There are six state highways serving as regional highways in Butte County. These highways provide the primary access through the county. Among them, SR 99 and SR 162 are near the project site. SR 99 travels north-south, connecting Butte County with Yuba City, Marysville, and Sacramento to the south and Red Bluff to the northwest. SR 99 directly serves the communities of Gridley, Biggs, and Chico. SR 162, also known as Oro-Dam Boulevard West, provides east-west access for Oroville and the southern part of Butte County. It runs from the Glenn County line to the foothills east of Oroville, serving the Oroville Dam recreation area.

A number of arterial and collector roadways in Butte County are regionally significant because they serve regional population areas. Midway Highway, also known as Richvale South Highway, is the primary rural arterial or collector roadway. Midway Highway is 0.5 to 1 mile

west of the project site. It is a two-lane road that runs parallel and west of SR 99 between SR 162 and the end of Park Avenue in the south of Chico.

### **PROJECT AREA SETTING**

The project site is located in the southwestern portion of Butte County, 1 mile east of the town of Richvale.

Richvale Highway is a two-lane roadway that travels east-west from SR 99 to Aguas-Frias Road. Richvale Highway crosses Midway Highway south of the town of Richvale. The ADT volumes on Richvale Highway on and near the project site range from 980 to 1,400 vehicles (Butte County 2006).

Other east-west tending roads near the project site that connect to arterial or connector roads include Nelson Shippee Road to the north, Lofgren Road to the west, and Fruitvale Avenue to the northwest. Erickson, Eucalyptus, and Wickman Roads travel north-south and connect with Richvale Highway west of the project site.

Two airports are located approximately 2 miles from the project site: Richvale Airport and Jones/Ag-Viation Airport, located to the northwest and southeast, respectively. In addition, the Oroville Municipal Airport is approximately 1 mile from Spoils Site 4.

### **TRAFFIC OPERATIONS ANALYSIS METHODOLOGY**

Establishing roadway level of service (LOS) grades allows transportation planners to evaluate traffic operating conditions and provides a basis for comparing operating conditions. A roadway or street segment is assigned a LOS grade that corresponds to its quality of traffic operations. A LOS grade of "A" indicates high quality service; a LOS grade of "F" indicates low quality service.

LOS is defined as the ratio of existing traffic volume to the maximum design capacity of a roadway. LOS can be calculated using annual average daily traffic volumes or peak-hour traffic volume (number of vehicles per hour during the peak hour of a day). Table 3.15-1 is the LOS threshold expressed in annual average daily traffic adopted by the *Butte County General Plan* (County General Plan).

The Circulation Element of the County General Plan governs the design of the transportation system and public facilities in the county. The goal of County General Plan is to design, maintain, and improve street facilities in order to maintain LOS C or better, except in congested urban areas where this policy would be uneconomical.

<b>Table 3.15-1 Level of Service Based on Roadway Capacity Level of Service</b>					
Roadway Capacity—Level of Service					
Roadway Description	Level of Service – as Percent of Vehicles per Day Capacity				
	A (60%)	B (70%)	C (80%)	D (90%)	E (100%)
Two-lane surface street	9,600	11,200	12,800	14,400	16,000
Three-lane one-way surface street	14,400	16,800	19,200	21,600	24,000
Four-lane surface street	19,200	22,400	25,600	28,800	32,000
Six-lane surface street	28,800	33,600	38,400	43,200	48,000
Two-lane rural expressway	10,500	12,250	14,000	15,750	17,500
Four-lane freeway	43,200	50,400	64,800	64,800	72,000
Six-lane freeway	64,800	75,600	86,400	97,200	108,000
Source: Butte County 1988					

## DISCUSSION

- a) **Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?**
- b) **Exceed, individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?**

**Less Than Significant with Mitigation Incorporated.** Transport of the sediment to the spoils sites would be the major source of project-related traffic. Impacts on the local traffic system would result from workers traveling to and from the project site, delivery of construction equipment to the project site, and transport of sediment to spoils sites. Workers traveling to and from work would generate approximately 15 round trips per day. To be conservative in assessing impacts on traffic, it is assumed these trips would occur during the a.m. and p.m. peak hours. The primary haul routes would include Richvale Highway, SR 162, SR 99, Midway Highway, and levee roads along Cherokee Canal to transport sediment to and from the spoils sites.

Richvale Highway is a two-lane rural expressway, and its capacity for LOS A is 10,500 vehicles per day. Existing traffic volumes on Richvale Highway range from 980 to 1,400 vehicles per day (Butte County 2006). With the proposed project, the traffic volumes would increase to approximately 1,390 to 1,810 vehicles per day. Even though construction-related traffic would add a large volume of traffic to Richvale Highway, the proposed project would not cause an increase in traffic that would exceed an acceptable LOS and the increase in traffic would be temporary.

The existing traffic volume on SR 162 is approximately 5,260 vehicles per day (BCAG 2006). With the proposed project, the traffic volumes would increase to approximately 5,885 vehicles per day. SR 162 is a two-lane rural expressway, and its capacity for LOS A is 10,500 vehicles per day. Even though construction-related traffic would add a large volume of traffic to SR 162, the proposed project would not cause an increase in traffic that would exceed an acceptable LOS and the increase in traffic would be temporary.

Existing traffic volume on Midway Highway is approximately 4,500 vehicles per day (BCAG 2006). Construction of the proposed project would increase the traffic on Midway Highway to approximately 4,710 vehicles per day. Midway Highway is also a two-lane rural expressway with a LOS A capacity of 10,500 vehicles per day. Therefore, even with construction-related traffic, Midway Highway would not exceed an acceptable LOS and the increase in traffic would be temporary.

Traffic volumes on SR 99 range from 10,000 to 12,500 vehicles per day (Caltrans 2008). During project construction, traffic on SR 99 would increase to approximately 11,250 to 13,750 vehicles per day. The LOS A for SR 99, which is a four-lane freeway, is 43,200 vehicles per day. Therefore, even though the proposed project would cause a temporary increase in traffic on SR 99, it would not exceed an acceptable LOS.

Levee roads along Cherokee Canal currently experience very limited traffic and no traffic counts exist for these roads. Although use of these roads as haul routes would cause a substantial increase in traffic compared to existing conditions, these roads are not public roads and this increase in traffic would be temporary.

Although implementation of the proposed project would not cause LOS to exceed an acceptable level for any roadways, implementation of the proposed project would increase traffic during the construction period and could result in trucks crossing traffic and entering roadways, which could result in a significant impact on traffic circulation in the area. The slower movement and larger turning radii of sediment hauling trucks compared to passenger vehicles could result in intermittent reductions in roadway capacity on these roadways. Therefore, short-term traffic impacts could be potentially significant. The proposed project would not have permanent impacts on the traffic system and, therefore, would not have any long-term impacts on traffic. Implementation of Mitigation Measure TRAFFIC-1 would reduce the short-term impacts to less-than-significant levels.

### **Mitigation Measure TRAFFIC-1: Prepare and Implement a Traffic Safety and Control Plan for Construction-Related Truck Trips**

The construction contractor will coordinate with Butte County to prepare and implement a traffic control plan. This traffic control plan will include measures to ensure that emergency access is maintained at all times. The plan may include, but is not limited to, the following measures:

- ▶ Access will be maintained for private roads, and residences that would be affected by construction traffic will be notified of project construction.

- ▶ Construction warning signs will be posted about the potential presence of slow-moving vehicles in advance of construction in the area and at any intersection that provides access to the construction area.
- ▶ Traffic control personnel will be used to direct traffic, if necessary.
- ▶ The contractor will train construction personnel in appropriate safety measures as described in the plan and will implement the plan. The plan will include the locations for staging equipment and parking trucks and vehicles.
- ▶ Before project construction begins, DWR will notify all appropriate emergency service providers in Butte County of project construction and will coordinate with providers throughout the construction period to ensure that emergency access through construction areas is maintained.

**c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?**

**No Impact.** Two airports are near the project site and one airport is near Spoils Site 4; however, the proposed project would not result in any activities that would cause any change in air traffic patterns. Therefore, no change in air traffic patterns would occur as a result of the proposed project.

**d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?**

**Less Than Significant with Mitigation Incorporated.** The proposed project would not change any roadways to create design features such as sharp curves or dangerous intersections and no sharp curves or dangerous intersections are within the project site. However, as part of the proposed project, sediment would be transported to various spoils sites using trucks, and this would affect area roadways. Trucks slowing and turning onto or exiting area roadways could affect traffic and could create traffic hazards. Although these activities would be short-term and would not result in a long-term increase in roadway hazards, the short-term impact on traffic would be potentially significant. Implementation of Mitigation Measure TRAFFIC-1, above, would reduce this impact to a less-than-significant level.

**e) Result in inadequate emergency access?**

**Less Than Significant with Mitigation Incorporated.** This proposed project would not result in road closures or detours; therefore, it would not adversely affect emergency access. However, trucks slowing and turning onto or exiting area roadways could affect traffic and could create traffic hazards. Implementation of Mitigation Measure TRAFFIC-1 would reduce this impact to a less-than-significant level.

**f) Result in inadequate parking capacity?**

**Less-Than-Significant Impact.** The project site is located in a rural area. An off-road staging and parking area would be designated for construction vehicles and construction workers; therefore, the proposed project would not result in inadequate parking capacity.

**g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?**

**No Impact.** The County General Plan's goals and policies related to alternative transportation pertain to long-term land use and transportation planning. The proposed project would not result in long-term changes in traffic or transportation; therefore, the proposed project would not affect long-term transportation policies and plans.

### 3.16 UTILITIES AND SERVICE SYSTEMS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>XVI. Utilities and Service Systems. Would the project:</b>				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### ENVIRONMENTAL SETTING

Wastewater disposal in unincorporated Butte County is not provided by a single public utility or agency, but occurs through a variety of service districts and community systems. In most of the unincorporated county, wastewater disposal occurs through individual private on-site septic systems (Butte County 2007:6-1). Existing solid waste management facilities in Butte County consist of two transfer stations, a large transfer station/materials recovery facility, the Neal Road public use landfill, one private wood-waste recycler, and two municipal wood-waste recyclers (Butte County 2007:6-33 – 6-34). The Pacific Gas and Electric Company (PG&E) provides Butte County with most of its electricity. PG&E also supplies most of the natural gas used within Butte County (Butte County 2007:14-2).

## DISCUSSION

**a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?**

**Less Than Significant with Mitigation Incorporated.** A temporary increase in runoff could occur during construction of the proposed project. However, implementation of Mitigation Measure GEO-1 in Section 3.6, "Geology and Soils," would reduce temporary impacts on water quality. In addition, the proposed project would not generate any new permanent sources of wastewater, and thus would not exceed wastewater treatment requirements of the Central Valley RWQCB. There are no permanent improvements proposed that would require wastewater treatment.

**b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?**

**No Impact.** The proposed project would not require improvement of existing or construction of new water control facilities for the project site. In addition, there would be no increase in permanent wastewater generated within the project site, and there would be no increase in water demand for the site. The proposed project would not require the construction or expansion of any off-site water or wastewater treatment facilities, the construction of which would cause significant environmental effects. There would be no impact.

**c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?**

**No Impact.** The proposed project would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. The project site is located in an area that does not have public drainage facilities, and thus the construction of new drainage facilities would not be required. There would be no impact.

**d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?**

**No Impact.** The proposed project would not construct any new residences or businesses that would require additional water and thus would not increase the demand for water in the project site. Water in Cherokee Canal would continue to be provided by runoff in the upper watershed. There would be no impact.

**e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?**

**No Impact.** The project site is not served by any wastewater treatment facilities, and the proposed project would not result in an increase in wastewater generated within the project

site. Therefore, the proposed project would not affect the capacity of any wastewater treatment facilities. No impact would occur.

- f) **Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?**
- g) **Comply with federal, state, and local statutes and regulations related to solid waste?**

**No Impact.** The proposed project would generate a significant amount of sediment (i.e., approximately 750,000 cubic yards) that would be removed from Cherokee Canal. However, sediment removed from the canal would be stockpiled or distributed to several previously identified spoil sites and would not be taken to a landfill. Therefore, the proposed project is not expected to affect the permitted capacity of any landfills within the project site. Hauling, storage, and handling of sediment would be in compliance with all federal, state, and local statutes regarding solid waste. There would be no impact.

### 3.17 MANDATORY FINDINGS OF SIGNIFICANCE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<b>XVII. Mandatory Findings of Significance.</b>				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Authority: Public Resources Code Sections 21083 and 21087.  
 Reference: Public Resources Code Sections 21080(c), 21080.1, 21080.3, 21082.1, 21083, 21083.3, 21093, 21094, 21151;  
*Sundstrom v. County of Mendocino*, 202 Cal.App.3d 296 (1988); *Leonoff v. Monterey Board of Supervisors*, 222 Cal.App.3d 1337 (1990).

### DISCUSSION

- a) **Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?**

**Less Than Significant with Mitigation Incorporated.** Sensitive resources, including special-status species and wetland and riparian habitats occur within Cherokee Canal and would be affected during project construction. However, impacts on biological resources would be mitigated to less-than-significant levels and existing habitat for giant garter snake would also be enhanced as part of the project. With incorporation of the mitigation measures and enhancement of existing habitat described in Section 3.4, “Biological Resources,” the proposed project would not substantially degrade the quality of the environment.

- b) **Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)**

**Less Than Significant with Mitigation Incorporated.** The timing of project construction may coincide with the rice harvesting season, which would also increase traffic on roadways in the project area. However, traffic-related impacts would be mitigated to a less-than-significant level, and project-related traffic combined with existing traffic would be well below any LOS thresholds for area roadways. Therefore, even with the addition of truck trips associated with rice harvesting, it is expected that none of the area roadways would exceed an acceptable LOS. In addition, project-related traffic and traffic associated with the rice harvest season would both be temporary.

No other past, present, or probable future projects were identified in the project vicinity that, when added with project-related impacts, would result in cumulatively considerable impacts. No cumulatively considerable impacts would occur with implementation of the proposed project.

- c) **Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?**

**No Impact.** Cherokee Canal is a flood control structure and is part of the Sacramento Valley Flood Control System developed to provide public safety. The purpose of the canal is to carry water away from residences and agricultural lands in the event of a flood. The 25-year flood design capacity is currently not being met within the project reach of Cherokee Canal. The purpose of the proposed project is to restore the flood carrying capacity of the Cherokee Canal, which would provide flood protection for human beings and human-made structures in the area surrounding the canal. Therefore, the proposed project would have a beneficial effect on human beings.



## 4 REFERENCES

### CHAPTER 2, "PROJECT DESCRIPTION"

Butte County Office of Emergency Services. 2006. (January). *Butte County Flood Mitigation Plan*. Prepared by Wood Rodgers.

Department of Water Resources. 2007 (December). *Cherokee Canal Preliminary Evaluation Study*.

DWR. See Department of Water Resources.

### SECTION 3.1, "AESTHETICS"

California Department of Transportation. 2008 (July 1). Scenic Highway Program. Eligible and Officially Designated Routes. Available: <<http://www.dot.ca.gov/hq/LandArch/scenic/cahisys4.htm>>. Accessed April 27, 2009.

Caltrans. See California Department of Transportation.

### SECTION 3.2, "AGRICULTURAL RESOURCES"

Butte County. 2007 (August 2). *Butte County General Plan: Setting & Trends Report Public Draft*. Prepared by Design, Community & Environment. Berkeley, California.

Department of Conservation. 2007. Important Farmland Mapping Categories and Soil Taxonomy Terms. Available: <[http://www.consrv.ca.gov/DLRP/fmmp/overview/prime\\_farmland\\_fmmp.htm](http://www.consrv.ca.gov/DLRP/fmmp/overview/prime_farmland_fmmp.htm)>. Accessed April 10, 2007. Cited in Butte County 2007.

Department of Conservation. 2006. *Farmland Conversion Report 2002 to 2004. Butte County*. Prepared by the Farmland Mapping and Monitoring Program, Sacramento, California.

DWR. See Department of Water Resources.

### SECTION 3.3, "AIR QUALITY"

ARB. See California Air Resources Board.

BCAQMD. See Butte County Air Quality Management District.

Butte County Air Quality Management District. 2008 (January). *CEQA Air Quality Handbook. Guidelines for Assessing Air Quality Impacts for Projects Subject to CEQA Review*. Chico, California.

California Air Pollution Control Officers Association. 2008. *CEQA and Climate Change*. Available: <http://www.capcoa.org/CEQA/CAPCOA%20White%20Paper.pdf>. Accessed June 3, 2009.

- California Air Resources Board. 2003. *HARP User Guide*. Sacramento, California.
- . 2005 (March). *Air Quality and Land Use Handbook: A Community Health Perspective*. Available: <[www.arb.ca.gov/ch/landuse.htm](http://www.arb.ca.gov/ch/landuse.htm)>. Accessed June 3, 2009.
- . 2008a (December). *AB 32 Scoping Plan*. Available: <<http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm>>. Last updated December 2008. Accessed June 3, 2009.
- . 2008b. *Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act*. Available: <<http://www.arb.ca.gov/cc/localgov/ceqa/ceqa.htm>>. Last updated December 11, 2008. Accessed June 3, 2009.
- . 2009a. *Ambient Air Quality Standards and Area Designation Maps – State and National*. Available: <<http://www.arb.ca.gov/desig/adm/adm.htm#state>>. Last updated February 2009. Accessed May 1, 2009.
- . 2009b. Air Quality Data Statistics. Available: <<http://www.arb.ca.gov/adam/welcome.html>>. Last updated 2009. Accessed May 1, 2009.
- . 2009c. Air Resources Board Emissions Inventory. Available: <<http://www.arb.ca.gov/ei/ei.htm>>. Last updated 2009. Accessed May 1, 2009.
- California Office of Planning and Research. 2008. *CEQA and Climate Change: Addressing Climate Change through the California Environmental Policy Act Review*. Sacramento, California.
- Northern Sacramento Valley Planning Area. 2006. *2006 Air Quality Attainment Plan*. Available: <<http://www.co.shasta.ca.us/departments/resourcegmt/drm/pdf/Attainment%20Plan%202006.pdf>>. Accessed: June 3, 2009.
- Salinas, Julio. Staff Toxicologist. Office of Health Hazard Assessment, Sacramento, California. August 3, 2004—telephone conversation with Kurt Legleiter of EDAW regarding exposure period for determining health risk.
- Zhu, Y., W. C. Hinds, S. Kim, and S. Shen. 2002. Study of Ultrafine Particles Near a Major Highway with Heavy-duty Diesel Traffic. In *Atmospheric Environment* 36:4323–4335.

### **SECTION 3.4, “BIOLOGICAL RESOURCES”**

- Brode, J., and G. Hansen. 1992. *Status and Future Management of the Giant Garter Snake (Thamnophis gigas) within the Southern American Basin, Sacramento and Sutter Counties, California*. Department of Fish and Game, Inland Fisheries Division, Sacramento.
- Department of Fish and Game. 2000. *Recommended Time and Methodology for Swainson’s Hawk Nesting Surveys in the Central Valley*. Swainson’s Hawk Technical Advisory Committee. Sacramento.

California Natural Diversity Database. 2009 (April). Database search for sensitive biological resources. Department of Fish and Game, Biogeographic Data Branch. Sacramento, California.

Department of Water Resources. 2006. *Preliminary Delineation of Waters of the United States for the Cherokee Canal Rehabilitation Project, Butte County, Richvale, California*. Department of Water Resources, Division of Local Assistance. Red Bluff, California.

———. 2007 (July 17). *Special Status Plant Species Surveys for Cherokee Canal Sediment Removal Project*. Letter memorandum from Gail Kuenster, Department of Water Resources Oroville Field Office, to Michelle Ng, Department of Water Resources Flood Maintenance Office. Oroville, California.

———. 2008a (July 2). *2008 Cherokee Canal Wildlife Survey Results*. Letter memorandum from Dave Boegner, DWR Northern District to Michelle Beachley, Department of Water Resources Flood Maintenance Office. Redding, California.

———. 2008b. Addendum to preliminary delineation of waters of the United States for the Cherokee Canal Rehabilitation Project, Butte County, Richvale, California addressing spoils sites only. DWR Division of Local Assistance. Red Bluff, California.

———. 2009a. *Addendum to the Memorandum Report submitted to Michelle Ng on June 19, 2007, regarding the evaluation of botanical/special status plant species for the Cherokee Canal Sediment Removal Project*. Letter memorandum from Gail Kuenster, DWR Oroville Field Division to Mark List, DWR Division of Flood Management. Oroville, California.

———. 2009b (June 1). *Special-Status Plant Species Surveys for Spoils Areas Associated with Cherokee Canal Sediment Removal Project – Phase I*. Letter memorandum from Barbara Castro, DWR Northern District to Stephanie Chun, Department of Water Resources, Flood Maintenance Office. Red Bluff, California.

———. 2009c. Botanical Resource Report for the Proposed Phase 1 Cherokee Canal Sediment Removal Project. Department of Water Resources, Division of Local Assistance. Oroville, California.

CNDDDB. See California Natural Diversity Database.

DFG. See Department of Fish and Game.

DWR. See Department of Water Resources.

Hansen, G. E. 1988. Review of the Status of the Giant Garter Snake (*Thamnophis couchii gigas*) and its Supporting Habitat during 1986–87. Unpublished final report for the Department of Fish and Game, Contract C-2060. Sacramento, California.

———. 1994 (June). *Potential Effects of the Cherokee Canal Sediment Removal Project on the GGS (Thamnophis gigas)*. Prepared for the Department of Water Resources, Sacramento.

- . 1998 (November). *Cherokee Canal Sediment Removal Project Post-Construction Giant Garter Snake (Thamnophis gigas) Surveys*. Prepared for the Department of Water Resources, Sacramento.
- Hansen, G. E., and J. M. Brode. 1993. *Results of Relocating Canal Habitat of the Giant Garter Snake (Thamnophis gigas) during Widening of State Route 99/70 in Sacramento and Sutter Counties, California*. Final report for California Department of Transportation Interagency Agreement 03E325 (FG7550) (FY 87/88-91-92). Sacramento.
- Hickman, James C. (ed.). 1993. *The Jepson Manual*. University of California Press, Berkeley, California.
- Jennings, M. R., and M. P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Department of Fish and Game. Sacramento.
- Shuford, D. W. and T. Gardali, editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. *Studies of Western Birds 1*. Western Field Ornithologists, Camarillo, California, and California Department Fish and Game, Sacramento.
- U.S. Fish and Wildlife Service. 1999a. *Draft Recovery Plan for the Giant Garter Snake (Thamnophis gigas)*. Portland, Oregon.
- . 1999b. *Conservation Guidelines for the Valley Elderberry Longhorn Beetle*. Sacramento, California.
- . 2009. Federal Endangered and Threatened Species that Occur or may be Affected by Projects in Biggs and Shippee Quads. Sacramento Fish and Wildlife Service Office. Available: <[http://www.fws.gov/sacramento/es/spp\\_lists/auto\\_list\\_form.cfm](http://www.fws.gov/sacramento/es/spp_lists/auto_list_form.cfm)>. Accessed May 10, 2009.
- USFWS. See U.S. Fish and Wildlife Service.

### **SECTION 3.5, “CULTURAL RESOURCES”**

- Bailey, M. (Golden Hills Environmental Services). 2004. *Cultural Resources Survey for the Dove Ridge Conservation and Mitigation Bank, near Orville, Butte County, California*. Northeast Information Center Report Number 6613. Chico, California.
- Elsasser, A. B. 1978. Development of Regional Prehistoric Cultures. In *California*, edited by R. F. Heizer, pp. 37–57. Handbook of North American Indians, Vol. 8, W. C. Sturtevant, general editor. Smithsonian Institution, Washington, DC.
- Kroeber, A. L. 1925. Handbook of the Indians of California. *Bureau of American Ethnology Bulletin 78*. Washington, DC.
- Kroeber, A. L. 1932. The Patwin and their Neighbors. *University of California Publications in American Archaeology and Ethnology* 29(4):253–423. Berkeley, California.

- McCarthy, H., with H. Scotten, A. Lopez and B. Doering. 2004. Ethnographic and Ethnohistoric Inventory of Konkow Maidu Cultural Places. Report prepared for the Department of Water Resources, Sacramento.
- Minor, W. C. (Basin Research Associates, Inc.). 1996. *Cultural Resources Inventory: Wild Goose Gas Storage Project, Butte County, California*. Northeast Information Center Report Number 2416. Chico, California.
- Moratto, M. J. 2004. *California Archaeology*. Academic Press, Orlando, Florida.
- Riddell, F. A. 1978. Maidu and Konkow. In *California*, edited by R. F. Heizer, pp. 370–386. Handbook of North American Indians, Vol. 8, W. C. Sturtevant, general editor. Smithsonian Institution, Washington, DC.
- Selverston, M. D., M. J. Markwyn, M. Walker, M. G. Delacorte, and M. Basgall. 2005. Archaeological and Historical Resources Inventory Report, Oroville Facilities Relicensing, FERC Project No. 2100. Report prepared for the Department of Water Resources, Sacramento.
- Stevens, L. V., M. D. Newland. 2006. *Oroville Dredge Fields (CA-BUT-465H): Site Technical Report. Forks of the Feather River Historic District Evaluation*. Sonoma, California.
- Wagner, D. L., C. W. Jennings, T. L. Bedrossian, and E. J. Bortugno. 1987. Geologic Map of the Sacramento Quadrangle. Regional Geologic Map Series, Map No. 1A. California Division of Mines and Geology.
- Wallace, W. J. 1978. Post-Pleistocene Archeology, 9000 to 2000 B.C. In *California*, edited by R. F. Heizer, pp. 25–36. Handbook of North American Indians, Vol. 8, W. C. Sturtevant, general editor. Smithsonian Institution, Washington, DC.

### **SECTION 3.6, “GEOLOGY AND SOILS”**

- California Geological Survey. 1962. Geologic Map of California, Chico Sheet. Sacramento, California.
- . 2007. Fault-Rupture Hazard Zones in California, Special Publication 42. Available: <<ftp://ftp.consrv.ca.gov/pub/dmg/pubs/sp/SP42.PDF>>. Accessed May 2009.
- Central Valley Regional Water Quality Control Board. 2007. *Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region*, fourth edition. Revised October 2007 with amendments. Available: <[http://www.swrcb.ca.gov/rwqcb5/water\\_issues/basin\\_plans/sacsjr.pdf](http://www.swrcb.ca.gov/rwqcb5/water_issues/basin_plans/sacsjr.pdf)>. Accessed May 2009.
- CGS. See California Geological Service.
- Natural Resources Conservation Service. 2007. *Soil Survey Butte Area, California*. Available: <<http://soildatamart.nrcs.usda.gov>>. Accessed May 11, 2009.

NRCS. See Natural Resources Conservation Service.

Butte County. 2007 (August 2). *Butte County General Plan: Setting & Trends Report Public Draft*. Prepared by Design, Community & Environment. Berkeley, California.

### **SECTION 3.7, “HAZARDS AND HAZARDOUS MATERIALS”**

Churchill, R. K., and R. L. Hill. 2000. *A General Location Guide for Ultramafic Rocks in California—Areas More likely to Contain Naturally Occurring Asbestos*. California Division of Mines and Geology Open-File Report 2000-19. Sacramento, California.

EPA. See U.S. Environmental Protection Agency.

FAA. See Federal Aviation Administration.

Federal Aviation Administration. 2007. Hazardous Wildlife Attractants on or Near Airport. FAA Advisory Circular 150/5200-33B. Available: <[http://www.faa.gov/airports\\_airtraffic/airports/resources/advisory\\_circulars/media/150-5200-33B/150\\_5200\\_33b.pdf](http://www.faa.gov/airports_airtraffic/airports/resources/advisory_circulars/media/150-5200-33B/150_5200_33b.pdf)>.

U.S. Environmental Protection Agency. 2009. Envirostor. Results of electronic record search. Washington, DC.

### **SECTION 3.8, “HYDROLOGY AND WATER QUALITY”**

Butte County. 2007 (August 2). *Butte County General Plan: Setting & Trends Report Public Draft*. Prepared by Design, Community & Environment. Berkeley, California.

Cherokee Watershed Alliance and Butte County Department of Water and Resource Conservation. 2005 (April). *Cherokee Watershed Existing Data Summary*. Prepared by Western Resource Associates. Durham, California. Available: <[http://www.cherokeewatershed.org/nodes/aboutwatershed/reports/cherokee\\_eds.htm](http://www.cherokeewatershed.org/nodes/aboutwatershed/reports/cherokee_eds.htm)> Accessed June 3, 2009.

Department of Water Resources. In prep. *Draft Environmental Impact Report Cherokee Canal Rehabilitation Project*. Sacramento, California.

### **SECTION 3.9, “LAND USE AND PLANNING”**

Butte County. 2006. *Butte Regional Habitat Conservation Plan*. Map of Planning Area for Butte Regional HCP/NCCP. Available: <<http://www.buttehcp.com/Background/index.html>>. Accessed May 27, 2009.

Landsite. 2007. Butte County Zoning. Available: <<http://www.landsite.com/zoneinformation/ButtecountyCAzoning.aspx>>. Accessed May 27, 2009.

### **SECTION 3.10, “MINERAL RESOURCES”**

Butte County. 2007 (August 2). *Butte County General Plan: Setting & Trends Report Public Draft*. Prepared by Design, Community & Environment. Berkeley, California.

### **SECTION 3.11, “NOISE”**

Bolt Beranek and Newman Inc. 1981. *Noise Control for Buildings and Manufacturing Plants*. Cambridge MA.

Butte County. 1977 (March 15). *Noise Element of Butte County General Plan*. Butte County, California.

California Department of Transportation. 2008 (September). *Annual Average Daily Truck Traffic on the California State Highway System*. Sacramento, California.

———. 2004 (June). *Transportation- and Construction-Induced Vibration Guidance Manual*. Sacramento, California.

Caltrans. See California Department of Transportation.

Federal Highway Administration. 1978 (December). *Federal Highway Traffic Noise Prediction Model FHWA RD 77-108*. Washington, DC.

Federal Transit Administration. 2006 (May). *Transit Noise and Vibration Impact Assessment*. Washington, DC. Prepared by Harris Miller Miller & Hanson Inc., Burlington, Massachusetts.

FTA. See Federal Transit Administration.

### **SECTION 3.12, “POPULATION AND HOUSING”**

Butte County. 2007 (August 2). *Butte County General Plan: Setting & Trends Report Public Draft*. Prepared by Design, Community & Environment. Berkeley, California.

### **SECTION 3.13, “PUBLIC SERVICES”**

Butte County. 2007 (August 2). *Butte County General Plan: Setting & Trends Report Public Draft*. Prepared by Design, Community & Environment. Berkeley, California.

### **SECTION 3.14, “RECREATION”**

Butte County. 2007 (August 2). *Butte County General Plan: Setting & Trends Report Public Draft*. Prepared by Design, Community & Environment. Berkeley, California.

### **SECTION 3.15, “TRANSPORTATION/TRAFFIC”**

BCAG. See Butte County Association of Governments.

Butte County. 1988. *Butte County General Plan, Circulation Element*. Butte County Department of Development Services. Available: <[http://www.buttecounty.net/dds/Planning/Current\\_General\\_Plan\\_Elements/Circulation\\_Element.pdf](http://www.buttecounty.net/dds/Planning/Current_General_Plan_Elements/Circulation_Element.pdf)> Accessed June 2, 2009.

Butte County. 2006 (August 22). Traffic Speed Studies. Available: <<http://www.buttecounty.net/Public%20Works/Divisions/Engineering/Traffic%20Studies.aspx>>. Accessed June 3, 2009.

Butte County Association of Governments. 2006. 2006 Traffic Counts. Available: <[http://www.bcag.org/documents/demographics/2006\\_BCAG\\_Traffic\\_Count\\_Data\\_Web.pdf](http://www.bcag.org/documents/demographics/2006_BCAG_Traffic_Count_Data_Web.pdf)>. Accessed June 2, 2009.

California Department of Transportation. 2008. Traffic Volumes. Available: <<http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2008all/r099i.htm>>. Accessed June 2, 2009.

Caltrans. See California Department of Transportation.

### **SECTION 3.16, “UTILITIES AND SERVICE SYSTEMS”**

Butte County. 2007 (August 2). *Butte County General Plan: Setting & Trends Report Public Draft*. Prepared by Design, Community & Environment. Berkeley, California.

## 5 LIST OF PREPARERS

### LEAD AGENCY

#### Department of Water Resources, Flood Maintenance Office

Mark List .....	Senior Engineering Geologist
Kelly Briggs.....	Senior Environmental Scientist
Stephanie Chun.....	Staff Environmental Scientist
Colin Kark .....	Engineering Geologist
Janis Offermann .....	Senior Environmental Planner
Tiffany Schmid.....	Associate Environmental Planner-Archaeology
Barbara Castro .....	Environmental Scientist/Botanist
Margie Graham.....	Environmental Scientist
Dave Bogener.....	Staff Environmental Scientist
Gail Kuenster.....	Staff Environmental Scientist
Ryan Martin .....	Environmental Scientist
Wanda Headrick.....	Staff Services Analyst

### IS/MND CONSULTANT

#### EDAW

Debra Bishop.....	Principal-in-Charge
Matt Wacker .....	Project Manager
Stephanie Rasmussen.....	Assistant Project Manager
Linda Leeman.....	Senior Biologist
Stephanie Jentsch .....	Biologist
Sarah Bennett.....	Botanist
Marianne Lowenthal .....	Environmental Analyst
Danielle Hughes .....	Hydrologist/Geologist
Honey Walters .....	Senior Air Quality and Noise Specialist
Jake Weirich .....	Air Quality Specialist
Chris Shields .....	Noise Specialist
Bill O'Daly .....	Editor
Christy Seifert .....	Editor
Amber Giffin.....	Document Publishing
Debby Jew.....	Document Publishing
Christy Anderson .....	Graphics
Lisa Clement.....	GIS Specialist
Eryn Pimentel .....	GIS Specialist

#### Philip Williams & Associates, Ltd.

Eric Ginney .....	Project Manager
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# **APPENDIX A**

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Air Quality



Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\weirichj\Desktop\Cherokee Canal 08110038.09\cherokee canal.urb924

Project Name: Cherokee Canal

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10 Total</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5 Total</u>	<u>CO2</u>
2010	1.20	16.74	5.95	0.02	20.82	0.64	21.46	4.36	0.59	4.95	2,185.10
Fine Grading 08/01/2010-08/30/2010	0.06	0.52	0.25	0.00	1.25	0.02	1.27	0.26	0.02	0.28	50.46
Fine Grading Dust	0.00	0.00	0.00	0.00	1.25	0.00	1.25	0.26	0.00	0.26	0.00
Fine Grading Off Road Diesel	0.05	0.46	0.21	0.00	0.00	0.02	0.02	0.00	0.02	0.02	41.34
Fine Grading On Road Diesel	0.00	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.84
Fine Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27
Mass Grading 09/01/2010-10/31/2010	1.15	16.21	5.71	0.02	19.57	0.62	20.19	4.09	0.57	4.66	2,134.64
Mass Grading Dust	0.00	0.00	0.00	0.00	19.50	0.00	19.50	4.07	0.00	4.07	0.00
Mass Grading Off Road Diesel	0.27	2.47	1.14	0.00	0.00	0.11	0.11	0.00	0.10	0.10	227.72
Mass Grading On Road Diesel	0.87	13.74	4.49	0.02	0.07	0.51	0.58	0.02	0.47	0.49	1,902.29
Mass Grading Worker Trips	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.63

Phase Assumptions

Phase: Fine Grading 8/1/2010 - 8/30/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 20

Maximum Daily Acreage Disturbed: 5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 155.77

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Off-Road Equipment:

- 1 Other Material Handling Equipment (191 hp) operating at a 0.59 load factor for 8 hours per day
- 1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 10 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 10 hours per day
- 1 Water Trucks (189 hp) operating at a 0.5 load factor for 10 hours per day

Phase: Mass Grading 9/1/2010 - 10/31/2010 - Default Paving Description

Total Acres Disturbed: 150

Maximum Daily Acreage Disturbed: 37.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 18173.08

Off-Road Equipment:

- 1 Plate Compactors (8 hp) operating at a 0.43 load factor for 10 hours per day
- 1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 10 hours per day
- 3 Scrapers (313 hp) operating at a 0.72 load factor for 10 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 10 hours per day
- 1 Water Trucks (189 hp) operating at a 0.5 load factor for 10 hours per day

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Documents and Settings\weirichj\Desktop\Cherokee Canal 08110038.09\cherokee canal.urb924

Project Name: Cherokee Canal

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10 Total</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5 Total</u>	<u>CO2</u>
Time Slice 8/2/2010-8/30/2010 Active Days: 25	4.55	41.81	19.90	0.01	100.03	1.83	101.86	20.89	1.69	22.58	4,036.50
Fine Grading 08/01/2010-08/30/2010	4.55	41.81	19.90	0.01	100.03	1.83	101.86	20.89	1.69	22.58	4,036.50
Fine Grading Dust	0.00	0.00	0.00	0.00	100.00	0.00	100.00	20.88	0.00	20.88	0.00
Fine Grading Off Road Diesel	4.19	37.17	16.65	0.00	0.00	1.66	1.66	0.00	1.53	1.53	3,307.59
Fine Grading On Road Diesel	0.29	4.53	1.48	0.01	0.02	0.17	0.19	0.01	0.16	0.16	627.13
Fine Grading Worker Trips	0.07	0.11	1.76	0.00	0.00	0.00	0.01	0.00	0.00	0.00	101.79
Time Slice 9/1/2010-10/30/2010 Active Days: 52	<b>44.05</b>	<b>623.61</b>	<b>219.45</b>	<b>0.68</b>	<b>752.57</b>	<b>23.81</b>	<b>776.38</b>	<b>157.47</b>	<b>21.90</b>	<b>179.38</b>	<b>82,101.52</b>
Mass Grading 09/01/2010-10/31/2010	44.05	623.61	219.45	0.68	752.57	23.81	776.38	157.47	21.90	179.38	82,101.52
Mass Grading Dust	0.00	0.00	0.00	0.00	750.00	0.00	750.00	156.63	0.00	156.63	0.00
Mass Grading Off Road Diesel	10.54	94.92	43.72	0.00	0.00	4.11	4.11	0.00	3.78	3.78	8,758.43
Mass Grading On Road Diesel	33.38	528.50	172.64	0.68	2.56	19.69	22.26	0.84	18.12	18.96	73,164.97
Mass Grading Worker Trips	0.12	0.19	3.09	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.12

Phase Assumptions

Phase: Fine Grading 8/1/2010 - 8/30/2010 - Default Fine Site Grading Description

Total Acres Disturbed: 20

Maximum Daily Acreage Disturbed: 5

Fugitive Dust Level of Detail: Default

Page: 2

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20 lbs per acre-day

On Road Truck Travel (VMT): 155.77

Off-Road Equipment:

1 Other Material Handling Equipment (191 hp) operating at a 0.59 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 10 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 10 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 10 hours per day

Phase: Mass Grading 9/1/2010 - 10/31/2010 - Default Paving Description

Total Acres Disturbed: 150

Maximum Daily Acreage Disturbed: 37.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 18173.08

Off-Road Equipment:

1 Plate Compactors (8 hp) operating at a 0.43 load factor for 10 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 10 hours per day

3 Scrapers (313 hp) operating at a 0.72 load factor for 10 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 10 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 10 hours per day

## **APPENDIX B**

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Noise



**Appendix B**  
**Traffic Noise Prediction Model, (FHWA RD-77-108)**  
**Model Input Sheet**

**Project Name :** Cherokee Canal CMS Pilot Project  
**Project Number :** 8110038.09  
**Modeling Condition :** Existing  
**Ground Type :** Soft  
**Metric (L<sub>eq</sub>, L<sub>dn</sub>, CNEL) :** Ldn

**K Factor :**  
**Traffic Desc. (Peak or ADT) :** ADT



Segment	Roadway	Segment		Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
		From	To										
1	State Route 99	Richvale Highway	Spoil Site 3	12500	55	100	90	2.2	7.8	85		15	
2	Richvale Highway	Colony Road	Midway Road	1400	50	100	79.9	2.7	17.4	85		15	
3	Richvale Highway	Midway Road	Cherokee Canal	1400	50	100	79.9	2.7	17.4	85		15	
4	Richvale Highway	Cherokee Canal	Spoil Site 1	1400	50	100	79.9	2.7	17.4	85		15	
5	Richvale Highway/ SR 162	Spoil Site 1	Spoil Site 4	5260	50	100	79.9	2.7	17.4	85		15	
6	Midway Road	Richvale Highway	Fruitvale Avenue	4500	25	100	95	2	3	85		15	

**Appendix B**  
**Traffic Noise Prediction Model, (FHWA RD-77-108)**  
**Predicted Noise Levels**

**Project Name :** Cherokee Canal CMS Pilot Project  
**Project Number :** 8110038.09  
**Modeling Condition :** Existing  
**Metric (Leq, Ldn, CNEL) :** Ldn



Segment	Roadway	Segment		Noise Levels, dB Ldn				Distance to Traffic Noise Contours, Feet				
		From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	State Route 99	Richvale Highway	Spoil Site 3	64.6	55.6	65.1	68.1	75	161	347	748	1612
2	Richvale Highway	Colony Road	Midway Road	53.4	46.4	58.6	60.0	21	46	100	215	463
3	Richvale Highway	Midway Road	Cherokee Canal	53.4	46.4	58.6	60.0	21	46	100	215	463
4	Richvale Highway	Cherokee Canal	Spoil Site 1	53.4	46.4	58.6	60.0	21	46	100	215	463
5	Richvale Highway/ SR 162	Spoil Site 1	Spoil Site 4	59.2	52.1	64.4	65.7	52	112	241	519	1118
6	Midway Road	Richvale Highway	Fruitvale Avenue	50.6	45.4	54.8	56.5	13	27	59	127	273