# *Proposed Finding of No Significant Impact/ Mitigated Negative Declaration and Draft Environmental Assessment/Initial Study for the M&T/Parrott Pumping Plant and Fish Screen Project*

Region 2
Rancho Cordova, CA

Ducks Unlimited Inc.
Sacramento, CA

Sacramento National Wildlife Refuge
Willows, CA

Prepared by:

Jones & Stokes Associates
Sacramento, CA

**April 1996**

# PUBLIC NOTICE

## Availability of a Proposed Finding of No Significant Impact/Mitigated Negative Declaration and Draft Environmental Assessment/Initial Study for the M&T/Parrot Pump Station and Fish Screen Project

The United States Fish and Wildlife Service (USFWS) and California Department of Fish and Game (DFG) announce the availability of a proposed Finding of No Significant Impact/Mitigated Negative Declaration (FONSI/MND) for the M&T/Parrot Pump Station and Fish Screen Project. An environmental assessment/initial study (EA/IS) has been prepared in compliance with the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) and forms the basis for the proposed FONSI/MND.

The proposed project involves the construction and operation of a new water supply pump station with fish screens on the Sacramento River, approximately 1,700-feet downstream from the mouth of Big Chico Creek. The new station would provide water to lands managed by the Llano Seco Wildlife Refuges, M&T Chico Ranch, and Parrot Investment Company. The project is being proposed to improve conditions in the Sacramento River and Big Chico Creek for steelhead and chinook salmon, including spring-run and winter-run chinook salmon.

The document is being circulated for a 30-day review and comment period. Written comments on the document should be received by the agencies at the addresses shown below no later than **May 8, 1996**. The document has been distributed to over 60 agencies, organizations, and interested individuals. Any written comments received will be considered by the agencies in preparing the final FONSI/MND.

The document is available for review at the following locations:

- **Sacramento National Wildlife Refuge Complex, 752 County Road 99W, Willows, CA;**
- **DFG Region 2 office, 1701 Nimbus Dam Road, Suite A, Rancho Cordova, CA;**
- **Butte County Library, Chico Branch, 1108 Sherman Avenue, Chico, CA; and**
- **City of Willows Library, 201 North Lassen Street, Willows, CA.**

**PROPOSED**
**FINDING OF NO SIGNIFICANT IMPACT**

M&T/Parrott Pumping Station and Fish Screen Project
**(Title of Project)**

Sacramento National Wildlife Refuge Complex

752 County Road 99W, Willows, CA 95988
**Name and Address of FWS Facility**

**The U.S. Fish and Wildlife Service**, the California Department of Fish and Game, Ducks Unlimited, M&T Chico Ranch, and Parrott Investment Company propose to relocate a water pumping station from Big Chico Creek to the Sacramento River to reduce impacts on spring-run and winter-run chinook salmon in Big Chico Creek and Sacramento River. The project would also involve increasing streamflows in Butte Creek to improve habitat for the spring-run chinook salmon.

**FWS has analyzed a number of alternatives to the proposal, including the following:** The following alternatives were considered and dismissed from further analysis because they were found to not satisfy either environmental, engineering and/or economic feasibility criteria or could not fully achieve the project objectives:

- Groundwater Pumping,
- Acquiring Outside Water Sources,
- Installation of Screens on Big Chico Creek diversion, and
- Water Conservation.

**The proposal was selected over the other alternatives because** it would reduce impacts on spring-run and winter-run chinook salmon, and satisfy environmental, engineering, and economic feasibility criteria. The No-Project alternative would allow the continued entrainment and mortality of various fish species in Big Chico Creek and the Sacramento River.

**Implementation of the preferred alternative would be expected to result in the following environmental and socioeconomic effects:**

- Beneficial Impact: Eliminate fish entrainment and mortality from operation of the existing M&T/Parrott pumping plant located on Big Chico Creek.

- Beneficial Impact: Improve stream flow conditions in Butte Creek for spring-run chinook salmon.

- Beneficial Impact: Assure a reliable water supply to the federal and state wildlife refuges at Llano Seco, M&T Chico Ranch and Parrott Investment Company.
- Potential disturbance of cultural artifacts during excavation and construction of the pipeline and pipeline outlet structure,
- Potential disturbance of valley elderberry beetle habitat during construction, and
- Potential disturbance of nesting Swainson's hawks during project construction activities.

**Measures to mitigate and/or minimize adverse effects have been incorporated into the proposal. These measures include:**

Mitigation Measure: Ensure that a Qualified Archeologist Is Present during Ground-Disturbing Activities with the Authority to Halt Construction and Consult with SHPO.

Mitigation Measure: Halt Work within 100 Feet of Any Find of Buried Cultural Resources Until the Find is Assessed by a Qualified Archeologist.

Mitigation Measure: Prepare and Implement a Plan to Protect Valley Elderberry Longhorn Beetle Habitat.

Mitigation Measure: Conduct Preconstruction Surveys for Swainson's Hawks and Comply with CDFG Hawk Guidelines.

**The proposal is not expected to have any significant effects on the human environment because** all environmental impacts have either been eliminated through project design or mitigation implemented by the agencies will reduce impacts to less than significant levels.

**The proposal has been thoroughly coordinated with all interested and/or affected parties. Parties** contacted include:

Ducks Unlimited, Inc.
M&T Chico Ranch
Parrott Investment Company
California Department of Fish and Game
National Marine Fisheries Service
U.S. Army Corps of Engineers
California State Board of Reclamation
Butte County
Central Valley Regional Water Quality Control Board
U.S. Fish and Wildlife Service, Division of Ecological Services
State of California, Office of Historic Preservation
U.S. Bureau of Reclamation

**Therefore, it is my determination that the proposal does not constitute a major Federal action significantly affecting the quality of the human environment. As such, an environmental impact statement is not required. An environmental assessment has been prepared in support of this finding and is available upon request to the FWS facility identified above.**

**Reference:** M&T/Parrott Pumping Station and Fish Screen Project.

_____ _____

**Regional Director** **Date**

State of California

The Resources Agency

Department of Fish and Game

# NEGATIVE DECLARATION
# FOR THE PROPOSED

# M&T PUMP RELOCATION AND FISH SCREEN

The project: Anadromous fish including spring-, fall-, late fall-, and winter-run chinook salmon and steelhead trout in the Sacramento River and Big Chico Creek are adversely impacted by the existing M&T pumps.

The existing unscreened M&T pumping station is located on Big Chico Creek approximately 3/4 mile upstream from the confluence with the Sacramento River. Water diverted by the M&T pumps is used on land owned and operated by the Department of Fish and Game (DFG), U.S. Fish and Wildlife Service (FWS), as well as the M&T Chico Ranch (M&T) and Parrott Investment Company (PIC). Substantial streamflow reversals occur during juvenile salmon emigration. During these periods, all downstream migrants are lost. Substantial entrainment of juvenile salmon occurs even during periods of positive out flow from Big Chico Creek due to the lack of screens and location of the existing diversion in a dead-end backwater. Adult spring-run chinook salmon migrating up the Sacramento River on their return have difficulty locating the mouth of Big Chico Creek when out flows are reduced or are reversed.

The M&T pump station and diversion will be relocated to the Sacramento River. Fish screens meeting DFG and National Marine Fisheries Service criteria would be placed on the intake structures.

The diversion will increase from 135 cfs to 150 cfs. Additionally the Ranches (M&T and PIC) will generally decrease their diversion rate at the Parrott-Phelan diversion on Butte Creek by 40 cfs from October 1 through June 30, providing 40 cfs through Butte Creek to the Sacramento River for salmon and steelhead trout restoration. The water bypassed at Parrott-Phelan dam will be transferred to the M&T pumps. The water transfer would be with the U.S. Bureau of Reclamation.

The Finding: Although the project may have the potential to cause minor short-term impacts on soil, vegetation, wildlife, water quality, and aquatic life, the measures to avoid significant impacts that will be incorporated into the project will lessen such impacts to less-than-significant levels (see Environmental Assessment/Initial Study).

Basis for the Finding: Based on the Environmental Assessment/Initial Study, it was determined that there would not be significant adverse environmental effects resulting from implementing the proposed project. The project is expected to achieve a net benefit to the environment by preventing the entrainment and loss of anadromous salmonids, including winter-run chinook salmon (endangered species), spring-run chinook salmon (proposed for listing as an endangered species) and steelhead trout.

The Department of Fish and Game finds that implementing the proposed project will have no significant environmental impact.

This Negative Declaration is filed pursuant to the California Environmental Quality Act Guidelines.

_____ _____

Jacqueline E. Schafer, Director Date

Department of Fish and Game

Determination

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 the *mitigation* measures described in the Environmental Assessment/Initial Study have been added to the project.

A NEGATIVE DECLARATION WILL BE PREPARED ..... X

I find the proposed project *may* have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required ..... ___

Date

For the Department of Fish and Game

# Proposed
# Finding of No Significant Impact/
# Mitigated Negative Declaration and
# Draft Environmental Assessment/Initial Study
# for the
# M&T Ranch/Parrott Pumping Plant
# and Fish Screen Project

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This document should be cited as:

Jones & Stokes Associates, Inc. 1996. Environmental assessment/initial study for the M&T Ranch/Parrott pumping plant and fish screen project. Administrative draft. February. (JSA 95-328.) Sacramento, CA. Prepared for U.S. Fish and Wildlife Service, Sacramento National Wildlife Refuge, Willows, CA; California Department of Fish and Game, Region 2 Inland Fisheries, Rancho Cordova, CA; Ducks Unlimited, Rancho Cordova, CA; and Montgomery Watson, Sacramento, CA.

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# Acronyms and Abbreviations

| | |
|---|---|
| ACHP | Advisory Council on Historic Preservation |
| APCD | air pollution control district |
| BMP | best management practice |
| CEQA | California Environmental Quality Act |
| CESA | California Endangered Species Act |
| CFR | Code of Federal Regulations |
| cfs | cubic feet per second |
| CNPS | California Native Plant Society |
| Corps | U.S. Army Corps of Engineers |
| CVP | Central Valley Project |
| CVPIA | Central Valley Project Improvement Act |
| CVRWQCB | Central Valley Regional Water Quality Control Board |
| Delta | Sacramento-San Joaquin Delta |
| DFG | California Department of Fish and Game |
| DU | Ducks Unlimited |
| DWR | California Department of Water Resources |
| ESA | federal Endangered Species Act |
| EA/IS | environmental assessment/initial study |
| FONSI/ND | finding of no significant impact/negative declaration |
| M&T | M&T Chico Ranch/Parrott Phelan Irrigation Company |
| MWD | Metropolitan Water District of Southern California |
| NDDB | Natural Diversity Data Base |
| NEPA | National Environmental Policy Act |
| NMFS | National Marine Fisheries Service |
| $NO_x$ | oxides of nitrogen |
| NRHP | National Register of Historic Places |
| NTU | nephelometric turbidity unit |
| PG&E | Pacific Gas & Electric Company |
| PIC | Parrot Investment Company |
| PM10 | inhalable particulate matter |
| ppd | pounds per day |
| ppt | parts per thousand |
| RBBD | Red Bluff Diversion Dam |
| ROG | reactive organic gases |
| SHPO | State Historic Preservation Officer |
| SIP | state implementation plan |
| SWRCB | California State Water Resources Control Board |
| TDS | total dissolved solids |

| | |
|---|---|
| TSS | total suspended solids |
| tpy | tons per year |
| USFWS | U.S. Fish and Wildlife Service |
| VELB | valley elderberry longhorn beetle |
| USGS | U.S. Geological Survey |
| WPCP | water pollution control plant |

Socioeconomics was not an issue raised during public scoping and, therefore, is not included in this EA/IS.

## TERMINOLOGY USED IN THIS DOCUMENT

This report identifies the following levels of impacts for the proposed project and alternatives:

- a less-than-significant impact causes no substantial adverse change in the environment and requires no mitigation measures;
- a significant impact causes a substantial adverse effect on the environment but can be reduced to a less-than-significant level with implementation of mitigation measures; and
- a beneficial impact causes a positive change in the environment.

This EA/IS also recommends mitigation measures to reduce the significant impacts of the proposed action. As described in Section 15730 of the State CEQA Guidelines, mitigation measures are designed to:

- avoid the impact altogether by not taking a certain action or part of an action;
- minimize the impact by limiting the degree or magnitude of the action and its implementation;
- rectify an impact by repairing, rehabilitating, or restoring the affected environment; or
- compensate for the impact by replacing or providing substitute resources or improvements.

Although not required in the EA/IS at this phase of the process, a mitigation monitoring plan is provided in Chapter 3 for each resource area.

# Chapter 1. Introduction

## PURPOSE OF THIS DOCUMENT

This document is a joint environmental assessment/initial study (EA/IS) prepared to address the environmental impacts of the construction and operation of the M&T/Parrott Pumping Plant and Fish Screen Project. The project, which would be located just south of the confluence of Big Chico Creek and the Sacramento River, is being proposed to eliminate fisheries impacts caused to Big Chico Creek and the Sacramento River by the existing M&T Chico Ranch (M&T) pump station.

This EA/IS is a public information document prepared to disclose the project's environmental effects and to inform decision makers about these effects in compliance with the National Environmental Policy Act (NEPA), the California Environmental Quality Act (CEQA), and the State CEQA Guidelines. This document also conforms with the U.S. Fish and Wildlife Service (FWS) NEPA Handbook that clarifies FWS NEPA procedures and U.S. Council on Environmental Quality (CEQ) guidance on NEPA as stipulated by 40 CFR Chapter V, Parts 1500-1517. The FWS is serving as the lead agency for NEPA compliance, and the California Department of Fish and Game (DFG), Region 2, is serving as the lead agency for CEQA compliance. This EA/IS has been prepared in accordance with, and uses terminology from, both NEPA and CEQA as appropriate; the document describes the proposed project (action), the alternatives (including the No-Action alternative), existing conditions, and the environmental impacts of the proposed project. The document evaluates the direct, indirect, and cumulative impacts as required in CEQ Guidelines 40 CFR, Chapter V, Sections 1508.7 and 1508.8. Mitigation measures and monitoring that may be necessary to reduce potential impacts to less-than-significant levels have been considered and either incorporated into the project design or agreed to by the lead agencies.

## PUBLIC PARTICIPATION

Consultation and coordination of the lead agencies with the public and other responsible agencies are recommended by the State CEQA Guidelines and by the CEQ. To ensure that provisions of both NEPA and CEQA are met, FWS and DFG issued a public notice and conducted a public scoping meeting; the public notice was published in the Chico Enterprise on December 27, 1995, and January 2, 1996. In addition, the public notice was mailed to 64 individuals, environmental organizations, and other relevant groups. The public scoping meeting was held in Chico on January 4, 1996. Several comment letters were received from various entities as a result of the scoping process and are included in Appendix A.

This draft EA/IS is being circulated for public and agency review and comment for 30 days, as required by CEQA and NEPA. The comment period ends on May 8, 1996.

If the information and analysis presented in the EA/IS or information received during public review indicate that there is no substantial evidence that the proposed action will have a significant effect on the environment, a finding of no significant impact/negative declaration (FONSI/ND) may be adopted by the lead agencies. The FONSI/ND will be presented to FWS and DFG for certification of its adequacy under NEPA and CEQA before action is taken on the project.

## ORGANIZATION OF THIS DOCUMENT

The format of this draft EA/IS is based on the Environmental Checklist developed by the Governor's Office of Planning and Research (OPR) and NEPA Guidelines. Appropriate setting information, impact significance criteria, and impact conclusions are provided for each section of the checklist. Responses to each checklist question are provided along with the rationale and logic for each conclusion.

The draft EA/IS is organized into the following chapters:

- Chapter 1, "Introduction";
- Chapter 2, "Proposed Project and Alternatives";
- Chapter 3, "Affected Environment, Environmental Consequences, and Mitigation";
- Chapter 4, "References";
- Chapter 5, "Report Preparation";
- Appendix A, "Comment Letters Received during the Scoping Process";
- Appendix B, "Plant and Wildlife Species Lists";
- Appendix C, "Swainson's Hawk Mitigation";
- Appendix D, "National Marine Fisheries Service Biological Opinion Regarding Effects on Sacramento Winter-run Chinook Salmon of the M&T/Parrott Pump Station and Fish Screen Project"; and
- Appendix E, "Opinion of Office of Historic Preservation Regarding M&T/Parrott Pump Station and Fish Screen Project."

# Chapter 2. Proposed Project and Alternatives

## BACKGROUND

Big Chico Creek, a tributary to the Sacramento River, supports one of the remaining spring-run salmon populations in northern California (Figure 2-1). Unlike fall-run salmon, which normally enter the river system in late summer to fall, spring-run salmon are a distinct race of salmon that enter the Sacramento River system in spring and enter their ancestral spawning grounds during high streamflows caused by spring snowmelt. Once in their home stream, spring-run salmon hold over the summer in deep cold pools in the upper watersheds and spawn in late summer to early fall.

The headwaters of Big Chico Creek are in the Lassen National Forest at an elevation of about 3,100 feet. Other streams in the area that support spring-run salmon include Butte Creek to the south and Mill Creek, Deer Creek, and Battle Creek to the north. In summer and during consecutive dry periods, most of the streamflow in these creeks is sustained by coldwater springs located in the headwaters. These springs emerge from ancient collapsed lava tubes, buried creeks, and volcanic basalt formations.

Agricultural water diversions along Big Chico Creek and other streams that support spring-run salmon have caused numerous obstacles for migrating salmon; these obstacles include reductions in streamflows, entrainment of fry and juvenile salmon emigrating from the system, and flow reversals near the pump stations that confuse adult salmon during migration. State and federal fish agencies have observed and documented the effects of agricultural diversions on these streams and are working with the landowners to find new water supply options that minimize or eliminate impacts on fisheries.

The population of spring-run chinook salmon in California has declined over the years, causing concern to state and federal biologists. A petition to list spring-run salmon under the California Endangered Species Act (CESA) was submitted to the DFG. After reviewing the petition, DFG staff determined that there was sufficient information to indicate that the petition action was warranted and recommended to the California Fish and Game Commission (Commission) that the petition be accepted and a notice be issued indicating that spring-run salmon is a candidate species for listing under CESA. However, the petition was denied by the California Fish and Game Commission (Commission) on April 4, 1996. In addition, the federal government has received a petition to list chinook salmon as threatened throughout its range in Idaho, Washington, Oregon, and California (60 Federal Register 110, June 8, 1995). Therefore, the National Marine Fisheries Service (NMFS) is conducting a general review to consider all races of chinook salmon for listing.

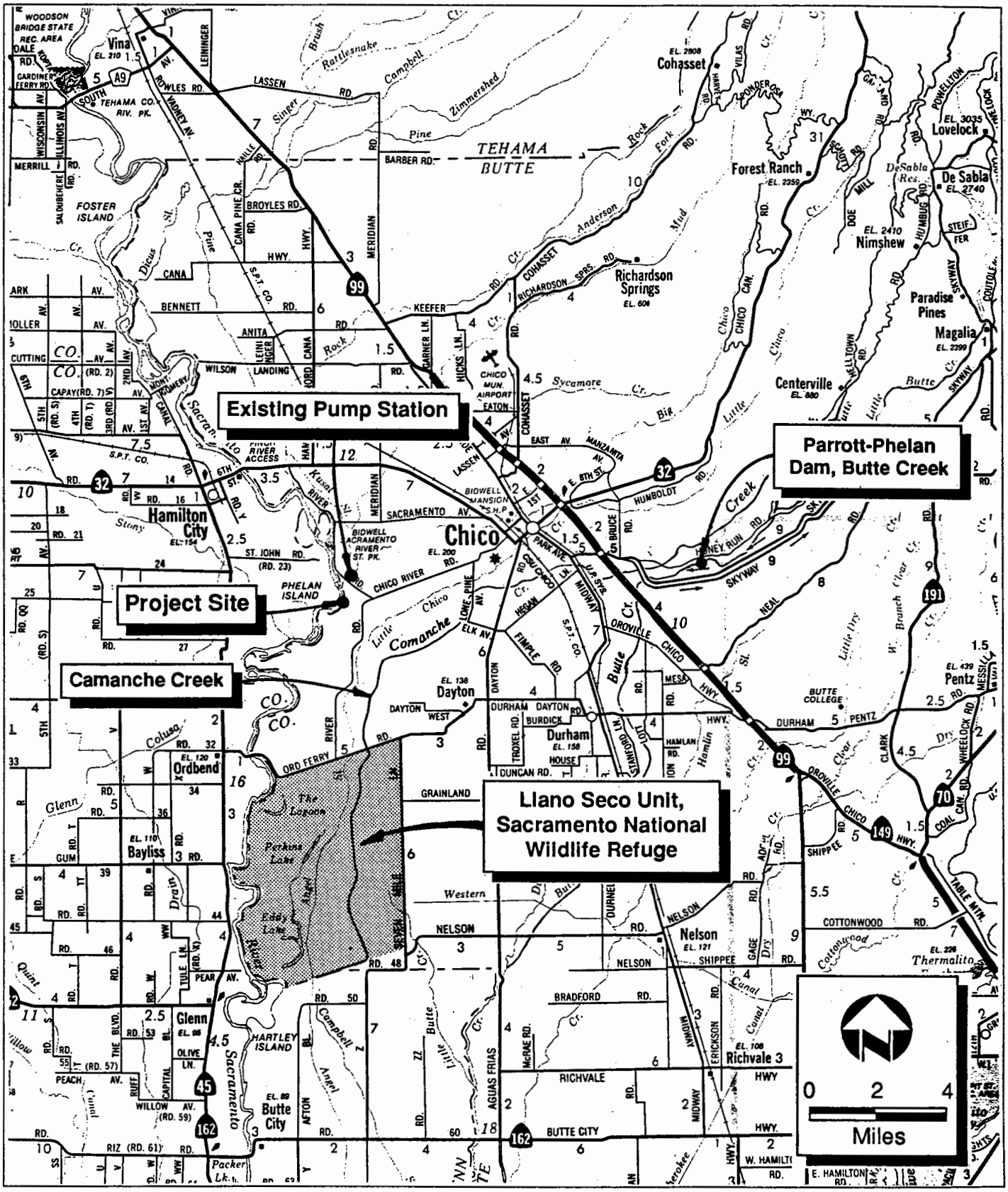


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**Figure 2-1**
**Regional Location**

## PROPOSED PROJECT

FWS, DFG, M&T, and PIC, in conjunction with Ducks Unlimited, propose construction and operation of a new water supply pump station on the Sacramento River to replace an existing pump station owned and operated by the M&T on Big Chico Creek (Figure 2-2). Both M&T and Llano Seco Rancho, which is owned by PIC, use the pump station for irrigation of a variety of crops and wetland habitat management. This pump station, which was constructed in the early 1900s, diverts water through a series of four unscreened pumps with a rated capacity of 135 cubic feet per second (cfs); the pumps have historically caused entrainment problems for both resident and anadromous juvenile fish (California Department of Fish and Game 1986).

FWS and DFG acquired land approximately 10 miles southwest of Chico and have established the federal Llano Seco Unit of the Sacramento River National Wildlife Refuge and the State Llano Seco Wildlife Management Area. The sites in the past have received water from Big Chico Creek and the Sacramento River via the existing M&T pump station or from Butte Creek via the Parrott-Phelan Diversion Dam. Because of impacts on fisheries caused by the existing M&T pump station, FWS and DFG opted not to take water diversions for the refuges from the existing pump station but intend to provide water with the proposed pump station on the Sacramento River.

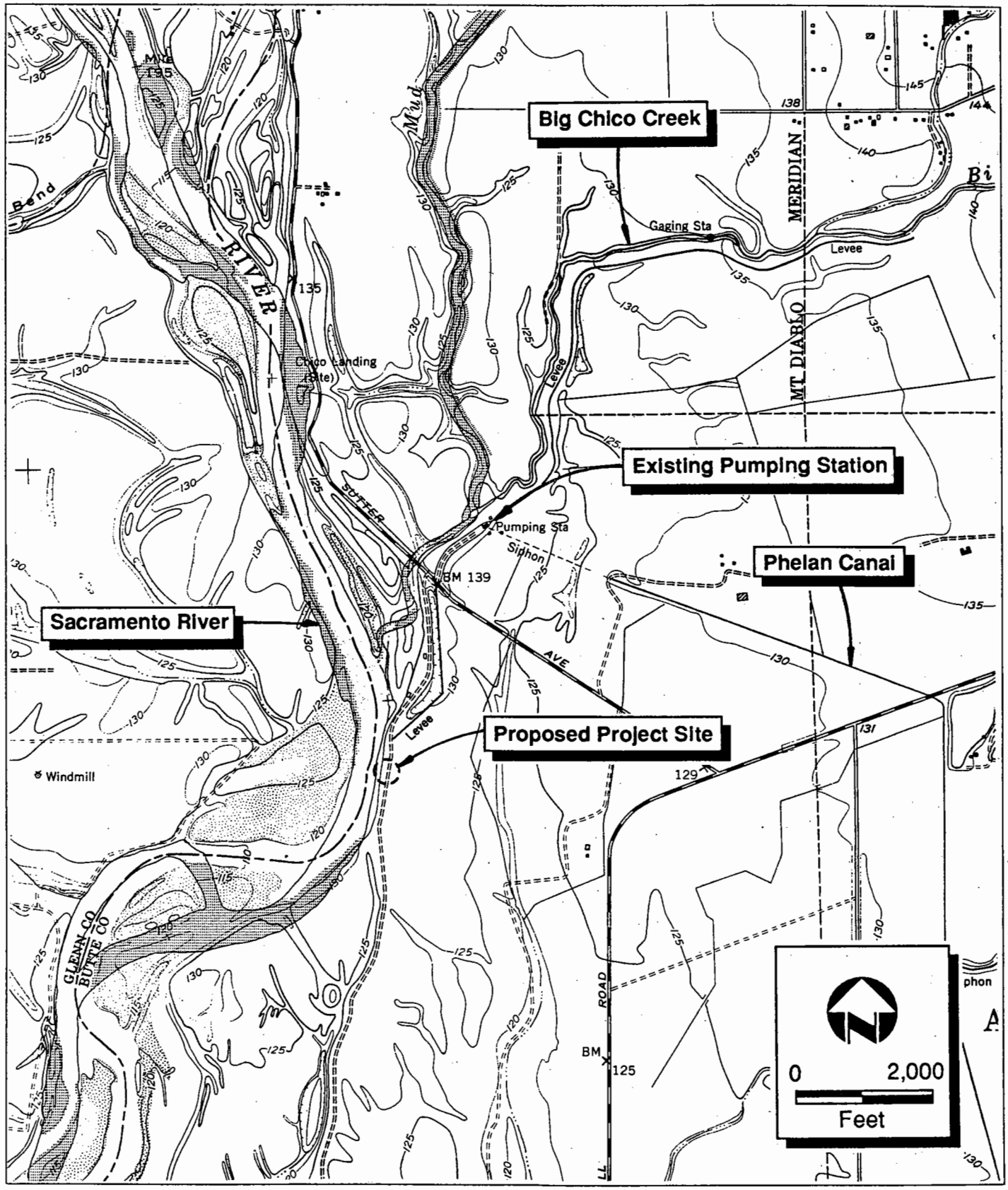
FWS and DFG are serving as lead agencies for project compliance with the requirements of NEPA and CEQA. Ducks Unlimited is the contract administrator for design and construction of the new pump station and preparation of this environmental document. M&T and PIC would own the new pump station, and it would be operated and maintained by M&T.

### Project Funding

The relocation of the M&T pump station would be funded with private, state, and federal grants under several programs, including the Central Valley Project Improvement Act (CVPIA) fund, Bay-Delta Accord Category III funds, Wildlife Conservation Board funds, and Ducks Unlimited funds.

### Purpose and Need

The purpose of the project is to provide a reliable water supply to M&T, Llano Seco Rancho, and the state and federal wildlife refuges while eliminating diversions from Big Chico Creek in order to protect spring-run chinook salmon, steelhead trout, and resident fish that use Big Chico Creek for spawning and rearing. In addition, the project will provide protection for all races of juvenile chinook salmon and steelhead trout which exit the Sacramento River and rear in Big Chico Creek. The project is needed to replace a water supply facility that has historically contributed to the decline of the salmon population in Big Chico Creek and is also known to have impacted winter-run salmon




Base map. Ord Ferry, California 7.5-minute quadrangle, photorevised 1969.

Jones & Stokes Associates, Inc.

**Figure 2-2**
**Project Location**

and other stocks of spring-run salmon from the Sacramento River and other upstream tributaries (California Department of Fish and Game 1986). Unlike the existing pump station, the proposed pump station would include fish screens to prevent impacts on fisheries. The proposed pump station would have a higher capacity than the existing station, which would also allow reduction of diversion of flows from Butte Creek, thereby reducing impacts on spring-run chinook salmon and steelhead trout in Butte Creek.

## Project Goals and Objectives

During development of the project, representatives of the U.S. Fish and Wildlife Service, The Nature Conservancy (TNC), California Department of Fish and Game, PIC, and M&T met to discuss options for improvements to the existing M&T pump station on Big Chico Creek. The existing pump station diverts water from Big Chico Creek and the Sacramento River to serve M&T, PIC, and Llano Seco wildlife refuge lands. FWS and DFG have reduced delivery of water from the existing M&T pump station because of concerns that the unscreened pump station diversion could potentially cause an adverse impact on the endangered winter-run chinook salmon juveniles utilizing Big Chico Creek. In discussing options to resolve this issue, several goals and objectives were developed for pump station improvements, or construction and operation of a new project. Project criteria would need to demonstrate that the new facility would not be detrimental to chinook salmon and steelhead trout and would meet the water supply needs of the Llano Seco wildlife refuges, M&T, and PIC. From these discussions, the following goals and objectives were developed:

- Provide a screened diversion that would eliminate significant adverse impacts to salmon and steelhead trout, including the spring-run and winter-run chinook salmon;
- Provide a screened diversion meeting the NMFS and DFG criteria for fish screen facilities;
- Increase flows in Big Chico Creek, particularly in the lower reaches extending downstream to its confluence with the Sacramento River, and prevent reverse flows from the Sacramento River to improve conditions for migrating chinook salmon and steelhead trout;
- Maximize use of existing water conveyance and distribution facilities, including the Phelan Canal; and
- Provide a reliable water supply to M&T, PIC, and Llano Seco wildlife refuge lands.

A Joint Management Committee (JMC) was formed to discuss the restoration and management of the Llano Seco Rancho following acquisition of fee title and conservation easements

by the FWS, DFG, and TNC from PIC[1]. JMC members include the above agencies and M&T, which was made an ex-officio member of the JMC because of its close water management association with the Llano Seco project. The objectives of the JMC are to coordinate the various restoration and land management objectives of the Llano Seco Rancho. A management objective undertaken by the JMC was to investigate water supply sources for the project area. All reasonable water supply options, including groundwater pumping, acquisition of outside water sources, use of the Big Chico Creek diversion and screening with the existing M&T pump station, construction of a new pump station,and water conservation were investigated. The alternatives were developed and screened based on their ability to meet the project objectives and are discussed below.

## PROJECT ALTERNATIVES

NEPA requires analysis of project alternatives that would avoid or minimize potential environmental impacts at the environmental assessment level. CEQA does not require alternatives analysis for mitigated negative declarations. Therefore, because this is a joint project with a federal agency, the environmental analysis includes an alternatives discussion.

Two alternatives are analyzed in this EA/IS, the No-Project Alternative and the Proposed Project Alternative. The No-Project Alternative represents a continuation of existing conditions, namely, continued operation of the M&T pump station on Big Chico Creek. The Proposed Project Alternative represents the construction and operation of a new pump station to be located on the Sacramento River and a pipeline extending from the new pump station to the existing siphons for the Phelan Canal system. Other project alternatives were considered, but were screened out in the early phases of project development by the proponents. During the early screening, the project proponents determined the other potential alternatives to the proposed action would have significantly greater impacts on the natural environment or would not meet the project objectives. The other potential water supply options for the Llano Seco project, M&T, and PIC lands were as follows:

- Groundwater Pumping,
- Acquisition of Outside Water Sources,
- Installation of Screens on the Big Chico Creek Diversion,
- Construction and Operation of a New Pump Station, and
- Water Conservation.

Each of these potential water supply options is discussed below and the results of the alternatives screening is presented in Table 2-1.

[1] The Llano Seco Rancho property is the entire area that was originally purchased by an individual and now managed by PIC.

Table 2-1. Results of Alternative Screening

| Alternative Screened | Project Goals and Objectives | | | | |
|---|---|---|---|---|---|
| | Reliable Water Supply for Participants | Screened Diversion | Meets NMFS and CDFG Fish Screen Criteria | Increase in Big Chico Creek Flows | Maximizes Use of Existing Water System |
| **No-Project Alternative** | No | No | No | No | Yes |
| **Proposed Project Alternative** | Yes | Yes | Yes | Yes | Yes |
| **Groundwater Pumping** | No | N/A | N/A | No (1) | No |
| **Acquire Outside Source** | | | | | |
| Acquire Pumped Groundwater | No | No | No | No (1) | No |
| Join Western Canal Water District | No | No | No | No (1) | No |
| **Install Screens for Big Chico Creek Diversion** | | | | | |
| At M&T Pumping Station | Yes | Yes | No | No | Yes |
| At Trash Barrier | Yes | Yes | No | No | Yes |
| At Mouth of Big Chico Creek | Yes | Yes | No | Yes | Yes |
| **Water Conservation** | Yes | No | No | Potential Unquantified | No |

(1) There would be no increase in Big Chico Creek flows compared to the No-Project Alternative.

Table 2-1. Results of Alternative Screening

| Alternative Screened | Project Goals and Objectives | | | | | |
|---|---|---|---|---|---|---|
| | Reliable Water Supply for Participants | Screened Diversion | Meets NMFS and CDFG Fish Screen Criteria | Increase in Big Chico Creek Flows | Maximizes Use of Existing Water System | Use of Participating Agency Property |
| **No-Project Alternative** | No | No | No | No | Yes | Yes |
| **Proposed Project Alternative** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Groundwater Pumping** | No | N/A | N/A | No (1) | No | N/A |
| **Acquire Outside Source** | | | | | | |
| Acquire Pumped Groundwater | No | No | No | No (1) | No | Yes |
| Join Western Canal Water District | No | No | No | No (1) | No | Yes |
| **Install Screens for Big Chico Creek Diversion** | | | | | | |
| At M&T Pumping Station | Yes | Yes | No | No | Yes | Yes |
| At Trash Barrier | Yes | Yes | No | No | Yes | Yes |
| At Mouth of Big Chico Creek | Yes | Yes | Yes | Yes | Yes | No |
| **Water Conservation** | No | N/A | N/A | Potential Unquantified | No | N/A |

(1) There would be no increase in Big Chico Creek flows compared to the No-Project Alternative because USFWS and CDFG water rights have not been exercised recently.

## Groundwater Pumping

Use of pumped groundwater was investigated as a potential water supply option. This option was dismissed because the volumes of water required for wetland management and agricultural needs at the Llano Seco Rancho would result in high energy costs for pumping and could be detrimental to existing groundwater obligate woodlands species within the Llano Seco Rancho site. Groundwater could be used to maintain a small portion of the total wetland acres, but pumping would not be economical when compared to use of available water rights to flood and maintain the entire wetland base.

Use of groundwater also would not resolve issues related to potential adverse impacts on steelhead trout and salmon, including winter-run chinook salmon, from continued operation of the M&T pump station. M&T and PIC each have riparian rights to divert water for agricultural irrigation and will continue to exercise those rights. Pumping groundwater to meet existing agricultural irrigation needs would be more expensive than use of available water rights and, therefore, was not considered further. This option was not carried forward for further environmental analysis.

## Acquisition of Outside Water Sources

Potential outside water sources considered for acquisition and use at Llano Seco Rancho were groundwater pumped by adjacent landowners and obtaining membership in the Western Canal Water District (WCWD). Use of acquired pumped groundwater would eliminate potential adverse impacts to the groundwater obligate woodlands within the project area but would still influence aquifers in the Upper Butte Basin area. Several landowners were contacted to solicit water purchase interests. Acquisition of groundwater from landowners located north of Llano Seco Rancho would be the most logical because of the ability to continue use of the existing water distribution system. Costs to acquire groundwater from adjacent land would be expensive ($50/acre-foot) and would not be a reliable continuous source of water for the refuges. Acquisition of groundwater for the M&T and PIC lands is not necessary. In addition, use of groundwater for agricultural irrigation was not considered feasible because of the high pumping costs and the availability of water rights supplies to serve these lands. This option was not carried forward for further environmental analysis.

Membership in the WCWD could benefit lands managed by the DFG within Llano Seco Rancho. This option would utilize WCWD's Butte Creek siphon project and would require modifications to the WCWD and DFG systems to deliver water to those lands; it is still under consideration by DFG. However the option was dismissed by FWS. Lands managed by FWS are located north of WCWD's water distribution system. A series of lift stations would be required to convey water north to FWS lands, but only a portion of the FWS lands could be served. Therefore, use of the WCWD system was dismissed. Membership in the WCWD system was not considered an option for M&T or PIC because these lands are located north of the WCWD system and these agencies would continue to exercise their existing water rights from Big Chico Creek. This option was not carried forward for further environmental analysis.

### Installation of Screens on the Big Chico Creek Diversion

Screening of the M&T pump station on Big Chico Creek presented two problems. The pumping and diversion of water from this location has created a reverse flow in Big Chico Creek from its confluence with the Sacramento River to the M&T pump station intakes located approximately 0.75 mile upstream. The reverse flow condition occurs during periods of low to no flow in Big Chico Creek and has been identified as a obstacle to migration of both juvenile and adult spring-run and winter-run chinook salmon. Juvenile migrants from the Sacramento River, including winter-run chinook salmon, enter the back water slough and become susceptible to entrapment and depredation. Adding fish screens to the existing pump station would not eliminate the reverse flow condition. However, three screening methods were considered for the Big Chico Creek diversion. The first method considered was to install screens at the existing pump station intakes. This measure was dismissed because the water supply intakes are located at a dead end point of the backwater slough and did not facilitate an adequate flow bypass through the screens. NMFS and DFG have developed criteria for fish screen facilities (Table 2-2). These criteria must be met to facilitate fish passage.

**Table 2-2**
**Fish Screen Criteria**

| | |
|---|---|
| **Approach Velocity** | DFG - 0.33 fps<br>NMFS - 0.40 fps |
| **Sweeping Velocity** | DFG - "at least two times the allowable approach velocity"<br>NMFS - "greater than the approach velocity" |
| **Screen Slot** | DFG - 0.094 inches (3/32")<br>NMFS - 1.75 mm (0.0689 inches) slot |
| **Open Area** | DFG - Minimum 50% open area<br>NMFS - Minimum 27% open area |

The second screening method considered was the screening of a trash barrier for the pump station. This option also was dismissed because the structure could cause bodily injury and entrapment to both juvenile and adult salmon coming in contact with the netting material. The third measure considered was installation of screening facilities at the mouth of Big Chico Creek and its confluence with the Sacramento River. A net-type structure could be installed to act as a barrier preventing fish from entering Big Chico Creek. This measure was dismissed because (1) the netting structure could cause bodily injury and entrapment to juvenile and adult salmon coming in contact with the net; (2) the structure was uneconomical, requiring intensive labor to install, monitor, and remove the netting, in addition to the high cost of a temporary structure; and (3) the measure was incompatible with DFG's salmonid restoration plans for Big Chico Creek.

## Water Conservation

During the scoping meeting held in Chico, water conservation was raised as an issue for the project proponents to consider. As a CVP contractor, M&T is already subject to a water conservation plan it prepared to meet the requirements of the U.S. Bureau of Reclamation (Heringer pers. comm.). Conservation and efficient use of water are major goals for both the wildlife refuges and the ranches and their water management operations are intrinsically tied to these goals. In addition, water conservation by itself could not achieve the project objectives of protecting salmon from entrainment and providing a reliable water supply to the proponents.

The results of the JMC subcommittee discussions and screening of alternatives led to the development and recommendation of the Proposed Action. The subcommittee's recommendation to the JMC was to relocate the point of diversion from the dead-end backwater slough on Big Chico Creek to the Sacramento River. The JMC collectively agreed to solicit various sources of funding for a new pump station to achieve the water needs of all of the partners: FWS, DFG, PIC, TNC, and M&T. The recommended action meets all of the project objectives, could be located on land donated by a participant, M&T, could provide a low-cost and available water supply to all of the project participants, and would provide significant environmental benefits. This EA/IS evaluates and compares the environmental impacts of two alternative actions, the Proposed Project and No-Project Alternatives, which are described below.

## No-Project Alternative

The No-Project Alternative represents the continued operation of the existing M&T diversion facility on Big Chico Creek. This is an unscreened diversion located within a backwater slough. The diversion facility discharges to a pipeline and into the Phelan Canal. Water is conveyed in the Phelan Canal to lands owned and operated by M&T, PIC, DFG, and FWS. However, the FWS and DFG have reduced delivery of water from the existing pump station because of potential adverse impacts on juvenile winter-run chinook salmon in the Sacramento River and Big Chico Creek. It is assumed that under the No-Project Alternative, M&T and PIC will continue to take delivery of their water rights for crop irrigation purposes. It also is assumed that the FWS and DFG will limit delivery of their available supplies for wetland habitat management and restoration purposes, as has been the recent practice.

## Proposed Project

The Proposed Project is to construct and operate a screened diversion facility and 150 cfs pump station on the Sacramento River at river mile 192.8. The pump station would discharge into

a new 72-inch diameter conveyance pipeline extending 4,388 feet east from the Sacramento River to the existing pipeline into the Phelan Canal. Water would be discharged to the Phelan Canal for distribution to M&T and PIC for wetland management and agricultural uses. The new diversion facility, pump station, and pipeline would be owned by M&T and PIC and operated by M&T.

Under the Proposed Project, it is assumed that M&T and PIC will take delivery of their water rights for crop irrigation and wetland management purposes. It also is assumed that the FWS and DFG will take delivery of their available water for wetland habitat management and restoration purposes at the federal and state Llano Seco Rancho refuges. The existing M&T pump station on Big Chico Creek will be retired.

The proposed action also includes the provision for a water exchange on Butte Creek. Under this provision, M&T, PIC, FWS, and DFG will modify their diversions from Butte Creek during certain months to protect chinook salmon and steelhead trout that are present in the creek. M&T and PIC have water rights on Butte Creek that are used to supplement water obtained from Big Chico Creek under the No-Project Alternative conditions; FWS and DFG have use of a portion of PIC's right. Under a new water management operation plan, M&T, PIC, and the agencies would forgo diversion of up to 40 cfs from Butte Creek from October 1 through June 30 of each year. In lieu of diverting water from Butte Creek during this period, the participants would have a right to divert an equal volume of water from the Sacramento River using the proposed new pump station. The water to remain in Butte Creek under this agreement will be committed to the maintenance of instream flows in Butte Creek for chinook salmon and steelhead trout habitat restoration and totals approximately 40 cfs during the October 1 through June 30 period.

### Design of Proposed Project Facilities

The new pump facility would consist of a 72-inch-diameter water supply intake structure and four fish screens, a pump station, and a pipeline to a new outlet structure at the Phelan Canal, an existing canal maintained by M&T (Figure 2-3).

### Intake Structure and Fish Screens

One 72-inch-diameter intake structure with four DFG- and NMFS-approved fish screens would be placed in the river, as shown in Figure 2-4. The fish screens would be cylindrical tee screens made of stainless steel of equal length and diameter with a wetted area sufficient to permit approach velocities not to exceed 0.33 foot per second; the screens would be piped to allow air burst cleaning. The intake structure would be secured to the foot of the levee by anchor piles and protected from submerged debris by diversion piles. NMFS engineers and biologist will be notified when the fish screens are installed and will inspect the installation before the sheet piles are removed and the screens are submerged. In addition, NMFS intends to conduct instream velocity measurements to ensure that the plant meets design criteria (Mobley pers. comm.). Cross-sectional views of the intake structure and pump station are shown in Figure 2-5.

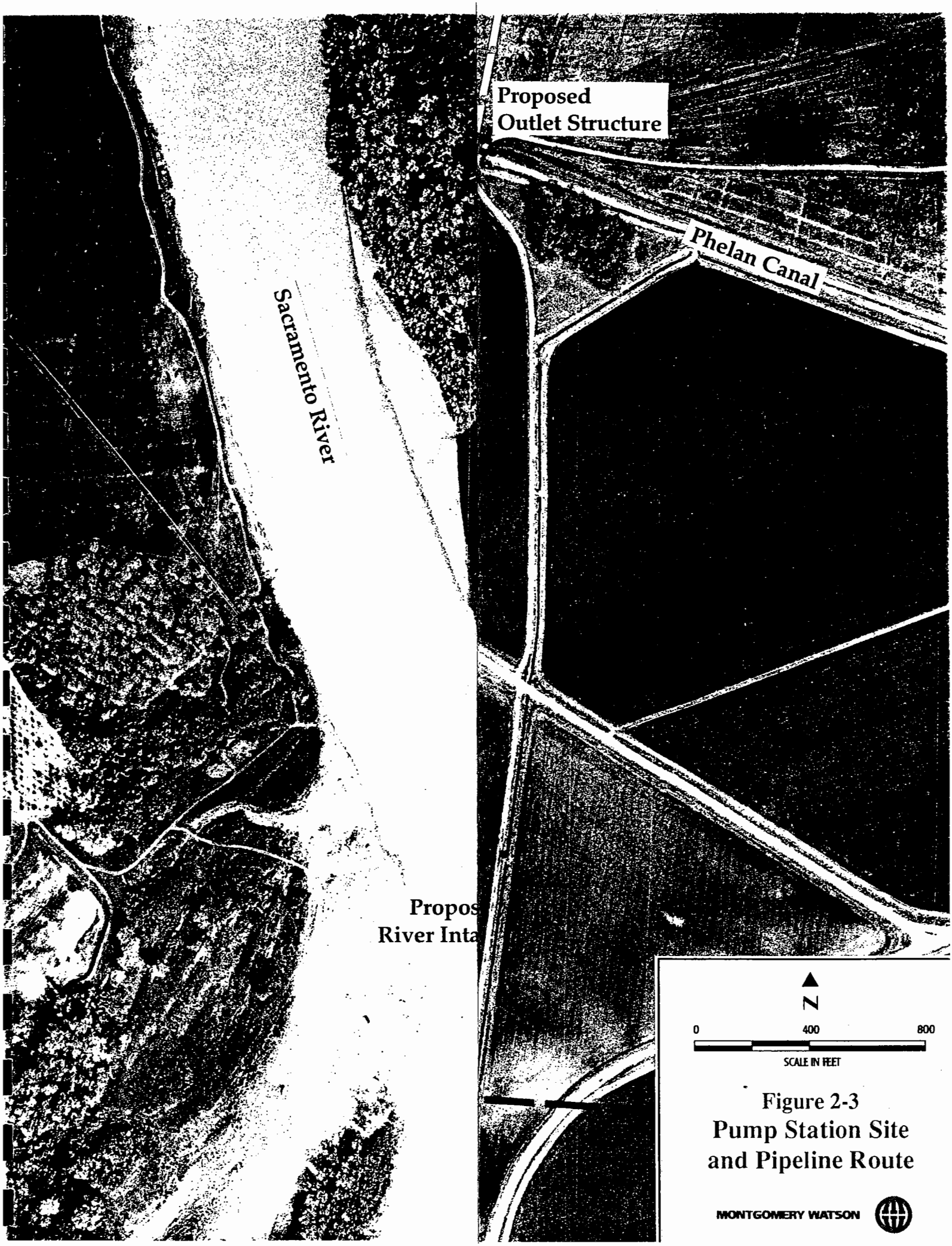
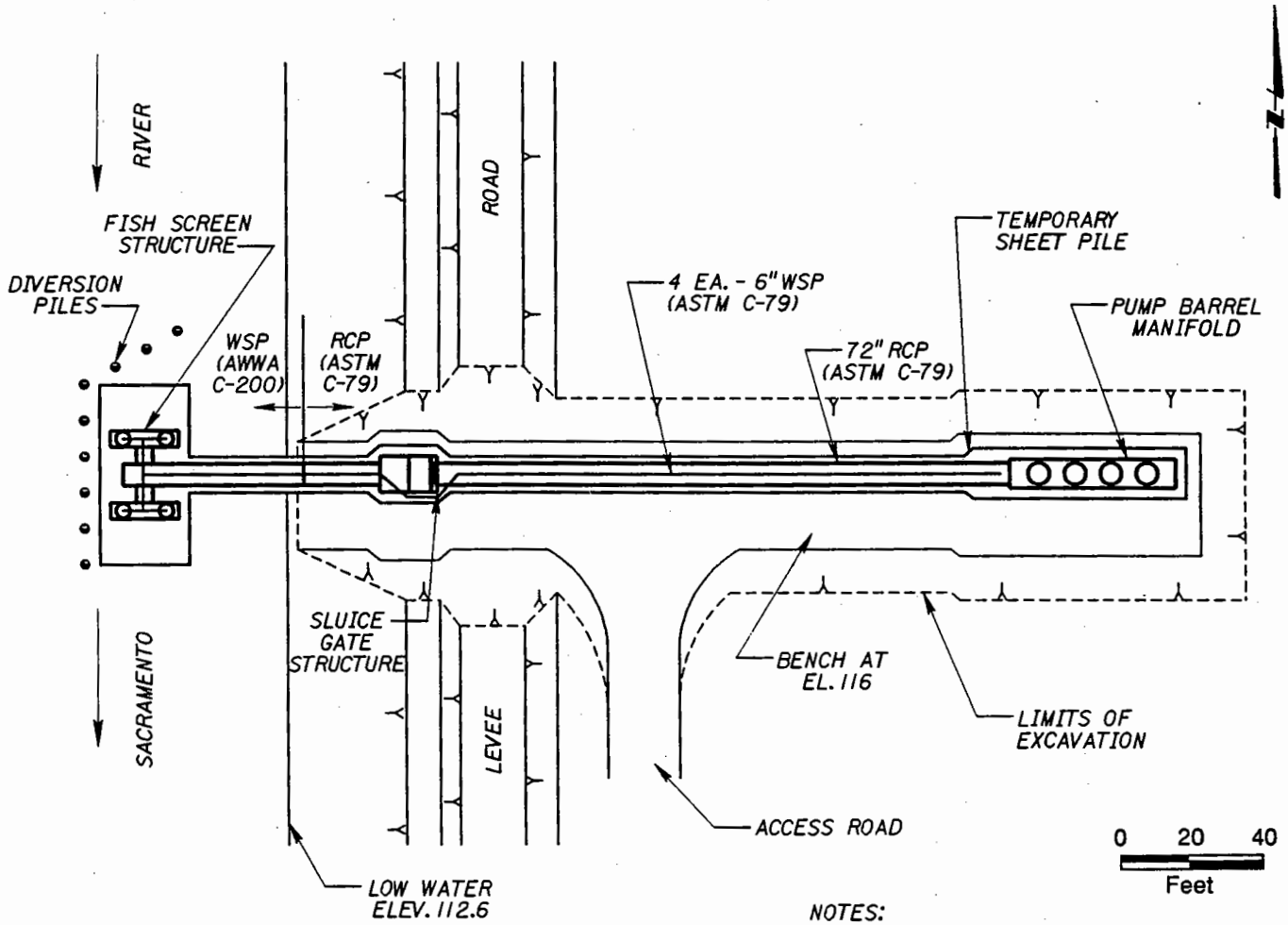



Figure 2-3
Pump Station Site
and Pipeline Route

MONTGOMERY WATSON




LEVEE TYPE: CLASS II (<= 6' HEAD)
SCALE:
RIVER MILE: 192.6
DATUM: NVGD29

Source: Montgomery Watson 1996.

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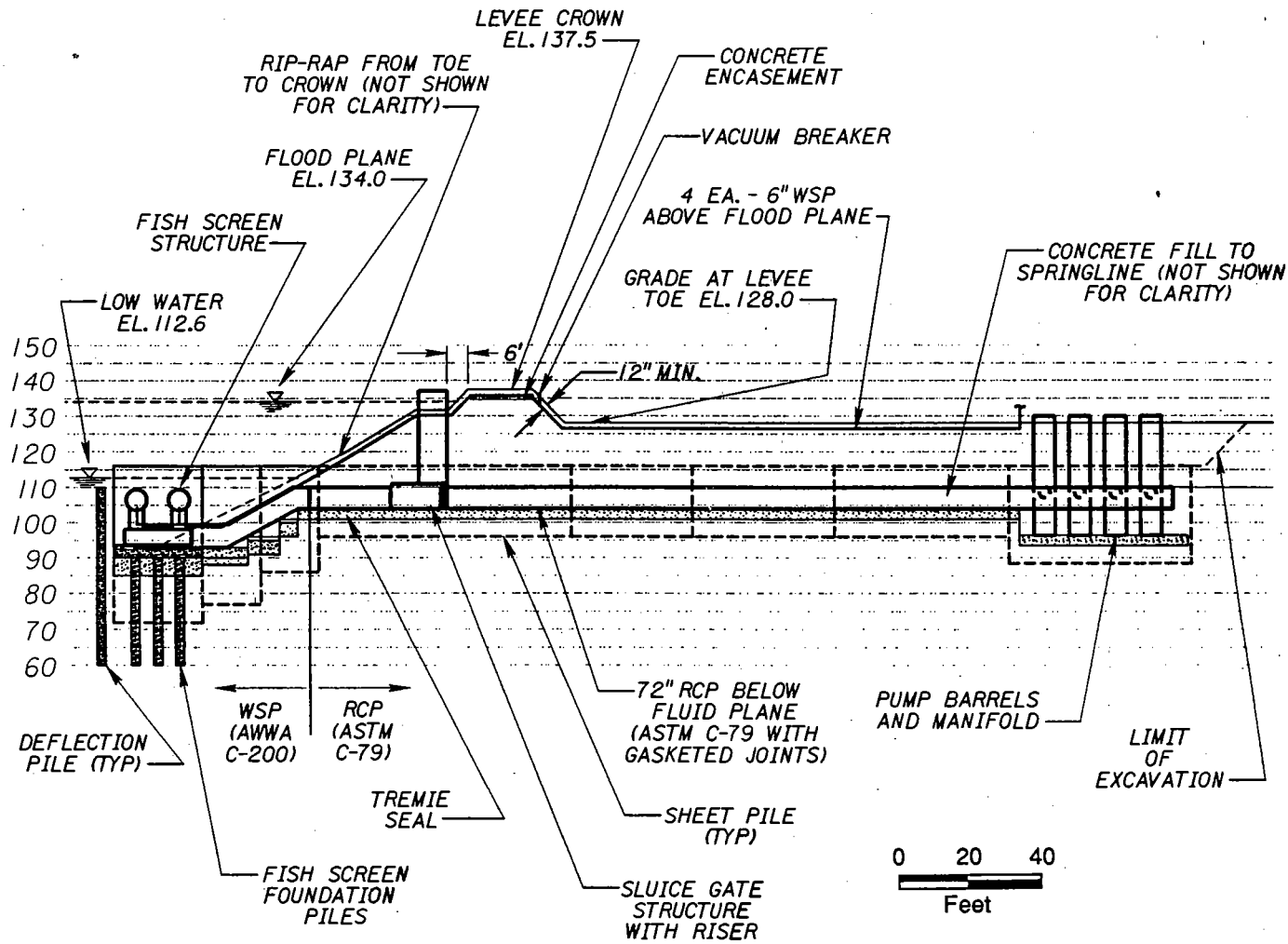
**Figure 2-4**
**Plan View of Proposed Project**




LEVEE TYPE: CLASS II ( <= 6' HEAD)
SCALE:
RIVER MILE: 192.6
DATUM: NVGD29

Source: Montgomery Watson 1996.

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**Figure 2-5**
**Cross Section View of Proposed Project**

To protect the fisheries and aquatic resources of the Sacramento River, all work performed in the river to construct the intake structure would be in accordance with time schedules dictated by the NMFS and DFG. Construction of the intake structure and screens would begin with installation of a series of steel sheet piles and a small coffer dam in the river to allow dewatering of the affected area; the affected area in the river would cover approximately 1,500 square feet. A pile driver placed on the levee would be used to install the sheet piles; it is estimated that installation of the sheet piles would be completed in 15 days. A vibratory hammer may be used to install the sheet piles. Once the sheet piles are in place and secure, water trapped in the interior would be removed using a small pump. The discharge from dewatering would be pumped directly into a small sediment settling basin that would be located within the pipeline corridor before the water is discharged back into the river. A maximum of 10 cubic feet per second (cfs) of water from site dewatering will be discharged to the river over a period lasting a maximum of 45 days. Once the pump station foundation is complete, the sedimentation basin would be drained and soil regraded to allow pipeline construction.

The new intake pipe would be placed in an area of the levee totaling approximately 8,500 square feet. Existing rock riprap on the levee would be removed and stored for reuse and the levee area excavated for barrel placement. Soil excavated from the levee would also be stockpiled for reuse. Construction of the water supply intake structure will require the excavation of approximately 5,000 cubic yards of materials from the river bed and bank. The intake pipes leading to the pump station would be epoxy-lined and coated steel pipe, which would eliminate the need to place concrete in the levee. After the intake pipe installation, the side slopes of the levee would be restored using the stockpiled riprap and new material as needed to protect the levee and intake from erosion and scour.

**Pump Station**

The pump station would be constructed behind the existing levee; it would include four screened intake structures with check valves connected to 38-cfs turbine pumps with natural gas-fired engine drives. A new natural gas line would be constructed by M&T to supply the engines at the pumping plant. The gas line would tap into an existing gas line that is owned and operated by M&T. If fill material is needed for the pump station foundation, it will come from the excavation for the pipeline trench. The pump station would be situated behind the levee at an elevation of 130 feet (msl), which is above the estimated 100-year floodplain elevation. To protect the engines and instruments from weather and vandalism, the pump station would be constructed of masonry block walls and have a roof of steel beams and decking. Because of high groundwater near the river, a series of dewatering wells or sheet piles and a coffer dam would be needed to allow construction of the foundation. Groundwater in the sheet piles would be discharged to a small detention basin that will be located in the pipeline corridor.

### Pipeline and Outlet Structure

The proposed 72-inch-diameter pipeline from the new pump station to the Phelan Canal would be about 4,388 feet long. It would be covered with a minimum of 5 feet of fill to protect it from M&T agricultural operations (Figure 2-3). The placement of the pipeline would involve a temporary open cut in River Road and would be performed in stages, as requested by Butte County Public Works, to leave one lane open for traffic circulation on River Road. The contractor will provide traffic control operators to manage local traffic during the road crossing activities. The pipeline would end at a new outlet structure on the Phelan canal, which would be used to dissipate energy, provide a change of direction of the flow, and provide a physical transition from the pipeline. The outlet structure would be constructed by first removing a small section of the existing underground pipeline from the old pump station and connecting the new pipeline at this point (Figure 2-6).

## INTEGRATION OF MITIGATION MEASURES INTO PROJECT DESIGN SPECIFICATIONS

During the preliminary environmental analysis, several mitigation measures were incorporated into the project design or will be required in the design specifications for the engineering contractor. They include the following measures:

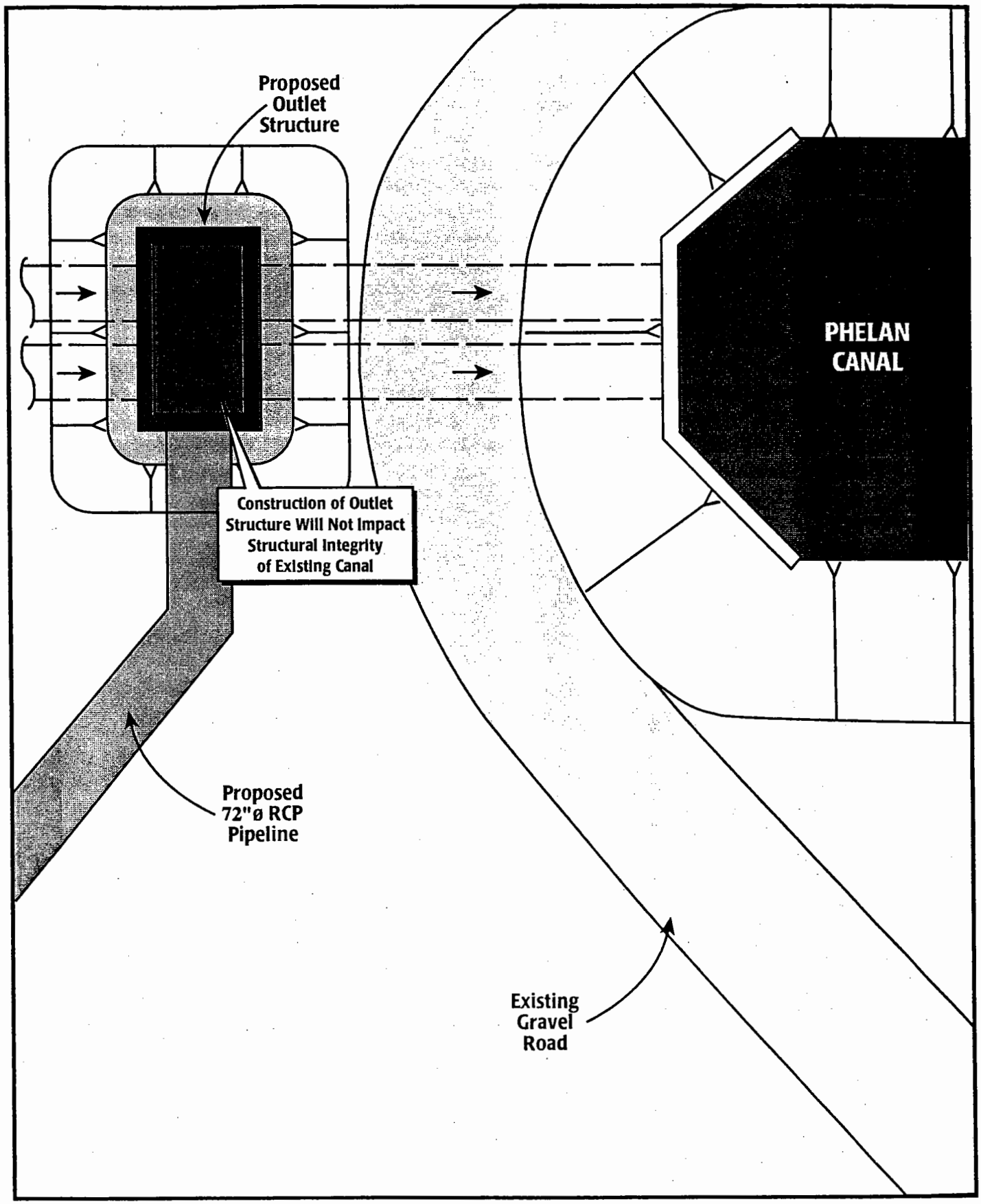
### Prepare a Dust Suppression Plan

The engineering contractor selected for the project must prepare and implement a dust suppression plan. The project contractor would submit the suppression plan to the Butte County APCD for review before initiating construction activities. The plan would include, but would not be limited to, the following measures:

- All exposed earth surfaces would be watered periodically during construction activities. This practice would be conducted twice during the morning and twice during the afternoon.

- Visible mud and dust carried onto River Road and nearby roads by construction equipment would be removed on a daily basis. The highest concentrations of mud and dust are created generally within several hundred feet from the project access road. The Butte County APCD generally requires this mitigation measure even for small projects located in rural areas because the dust generated contributes to the regional PM10 problem.

- Haul trucks would be covered with tarpaulins or watered sufficiently to eliminate dust emissions.




Source: Montgomery Watson 1996.

Jones & Stokes Associates, Inc.

**Figure 2-6**
**Proposed Outlet Structure Location**

### Prepare A Hazardous Materials Control and Spill Prevention and Response Plan

The contractor will be required to prepare and implement a hazardous materials control and spill prevention and response plan. Measures would include, but would not be limited to, the following:

- Prevent raw cement, concrete or concrete washings, asphalt, paint, or other coating material, oil or other petroleum products, or any other substances that could be hazardous to aquatic life from contaminating the soil or entering watercourses.

- Establish a spill prevention and countermeasure plan before project construction that includes strict onsite handling rules to keep construction and maintenance materials out of drainages and waterways.

- Clean up all spills immediately according to the spill prevention and countermeasure plan and notify DFG and RWQCB immediately of any spills and cleanup procedures.

- Provide staging and storage areas for equipment, materials, fuels, lubricants, solvents, and other possible contaminants away from watercourses and their watersheds.

The plan would be prepared by the construction contractor for the proposed project and should be implemented before the construction phase begins. FWS and DFG would inspect the plan to verify that hazardous material control and spill response measures have been incorporated to control the use of hazardous materials and reduce the chance of spills to the maximum extent practicable. FWS and DFG would inspect construction activities to ensure compliance with this measure.

### Prepare Erosion Control Plan and Stormwater Pollution Prevention Plan

The project specifications require the contractor to prepare an erosion control plan and a stormwater pollution prevention plan. The plans will include, but would not be limited to, the following measures to minimize erosion and sedimentation:

- All graded areas adjacent to the levee would be covered with protective material, such as mulch, or reseeded with adapted native plant species. The pipeline would not be required to be reseeded because it will be used soon thereafter for agriculture.

- Surface disturbance of soil and vegetation would be minimized.

- Any stockpiled soil would be placed such that it would not be subject to accelerated erosion.

- Revegetation and placement of erosion control devices such as riprap would commence as soon as a graded area has attained finish grade.

- Use of sedimentation basins and straw bales or other measures to trap sediment and prevent sediment and silt loads to adjacent streams.

The plans would be prepared by the construction contractor for the proposed project using the services of a certified erosion control specialist or California-registered civil engineer. The plans would be prepared and implemented before the construction phase begins. The construction inspector and M&T would inspect the plan to verify that physical best management practices (BMPs) have been incorporated to reduce erosion and sedimentation to the maximum extent possible and ensure compliance with this measure. Erosion and sedimentation would be reduced to the maximum extent possible according to the BMPs being used.

## Butte Creek Water Exchange

An additional component of the proposed project is a four-party agreement between DFG, FWS, M&T, and PIC to modify diversions by the latter two parties from Butte Creek during certain key months to protect spring-run and fall-run salmon and steelhead trout in Butte Creek. M&T and PIC have water rights on Butte Creek, and DFG and FWS have rights to use a portion of the water belonging to PIC. M&T and PIC use the water from Butte Creek to supplement the water they obtain from Big Chico Creek and the Sacramento River. Water from Butte Creek is diverted at the Parrott-Phelan Diversion Dam and conveyed through Comanche Creek to the ranches and other water users in the valley. Under this new agreement, M&T, PIC, DFG, and FWS would leave the first 40 cfs of flow in Butte Creek from October 1 through June 30 of each year. Instead M&T and PIC would have the right to pump an additional amount equal to that foregone in Butte Creek during this period from the proposed pump station on the Sacramento River.

M&T and PIC each have the right to divert 53.33 cfs of imported West Branch Feather River water and up to 25.00 cfs from the natural flow of Butte Creek.

Rights to the 50 (25 + 25) cfs from Butte Creek are exercised only after the rights of priority right holders of up to 158.91 cfs are met (excluding any diversions from the West Branch Feather River). Ranches have the right to divert at a rate of 125 cfs as long as the 30-day average does not exceed 50 cfs.

While not part of the four-party agreement, M&T will seek the right to "exchange" the quantities of water that they commit to maintenance of instream flows in Butte Creek (40 cfs during October 1 through June 30 of each year) for an equivalent amount of water from the Sacramento River that would be delivered through the new pump station. No exchange has been applied for, nor is it possible to determine at this time all the features of such an application if it is actually made. At a minimum, however, it would require consideration (if not action) by the U.S. Bureau of Reclamation and perhaps the State Water Rights Division of the California State Water Resources Control Board (SWRCB).

It would be extremely speculative to attempt to predict all the requirements and effects of possible applications that might be made to implement the exchange concept in whole or in part. If such an application is made, it will then be possible, based on the specific terms of the proposal, to determine whether additional issues require study. Nonetheless, it is possible to consider the direct physical environmental impacts of such an exchange. There are three key issues, as follows:

- Total diversions from the Sacramento River may increase by up to 40 cfs from October 1 through June 30 of each year. Although these diversions would be matched by equivalent flows allowed to remain in Butte Creek and flow to the Sacramento River, they would diminish flows in the Sacramento River from the point of diversion at the M&T pumps to the downstream confluence of Butte Creek and the Sacramento River. Given the period when the additional diversion from the Sacramento River would occur, it does not appear likely that M&T and PIC would seek to replace all of the Butte Creek diversions with water from the Sacramento River. This analysis, however, assumes a full, equivalent diversion.

- Flows in Butte Creek may increase up to 40 cfs from October 1 through June 30 of each year as a result of the commitment to maintain the instream flows.

- Flows in Comanche Creek may be reduced as a result of reductions in use by M&T, PIC, FWS, and DFG of waters that are currently diverted from Butte Creek through Comanche Creek into the irrigation system that serves the M&T, PIC, FWS, and DFG properties.

This environmental analysis covers these three topic areas associated with the Butte Creek Water Exchange.

## Permits and Approvals Required

This EA/IS and associated documentation will be used by state and federal agencies in considering the following permits and approvals for the project:

- **U.S. Army Corps of Engineers (Corps) permit under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.** The installation of the intake structure and sheet piles will require discharges of fill material into the Sacramento River. A Section 404 permit from the Corps is required for all discharges of fill or dredged material into waters of the United States.

- **Water quality certification from the Central Valley Regional Water Quality Control Board (CVRWQCB) under Section 401 of the Clean Water Act.** Section 401 of the Clean Water Act requires that state water quality standards not be violated by the discharge of fill or dredged material into waters of the United States. The Corps will

not issue a Section 404 permit until the CVRWQCB has issued a certification (or a waiver of certification) of compliance with state water quality standards.

- **FWS, NMFS, and DFG authorizations.** The FWS-Endangered Species Division, NMFS, and DFG must authorize project activities that may affect federally listed and state-listed species under the federal and state Endangered Species Acts, respectively. DFG Region 2 is coordinating with its Endangered Species Division. FWS Sacramento National Wildlife Refuge staff are coordinating with FWS's Endangered Species Division in Sacramento and NMFS on the Section 7 consultation.

- **Coordination with the State Historic Preservation Officer (SHPO) and Advisory Council on Historic Preservation (ACHP).** Section 106 of the National Historic Preservation Act requires FWS to coordinate with the SHPO and the ACHP regarding the effects a project may have on properties listed, or eligible for listing, in the National Register of Historic Places (NRHP).

- **California State Reclamation Board permit for encroachment onto the levee.** A permit must be obtained from the California State Reclamation Board for project work involving the levee.

- **Section 1601 Streambed or Lakebed Alteration Agreement.** DFG regulates work that will substantially affect resources associated with rivers, streams, and lakes in California, pursuant to Fish and Game Code Sections 1600-1607. Prior to any action that substantially diverts, obstructs, or changes the natural flow of the river, stream, or lake, or uses material from a streambed, authorization (known as a streambed alteration agreement) is required from DFG under Section 1601 for public projects and 1603 for projects proposed by nonpublic entities.

# Chapter 3. Affected Environment, Environmental Consequences, and Mitigation

This chapter presents information on the environmental setting, impacts, and mitigation for the proposed project. The format of the chapter is derived from the environmental checklist developed by the Governor's Office of Planning and Research while also including information such as the affected environment and environmental consequences to reflect consistency with provisions of NEPA. The chapter is divided into the following sections:

- land use and planning;
- population, employment, and housing;
- geology, soils, and seismicity;
- hydrology and water quality;
- biological resources;
- cultural and historical resources;
- traffic and transportation;
- visual quality and aesthetics;
- air quality;
- noise and vibration;
- utilities and infrastructure;
- public services;
- energy;
- hazardous materials; and
- mandatory findings of significance.

The checklist items and responses are provided as the first part of every section and are followed by brief descriptions of the environmental setting, which provides a basis for assessing impacts. Federal and state thresholds of significance are established for each resource section, and impacts are assessed based on these thresholds. Mitigation measures are specified for each significant impact along with information required by CEQA Section 21081.6 to ensure that mitigation measures are implemented and monitored. Although not required at this stage of the environmental review process, mitigation monitoring information is integrated into each mitigation measure to inform reviewers of monitoring that is being recommended. This information will serve as the mitigation monitoring plan for the project and therefore a separate monitoring document will not be prepared. The biological resources section of the checklist was modified and expanded specifically for this project to provide the readers with a detailed assessment of the fish issues. Socioeconomics was not an issue at the scoping meeting and is not considered by the agencies to be a substantive issue requiring detailed analysis; therefore, this issue was dismissed from further consideration.

As lead agencies, FWS and DFG would be responsible for mitigation monitoring, although some mitigation measures may be implemented by or designated to other entities, such as engineering contractors and consultants. Written documentation of the monitoring program is a necessary component of mitigation. Such documentation is intended to provide the lead agencies and the public with a written record of the effectiveness of the mitigation program. All monitoring reports will be available for public review at the Sacramento National Wildlife Refuge Complex and DFG Region 2 offices.

## Land Use and Planning

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| **1. Land Use and Planning** | | | | |
| a. Does the project conflict with adopted land use plans or policies that are applicable to the project site or to the project vicinity? [Note that on a project-specific basis, such applicable land use plans and policies may include those imposed by local agencies, by local or regional agencies, and by statewide land use agencies.] | X | | | |
| b. Would the project conflict with open space, low-income housing, or other adopted land use goals that are applicable to the project location? | X | | | |
| c. Would the project conflict with established recreational, educational, religious, or scientific uses at the project location? | X | | | |
| d. Would the project require cancellation of Williamson Act agricultural contracts, or convert agricultural land to a non-agricultural use within an area designated as Important Farmland by the Department of Conservation, or an area designated as Prime Farmland by the U.S. Natural Resources Conservation Service of the federal Department of Agriculture? | | X | | |
| e. Would the project cause a nuisance to existing or planned land uses? Would existing or planned land uses cause a nuisance to the residents or users of the project? | | X | | |

**Affected Environment**. Land use in the project area is predominately agricultural and is within the jurisdiction of land use plans adopted by Butte County. Land uses near the site include recreation and one single-family residence. The California Parks and Recreation Department manages a small

recreational area, including a beach, along the Sacramento River north of the proposed pump station site. Recreational use of the park is highest from late spring through mid-summer.

**Criteria for Determining Impact Significance**. Land use impacts were considered significant if the proposed project would conflict or be inconsistent with Butte County general plans or other local policies.

**Discussion of Environmental Consequences**. The item numbers in this section correspond to the item numbers of the checklist above.

**Preferred Alternative**

1a. Implementation of the project would not conflict with adopted Butte County land-use plans or policies. Construction and operation of the pump station would require the use of a very small amount of farmland (approximately 0.25 acres) but the pump station is an important element for maintaining agricultural land uses, particularly at M&T.

1b. Implementation of the proposed project would not conflict with open space, low-income housing, or other land use goals that are applicable to the project area.

1c. Implementation of the proposed project would not conflict with recreational or other uses at the project location. Recreationists at the state park should not be affected by pump station operations because the pump station would be placed behind the river levee, which would shield it from direct views from the river.

1d. The project would not require cancellation of Williamson Act contracts. The M&T Williamson Act contract would probably need to be revised to exclude the small area needed for the new pump station site. A small area of land (approximately 0.25 acre) would be converted from agricultural production for the new pump station. The pump station would be located on Columbia soils, which are classified as Class II soils and are considered prime farmland according to criteria established by the USDA Natural Resources Conservation Service (NRCS). The loss of 0.25 acre of prime farmland is considered less than significant because the loss is small, the pumping plant is an agricultural land use, and the project would not cause conversion of farmlands to non-agricultural uses. This impact conclusion was confirmed with discussions with staff from the NRCS (Conlon pers. comm.).

1e. The pump station should not create a nuisance to existing or planned land uses.

**Mitigation**. No mitigation measures are required.

## No-Project Alternative

Implementation of the No-Project Alternative would avoid soil and geology impacts associated with the proposed project but would not achieve the project goals and objectives. The loss of a small amount of prime farmland would be avoided with this alternative.

## Population, Employment, and Housing

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| **2. Population, Employment, and Housing** | | | | |
| a. Does the project conflict with population, employment, or housing policies or projections established by government agencies with jurisdiction over the project? | X | | | |
| b. Will the project directly or indirectly cause substantial growth or concentration in the population beyond current levels? | X | | | |
| c. Will the project directly or indirectly cause a net loss in the number of jobs in the community or cause substantial job or income losses by changing the employment opportunities in a community? | X | | | |
| d. Does the project displace existing residences or otherwise create or exacerbate a housing shortage? | X | | | |

**Affected Environment.** The proposed project site is about 5 miles southwest of Chico along the Sacramento River in a rural area that is primarily agricultural. The project involves constructing a new pumping plant on the Sacramento River to eliminate the need for the current pumping plant, which is causing ecological damage at Big Chico Creek. Except during the construction phase of the project, there would be no new jobs created nor existing jobs lost; existing jobs would be moved from the current location to the new location.

**Criteria for Determining Impact Significance.** The following criteria, based on Appendix G of the State CEQA Guidelines and on professional judgment, were used to determine the level of significance of population, employment, and housing impacts. The project would result in a significant impact if it would:

- conflict with adopted environmental plans and community goals,
- induce substantial growth or concentration of population, or
- displace a large number of people.

**Discussion of Environmental Consequences.** The item numbers in this section correspond to the item numbers of the checklist above.

**Proposed Project**

2a. This project would not entail a significant change in population, employment, or housing because it is a small project that consists of replacing an existing facility.

2b. The construction phase of the proposed project might require short-term recruitment of a small number of employees, and normal operation would require someone to operate the proposed pump station. Neither the construction phase nor normal operation of the proposed project would cause substantial direct or indirect growth or concentration in the population beyond current levels.

2c. The proposed project would replace another pumping plant currently in existence. Construction and normal operation of the proposed project would not cause any job or income loss.

2d. The proposed project would be located in a rural area away from existing residences. The closest residence is located about 0.75 mile northeast of the pump station site. Construction and normal operation of the project would not cause or exacerbate a housing shortage.

**Mitigation.** No mitigation measures are required.

**No-Project Alternative**

Implementation of the No-Project Alternative would have the same effects on population, employment, and housing when compared to the proposed project. The short-term employment opportunities generated by the proposed project would not be available with the No-Project Alternative.

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| **3. Geology, Soils, and Seismicity** | | | | |
| a. Would the project conflict with applicable legal requirements regarding geohazards and soil conservation? | X | | | |
| b. Is the project likely to expose people or structures to significant geohazards? In particular, is the project located within an Alquist-Priolo Special Studies Zone, within a known active fault zone, in an area characterized by surface rupture that might be related to a fault, or in an area designated as geologic hazard area or subject to geohazard safety measures in a local plan or ordinance? | X | | | |
| c. Does the substrate at the project site consist of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking? | | X | | |
| d. Is there any evidence of static hazards, such as landsliding or slopes in excess of 15%, that could result in slope failure? | X | | | |
| e. Is the project located on or in the vicinity of soil that is likely to collapse or subside, as might be the case with fill, old mining properties, or areas of subsidence caused by groundwater drawdown? | | X | | |
| f. Are soils characterized by shrink/swell potential that might result in deformation of foundations or damage to structures? | | X | | |
| g. Would the project result in substantial soil erosion or loss of topsoil? | | X | | |

## Geology, Soils, and Seismicity

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| h. Would the project result in loss of (or lost access to) mineral resources, including rock/ sand/gravel resources, or other known resources such as those identified in a Mineral Resource Zone identified by the California Department of Mines and Geology? | X | | | |
| i. Would the project result in loss of a unique geographical feature of statewide or national significance? | X | | | |

**Affected Environment**

**Seismicity**. Approximately one mile to the east of the proposed project site lies the Chico monocline fault and one mile to the west lies the Corning fault. Both faults show evidence of fault drop within the past 1.6 million years, but neither is considered active (California Department of Conservation 1994a, 1994b). Also approximately one mile to the west is the Willows fault and approximately 0.5 miles to the west is the Thermalito fault. The Willows and Thermalito faults show no evidence of displacement in more than 1.6 million years, and neither is considered active (California Department of Conservation 1994a, 1994b).

Earthquakes generated on the active Cleavland Hill fault, located approximately 35 miles southeast of the proposed project site, could result in strong ground shaking (Modified Mercalli Intensity of VIII) (Blaney Dyett and Michael Brandman Associates 1994).

The proposed project does not fall within an Alquist-Priolo Special Studies Zone (California Department of Conservation 1994b).

Liquefaction of soil and sediments occurs during earthquake events when material is transformed from a solid into a liquid state by increases in interpore pressure. Earthquake-induced liquefaction most often occurs in low-lying areas with soil or sediments composed of unconsolidated, saturated, clay-free sands and silts, but it can also occur in dry, granular soil or saturated soil with some clay. Soil along the Sacramento River where the proposed project would be located has been mapped as having a high potential for liquefaction in the Master Environmental Assessment for the Chico General Plan, and the expected ground shaking from a moderate earthquake on one of the regional faults may be sufficiently strong to initiate liquefaction (Blaney Dyett and Michael Brandman Associates 1994).

**Geology and Soils.** The proposed project site is on two mapped geologic units: channel deposits and alluvial terrace and fan deposits (California Department of Conservation 1992). These geologic units consist of three mapped soil series: Maywood fine sandy loam, Farwell clay loam, and Conejo clay loam (Natural Resource Conservation Service n.d.).

The Maywood fine sandy loam is found close to the Sacramento River. This soil consists of a sand layer from 24 to 40 inches deep that is prone to liquefaction. It is well drained and has moderately rapid permeability. This soil is within the meander belt of the Sacramento River, but riprap and a levee have been installed to help stabilize the riverbank. A review of aerial photographs dating back to the early 1960s and consultation with staff in the Red Bluff office of the California Department of Water Resources (DWR) indicate that the riverbank has been very stable and that it meanders on its west bank (Buer pers. comm.). The potential for this soil to expand when wet and shrink when dry is low, and there is only a slight potential for erosion when the soil is bare. This soil series receives occasional brief flooding from December through March.

The Farwell clay loam is found in the center of the proposed project site. This soil is moderately well drained and has moderately slow permeability. The potential for expansion and contraction is moderate, and there is only a slight potential for erosion when the soil is bare.

The Conejo clay loam is found on the east edge of the proposed project site. This soil is well drained and has moderately slow permeability. The potential for expansion and contraction is moderate, and there is only a slight potential for erosion when the soil is bare.

The general topography of the proposed project area has been modified by agricultural activity, and the ground is now nearly level, except at the edge of the Sacramento River where riprap has been placed along the slope of the riverbank.

**Criteria for Determining Impact Significance.** The following criteria were used to determine the level of significance of geology, soils, and seismicity impacts. The criteria are based on Appendices G and I of the State CEQA Guidelines and professional judgement. A project will normally have a significant geologic or soil impact if it will:

- expose people, structures, or property to major geologic hazards such as earthquakes, landslides, mudslides, or ground failure;
- result in unstable earth conditions or changes in geologic substructure;
- result in substantial disruptions, displacements, compaction, or overcovering of the soil;
- result in a substantial change in topography or ground-surface relief features;
- result in a substantial increase in wind or water erosion of soils, either on or off the site; or

- be located on soils displaying evidence of static hazards, such as landsliding or excessively steep slopes, that could result in slope failure.

No federal or state standards exist for subsidence caused by groundwater withdrawal and conclusions, therefore, are based on best professional judgement.

**Discussion of Environmental Consequences**. The item numbers in this section correspond to the item numbers of the checklist above.

**Proposed Project**

3a. The proposed project would not conflict with legal requirements regarding geological hazards and soil conservation. The project would require excavating, grading, and moving soil, but all spoils would remain on the site. Approximately 500 cubic yards of materials from the river bed and bank will be removed for construction of the intake structure. An additional 500 yards would be excavated for construction of the pump station. Therefore, a total of 1,000 cubic yards of materials would be excavated for the project. Some of the material would be stockpiled and reused during regrading of the levee face; the remaining soil will be regraded into the nearby agricultural field. No spoils would be transported off-site. Soil erosion is not considered a major issue because the project would be constructed in the summer months when the risk of rain-induced erosion is extremely low. However, a soil erosion and control plan is generally required for county grading permits and is also being required for the grading and excavation activities to minimize potential impacts to soil entering the river and increasing river turbidities from the levee penetration and intake structure construction portion of the project. Construction of the natural gas pipeline and above-ground electrical powerlines would not create significant soils impacts because topsoil would be stockpiled and reused to cover the pipeline. This is discussed in more detail in Section 4, Hydrology and Water Quality.

3b. The proposed project is not likely to expose people or structures to significant geological hazards. The proposed project is not located within an Alquist-Priolo Special Studies Zone, within a known active-fault zone, or in an area characterized by surface rupture that might be related to a fault. The area has not been designated a geologic hazard area, and it is not subject to geologic-hazard safety measures in any local plans or ordinances.

3c. California Department of Conservation (1994a) and Natural Resource Conservation Service maps of a portion of the project site depict the area as consisting of soils that are subject to liquefaction under ground-shaking conditions. However, site-specific soil boring data collected at the proposed pump station site indicate that the subsurface conditions consist of well-sorted gravels and pea gravel and that the site is unlikely to be affected by earthquake-induced liquefaction (Ayres & Associates 1996). Therefore, based on this evidence, liquefaction is not a significant issue for the pump station site and is considered a less than significant impact.

3d. The site is located in a relatively flat area next to the river. No slopes in excess of 15% or evidence of potential landslides are present at the proposed project site. Therefore, landslides are not an issue at the project site.

3e. The proposed pump station would be located on soil that is not likely to collapse or subside because its texture is coarse enough not to be affected by groundwater drawdown. The soils that underlie the proposed pipeline have the potential to subside with drawdown of regional groundwater, although this is not expected due to the site's proximity to the river and because subsidence is not a problem in this portion of Butte County. Additionally, measurable subsidence has not been observed at the existing pump station, pipeline, or the Phelan Canal. This information supports the conclusion that subsidence is not a major design criterion for the new pump station and associated facilities. Therefore, this impact is considered less than significant.

3f. Soils that underlie the proposed project site have been mapped by the Natural Resource Conservation Service as having low to moderate potential for expansion-contraction. Ayers Associates has performed site-specific soil borings that generally concur with the soil survey findings of low to moderate expansion-contraction potential (Ayres & Associates 1996). The proposed project foundation and other important structures will be designed to accommodate any shrink-swell potential that may occur at the site. This issue is an engineering design consideration for the foundation and is not an impact of the project on the environment. Damage to the proposed project from expansive soils has the potential to cause leakage at pipe joints and at the pump station; however, because water pressure within the pipe is only approximately 15 psi, the potential for leakage is expected to be minimal and is considered less than significant.

3g. Minimal erosion could occur during project construction but because of the small size of the excavated or graded area, this impact is considered less than significant. All top soil excavated for the pipeline will be stockpiled and reused as fill to provide the 5 feet of cover required by M&T. Any remaining stockpiled soil will be regraded into existing fields.

3h. The proposed project site would not result in the loss of, or lost access to, mineral resources because of the small size of the project when compared to the length of the Sacramento River. Additionally, gravel in the Sacramento River is no longer extensively mined because of environmental constraints and the difficulty of working in an area with a high water table (Blaney Dyett and Michael Brandman Associates 1994). This impact is considered less than significant.

3i. The proposed project would not result in the loss of a unique geographical feature of statewide or national significance. The site is continually disturbed by agricultural practices and contains no unique geographical features.

**Mitigation.** No mitigation measures are required.

**No-Project Alternative**

Implementation of the No-Project Alternative would avoid potential soil erosion and excavation impacts from project construction activities but would not achieve the goals and objectives of the project.

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| **4. Hydrology and Water Quality** | | | | |
| a. Would the project conflict with applicable legal requirements relating to hydrology and water quality? | _____ | __X__ | _____ | _____ |
| b. Would the project cause direct or indirect wastewater discharges that would result in acute or eventual exposures to levels of hazardous materials that would adversely affect human health, wildlife, or plant species? Would the project otherwise substantially degrade surface water quality? | _____ | ___X___ | _____ | _____ |
| c. Would the project substantially degrade groundwater quality, interfere substantially with groundwater recharge, or deplete groundwater resources in a manner that would cause water-related hazards such as subsidence? | _____ | ___X___ | _____ | _____ |
| d. Would the project alter the existing drainage pattern of the site or area in a manner that results in flooding, erosion, or siltation, on- or off-site? | _____ | __X___ | _____ | _____ |
| e. Is the project located in a flood-prone area, based on either historical flood records or potential risks relating to existing or planned changes to flood control measures? | _____ | __X___ | _____ | _____ |

**Affected Environment**

**Surface Water Hydrology**. The proposed project would be located on the Sacramento River approximately 5 miles southwest of Chico. The Sacramento River is the largest river in California, originating in the Cascade and Siskiyou Mountains of northern California and terminating in the Sacramento-San Joaquin Delta (Delta). Several major tributaries, including the upper Sacramento, McCloud, Pit, Feather, Yuba, and American Rivers, contribute to flow in the Sacramento River. Flow is also contributed to the Sacramento River by a large number of smaller tributaries, including Cottonwood, Battle, Butte, Mill, Deer, and Thomes Creeks.

Base flow levels in the Sacramento River are controlled by releases from Shasta Dam and, to a lesser extent, from Oroville Dam. These releases are adjusted to meet downstream requirements for water supply; Delta water quality, fish, and wildlife habitat maintenance; flood control; and other beneficial uses in accordance with numerous legal and regulatory requirements. In spite of upstream regulation, however, flow conditions in the Sacramento River follow a well-defined seasonal pattern. DWR and the U.S. Geological Survey (USGS) measure flows in the Sacramento River at several locations, including the Hamilton City gage station, which is approximately 8 miles upstream of the proposed project site. The average Sacramento River flow at that station, calculated using 26 years of flow data (1968-1994), is 13,007 cubic feet per second (cfs). The low flow measured at this station is 2,710 cfs; the highest measured flow is 159,000 cfs.

In addition to the Sacramento River, the proposed project involves the surface waters of Big Chico Creek, Butte Creek, and Comanche Creek. The existing irrigation system uses Comanche Creek to divert water from Butte Creek into the Phelan Canal and pumps water from Big Chico Creek into the canal. Each surface water component is described below, with particular detail given to the role of Comanche Creek in the irrigation system operation.

**Comanche Creek**. Comanche Creek is an ephemeral stream originating east of Chico and flows southwest into the Phelan Canal (Figure 2-1). The creek drains a grass and open woodland basin. Land uses are primarily grazing and residential. Storms in the area produce rapid runoff. On February 8, 1996, the flow was observed in the natural channel upstream of its confluence with the diversion channel 4 days after a large winter storm; the flow at this time was estimated to be 1-5 cfs. In the area it was observed, the channel is broad and has a gravel substrate. Flows are currently diverted from Butte Creek to Comanche Creek to supply the Comanche Creek irrigation system, which provides water to M&T, PIC, the Llano Seco wildlife refuges, and Dayton Mutual water users. Other entities along the creek are reported to divert water for residential and agricultural uses as well. As part of the proposed project, diversions from Butte Creek to Comanche Creek may be reduced from October through June to allow for increased flow in Butte Creek. Butte Creek water is diverted to Comanche Creek at the Parrott-Phelan Diversion Dam. On the northwest bank of Butte Creek, there is a screened inlet for diversion and a fish ladder on the mainstream to allow fish passage alongside the dam. Diversions from Butte Creek are controlled with a screw gate and conveyed with a natural and improved channel.

**Butte Creek.** Flow on Butte Creek is measured at a USGS gage 0.7 mile downstream of the confluence with Little Butte Creek and upstream of the Parrott-Phelan Diversion Dam. From October 1979 through September 1992, the mean and minimum monthly flows were as follows:

| Month | Mean (cfs) | Minimum (cfs) |
|---|---|---|
| October | 126 | 74 |
| November | 293 | 78 |
| December | 442 | 90 |
| January | 504 | 91 |
| February | 844 | 120 |
| March | 863 | 313 |
| April | 595 | 279 |
| May | 582 | 238 |
| June | 250 | 131 |
| July | 162 | 114 |
| August | 128 | 79 |
| September | 101 | 52 |

Comanche Creek is an ephemeral stream that under natural conditions received flows from Butte Creek primarily during peak runoff conditions. In essence, Comanche Creek was a natural bypass of Butte Creek floodwaters. After widespread agricultural development in the valley increased the need for irrigation water, the Parrot-Phelan Diversion Dam was constructed and the natural bypass channel was deepened to allow for diversion of Butte Creek waters to provide for water deliveries in the valley during a wider range of flows in Butte Creek. The bypass channel is relatively straight with steep banks 6 feet high. It flows through low-density residential areas before meeting Comanche Creek. There is a weir with a gage approximately 0.25 m below the inlet.

Approximately 3.5 miles from the Butte Creek diversion, Comanche Creek enters a siphon with a spillway to the Little Chico Creek bypass, which diverts storm flow from Little Chico Creek to Butte Creek. Below the siphon, Comanche Creek flows through an urban area. Stormwater from large commercial developments to the north flows through constructed and natural drainages into Comanche Creek. The channel is broader in this section with a 2-foot, incised, low-flow channel, meanders, and small vegetated islands and bars. Residents along the south bank have modified the creek by constructing pools, additional channels, and other features in the creek. As the creek enters Chico, its channel is more constrained and more incised.

West of Chico near Dayton Road (approximately 6.5 miles from the Butte Creek diversion), Comanche Creek is straight and incised 10-15 feet with nearly vertical banks. This area is predominately agricultural but has some residential areas. South of Edgar Road, the channel has some meanders and is broader and less incised with 3- to 5-foot banks. Clay hardpan soils in this area may be preventing further deepening of the channel. There is a stage gage in this area to measure water delivered to consumers. Dayton Mutual has three points of diversion on the south bank not far below the weir. The north bank is part of M&T and water can be diverted from the creek to irrigate the ranch. The creek flows into the Phelan Canal approximately 3 miles past Edgar Road. At the intersection of Comanche Creek and the Phelan Canal, water can be diverted south to

Llano Seco Ranch, north to M&T, or west into the Phelan Canal. There is a surge pond at the intersection to provide temporary storage of water.

The system provides drainage for stormwater runoff from the area north of the channel. During winter storms, runoff from urban and range lands around Comanche Creek can produce high flows in the creek. A peak rate of 400 cfs was recorded at the Dayton gage on February 4, 1996, when no water was being diverted from Butte Creek. During large storm events, diversions from Butte Creek are curtailed to prevent flooding in Comanche Creek.

Diversions from Butte Creek are also reported to be curtailed from November through March because of a lack of demand and to allow for channel maintenance. In April, May, and June, large quantities of water (up to 11,000 acre ft/month) are diverted from Butte Creek into Comanche Creek to flood rice fields and irrigate nut/fruit trees. Bank storage may be significant with large losses to the bank noticeable when flows increase. Bank storage, seepage, and other losses typically can consume 20-30% of the flow diverted from Butte Creek, with higher losses occurring when residents along Comanche Creek take water.

As natural flows in Butte Creek drop, the availability of appropriated Butte Creek water utilized by M&T and PIC decreases. Dayton Mutual has a senior right to the natural flows of Butte Creek and can use water during periods when M&T, Llano Seco Rancho and the Llano Seco wildlife refuges cannot. During summer, when flows in Butte Creek are low, Dayton Mutual may continue to receive water via Comanche Creek when deliveries to M&T, Llano Seco Rancho, and the Llano Seco wildlife refuges may be limited, either because of limited flows from the West Branch of the Feather River or because of the inferior right to the natural flow of Butte Creek.

In addition to appropriating Butte Creek water, the users of Comanche Creek appropriate water originating in the West Branch of the Feather River. Pacific Gas and Electric Company (PG&E) transfers the water from the Feather River to Butte Creek in the process of generating electricity. This "foreign water" is diverted from Butte Creek and conveyed along Comanche Creek. If PG&E transfers are disrupted, diversions of foreign water from Butte Creek to M&T and Llano Seco Rancho are stopped.

The physical result of this arrangement is the summer diversion from Butte Creek to Comanche Creek, which ranges from 15-163 cfs; however average summer flows for the period 1968 through 1992 were approximately 88 cfs. This flow represents combined Butte Creek and foreign water appropriations. When no foreign water is available and Butte Creek flows are low, diversions through Comanche Creek may be reduced to as low as 6 cfs for delivery to Dayton Mutual. Comanche Creek is generally dry during summer above its confluence with Edgar Slough.

When water demand at M&T and Llano Seco Rancho exceeds available supply through Edgar Slough and Comanche Creek, water is pumped from Big Chico Creek and the Sacramento River at the M&T pumps to supply water to the Phelan Canal. Water in the canal can be delivered to M&T, Llano Seco Rancho, and the Llano Seco wildlife refuges. The ranches prefer to divert from Butte Creek to Edgar Slough and Comanche Creek because the system operates by gravity and the

pumps on Big Chico Creek are expensive to operate; consequently, diversions generally decline in the late summer and increase again in early fall as fields are flooded for waterfowl habitat.

**Surface Water Quality**. Water quality data for the Sacramento River are collected by several agencies, including DWR, USGS, and the Central Valley Regional Water Quality Control Board (CVRWQCB), as part of various monitoring programs and special studies. Based on available data, water in the Sacramento River in the discharge area can be classified as relatively soft, moderately alkaline, containing low to moderate concentrations of total dissolved solids (TDS), and containing low concentrations of total suspended solids (TSS). Three years of monthly turbidity data, measured at Hamilton City, reveal that the turbidity of the Sacramento River ranges between 1 nephelometric turbidity unit (NTU) and 270 NTU (U.S. Geological Survey 1993), varying somewhat according to river flow. During June, July, and August, when it is assumed that instream work related to proposed project construction would occur, the median and mode of the turbidity values are both 3 NTU. Overall, the water quality of the Sacramento River near the proposed project site is good to excellent.

**Groundwater Hydrology**. A review of geologic maps prepared by the USGS indicates that wells in the Chico area probably obtain water from alluvial deposits associated with the Sacramento River (the Red Bluff Formation). Groundwater recharge occurs primarily from the Sacramento River, with seasonal contributions from Coast Range and Cascade Range tributaries and general surface runoff.

A geotechnical investigation conducted in 1990 at the Chico Water Pollution Control Plant (WPCP), approximately 1.5 miles from the site of the proposed project, indicated that the shallow groundwater aquifer ranged from 1-7 feet below the ground surface. However, appreciable amounts of water did not flow into borings until a depth of 5-10 feet.

**Groundwater Quality**. Groundwater in the project area generally is considered good, based on a USGS water quality survey of the Sacramento Valley (U.S. Geological Survey 1978). Groundwater is characterized as a calcium-magnesium-carbonate water, generally low in sulfates and chlorides, and having moderate dissolved mineral content with a low sodium adsorption ratio. In some areas in the basin, groundwater quality is poor as a result of drainage from small streams originating in the Coast Range, where the geologic formations, primarily deformed and tilted marine shale, siltstone, and sandstone, often produce saline springs and streams with high levels of TDS.

**Criteria for Determining Impact Significance**. The following criteria, based on Appendix G of the State CEQA Guidelines, the CVRWQCB water quality control plan for the Central Valley Region (basin plan), and professional judgment, were used to determine the level of significance of hydrology and water quality impacts. The project would result in a significant impact if it would:

- substantially degrade the water supply;
- contaminate a public water supply;
- cause substantial flooding, erosion, or siltation;

- substantially degrade or deplete groundwater resources;
- substantially interfere with groundwater recharge; or
- increase turbidity by more than 1 NTU during June, July, or August (California State Water Resources Control Board 1995).

**Discussion of Environmental Consequences**. The item numbers in this section correspond to the item numbers of the checklist above.

**Proposed Project**

4a. The project proponents are required to comply with all applicable hydrology and water quality regulations. Several permits are required from other state and federal agencies that will ensure compliance or permits would not be issued. The following necessary permits and approvals, described in Chapter 2, would be obtained as part of the proposed project:

- Section 404 permit from the Corps,
- Section 401 water quality certification (or waiver of certification) of compliance with state water quality standards from the CVRWQCB ,
- Section 1601 streambed or lakebed alteration agreement from DFG,

The engineering contractor selected for this project is required to obtain all permits and approvals for these agencies prior to construction and will use the EA/IS to obtain permits. Therefore, this impact is considered less than significant.

4b. The following sections describe potential effects related to mixing and dispersion of wastewater discharges, releases of hazardous materials, turbidity, and Sacramento River and Butte Creek flows.

**Mixing and Dispersion of Wastewater Discharges.** During installation of the intake structures and fish screens, a series of sheet piles and a small coffer dam would be installed in the Sacramento River along the levee to allow dewatering of the construction area. The sheet piles would extend about 100 feet from the levee bank. Approximately 1,500 square feet would be affected. The City of Chico's 38-foot wastewater diffuser, located 70 feet from the existing WPCP gate structure and transverse to the river flow, is about 400-425 feet downstream of the proposed project site. It is possible that the temporary coffer dam may affect dilution, mixing, and dispersion of the treated wastewater (Sulik pers. comm.). However, the City of Chico currently discharges a daily maximum of approximately 9 cfs, a fraction of the 13,007-cfs average flow of the Sacramento River at the Hamilton City gage. Additionally, the city's diffuser is located several feet beyond the end of where the coffer dam would be placed so it should not have appreciable effects on river flow across the diffuser. Therefore, it is believed that there would be sufficient flow in the river to dilute

the wastewater, even if the river's flow direction would be slightly altered upstream by the presence of the piles and coffer dam. It is possible that the temporary coffer dam would increase river velocities across the diffuser and increase dispersion and mixing. Therefore, this impact is considered to be less than significant.

**Hazardous Materials Releases**. Construction projects may involve the use of a wide variety of potentially hazardous materials, such as oils, greases, fuels, and other similar materials. As with any construction project, the construction phase of the proposed project includes a risk of accidental or inadvertent discharge of hazardous materials that, if released to a surface water body in sufficient volumes, may be toxic to aquatic life. This impact is considered less than significant because preparation and implementation of a hazardous spill prevention plan is being required in the engineering bid specifications for the project. The selected contractor will be required to have a plan and be prepared for any hazardous materials spills that could occur during construction activities.

**Turbidity**. Project site and levee excavation activities would expose soils and increase erosion potential. Pile driving for the coffer dam sheet piles would disturb the bottom sediments and could cause some incremental increases in turbidity in the Sacramento River for several days. Although site-specific data are not available on substrate conditions where pile driving would be conducted, it is reasonable to assume that fine materials are present and that turbidity could increase with their disturbance. The turbidity generated from pile driving in a flowing channel or river tends to affect a very small area of the river: the river flow carries disturbed sediments downstream, forming a ribbon effect that is usually less than 5 feet wide. As stated previously, river turbidity levels during the proposed construction period would be fairly low (generally below 5 NTU). The basin plan states that river projects or discharges should not cause turbidity levels to exceed 20% of background levels. If a background level of river turbidity of 5 NTU is assumed, the allowable increase would be 1 NTU and total allowable turbidity would be 6 NTU. Elevated turbidity levels would probably be limited to the left bank, where the pile driving would be conducted; the right bank of the river probably would not be affected. Discussions with the area regional board engineer indicate that the turbidity derived from pile-driving activities is short-term and intermittent on a daily basis and is not likely to have appreciable effects on beneficial uses downstream (Manjii pers. comm). The CVRWQCB will likely require turbidity monitoring and reporting during the construction period as part of the CWA Section 401 process. Based on this information, it is likely that pile-driving activities, although short-term and affecting only a small area of the river, may cause Sacramento River turbidity levels to temporarily increase above limits allowed by the basin plan. This is considered a less-than-significant impact because an erosion control plan and other measures required by the CVRWQCB are being integrated into the engineering contractor's bid specifications.

**Effects on Flows**. Implementation of the Butte Creek exchange component of the proposed project would reduce flow in the Sacramento River between the project site and the river's confluence with Butte Creek. With an irrigation pumping capacity estimate of 150 cfs, the proposed project would divert only an estimated 1% of the river's average flow so the effect on the daily flows of the Sacramento River would be negligible.

The proposed project is likely to increase the flow in Butte Creek from October through June. An additional 40 cfs may be available during these months, which is more than 30% of the mean monthly flow in October for the period from 1979 through 1992. This additional flow is likely to be very beneficial in dry years when flows from October through January can be less than 100 cfs. The proposed project would not affect diversions from Butte Creek in July, August, and September and, thus, flow in Butte Creek and Comanche Creek would not be affected by project operations during these months.

The proposed project may limit M&T's, Llano Seco Rancho's, and the Llano Seco wildlife refuges' diversions from Butte Creek for the period of October 1 through June 30 to provide additional flow in Butte Creek. At most, an additional 40 cfs will be available for Butte Creek instream uses. As a result of the agreement, there may be periods when M&T, Llano Seco Rancho, and the Llano Seco wildlife refuges will not be able to divert water from Butte Creek (if less than 40 cfs is available) and, consequently, flow through Comanche Creek will be diminished. Under the proposed project, for example, based on the period from October 1979 through September 1992, there were 24 months when M&T, Llano Seco Rancho, and the Llano Seco refuges would not have been able to divert water from Butte Creek, with a maximum of 5 consecutive months (October1991 through February 1992) when no diversions would have been allowed.

When deliveries to M&T, Llano Seco Rancho, and the Llano Seco refuges are limited, flow in Comanche Creek will be diminished. Comanche Creek will continue to be used, however, by Dayton Mutual to appropriate water from the natural flow of Butte Creek and the West Branch of the Feather River when available. Since Dayton Mutual holds senior rights to the natural flow of Butte Creek, it may appropriate water at times when M&T, Llano Seco Rancho, and the Llano Seco refuges cannot, both under existing conditions and those of the proposed project. As a result, the proposed project is unlikely to increase the number or duration of "no flow" periods in Comanche Creek. This impact is considered less than significant.

4c. Dewatering in the Sacramento River will be necessary to install the intake structures and screens. The affected area of the river will be approximately 1,500 square feet. The dewatering would prevent groundwater recharge in the region of the construction site. However, when compared to the volume of recharge that occurs along the Sacramento River, this is a less than significant impact. Due to high groundwater conditions near the river, a series of dewatering wells or a sheet pile/coffer dam would be needed to allow construction of the pump station's foundation. The volume of water that would be removed to construct the foundation would not be sufficient to cause any water-related hazards. This is considered a less-than-significant impact. There would be a potential to contaminate groundwater during the construction phase of the proposed project if any toxic materials used during construction were released. This is an important consideration because the groundwater in the area is very shallow and contaminants could rapidly reach and contaminate the aquifer. This impact was considered less than significant because a hazardous materials management plan is being required as part of the proposed project and will be included in the project bid specifications.

4d. The fish screens and intake structure would be submerged in the river. Because the structure would be only a fraction of the size of the river bed, it should not have a limiting effect on the

river's flood carrying capacity. The fish screen and intake structure would be designed to mitigate changes in drainage patterns in its immediate vicinity. After the intake structure is built, the levee side slopes would be restored using stockpiled riprap and soil to protect the levee and intakes from erosion and scour. Therefore, the project would not cause flooding, erosion, or siltation. This impact is less than significant.

The reduction in use of flows from Comanche Creek may result in reduced groundwater recharge to local wells. While the project would reduce flow in the creek during some periods (e.g., winter months in dry years), Comanche Creek would continue to be used to deliver water to other users and to convey stormwater. As a result, the rate of groundwater recharge is unlikely to be diminished. This impact is considered less than significant.

4e. According to a Flood Insurance Rate Map produced by the Federal Emergency Management Agency, the proposed project is located within the Sacramento River 100-year flood plain. However, the pump station would be located above the estimated 100-year floodplain elevation behind the Sacramento River levee at an elevation of 130 feet. Also, the construction period would be limited to between April 15 and October 31 by the Reclamation Board to minimize flooding potential. Therefore, the proposed project would not cause incremental risks to any flooding problems. This would be a less-than-significant impact.

**Mitigation**

No CEQA mitigation is required because erosion control and hazardous materials plans are being required in the project bid specifications.

**No-Project Alternative**

Implementation of the No-Project Alternative would avoid the short-term temporary increases in turbidity in the Sacramento River and the risks associated with release of hazardous materials during in-river construction activities and other hydrology and water quality effects associated with the project but would not achieve the project goals and objectives.

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| **5. Biological Resources** | | | | |
| *Wildlife and Plants* | | | | |
| a. Would the project violate any environmental law or regulation designed to protect wildlife, fisheries, plant species, or habitat areas? | X | | | |
| b. Would the project directly harm a sensitive species or cause a net loss to the habitat of the species? | | X | | |
| c. Would the project interfere substantially with the movement of any resident or migratory fish or wildlife species, or with established resident or migratory corridors? | X | | | |
| d. Would the project cause any fish or wildlife population to drop below self-sustaining levels? | | X | | |
| e. Would the project cause a net loss of any riparian lands, wetlands, marshes, or other environmentally sensitive habitat areas? | | X | | |
| f. Would the project result in the loss of any "specimen tree" or tree with historic value? | X | | | |
| *Fish* | | | | |
| g. Would the project cause a temporary decline in growth rates, survival or reproductive success of special-status species (e.g., winter-run and spring-run chinook salmon)? | | X | | |
| h. Would the project cause a long-term decline in chinook salmon and steelhead trout growth rates, survival, or reproductive success in Big Chico Creek? | X | | | |

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| i. Would the project cause a temporary decline in chinook salmon and steelhead trout growth rates, survival, or reproductive success in Big Chico Creek? | | X | | |
| j. Would the project cause a long-term decline in chinook salmon and steelhead trout growth rates, survival or reproductive success in the Sacramento River? | X | | | |
| k. Would the project cause a temporary decline in chinook salmon and steelhead trout growth rates, survival, or reproductive success in the Sacramento River? | | X | | |
| l. Would an increase in diversion by 40 cfs from the Sacramento River instead of Butte Creek significantly decrease flows in the Sacramento River, resulting in a decrease in fish habitat? | | X | | |
| m. Would the project remove spawning and rearing grounds for warm water species on the Sacramento River? | | X | | |
| n. Would the reduction in water diversions from Butte Creek through Edgar Slough and Comanche Creek adversely affect fish habitat and decrease fish populations? | | X | | |

This section is divided into two parts. The first part covers wildlife and plants; the second part covers fish.

**Wildlife and Plants**

The following sections describe the wildlife and plants at the pump station site, pipeline corridor, and Comanche Creek. Comanche Creek wildlife and their habitats are discussed because they could be affected by the Butte Creek Water Exchange. This analysis includes an assessment of wildlife and vegetation impacts to 10 miles of the Comanche Creek corridor beginning at the Parrott-Phelan diversion to dam to where the creek drains into the Phelan Canal.

**Affected Environment.** The information in this section regarding wildlife and plants is largely based on two field visits conducted by a Jones & Stokes Associates botanist and wildlife biologist on January 17, 1996, and February 8, 1996. The purpose of these field visits was to assess the habitat types and potential for special-status species to occur at the sites and to determine whether the proposed installation of a new pump station, the construction of a pipeline between the Sacramento River and the Phelan Canal, and the change in diversions from Butte Creek would result in adverse effects on biological resources.

In addition to the field surveys, information on wildlife and plants is based on a review of DFG's Natural Diversity Data Base (NDDB) (1995), a review of the California Native Plant Society's (CNPS's) Inventory of Rare and Endangered Vascular Plants of California (Skinner and Pavlik 1994), contact with knowledgeable individuals, and review of pertinent literature.

The scientific names of all plant and wildlife species mentioned in the text and observed during the field visits are provided in Appendix B, Tables B-1 and B-2.

### Plant Communities

**Pumping Station Site.** Plant communities encountered at the proposed project site include ruderal grassland; blackberry bramble; agricultural fields; and irrigation ditch, seasonal drainage, and riparian scrub. Riparian scrub is considered a sensitive natural community because it provides important ecological functions, including water quality maintenance and essential habitat for wildlife. Additionally, the distribution of riparian scrub is limited locally and throughout California compared to its historic distribution. Sensitive biological communities are afforded special protection and consideration under state and county laws and policies, and the elimination or substantial degradation of such communities would constitute a significant impact under CEQA.

**Comanche Creek.** Plant communities encountered along the approximately 10-mile-long stretch of Comanche Creek between its headwaters at Butte Creek and its confluence with the Phelan Canal include riparian woodland and scrub, freshwater emergent marsh, agricultural fields, blackberry bramble, and landscaped and ruderal areas. The riparian woodland and scrub and the freshwater emergent marsh qualify as sensitive biological communities.

The upper reaches of the creek, east of Chico, are fringed with a multilayered riparian woodland community of valley oaks, interior live oaks, sycamores, and willows with a dense understory of shrubs and blackberry vines. Where the creek cuts through private property, the banks have been planted with ornamental trees and shrubs in several areas. West of Chico, Comanche Creek flows through residential and commercial areas and through farm fields and orchards. The riparian scrub and woodlands along its banks are composed of foothill pines and shrubs in some stretches and of a thin band of mature willows and a dense understory of blackberries for most of the creek's reach. A freshwater emergent marsh composed of a dense cover of iris was observed in a low-lying depression within the streambed west of Highway 99, where Comanche Creek crosses the industrial zone south of Chico. A beaver dam at the downstream end of the wetland had caused a backup of water into the depression. At the lower end of Comanche Creek, close to its confluence with the Phelan Canal, the banks are intensely managed for agricultural purposes and are mostly

devoid of vegetation. A narrow band of tules can be found along the fringes of the creek in some areas.

### Wildlife

**Pumping Station Site.** A limited variety of wildlife species would typically occur in the proposed project vicinity because most of the habitat is agricultural fields. However, because these fields are adjacent to riparian areas, which hold the greatest diversity of wildlife species, several wildlife species which would not typically be common in the proposed project area can frequently be found. Several raptor species, including Cooper's hawk, red-shouldered hawk, red-tailed hawk, northern harrier, and sharp-shinned hawk, were observed at the proposed project site during field visits or have the potential to occur at the proposed project site. Additionally, many common wildlife species, including striped skunks, Virginia opossums, river otter, and American crows, frequent the proposed project site.

**Comanche Creek.** Wildlife species common in the habitat types along Comanche Creek include a variety of common bird species. Diversity of bird species was high in the freshwater emergent wetlands and riparian woodland and scrub compared to that of the agricultural fields and ruderal areas.

Common species found along Comanche Creek included red-shouldered hawk, ruby-crowned kinglet, black phoebe, rufous-sided towhee, and scrub jay.

Common mammals that could occupy habitat along Comanche Creek include raccoon, striped skunk, and Virginia opossum.

**Special-Status Species.** Special-status species are plant and animal species that are legally protected under the federal Endangered Species Act (ESA), the California Endangered Species Act (CESA), or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such listing.

As a result of the database searches, contact with knowledgeable individuals, and the literature review, four special-status plant species were identified as having the potential to occur in the vicinity of the project area; these species are listed in Appendix B, Table B-3. These are fox sedge, four-angled spikerush, rose-mallow, and Sanford's arrowhead, which are all associated with wetland habitats. Because the site visits were conducted at a time when these plants were not identifiable, the survey methods for special-status plants consisted of an assessment of habitat suitability for those species with the potential to occur at the project site.

During the January 17, 1996 and the February 8, 1996 surveys, no special-status plant species were found, and none were expected because the surveys did not coincide with the period when these plants would be identifiable. No habitat suitable for special-status plants was present at the pump station site. Due to limited access, the banks of Comanche Creek could not be walked for the entire length between Butte Creek and the Phelan Canal. Some stretches of more natural vegetation along the upper reach of the creek may support potential habitat for special-status plant

species. However, the search of the NDDB for the Chico and Hamlin Canyon 7.5 minute quadrangles and contacts with local knowledgeable botanists in the area revealed no known occurrences of special-status plant species along Comanche Creek or in any nearby areas.

Thirty-four special-status wildlife species were identified as having the potential to occur from the database and literature searches. These species are listed in Appendix B, Table B-4. Because many of these species are difficult to detect and the site visit was conducted at a time of the year when some of the species would not commonly occur in the area, the survey methods also consisted of an assessment of habitat suitability at the proposed project site.

During the January 17, 1996 and the February 8, 1996 surveys, two special-status wildlife species were observed. These species include the northern harrier and white-tailed kite. In addition, valley elderberry shrubs, which provide habitat to support valley elderberry longhorn beetles (VELB) were located along the creek. All shrubs were inspected for the presence of VELB exit holes; however, no holes were found. Habitat was not present for many of the other wildlife species. Two special-status species may occur at the proposed project sites—Swainson's hawk and yellow warbler—but the surveys were not conducted at the time of year when these species typically occur. Additionally, the banks of Comanche Creek could not be walked for the entire length between Butte Creek and the Phelan Canal because of limited access. However, the search of the NDDB for the Chico and Hamlin Canyon 7.5 minute quadrangles revealed no known occurrences of special-status wildlife species along Comanche Creek or in any nearby areas.

**Criteria for Determining Impact Significance.** Impacts on biological resources are considered significant if they would result in the following:

- direct mortality or the permanent loss of existing or potential habitat for species which are federally or state listed or proposed for listing as threatened or endangered;
- loss or disturbance of substantial portions of local populations of federal candidate species (Category 1 or 2); CNPS list 1B, 2, 3 or 4 plant species; California state species of special concern; or game species;
- adverse effects on a substantial portion of a vegetation type (including sensitive natural communities) in a local region;
- temporary loss of habitat that may result in increased mortality or lowered reproductive success of special-status wildlife species; or
- avoidance by wildlife of biologically important habitat for substantial periods with the risk of increased mortality or lower reproductive success.

**Discussion of Environmental Consequences.** The item numbers in this section correspond to the item numbers of the checklist above. This section first covers plants and then covers wildlife.

**Proposed Project**

**Botanical Resources**

5a. The proposed project would not violate any environmental law designed to protect plant species or habitat areas.

**Pumping Station Site**. Implementation of the proposed project would result in the temporary disturbance of ruderal grassland, blackberry bramble, agricultural fields and irrigation ditch and seasonal drainage scrub. This impact is considered less than significant because the affected areas would be small, the disturbance would be temporary, and these habitat types are locally and regionally common.

Implementation of the project would also cause temporary disturbance to a thin band of riparian scrub. This impact is discussed below under 5e.

**Comanche Creek**. Changes of flow in the Comanche Creek channel are unlikely to cause a significant adverse effect on the natural communities along the creek. Prior to the development of agriculture in the area and the use of Comanche Creek as an irrigation canal, the stream likely functioned as an intermittent drainage and experienced natural cycles of dry and wet periods, depending on local rainfall and runoff patterns. The riparian woodland and scrub along the upper reaches of the creek are well established, and the trees and shrubs along the stream have likely tapped into the groundwater. Changes in diversion will take place primarily during the months of October to June. During the winter month, Comanche Creek receives runoff from direct precipitation and inflow from several small tributary drainages along the upper reach. In addition, Dayton Mutual will maintain its right to divert water throughout the year, preventing Comanche Creek from drying up completely during times of changed diversions from Butte Creek by M&T, Llano Seco Rancho, and the Llano Seco refuges. Since no changes in diversion will occur in the months of July, August, and September, water will still be available during the driest summer months for riparian trees and shrubs as well as wetland plants.

**Butte Creek**. Increased flows in Butte Creek resulting from changed diversions are likely to have a beneficial effect on existing riparian vegetation, wetlands, and other natural communities occurring along the stream corridor.

**Sacramento River**. The diversion of a maximum of 40 cfs from the Sacramento River at the proposed pump station is unlikely to have a significant adverse effect on the riparian vegetation and other natural plant communities along the river since the amount of water that would be diverted is small compared to the total amount of flow in the river.

5b. The proposed project would not directly harm a sensitive species or cause a net loss to the habitat of the species.

**Pumping Station Site**. Because the project site lacks suitable habitat for special-status plant species, the proposed project would not have adverse effects on any of these species.

**Comanche Creek**. Because the proposed changes in diversion from Butte Creek would be unlikely to result in an increase in the number of "no-flow" periods in Comanche Creek and because no changes would occur during the summer months when special-status plant species would be flowering, the proposed changes in diversion would be unlikely to have a significant adverse effect on any special-status plant species possibly present in or along Comanche Creek.

5e. The proposed project would cause a net loss of riparian lands, wetlands, marshes or other environmentally sensitive habitats.

**Pumping Station Site.** Implementation of the proposed project would result in the temporary disturbance of a thin band of riparian scrub dominated by willows and white alder along the base of the levee of the Sacramento river where the new pump station would be placed. Riparian vegetation, consisting mainly of willows, also occurs along two non-jurisdictional ditches and a natural seasonal drainage crossed by the proposed pipeline. Approximately 0.05 acres of riparian scrub would be removed or disturbed. Because the loss to this sensitive natural community is minimal, the impact is considered less than significant. However, it is DFG's and FWS's policy that no net loss of riparian wetland occurs. Therefore, the disturbed area would be mitigated by revegetating in-kind an area adjacent to the site. Construction of the natural gas pipeline and electrical power lines to the pump station would not impact any environmentally sensitive habitats because they are proposed in agricultural lands, and the timing of construction after harvest would avoid any crop losses.

The areas of riparian scrub may qualify as wetlands, which are under Corps jurisdiction pursuant to section 404 of the Clean Water Act. The placement of dredged or fill material into, or excavation of, a jurisdictional wetland requires a permit from the Corps. Because the affected area is less than 1 acre, the project may qualify for a Nationwide general permit.

Since the placement of the new pump station and the installation of the new pipeline require work on the bank of the Sacramento River and in a natural jurisdictional drainage, a Section 1603 streambed alteration agreement would need to be obtained from DFG. In addition, work on the levee of the Sacramento River would require a levee encroachment permit issued by the Reclamation Board.

**Comanche Creek**. The proposed project will not result in the loss of any sensitive natural habitats along Comanche Creek.

5f. The proposed project would not result in the loss of any "specimen tree"or tree of historical value.

**Pumping Station Site.** Because the proposed project does not call for the removal of any trees except for the temporal disturbance of riparian scrub resulting from installation of the pump station and pipeline discussed above, no impacts on protected trees would occur.

**Comanche Creek.** The changes in diversion will not result in the loss of any trees so no impact is expected.

**Wildlife**

5a. Implementation of the proposed project would be consistent with Section 7 of the ESA and Sections 3503 and 3503.5 of the California Fish and Game Code. DFG and FWS will conduct internal consultations with their respective Endangered Species Divisions to ensure that potential impacts to listed species are avoided through project modifications.

5b. Implementation of the proposed project could potentially harm a sensitive species such as the threatened Swainson's hawk and valley elderberry longhorn beetle.

Below is a determination of whether the proposed project would significantly impact any of the potential special-status wildlife species:

- Conservancy fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp: there would be no impact because vernal pools are not present on the proposed project site.

- Marysville kangaroo rat and San Joaquin pocket mouse: significant impacts are not expected because there is no suitable habitat on the proposed project site for these species and the project appears to be outside the published range of the Marysville Kangaroo rat (Vega pers. comm.).

- Antioch Dunes anthicid beetle and Sacramento anthicid beetle: significant impacts are not expected because there is no suitable habitat present on the proposed project site.

- Special-status bat species: significant impacts on these bat species are not expected because there are no suitable nesting or maternity sites at the proposed project site and implementation of the proposed project would not effect their foraging because there is abundant suitable foraging habitat nearby.

- Northern harrier, white-tailed kite, tricolored blackbird, greater sandhill crane, Ferruginous hawk, little willow flycatcher, merlin, bald eagle, American perigrine falcon, Aleutian Canada goose, white-faced ibis, golden eagle, Cooper's hawk, sharp-shinned hawk, California yellow warbler, and bank swallow: there could be a temporary loss of suitable foraging habitat during construction activities or slight changes in water flows. This impact is considered less than significant because the proposed pump station, pipeline site, and Comanche Creek are considered low to moderate quality foraging habitat for these species and quality foraging habitat is abundant in the project vicinity.

- Burrowing owls, western yellow-billed cuckoos, western spadefoot toad, and California red-legged frogs: significant impacts are not expected because the project site has a low potential to support these species.

- Northwestern pond turtle: significant impacts are not expected because construction activities are unlikely to disturb winter hibernation and upland breeding habitat and because the project site has a low potential to support pond turtles. No mitigation is required.

- Swainson's hawk (foraging): There could a temporary loss of winter wheat that is used as foraging habitat along the pipeline route. This impact is considered less than significant because only a small proportion of the habitat in the general area of the proposed project would be disturbed.

- Valley elderberry longhorn beetle: Elderberry shrubs found along Comanche Creek would not be affected. However, significant impacts on elderberry shrubs could occur in the oak grove east of the proposed outlet structure if the site is used for staging of construction equipment or by construction workers.

- Giant garter snake: There would be no impacts on this species because the project as proposed will not disturb any giant garter snake habitat. Snakes traversing the pipeline route are extremely unlikely to be disturbed by the project because of their wariness and the highly sporadic nature of such activity. Changes in water flows in Comanche Creek would not occur during the summer months, and changes in other months are unlikely to increase the number of no-flow periods that could possibly affect any potential giant garter snakes in the creek. No mitigation is required but it is recommended that pipeline excavations near the irrigation ditches be performed when the ditches have been dry for at least 7 days, preferably during summer or early autumn.

- Active raptor nests: Significant impacts on raptor nests are not expected along Comanche Creek because only slight flow changes will occur in the creek and no other disturbances are proposed along the creek. Potential raptor nests near the proposed pump station or outlet structure could be disturbed from construction activities near the proposed pump station or outlet structure. This impact is considered less than significant because no nest trees will be removed.

- Swainson's hawk (nesting): There would be no impacts on potential nesting Swainson's hawks along Comanche creek. A Swainson's hawk nest is recorded in the vicinity of the proposed pump station site and pipeline route. The nest is located on the north bank of Big Chico Creek approximately 300-400 yards from the confluence with the Sacramento River (NDDB 1995). The nesting area is in mature valley oak/cottonwood riparian forest. According to DFG biologists, the riparian forest provides a visual screen with a minimum width of 150 yards between the nest and project site, and it is not anticipated that nest disturbance from the project will occur at this particular site (Snowden pers. comm.). However, this nest should be initially monitored to avoid any potential impact. Additionally, two unknown raptor nests were observed within 1/4 mile from the proposed outlet structure during the project field survey. It is unknown whether Swainson's hawks use these nests near the outlet structure. Preconstruction surveys should be conducted to determine if these nests are being used by Swainson's hawks.

This impact is considered potentially significant because Swainson's hawk is a state-listed threatened species. Implementation of Mitigation Measure 5-2 would reduce this potentially significant impact to a less than significant level.

5c. Implementation of the proposed project, including the natural gas pipeline and electrical power line placement, would not interfere substantially with the movement of any resident or migratory wildlife species or with established resident or migratory corridors.

5d. Implementation of the proposed project including natural gas pipeline and electrical power line placement would cause less-than-significant impacts on wildlife populations. However, these impacts would not cause populations to drop below self-sustaining levels.

Implementation of the proposed pump station and outlet structure could potentially cause mortality to common wildlife and to raptors; wildlife could become trapped in the coffer dam and raptors could become snared or tangled in construction tape or cords. Adverse impacts on common wildlife species, however, would not cause these populations to drop below self-sustaining levels because these species are regionally or locally abundant and widely distributed. Limiting these impacts could include temporary fencing, screening, or covering of construction areas. Although possible, the snaring of raptors in construction tape or cord is highly unlikely. Maintaining a clean construction site will limit these potential impacts.

**Mitigation**. No mitigation for impacts on plant communities or special-status plant species is required under CEQA. However, DFG will require riparian restoration as part of the 1603 streambed alteration agreement in areas subject to jurisdiction under the Fish and Game Code. Disturbance to riparian vegetation should, therefore, be avoided or minimized to the fullest extent possible.

**Mitigation Measure 5-1: Contractor Will Prepare and Implement a Plan to Protect Valley Elderberry Longhorn Beetle Habitat**. The measure would include, but not be limited to, the following:

a. Construction equipment would not be staged in the undisturbed vegetated areas under the oak grove canopy west of the proposed outlet structure. Temporary fencing will be placed around or at the oak grove edges to ensure that the elderberry shrubs in the area remain undisturbed.

***Responsible Party***: The plan would be prepared by the contractor that constructs the proposed project.

***Timing***: Temporary fencing will be placed around or at the oak grove edges immediately prior to construction of the proposed outlet structure.

***Monitoring Program***: FWS or DFG would conduct a site check prior to construction activities.

***Standards for Success***: Elderberry shrubs would not be directly impacted or disturbance of the area would not negatively affect their future survival.

**Mitigation Measure 5-2: Implement Swainson's Hawk Nesting Survey. If Nest Sites are Found, Implement Guidelines in DFG Document "Staff Report Regarding Mitigation for Impacts on Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California" (See Appendix C).**

Because Swainson's hawks could potentially be nesting during the implementation of the proposed project, construction activities near an active nest could significantly impact this species. Swainson's hawk surveys should be conducted prior to construction. If active nest(s) are found within 1/4 mile of the proposed project, consult with the DFG to determine if the potential for nest abandonment exists. If an adequate buffer is present between the nest and the proposed project then no mitigation is required. If DFG determines that the potential for nest abandonment exists, it may authorize the use of biological monitoring in order to allow construction activities to proceed once the young are in the nest.

***Responsible Party***: DFG would ensure that the site is surveyed for Swainson's hawk nests.

***Timing***: One raptor survey should be conducted between mid-April to mid-May.

***Monitoring Program***: Monitoring would be performed in accordance with guidelines in "Staff Report Regarding Impacts to Swainson's's hawks (*Buteo swainsoni*) in the Central Valley of California" (see Appendix C).

***Standards for Success***: Swainson's hawks will not be disturbed during project construction activities.

**Fish**

**Affected Environment**. The proposed project involves pumping water from the Sacramento River, which could affect resident and anadromous fisheries. Of particular concern are spring-run and winter-run chinook salmon, which are both found near the proposed project site. Because spring-run and winter-run salmon are either listed or petitioned for listing as endangered species, this section briefly provides some background information on the ESA and CESA as well as information on the life histories of the two species. Other fish species, some of which are special-status species, may also be found in the vicinity of the project site; some life history traits of these species are also described in this section. Impacts and necessary mitigation measures are included.

The project could potentially affect winter-run chinook salmon, which are listed as endangered under the federal ESA and CESA, and spring-run chinook salmon, which are currently petitioned for listing as threatened under CESA.

Under the ESA, a federal agency must consult with the FWS and NMFS if the agency's action may affect an endangered species and/or its critical habitat under the authority of each agency. As the federal lead agency for the proposed project, FWS must conduct a Section 7 consultation with its Endangered Species Division to ensure that threatened and endangered species overseen by the FWS are not impacted by the project. It must also consult with NMFS to assess the consequences

of its actions. Biological information in this EA/IS will be the basis for the consultation between FWS and NMFS.

If NMFS determines that the project could jeopardize the continued existence of a listed species, NFMS would identify reasonable and prudent alternatives that could meet the project objectives but avoid such jeopardy. If the project would not jeopardize their continued existence, but could result in take (i.e., harm, harassment, or mortality) of a listed species, NMFS would identify reasonable and prudent measures to reduce or avoid and compensate for the take.

The CESA consultation process is similar to the federal process. As the state lead and regulatory agency for the proposed project, DFG must undertake an internal consultation. CESA does not require preparation of a state biological assessment; the federal biological assessment and the CEQA analysis or any other relevant information can provide the basis for consultation. CESA requires that DFG coordinate consultation for joint federally listed and state-listed species to the extent possible; generally, the state opinion for listed species is brief and references provisions in the federal opinion.

Take restrictions differ for ESA and CESA. To qualify as a take under CESA, an action must have a direct, demonstrable detrimental effect on individuals of the species. Impacts on habitat that may ultimately result in effects on individuals are not considered a take under CESA, but can be considered a take under ESA.

Table B-5 in Appendix B defines the fish species potentially present in the area of the project site and lists their status based on the ESA and CESA.

**Chinook Salmon**. Chinook salmon support major commercial and sport fisheries in California. Four races of chinook salmon occur in the Sacramento River, distinguished by the timing of upstream migration: fall-, late fall-, winter-, and spring-run. The fall-run race of chinook salmon is the most numerous of the four races, followed by late fall-, spring-, and winter-run races. Fall-, late fall-, and spring-run chinook salmon are present in Big Chico and Butte Creeks. Figure 3-1 presents the approximate temporal occurrence of salmon by life stage in the Sacramento River basin.

Chinook salmon spend the majority of their lives in the ocean. They enter the Sacramento River through the Delta and migrate upstream to spawn in the main river and tributary streams. Salmon require relatively clean, cool (less than 57°F) water in which to spawn successfully. All adult salmon die after spawning. Eggs are laid in redds (nests) dug into the gravel and hatch in about 2 months. The young remain in the gravel for several weeks before emerging as fry. Juvenile chinook salmon rear in the river until morphological and physiological changes cause them to migrate to the ocean.

Fall-run and late fall-run chinook salmon spawn over coarse gravel riffles of the mainstem Sacramento River from below Keswick Dam downstream to Princeton, which is approximately 25-30 river miles downstream of the project site. Most spawning of winter-run chinook salmon is confined to the upper Sacramento River above the Red Bluff Diversion Dam (RBDD), where releases from Shasta Dam keep summer water temperatures cool. Spring-run chinook typically

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Fall-run and late fall-run chinook salmon spawn over coarse gravel riffles of the mainstem Sacramento River from below Keswick Dam downstream to Princeton, which is approximately 25-30 river miles downstream of the project site. Most spawning of winter-run chinook salmon is confined to the upper Sacramento River above the Red Bluff Diversion Dam (RBDD), where releases from Shasta Dam keep summer water temperatures cool. Spring-run chinook typically spawn higher up in the Sacramento River and its tributaries, where the water temperatures are also cool.

**Current Status of Chinook Salmon**. Spring-run chinook salmon are currently recognized as a California species of special concern (California Department of Fish and Game 1989) and have been petitioned for state listing as an endangered species; however, on April 4, 1996, the California Fish and Game Commission denied the petition. Spring-run chinook salmon were historically the most abundant race in the Central Valley but have disappeared from many streams because access to their spawning grounds has been blocked by the construction of dams. In its annual surveys of the upper Sacramento River, DFG documents the spawning locations of chinook salmon. Presently, the most viable, self-sustaining populations of spring-run chinook salmon are found in Butte, Deer, and Mill Creeks, although Antelope and Battle Creeks support runs in some years (Moyle et al. 1989). A remnant population also occurs in Big Chico Creek (Reynolds et al. 1993). The Sacramento River serves as a migration corridor for adult and juvenile spring-run chinook salmon and is used by juveniles in the project vicinity as rearing habitat during their migration to the ocean.

Following a dramatic decline in the winter-run chinook salmon population, the winter-run chinook salmon was listed in 1989 as an endangered species under the CESA and as a threatened species under ESA. In 1994, the federal government reclassified winter-run chinook salmon as an endangered species (59 FR 440, January 4, 1994). The portion of the Sacramento River from Keswick Dam to Chipps Island, all waters westward from Chipps Island to the Carquinez Strait Bridge, all waters of San Pablo Bay, and all waters of San Francisco Bay north of the San Francisco-Oakland Bay Bridge have been designated critical habitat for winter-run chinook salmon (58 FR 33212, June 16, 1993). Critical habitat includes the river water, river bottom, and adjacent riparian zone (i.e., those adjacent terrestrial areas that directly affect a freshwater aquatic ecosystem).

The primary causes of the decreased abundance of winter-run salmon are blockage of upstream migration from the construction of dams and flood control projects, agricultural and municipal diversions, deleterious temperatures in the Sacramento River, reduced availability of spawning gravels, and toxic discharges. Additional causes of decreased winter-run salmon

abundance include reduced habitat caused by fluctuating or inadequate river discharge and bank stabilization projects. The Sacramento River serves as a migration corridor for migrating adult and juvenile winter-run chinook salmon and provides rearing habitat for juvenile winter-run chinook salmon in the project vicinity.

The federal government has received a petition to list all races of chinook salmon as threatened (60 FR 110, June 8, 1995). Therefore, NMFS is conducting a general review to consider all races of chinook salmon for listing.

**Steelhead Trout.** Steelhead trout, an anadromous form of rainbow trout, supports a major sport fishery in the Sacramento River system. The historical range of steelhead trout in the Central Valley has been reduced considerably by dams that restrict the species to the lower portions of major rivers where habitat is less favorable for steelhead spawning and rearing. Steelhead trout use the Sacramento River as a migration corridor to and from spawning grounds in the mainstem of the river above RBDD, the tributary streams, and Coleman National Fish Hatchery. Steelhead are present in the Sacramento River year-round, either as smolts migrating downstream or as adults migrating upstream or downstream. Upstream migration occurs from August through March, with most spawning occurring from January through March. Unlike chinook salmon, not all steelhead trout die after spawning. The eggs incubate for 3-4 weeks, and the fry emerge from 4-8 weeks after hatching (Reynolds et al. 1993). Juvenile migration generally occurs during the spring after at least 1 year of rearing in upstream areas. Because juveniles rear in freshwater for at least 1 year, adequate streamflows and water temperatures are necessary year round.

Steelhead trout populations have greatly declined over much of the species' range, including the Sacramento River basin, and the species is under consideration for federal listing as a threatened species. The causes of the declines in steelhead trout are the same as those described above for winter- and spring-run salmon. Presently, the most viable, self-sustaining populations of steelhead are found in Deer and Mill Creeks, but small populations also persist in Big Chico and Antelope Creeks (Reynolds et al. 1993). The Sacramento River serves as a migration corridor for adult and juvenile steelhead and is used by juveniles in the project vicinity as rearing habitat.

**Striped Bass.** Striped bass, an introduced species, is one of the most highly sought gamefish species in the Sacramento River, the Delta, and San Francisco Bay. Striped bass begin migrating up the Sacramento River in winter and spring, and spawn in the Sacramento River upstream from the Delta during May and June. Striped bass broadcast-spawn their semibuoyant eggs in open water, and the eggs drift with the current before hatching. DFG studies of striped bass spawning locations in 1963 determined that most spawning occurred in the Sacramento River below river mile 160 (near Butte City) (Farley 1966).

**American Shad.** American shad, an introduced species, is also a popular sport fish. American shad spend the majority of their lives in the ocean, moving into freshwater only to spawn (Moyle 1976). Large spawning runs of shad occur in late May and June. American shad are mass spawners, broadcasting their semi-buoyant eggs in the main channel of the Sacramento

River as far upstream as Red Bluff. Tributaries to the Sacramento River (the Yuba, Feather, and American Rivers) also contain spawning runs. The eggs drift with the current and hatch within 1 week. The fry then rear in the rivers downstream of the spawning areas. Rearing primarily occurs in the Sacramento River downstream of Colusa, in the Feather River below the Yuba River, and in the Delta.

**White and Green Sturgeon**. White and green sturgeon are present in the Sacramento River, although white sturgeon dominate the Sacramento River sturgeon fishery. Sturgeon migrate into the Sacramento and Feather Rivers, where they spawn between mid-March and early June (Moyle 1976). During sampling of the Sacramento River in 1973, Kohlhorst (1976) found that spawning probably occurred from the vicinity of Knights Landing to just above Colusa; however, spawning may also occur upstream of RBDD. Recent sampling by DFG has shown that larval and juvenile green sturgeon are present during May through December at the Glenn-Colusa Fish Screen (R.M. 205-206). The eggs are adhesive after fertilization and attach to the substrate. The eggs hatch in 1-2 weeks, and the larvae remain close to the bottom as they are carried downstream to the Delta.

**Warmwater Resident Game Species**. Most warmwater game species prefer quiet, backwater areas and vegetated, shoreline areas; they nest on the bottom. These fish seldom inhabit the main channel where current velocities can be high and cover is lacking. Aquatic vegetation and emergent or flooded terrestrial vegetation provides essential spawning and rearing cover for bass, sunfish, and catfish. Warmwater game species are found in the Sacramento River and may also be present in Comanche Creek.

**Coldwater Resident Game Species**. Coldwater game species likely to occur in the reach of the Sacramento River near the project site include rainbow trout and brown trout (an introduced species). These fish reside year-round in the Sacramento River and tributary streams and have similar life-history patterns and habitat requirements to steelhead trout, except that they do not migrate to the ocean. Rainbow trout spawn in spring, while brown trout spawn in fall.

**Nongame Species**. Both native and introduced nongame species are present in Comanche Creek and the Sacramento River. Fish species found in the Sacramento River near its confluence with Big Chico Creek probably also occur in Big Chico Creek. Table 1 includes a list of all nongame species potentially found within the project site.

**Sacramento Splittail**. Sacramento splittail are freshwater fish capable of tolerating moderate levels of salinity (10-18 parts per thousand [ppt]) (59 FR 862 June 5, 1994). They grow to be 40 cm long and can live as long as 5 years. Both male and female splittail become sexually mature by their second winter, when they are about 10 cm long. Splittail deposit adhesive eggs over flooded streambanks or aquatic vegetation when water temperatures are between 9°C and 20°C (Moyle 1976, Wang 1986). Splittail spawn in late April and May in Suisun Marsh, and from early March through May in the upper Delta and lower reaches of the Sacramento and San Joaquin Rivers (Moyle et al. 1989). Spawning has been observed to occur as early as January and to continue through July (Wang 1986).

FWS has estimated that splittail abundance has declined by 62% over the last 15 years and has proposed the splittail for listing as threatened under ESA (59 FR 862, January 5, 1994). The decline in abundance prompted DFG to designate splittail as a species of special concern. However, because the project site is located outside the primary range of the species, the project will have no impact on splittail.

**Criteria for Determining Impact Significance**. Impacts on aquatic resources were considered significant if they would:

- directly or indirectly reduce the growth, survival, or reproductive success of individuals of species listed or proposed for listing as threatened or endangered under the federal ESA;
- directly or indirectly reduce the growth, survival, or reproductive success of substantial portions of federal status 1 and 2 candidate species; state-listed endangered, threatened, rare, or special- concern species; or regionally important commercial or game species; or
- substantially reduce the quality and quantity of important habitat for fish species or their prey species.

Impacts were considered less than significant if they do not meet one of the criteria listed above.

**Discussion of Environmental Consequences**. The item numbers in this section correspond to the item numbers of the checklist above.

**Proposed Project**

5g. Adult or juvenile chinook salmon and steelhead trout that spawn or rear upstream of the proposed project site must pass the site during their upstream and downstream migrations. Sheet piles would be needed to construct the intake structure and fish screens; in-channel construction is estimated to require about 3 - 4 weeks to complete. To avoid impacts on the federally listed winter-run chinook salmon, construction should take place between May 15 and August 15 (Mobley pers. comm.). DFG field survey data indicate a potential for rearing juvenile fall- and spring-run chinook salmon to be present in the Sacramento River until mid-June (Nelson pers. comm., Brown pers. comm.). However, few or no juvenile salmonids are expected to be present at or near the construction site because of high water velocities, because of the lack of riparian vegetation or other cover sources, and because construction would occur during daylight hours when downstream migration of juveniles has stopped or is occurring at low levels. Therefore, this impact is considered less than significant.

5h. Implementation of the project would result in abandonment of the pump station on Big Chico Creek, eliminating entrainment of fish at the site. It would also end reverse flows

caused by pump operation (Nelson pers. comm.), which has historically caused entrainment of juvenile salmon and steelhead trout and made it difficult for spring-run chinook salmon to find Big Chico Creek. This action will provide substantial long-term benefits to anadromous salmonids in Big Chico Creek and potentially to juvenile salmonids that may enter Big Chico Creek from the Sacramento River. This is considered a beneficial impact of the project.

5i. Construction activities could result in temporary increases in turbidity and suspended sediment attributable to sheet pile driving for the coffer dam in the Sacramento River adjacent to and downstream of the project site. Such increases would result in a reduction of feeding opportunities for sight-feeding fish, avoidance by fish of important habitat, sedimentation of instream cover and food-producing areas (e.g., aquatic vegetation), and sedimentation of spawning habitat or eggs. However, because rearing habitat at and near the proposed project site is considered to be of low value, it is unlikely the chinook salmon use this area as a rearing area. No impacts on salmon spawning success or spawning habitat are expected because there are no spawning areas near the project site. Therefore, construction-generated turbidity impacts on chinook salmon spawning and rearing habitats are considered less than significant.

5j. Project operation would not affect migrating juvenile chinook salmon and steelhead trout because the fish screens are designed to prevent entrainment and minimize predation rates on juvenile salmonids. The fish screens that would be installed were designed to meet DFG screening criteria (Nelson pers. comm.); these criteria are consistent with those specified by NMFS (Mobley pers. comm.). No spawning habitat is located near the site of the proposed pump station, so impacts on spawning are not anticipated. There may be a slight impact on rearing salmon and steelhead trout as a result of pump operations, but the impacts should be minimal because there is more suitable rearing habitat further downstream, where the fish are not likely to be affected by operation of the pumps. NMFS has issued a biological opinion on the project, which is provided in Appendix D.

5k. Because salmon and steelhead trout spawn in the Sacramento River and its tributaries upstream of the proposed pump station, these fish must pass through the construction area for the pump station. The consequences of this impact are the same as stated in 5i.

5l. The increase in diversion by a maximum of 40 cfs from the Sacramento River instead of Butte Creek during October through June would benefit anadromous salmonids, particularly spring-run chinook, by providing higher instream flows for migration, spawning, and rearing. Under the proposed project, diversions from Butte Creek would be reduced during October through June, which would improve flows during the rearing stages of spring- and fall-run chinook salmon and steelhead trout. This small reduction would have less-than-significant impacts on fish populations and habitat in the Sacramento River.

5m. Potential impacts on the spawning success of warmwater species such as largemouth bass and bluegill in the Sacramento River would be less than significant because potential adverse effects on the spawning and rearing life stages would be temporary and would potentially affect only a small portion of the population inhabiting the Sacramento River. Most

spawning is believed to occur in quiet, backwater areas or off-channel ponds away from the major effects of construction of the proposed project.

5n. Comanche Creek is currently subject to extreme flow fluctuations, often to the point of being completely dry for up to several days or weeks upstream of Chico during the winter months. No fisheries data were available for Comanche Creek from DFG. Field observations conducted in February 1996 did not reveal any significant fish populations in Comanche Creek. Consequently, the waterway does not provide adequate fish habitat or sustain viable fish populations. Therefore, there will be no impact on fish in this segment of the creek with a reduction in diversion.

Once it reaches Chico, Comanche Creek is more likely to hold water year-round, primarily because of urban runoff and high groundwater conditions, although flows may be minimal. Fish were not observed in this stretch of stream, however, and no impacts on fish as a result of reduced diversions are expected in this section of the stream.

Large groups of small minnows were observed in Comanche Creek as it flowed through the crop lands approximately 1.5 miles upstream from the connection between the creek and Phelan Canal. With a reduction in stream flows, the potential for increased water temperature is intensified. However, the fish species likely to occur in this portion of the creek during the irrigation season include California roach, golden shiner, and red shiner as well as warm water game fish such as bluegill, green sunfish, and largemouth bass; these species can generally tolerate broad temperature ranges (50°-90°F). No special-status species are likely to occur in Comanche Creek.

**No-Project Alternative**

Implementation of the No-Project Alternative would avoid some minor impacts to vegetation and temporary disturbance of a small amount of riparian vegetation at the pump station site. Potential impacts on wildlife, such as disturbance of Swainson's hawks during construction, would be avoided with this alternative.

Implementation of the No-Project Alternative would allow the potential continuation of entrainment and mortality of winter-run and spring-run chinook salmon at the existing pump plant. Fisheries impacts of the No-Project Alternative would be greater than with the proposed project. The beneficial fisheries aspects of the proposed project would not be realized with the No-Project Alternative.

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| **6. Cultural and Historical Resources** | | | | |
| a. Would the project conflict with the cultural and historic protection measures established by federal, state, or local regulatory programs? | X | | | |
| b. Would the project cause the physical disturbance of, or prevent future access to, a prehistoric, historic, or cultural site that is listed or eligible for listing on the National Register of Historic Places, the California Register of Historic Resources, or a Register of Historic Resources that has been adopted by resolution or ordinance of a local government? | | | X | |
| c. Would the project cause the physical disturbance of, or prevent future access to, a structure, parcel, or other feature of historic or cultural significance to a community, ethnic, or social group? | X | | | |
| d. Would the project cause the physical disturbance of, or prevent future access to, a unique paleontological site? | X | | | |
| e. Would the project cause the disturbance of any human remains? | X | | | |

**Affected Environment**

**Prehistory**. Although human occupation of the northern Sacramento Valley may extend back 10,000 years or more, reliable evidence of the presence of such early inhabitants is lacking. If humans did occupy the area during this period, much of the evidence of their presence may be deeply buried under alluvium (Moratto 1984).

Evidence of substantial occupation of the northern Sacramento Valley after 6000 B.C. is more reliable (Johnson et al. 1984). Artifacts from the Lower Archaic period (6000 to 3000 B.C.), locally represented by the Borax Lake pattern, consist largely of wide-stemmed

projectile points, and manos and metates used for grinding food. The Middle Archaic period (3000 to 500 B.C.), identified locally as the Late Borax Lake Pattern, is associated with an increase in the types of projectile points; the use of the atlatl, a projectile throwing tool; the continued use of manos and metates; and the use of bowl mortars.

The Upper Archaic period (500 B.C. to A.D. 500) reflects a shift to the use of the mortar and pestle from the mano and metate, possibly indicating an increased reliance on acorns as a food staple (Johnson et al. 1984). The Emergent period (A.D. 1000 to the historic period) is identified locally as the Shasta Aspect of the Augustine Pattern and is represented by settlements near streams, semisubterranean dwellings, a subsistence economy based on hunting and gathering, and numerous artifact types. This last period is thought to represent an intrusion of peoples and influences from the north (Moratto 1984).

**Ethnography**. The project area was once inhabited by the Konkow, also known as northwestern Maidu, a linguistic division of Maidu that also includes northeastern Maidu and Nisenan; the latter group is also known as the southern Maidu. The Maidu inhabited the area of California extending from Lassen Peak to the Cosumnes River and from the Sacramento River to Honey Lake. The division of these three groups is based on linguistic and environmental differences. The languages of the groups have been classified as separate languages within the Maiduan family, Penutian stock (Shipley 1978). Within each language, there were several dialects.

The Konkow inhabited the Feather River area west of Richbar extending to the southwest almost to the Sutter Buttes, and along the Sacramento River from about Butte City in the south to Vina in the north. The Konkow were bordered on the south and east by the Nisenan, on the west by the Nomlaki, and on the north by the Yana and Northeastern Maidu (Riddell 1978).

The basic subsistence strategy of the Konkow was seasonally mobile hunting and gathering. Acorns, the primary staple, were gathered in the valley along with seeds, buckeye, salmon, insects, and a wide variety of other plants and animals. During the warmer months, the Konkow moved to mountainous areas to hunt and collect food resources particular to higher elevations, such as pine nuts.

Politically, the Konkow were organized by tribelet; each tribelet was composed of several villages. When needed for group decisions or group activities, a leader for the tribelet was selected from among the headmen of the villages. Headmen were not powerful but instead acted as advisors; they were chosen through the auspices of a shaman for qualities such as wealth, maturity, ability, and generosity.

Although the first contacts with Euro-Americans occurred in 1808, it was not until between 1828 and 1836 that exposure to Euro-Americans became intensive. The increased contact was a result of fur trapping in the region by Hudson's Bay Company. In 1833, an epidemic, possibly of malaria, killed up to 75% of the Konkow population. The establishment of Sutter's Fort in Nisenan territory in 1839 became the focal point of settlers' and miners' incursions into Konkow lands, especially after the 1848 discovery of gold. The reduction in

population as a result of the epidemic left the Konkow unable to resist the overwhelming flood of miners and settlers. Many of the few survivors became wage laborers at mines and ranches, and their language and culture nearly disappeared.

**History**. The project site is located on land granted in 1844 to William Dickey and Edward Farwell by the Mexican government. This land grant was known variously as Rancho Arroyo Chico, Rancho Chico, and Rancho Farwell. The land was purchased from Dickey and Farwell in 1849 by John Bidwell, who later established the town of Chico (Hoover et al. 1966).

Chico Landing, also known as Bidwell's Landing, is located on the Sacramento River approximately 3,000 feet northwest of the project area. This site was used as a ferry crossing and loading dock and is shown on the 1862 County Map.

**Regulatory Framework**. Because the proposed project requires funding from the United States Fish and Wildlife Service and because historic properties could be affected, it is necessary to comply with Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations. Section 106 requires federal agencies, and agencies that they fund or to which they issue permits, to take into account the effects of their actions on properties that may be eligible for listing, or are listed, in the National Register of Historic Places (NRHP).

To determine if an undertaking could effect NRHP-eligible properties, cultural sites, including archaeological, historical, and architectural properties, must be inventoried and evaluated for NRHP eligibility. While compliance with Section 106 is the responsibility of the lead federal agency, the work necessary for compliance can be delegated to others.

The Section 106 review process is implemented using a five-step procedure: (1) identifying and evaluating historic properties; (2) assessing the effects of the undertaking on properties that are eligible for listing in the NRHP; (3) consulting with the State Historic Preservation Officer (SHPO) and other agencies to develop an agreement that addresses the treatment of historic properties; (4) receiving comments from the Advisory Council on Historic Preservation on the agreement or results of the consultation; and (5) proceeding with the project in accordance with the conditions of the agreement. It will not be necessary to perform all five steps for this project because it will not have an effect on historic properties.

**Criteria for Determining Impact Significance**. Cultural resource significance is evaluated in terms of eligibility for listing in the NRHP. The criteria for evaluating a property's eligibility for listing in the NRHP are as follows:

> The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling and association, and that:

- are associated with events that have made a contribution to the broad pattern of our history;

- are associated with the lives of people significant in our past;

- embody the distinct characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

- have yielded, or are likely to yield, information important in prehistory or history (36 CFR 60.4).

Significant impacts can occur when prehistoric or historic archaeological sites, structures, or objects listed in, or eligible for listing in, the NRHP are subjected to the following effects:

- physical destruction or alteration of all or part of the property;

- isolation of the property from, or alteration of, the property's setting when that character contributes to the property's qualification for the NRHP;

- introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;

- neglect of a property resulting in its deterioration or destruction; and

- transfer, lease, or sale of the property (36 CFR 800.9).

**Discussion of Environmental Consequences.** The item numbers in this section correspond to the item numbers of the checklist above.

**Proposed Project**

A cultural resources inventory of the proposed project area resulted in the identification of two cultural resource sites: the existing pump station located on the east side of Big Chico Creek (MT-JSA-2), and a prehistoric site located near the Phelan Canal (MT-JSA-1). Impacts on both of these cultural resources will be avoided or reduced to a less-than-significant level.

6a. The proposed project would not conflict with the cultural and historic protection measures established by federal, state, or local regulatory programs because issuance of federal funding and permits would be dependent on compliance with Section 106 of the NHPA. The Section 106 review process meets or exceeds cultural and historic protection measures required by the California Environmental Quality Act or by local authorities. The SHPO concurrence letter regarding the project's effects on cultural resources is provided in Appendix E.

6b. Construction of this project could result in the physical disturbance of site MT-JSA-1, a prehistoric site located near the Phelan Canal. This site has not been evaluated for NRHP eligibility and should be considered potentially eligible. Impacts on this site, as it is delineated from surface artifactual finds, will be avoided by placing the pipeline at least 100 feet outside of the site boundaries. It is possible, however, that the site could extend further than surface observations indicate and that the proposed pipeline could disturb buried portions of the site. To reduce this potential impact on archaeological site MT-JSA-1 to a less-than-significant level, implement mitigation measure 6.1

Additionally, significant buried cultural resources that were not identified during field surveys could be inadvertently unearthed during construction activities, resulting in substantial damage to, or demolition of, significant cultural resources. This impact is considered significant. Implementing Mitigation Measure 6-2 would avoid impacts on buried cultural resources or reduce impacts to a less-than-significant level.

6c. The only identified structures in the area of potential effects of the proposed project are the existing pump station facilities that include the intake structure, the pump house, and a pump station monitor house. These structures will remain intact in their current location, resulting in no impact on this resource.

6d. No paleontological resources have been identified in the proposed project area.

6e. No human remains have been identified in the proposed project area. It is possible, however, that buried human remains could be unearthed during construction activities, especially near archaeological site MT-JSA-1. To reduce this potential impact on human remains to a less-than-significant level, implement mitigation measures 6.1 and 6.2.

**Mitigation**

**Mitigation Measure 6-1: Contractor Will Ensure That a Qualified Archaeological Monitor Is Present during Ground-Disturbing Activities with the Authority to Halt Construction and Consult with the SHPO, If Necessary.** A qualified archaeological monitor will be present during all ground-disturbing activities in the vicinity of archaeological site MT-JSA-1. The vicinity of the site shall be considered an area within 100 meters of the recorded boundary of the site. If intact archaeological remains are identified, the archaeological monitor will be authorized to halt construction until he or she can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with the SHPO. Appropriate treatment measures will be implemented before ground-disturbing activities in the area are resumed.

***Responsible Party***: FWS, as the lead federal agency responsible for compliance with Section 106 of the NHPA, shall ensure that the identified mitigation measures are implemented.

***Timing***: Cultural resource mitigation measures will be implemented at the time of project construction in the identified locations.

***Monitoring Program***: Cultural resource monitoring will be limited the vicinity of archaeological site MT-JSA-1 during construction of the proposed project. No additional monitoring is recommended.

***Standards for Success***: Cultural resources that may be discovered during the project are analyzed and either protected or recovered.

**Mitigation Measure 6-2: Halt Work within 100 Feet of Any Find of Buried Cultural Resources until the Find Is Assessed by a Qualified Archaeologist**. If buried cultural resources, such as chipped or ground stone, historic debris, building foundations, or human bone, are inadvertently discovered during ground-disturbing activities, work will stop in that area and within 100 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with the SHPO. Appropriate treatment measures will be implemented before ground-disturbing activities in the area are resumed.

***Responsible Party***: FWS, as the lead federal agency responsible for compliance with Section 106 of the NHPA, shall ensure that the identified mitigation measures are implemented.

***Timing***: Cultural resource mitigation measures will be implemented at the time of project construction in the identified locations.

***Monitoring Program***: Cultural resource monitoring will be limited to the vicinity of archaeological site MT-JSA-1 during construction of the proposed project. No additional monitoring is recommended.

***Standards for Success***: Cultural resources that may be discovered during the project are analyzed and either protected or recovered.

**No-Project Alternative**

Implementation of the No-Project Alternative would avoid potential disturbance of cultural artifacts caused during proposed project construction activities but would not achieve the project goals and objectives.

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| **7. Traffic and Transportation** | | | | |
| a. Would the project cause a new violation, or exacerbate an existing violation, of an applicable legal standard or goal relating to traffic levels of service (LOS) or volume/ capacity (V/C) ratios, of a state or local agency? (LOS ratings range from "A" to "F", with many California agencies ranking "E" and "F" as unacceptable. V/C ratios range from 0 to 1.0, with many California agencies ranking an incremental worsening of 0.02 as unacceptable for intersections already operating at LOS E or F. These significance thresholds should be used to evaluate average and peak-hour project traffic impacts if the local agency has not adopted any particular significance standards for the project area.) | _____ | __X___ | _____ | _____ |
| b. Does the project conflict with an applicable Congestion Management Plan, air quality plan, or other plan or policy relating to automobiles or transit systems, adopted by a federal, state, or local agency? | __X___ | _____ | _____ | _____ |
| c. Would the project add traffic to a roadway that has design features (e.g., narrow width, roadside ditches, sharp curves, poor sight distance, inadequate pavement structure) or supports uses that would be incompatible with substantial increases in traffic (e.g., rural roads used by farm equipment, livestock, horseback riders, or pedestrians) that would result in safety problems with the addition of project-related traffic? | _____ | __X___ | _____ | _____ |
| d. Does the project have adequate internal circulation capacity, including entrance and exit routes, to safely accommodate average and peak-hour traffic loads? | __X___ | _____ | _____ | _____ |

## Traffic and Transportation

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| e. Does the project provide for safe pedestrian and bicycle circulation? | __X__ | _____ | _____ | _____ |
| f. Does the project provide sufficient parking capacity for the projected numbers of automobiles and bicycles? If not, is there sufficient commercial parking capacity available in the immediate project vicinity? If not, will unmet project parking demand worsen parking availability for existing residents or commercial enterprises? | __X__ | _____ | _____ | _____ |
| g. Is the project currently served by the community transit program? Is there sufficient capacity on the existing transit system for the project? If not, is there an adopted and funded plan to increase transit capacity to meet project demand? | __X__ | _____ | _____ | _____ |

**Affected Environment.** The project is located in a rural agricultural area with light traffic. The primary roads in the area are Chico River Road, Fell Road, and Sutter Avenue, all two-lane roads with narrow shoulders. Traffic on these roads is very light, and there is no congestion.

**Criteria for Determining Impact Significance.** The following criteria were used to determine the level of significance of traffic impacts; these criteria were developed based on Appendix G of the State CEQA Guidelines and on professional judgment. The proposed project would result in a significant impact if it would:

- substantially increase traffic in relation to existing traffic load and capacity,
- substantially disrupt traffic flow, or
- create an unsafe roadway condition.

**Discussion of Environmental Consequences.** The item numbers in this section correspond to the item numbers of the checklist above.

**Proposed Project**

7a. The project would generate no more than a few vehicle trips per day, which would not cause a violation of any traffic standard. Furthermore, the project would not generate new traffic but would merely relocate the small amount of traffic that already serves the existing pump station.

7b. There are no transportation-related plans that apply to the project.

7c. Roadway safety problems would be minimal. The roadways in the area have narrow shoulders, but they are adequate for automobiles and trucks. Existing traffic is light, and the project would not generate new traffic but would merely relocate the small amount of traffic that serves the existing pump station.

7d. The project would require only a simple driveway to accommodate expected traffic.

7e. The project would not have any effect on pedestrian or bicycle circulation.

7f. The project would require only one or two parking places and would have no effect on parking demand in the vicinity.

7g. The project area is not served by a transit system, and there is not sufficient demand to justify transit service to the area.

**Mitigation.** No mitigation measures are required.

**No-Project Alternative**

Implementation of the No-Project Alternative would avoid the potential short-term transportation effects of the proposed project but would not achieve the project goals and objectives.

## Visual Quality and Aesthetics

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| **8. Visual Quality and Aesthetics** | | | | |
| a. Would the project conflict with the applicable vista protection standards, scenic resource protection requirements, and design criteria of federal, state, and local agencies? | X | | | |
| b. Does the project alter or obstruct existing public viewsheds from or across the project site, including scenic features associated with designated scenic highways? | X | | | |
| c. Does the project change the existing visual quality and character at the project site in a manner that is inconsistent with other uses that currently exist or have been approved for the area? Are such changes attributable to project size, massing, density, landscaping, regrading, or other changes to the physical environment? | | X | | |
| d. Does the project increase light and glare in the project vicinity so as to cause a hazard or nuisance condition? | | X | | |
| e. Does the project significantly reduce sunlight or introduce shadows in public areas? Would loss of sunlight or increase in shadows adversely affect sensitive species or habitats? | X | | | |

**Affected Environment**. The proposed project would be located in an agricultural area. The visual landscape near the plant site is composed primarily of agricultural land planted with row crops and the riparian corridors along the Sacramento River and Big Chico Creek. The Sacramento River is visible only from the top of the levee adjacent to the river. From the elevation of the river, the existing levee creates a visual barrier to the plant site. During clear days, views to the east reveal the volcanic tablelands of the foothills and the Mount Lassen area. Views to the south from the site are primarily of agricultural land and possibly Sutter Buttes.

**Criteria for Determining Impact Significance**. According to the State CEQA Guidelines, Appendix G, visual resource impacts are considered significant if a project has a "substantial

demonstrable negative aesthetic effect". Based on professional standards and practices, a project will normally be considered to have a significant impact if it would:

- conflict with adopted visual resource policies;
- substantially reduce the vividness, intactness, or unity of high-quality views; or
- introduce a substantial source of light and glare into the viewshed.

**Discussion of Environmental Consequences.**

**Proposed Project**

The pump station would be located in an agricultural area and would be consistent with the surrounding visual landscape. Visual impacts were not raised as an issue during public and agency scoping meetings conducted in January 1996, and no visual or aesthetic impacts are anticipated.

**Mitigation.** No mitigation measures are required.

**No-Project Alternative**

Because visual impacts were judged less than significant with the proposed project, visual impacts of the No-Project Alternative would be the same as the proposed project.

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| **9. Air Quality** | | | | |
| a. Would the project violate any law or regulation designed to achieve or maintain compliance with ambient air quality standards or protect against adverse health effects caused by air pollution? | _____ | __X__ | _____ | _____ |
| b. Would the project violate any approved plan or policy regarding air pollution, including federal or state air quality management plans for achieving or maintaining compliance with applicable ambient air quality standards, local or regional growth or congestion management plans, and local or regional CEQA significance standards for air quality? | _____ | __X__ | _____ | _____ |
| c. Would the project result in a net increase of any criteria pollutant for which the project area has not attained applicable federal or state ambient air quality standards? Would such a net increase exceed any of the specific parameters listed below? | _____ | __X__ | _____ | _____ |
| d. Using the approved or established risk assessment methodologies of the air quality control agencies, would project toxic air contaminant (TAC) emissions cause a significant short- or long-term health risk? Would project TAC emissions cause an increased cancer risk of greater than ten per million? | __X__ | _____ | _____ | _____ |
| e. Would the project require the removal or demolition of building components containing asbestos, or the excavation or crushing of serpentine rock containing asbestos? | __X__ | _____ | _____ | _____ |

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| f. Would the project require the removal or movement of soils contaminated by hazardous materials that can cause adverse health impacts if airborne? | X | | | |
| g. Would the project concentrate vehicle trips or vehicle-related emissions in a localized area (e.g., intersections, parking areas), which would cause a violation of the carbon monoxide ambient air quality standard? | | X | | |
| h. Does the project have the potential to cause an odor, visibility, or other problem that would create a public nuisance condition? | | X | | |

**Affected Environment**

**Air Quality Pollutants and Existing Air Quality Conditions**. The pollutants of greatest concern in the project area are ozone and inhalable particulate matter (PM10). Ozone is not emitted directly into the air, but instead is formed by photochemical reactions in the atmosphere. Ozone precursors, reactive organic gases (ROG) and oxides of nitrogen ($NO_x$), react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. PM10 emissions are generated by a variety of sources, including agricultural activities, construction, and traffic. Carbon monoxide concentrations are generally elevated near heavily traveled intersections. Because the pump station would be located in a rural area, carbon monoxide is not a concern.

All of Butte County experiences occasional violations of the state and federal ozone standards. In Chico, the state 24-hour PM10 standard is exceeded about 25% of the time. The state annual PM10 standard is also exceeded in most years. PM10 levels near the project site may be higher than in Chico because of the proximity of agricultural activities.

**Air Quality Conformity**. The EPA has promulgated a rule requiring that all federal actions in federally designated nonattainment areas comply with applicable state implementation plans (SIPs) (40 Code of Federal Regulations [CFR] Parts 6, 51, and 93). Federally funded projects in Butte County are potentially subject to the conformity rule because the county is classified as a moderate nonattainment area for the federal ozone standards. The Chico urbanized area is also a nonattainment area for the federal carbon monoxide standards. Carbon

monoxide conformity is not an issue for the pump station because the project would not located within the Chico urbanized area.

The general conformity rule contains *de minimis* emission thresholds that are based on the severity of air pollution in the area. Projects with nonattainment area emissions exceeding the *de minimis* thresholds must be shown to conform to the applicable SIP(s). Projects with emissions lower than the thresholds are exempt from conformity.

In Butte County, the *de minimis* thresholds equal 100 tons per year (tpy) for the ozone precursors ROG and $NO_x$. Since federal funds may be used for construction, the proposed project must be shown to be exempt from the conformity rule because emissions are lower than *de minimis* levels, or to conform to the rule.

**Emissions from Existing Pumping Station.** The existing pump station is driven by electric-powered turbines. The turbines do not produce direct emissions that affect air quality.

**Criteria for Determining Impact Significance.** The following criteria, used to determine the level of significance of air quality impacts, were developed based on Appendix G of the State CEQA Guidelines and on professional judgment. The project would result in a significant impact if it would:

- violate any ambient air quality standard;
- contribute substantially to an existing or projected air quality violation;
- expose sensitive receptors to substantial pollutant concentrations;
- result in substantial air emissions or deterioration of air quality (substantial emissions would be emissions above the Butte County Air Pollution Control District [APCD] emission offset threshold levels of 250 pounds per day [ppd] for carbon monoxide, ROG, and $NO_x$, and 150 ppd for PM10);
- create objectionable odors; or
- alter air movement, moisture, or temperature, or result in any change in climate either locally or regionally.

**Discussion of Environmental Consequences.** The item numbers in this section correspond to the item numbers of the checklist above.

**Proposed Project**

9a. Implementation of the project would result in short-term emissions from construction activities and long-term emissions from the natural gas-fueled engines used to operate the pumps.

Construction emissions would result from grading and earthmoving and from equipment exhaust. Butte County is a nonattainment area for PM10 and ozone. The construction emissions of greatest concern are PM10, ROG, and $NO_x$. This impact is considered less than significant because the design specifications for the project require that the engineering contractor prepare and implement a dust suppression plan as part of the project design.

The project would generate emissions of ROG and $NO_x$ from fuel combustion to drive the pumps. Based on emission rates for natural gas-fueled industrial engines, emissions are estimated to equal 29 ppd of ROG, 76 ppd of $NO_x$, and 67 ppd of carbon monoxide. Because emissions of ROG, $NO_x$, and carbon monoxide would be below the Butte County APCD threshold levels, this impact would be less than significant.

9b. Operation of the pump station would result in emissions from fuel use equaling 5 tons per year of ROG and 14 tons per year of $NO_x$. These emissions would be below the *de minimis* levels. Therefore, the project would be exempt from federal conformity.

9c. As described above, the project would not result in emissions exceeding any of the established parameters for ROG, $NO_x$, or carbon monoxide.

9d. The project would not generate any toxic air contaminant emissions.

9e. The project would not require any removal or demolition of building components, or the excavation of serpentine rock. Asbestos, therefore, is not a concern.

9f. The project would be located on the Sacramento River levee, and the pipeline would traverse an agricultural area. It is not expected that the project would require the removal or movement of any contaminated soil as this area has been used exclusively for intensive agriculture.

9g. The project would generate no more than a few vehicle trips each day. This small number of trips would not result in violations of the carbon monoxide standard.

9h. Natural gas-fueled engines do not produce odorous emissions or visibility-reducing emissions. The project is not located near any sensitive land uses and is not expected to produce any odor, visibility, or other air quality problems that would create a public nuisance.

**No-Project Alternative**

Implementation of the No-Project Alternative would avoid air quality impacts of the proposed project but would not achieve the project objectives.

## Noise and Vibration

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| **10. Noise and Vibration** | | | | |
| a. Would the project violate any established noise or vibration law, regulation, or standard? | _____ | __X__ | _____ | _____ |
| b. Would the project cause a permanent increase in ambient noise or vibration levels that would be perceptible to humans in the project vicinity, and that is perceptibly greater than the noise or vibration levels caused by existing development in the project area? | _____ | __X__ | _____ | _____ |
| c. Would the project cause a temporary or periodic increase in ambient noise or vibration levels that would be perceptible to humans in the project vicinity, and that is perceptibly greater than the noise or vibration levels caused by existing development and activity in the project area? | _____ | __X__ | _____ | _____ |
| d. Can the project noise and vibration level during construction activities be limited to daylight, weekday hours and be comparable to that required for construction of existing development in the project area? | _____ | __X__ | _____ | _____ |

**Affected Environment**. The pump station and pipeline would be located in an area that is used primarily for agriculture. There are no noise-sensitive land uses near the project site. Existing noise conditions in the project vicinity are influenced by agricultural activities, traffic on Chico River Road, occasional aircraft flights, and natural sources such as birds and wind. Existing noise levels in rural locations such as the project vicinity are generally low, with 24-hour values in the range of 40 to 50 dBA Ldn. (Ldn is a 24-hour noise descriptor that adds a 10 dB penalty to nighttime noise to account for people's increased sensitivity to nighttime noise).

**Criteria for Determining Impact Significance**. The following criteria, used to determine the level of significance of noise impacts, were developed based on Appendix G of the State CEQA Guidelines and on professional judgment. The proposed project would result in a significant impact if it would:

- substantially increase noise levels at noise-sensitive land uses, or
- expose people to severe noise levels.

**Discussion of Environmental Consequences.** The item numbers in this section correspond to the item numbers of the checklist above.

**Proposed Project**

10a. Pumping station noise generation was estimated using standard noise generation rates for pumps (Miller 1982). The proposed project is expected to generate a noise level of about 50 dBA at a distance of 50 feet This noise level would not violate any established law, regulation, or standard. The project is not expected to produce any noticeable vibrations.

10b. The pump station is expected to generate a noise level of about 50 dBA at a distance of 50 feet. At a distance of 200 feet, the pump station noise is expected to be about 38 dBA. The expected noise level would be similar to the existing noise level in the area. At distances of 200 feet or more, the pump station would not generate a noise level that is perceptibly greater than the existing noise level. Because the surrounding land is privately owned, it is unlikely that a person would approach to within 200 feet of the pump station. The project is not expected to produce any noticeable vibrations.

10c. The pump station would generate a steady noise rather than temporary or periodic noise. The effects of steady noise generation from the project have been described above.

10d. The majority of project construction activities can be limited to daylight, weekday hours. Installation of the screens may require working into the night because of the complexities of working in the Sacramento River; any work performed at night would be a relatively small portion of the total construction. Furthermore, installation of the screens, along with the other construction activities, would not be performed near any noise-sensitive land uses.

**Mitigation**. No mitigation measures are required.

**No-Project Alternative**

Implementation of the No-Project Alternative would avoid the short-term temporary noise effects from construction activities but would not achieve the project objectives.

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| **11. Utilities and Infrastructure** | | | | |
| a. *Electricity*: Will the project require expansions in existing electrical generating facilities and existing high-power transmission lines? | _____ | __X___ | _____ | _____ |
| b. *Water*: Will the project comply with water conservation and supply requirements imposed by state and local agencies? Will the project require expansions in existing water supply treatment facilities or trunk conveyance lines? Has the water purveyor determined that it has adequate treatment facilities, conveyance capacity, and water supplies to serve project demand? Will the water supply be drawn from a groundwater basin that is overdrawn in relation to demand and historical levels? | __X___ | _____ | _____ | _____ |
| c. *Wastewater Treatment*: Will the project comply with wastewater pretreatment standards enforced by federal, state, and local regulatory agencies? Will the project require expansions of the wastewater treatment facilities and trunk conveyance lines? Has the wastewater treatment provider determined that it has adequate treatment and conveyance capacity to serve project demand? | __X___ | _____ | _____ | _____ |
| d. *Solid Waste*: Will the project comply with state and local requirements relating to recycling, litter control, and solid waste handling? Is a landfill available with sufficient capacity to accommodate on a long-term basis (10 or more years) solid waste generated by the proposed project? | _____ | __X___ | _____ | _____ |

**Affected Environment**. The proposed project would be located next to the Sacramento River, about 5 miles southwest of Chico. The companies that would provide the utilities in this area if they were needed are:

- natural gas and electricity - Pacific Gas and Electric Company, and
- solid waste disposal - Chico Butte Disposal Service Inc.

**Criteria for Determining Impact Significance**. The following criteria, based on Appendix G of the State CEQA Guidelines and on professional judgment, were used to determine the level of significance of impacts on utilities. The project would result in a significant impact if it would:

- breach published standards relating to solid waste or litter control,
- encourage activities requiring large amounts of fuel, water, or energy, or
- use fuel, water, or energy wastefully.

**Discussion of Environmental Consequences**. The item numbers in this section correspond to the item numbers of the checklist above.

**Proposed Project**

11a. There has been a long-term trend in the area toward higher energy costs. Investigations showed that the use of four 38-cfs pumps with natural gas-fired engine drivers would be the most economical configuration for this project. Electricity would be used to operate a compressor(s) at the pump station, requiring the extension of an electrical power line to the pump station. Montgomery Watson would design the electrical power supply and controls for operating the pump station. The proposed project would not require an expansion in power generation. Therefore, this is a less-than-significant impact.

11b. The proposed project would not require water from a water purveyor or private well. Therefore, there would be no water utility impacts.

11c. The proposed project would generate wastewater only during the construction phase and would not require the services of a wastewater treatment facility. Portable toilets would be provided by the contractor.

11d. Under normal operation, the proposed project would not generate solid waste. There would be solid waste generated, however, during the construction phase of the proposed project; plans for disposal of that waste would be prepared by the contractor. The project would comply with any state or local requirements for recycling, litter control, and solid waste handling. Therefore, this impact would be less than significant.

**Mitigation**. No mitigation measures are required.

**No-Project Alternative**

Implementation of the No-Project Alternative would have greater energy impacts because the existing pump station is old and inefficient.

## Public Services

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| **12. Public Services** | | | | |
| a. *Sheriff*: Will the project require additional staff or equipment to maintain acceptable service ratios, response times, or other performance objectives? | X | | | |
| b. *Fire*: Will the project require additional staff or equipment to maintain an acceptable level of service (i.e., response time, equipment capacity)? | X | | | |
| c. *Schools*: Will the project increase the population of school-age children in a K-12 school district that is or will be operating without adequate staff, equipment, or facilities? | X | | | |
| d. *Parks and Recreation*: Will the project increase use of existing park and recreational facilities, or require the creation of new park and recreational facilities, to comply with locally adopted park and recreational service standards? | X | | | |

**Affected Environment.** The proposed project site is located along the Sacramento River about 5 miles southwest of Chico. Sheriff's and fire services are provided by Butte County. Parks and recreational areas are maintained by the California State Parks and Recreation Department, the City of Chico, and private entities along the Sacramento River.

**Criteria for Determining Impact Significance.** Appendix G of the State CEQA Guidelines and professional judgment were used to determine the level of significance of impacts on public services.

**Discussion of Environmental Consequences.** The item numbers in this section correspond to the item numbers of the above checklist.

**Proposed Project**

12a. The proposed project would be located in a rural area and should not cause population growth, so it would not affect the service ratios, response times, or other performance objectives of local law enforcement. Therefore, there would be no impacts on law enforcement.

12b. The proposed project would involve the construction and operation of a new pumping plant along the Sacramento River. The construction and operation of the pumping plant would not cause development in the region and should not cause population growth. It would not affect the response time or equipment capacity of the local fire protection agency. Therefore, there would be no fire protection impacts.

12c. The proposed project should not cause population growth. Therefore, there would be no school impacts.

12d. The proposed project should not cause population growth, and would not influence the use of park and recreational facilities. Therefore, there would be no park and recreation impacts.

**Mitigation**. No mitigation measures are required.

**No-Project Alternative**

Implementation of the No-project Alternative would have the same impacts as the proposed project and are less than significant.

## Energy

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| 13. **Energy** | | | | |
| a. Does the project comply with applicable laws and regulations regarding energy conservation? | X | | | |
| b. Does the project require quantities of nonrenewable sources of energy in excess of quantities required by recent, similar projects? | X | | | |
| c. Do the energy suppliers have the capacity to supply the project's energy needs with existing and planned energy sources and conveyance systems? | X | | | |

**Affected Environment**. Power utilities in the project area include electric service provided by Pacific Gas and Electric Company (PG&E) and a private natural gas line that is owned and maintained by M&T. Electric power in the region is supplied primarily from hydroelectric power plants located in the Feather River watershed. The existing pumping plant is fueled by electric power; it is not energy efficient compared to today's standards.

**Criteria for Determining Impact Significance**. The state CEQA Guidelines indicate that energy or utility impacts of a project are considered significant if the project would encourage activities requiring large amounts of fuel, water, or energy or would use fuel, water, or energy wastefully.

**Discussion of Environmental Consequences**. The item numbers in this section correspond to the item numbers of the checklist above.

**Proposed Project**

13a. The proposed project would be designed by Montgomery Watson to meet current energy efficiency codes and regulations regarding energy conservation. Cummins natural gas-fired engines are being proposed to drive the water pumps for the plant.

13b. The proposed project would use natural gas-fired engines that would be more efficient than the existing pumping plant, which uses electricity. Energy use is expected to be less than with the existing plant. This impact is considered less than significant.

13c. The proposed plant would use natural gas supplied by PG&E through a gas main that is owned and maintained by M&T. In general, PG&E has surplus gas supplies statewide, and the gas demand created by the project should not be a problem for the utility. This impact is considered less than significant.

**Mitigation.** No mitigation measures are required.

**No-Project Alternative**

Implementation of the No-Project Alternative would have greater energy impacts because the existing pump station is old and energy inefficient.

## Hazardous Materials

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| **14. Hazardous Materials** | | | | |
| a. Will the project comply with applicable federal, state, and local laws, regulations, and standards relating to hazardous materials? | X | | | |
| b. Is the soil or groundwater at the project site contaminated by hazardous materials? Is such contamination known to exist at another location that is within 2,000 feet of the project site? | X | | | |
| c. Does the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? | X | | | |
| d. Does the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials to the environment? | | X | | |
| e. Will the project interfere with community emergency response plans or emergency evacuation plans in the event of a reasonably foreseeable emergency situation involving a hazardous material exposure or release? | X | | | |
| f. Are there hazardous material re-use, or one or more hazardous waste treatment or disposal, facilities available to lawfully accept and handle hazardous wastes generated by the project? | X | | | |

**Affected Environment.** The proposed project site is located along the Sacramento River, about 5 miles southwest of Chico. It is in a rural agricultural area that is currently not contaminated by hazardous materials. There does not appear to be a potential source of contamination near the proposed project site.

**Criteria for Determining Impact Significance**. Appendix G of the State CEQA Guidelines and professional judgment were used to determine the level of significance of hazardous waste impacts.

**Discussion of Environmental Consequences**. The item numbers in this section correspond to the item numbers of the checklist above.

**Proposed Project**

14a. The proposed project is a water supply pump station that would not generate or produce hazardous waste. The proposed project would comply with existing hazardous waste and disposal laws.

14b. According to the ranch manager, the site has been used exclusively for agricultural production and there is no reason to believe that groundwater contamination is an issue at this site (Heringer pers. comm).

14c. Hazardous materials would not be transported to the pumping plant.

14d. Plant operations would not create a significant health hazard. However, hazardous materials would be used during the construction phase of the proposed project, and there is potential for a release of hazardous materials during construction. This is considered a less-than-significant impact because a hazardous materials control and spill prevention and response plan is part of the bid specifications for the construction contractor.

14e. The project would be located in a rural area and the emergency response plans or evacuation plans in the Butte County area would not be affected.

14f. Because the project would not produce hazardous waste, reuse, treatment, and disposal of hazardous wastes would not be needed for this project.

**Mitigation**. No mitigation measures are required.

**No-Project Alternative**

Implementation of the No-Project Alternative would have the same impacts as the proposed project.

## Mandatory Findings of Significance

| | No Impact | Less-than-Significant Impact | Significant Impact unless Mitigated | No Mitigation Identified - EIR |
|---|---|---|---|---|
| **15. Mandatory Findings of Significance** | | | | |
| a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of fish or wildlife species, cause fish or wildlife populations to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory? | _____ | __X___ | _____ | _____ |
| b. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one that occurs in a relatively brief, definitive period of time while long-term impacts will endure well into the future.) | ___X___ | _____ | _____ | _____ |
| c. Does the project have impacts that are individually limited, but cumulatively significant when placed in the context of other reasonably foreseeable projects? | _____ | ___X___ | _____ | _____ |
| d. Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly? | ___X___ | _____ | _____ | _____ |

**Discussion of Environmental Consequences**. The item numbers in this section correspond to the item numbers of the checklist above.

15a. The purpose of the project is to benefit fish populations in Big Chico Creek, Butte Creek, and the Sacramento River. The project would have some short-term temporary impacts that will be mitigated, as discussed in previous discussions. The project would not cause significant impacts on fisheries or to plant or animal species or affect cultural resources.

15b. The proposed project would protect fisheries resources in Big Chico Creek, Butte Creek, and the Sacramento River. The project would have long-term benefits to fish populations.

15c. Significant cumulative impacts are effects that may be individually minor at a project level but collectively significant when considering the contribution of other projects. CEQA and NEPA both require analysis of past, present, and reasonably foreseeable future projects that would contribute to resource impacts. During preparation of the EA/IS, the lead agencies received a late scoping letter from the California Sport Fishing Protection Alliance (CSPA) which contained a lengthy description of various issues concerning Big Chico Creek that affect the spring-run fishery. CSPA is concerned about the project's incremental contribution to cumulative impacts in the watershed. The scoping letter is included in Appendix A. The letter describes various topics and problems in the Big Chico Creek watershed, including soil erosion, sediment transport, water temperatures, fish barriers, and other issues of concern. Cumulative impacts were also raised as a possible issue at the scoping meeting. The concern raised was the combined impacts of the City of Chico's wastewater treatment plant expansion located several hundred feet upstream of the wastewater treatment plant's outfall with the operation of the proposed pumping plant. Although the comment was not specific, it was assumed that the commenter was concerned about the ability of migrating adult salmon to navigate through the wastewater outfall and then pass by the new pumping plant.

The M&T /Parrott Pumping Plant and Fish Screen Project is one of many proposals being considered to improve anadromous fisheries resources and is one of several proposals that have been identified by DFG and FWS to improve conditions for spring-run salmon in the Central Valley Project Improvement Act (CVPIA) Anadromous Fish Restoration Plan (AFRP) and DFG restoration plans (California Department of Fish and Game 1993). DFG and FWS have developed plans or programs to guide them in seeking to improve fisheries conditions throughout northern California streams. The actual timing of implementation of these proposals or preliminary plans into specific projects is uncertain for several reasons, such as availability of funding and agency priorities. Several of these proposals are not considered reasonably foreseeable projects from a CEQA perspective, and many may not be completed for several years.

The proposed project is a beneficial fisheries project that seeks to improve fishery conditions in Big Chico Creek, Butte Creek, and the Sacramento River. From this perspective, the proposed project improves the baseline or the No-Project condition. Therefore, in an overall assessment of cumulative effects on the spring-run fishery in Big Chico creek watershed, this project would have a beneficial effect. Because of the concerns raised in scoping regarding site-specific, short-term effects to fisheries resources, another approach in assessing cumulative impacts was identified. The following cumulative impact analysis contains an evaluation of short-term impacts at a resource level and a discription of whether the project's specific incremental effects, when combined with other reasonably foreseeable projects, could have significant cumulative impacts.

To assess the near-term impacts of project construction activities, the City of Chico Planning Department, Butte County Planning Department, the Reclamation Board, and the Governor's Office of Planning and Research (OPR) were contacted to obtain information on projects that may affect the Sacramento River or Big Chico Creek near the project site during the

months of June, July, and August. The City of Chico and Butte County Planning Departments were contacted because they have land use planning jurisdiction in areas that affect the Sacramento River and Big Chico Creek and would be able to identify specific projects that are pending that require their approvals. The Reclamation Board regulates activities along the Sacramento River levees where it has jurisdiction and would have knowledge of projects in the area that require an encroachment or dredging permit. OPR maintains a database, organized by county, of the various projects undergoing environmental review and could assist in identifying projects along or near the river.

**Fisheries Resources**

**Effects on Sacramento River Turbidity Levels.** The project would cause short-term temporary increases in turbidity and suspended solids in the Sacramento River during pile driving activities for the coffer dam. The project would cause an incremental increase in turbidity in the river for an estimated two weeks in the summer or until the sheet piles are in-place and the coffer dam is completed. Increased turbidity levels during the summer could result in reduction of feeding opportunities for sight feeding fish and other similar activities. This impact was considered less than significant because the area near the pump station site does not support high value rearing and spawning habitats. Turbidity levels in the Sacramento River vary substantially depending upon season and inflow from agricultural drains and other sources. Turbidity levels in the Sacramento River are not a regional problem according to the basin plan (Central Valley Regional Water Quality Control Board 1995).

According to discussions with Reclamation Board staff, the proposed project is the only project being constructed on the Sacramento River in Butte County within the last 15 months (Whitman pers. comm.). In addition, the OPR database did not reveal any proposed projects that would be located either upstream or downstream of the proposed project in Butte County (Belsky pers. Comm).

The City of Chico indicated that it has has one project pending this summer that may affect Big Chico Creek: construction of a 42-inch diversion pipe underneath its One-Mile/Sycamore Pool. The project is needed to eliminate turbidity and sedimentation effects on Big Chico Creek when the City maintains the pool. A second City project is the expansion of its wastewater treatment plant which would affect the Sacramento River.

The One Mile/Sycamore Pool is a portion of Big Chico Creek that is created by a flashboard dam and the creek has been widened and paved to create the pool for summer recreation. The diversion pipe is needed to allow the City to maintain the pool by diverting the creek flow temporarily through the pipe during pool cleaning operations. This project has been identified in DFG's plans to improve the Big Chico Creek fishery (Nelson pers. comm.). An initial study is currently being prepared by the City and the project will undergo environmental review but it is uncertain whether the project would be constructed this summer or during the same time as the M&T project (Joliffe pers. comm.). The City's project may cause some temporary construction impacts, such as increasing turbidity and suspended solids in Big Chico

Creek. However, it is unlikely that the City's project turbidity when combined with the incremental increases in turbidity associated with the M&T project would cause regionally significant cumulative impacts because the City's project is located several miles upstream of the M&T project and the turbidity effects are not expected to extend that far downstream of One-Mile Pool. Additionally, the M&T project would not directly affect Big Chico Creek turbidity levels because all construction would be performed in the Sacramento River. The project is the only known major construction project proposed on the Sacramento River in Butte County during the summer of 1996 and should not have combined effects with other projects within Butte County. Therefore, potential cumulative effects on turbidity levels are judged less than significant.

A second City of Chico project that was considered in this analysis is the expansion of the wastewater treatment plant. The City's outfall is located about 400-450 feet downstream of the proposed project. An environmental impact report was prepared and was certified by the City in March 1996 ( Jones & Stokes Associates 1995). That project does not involve modifications to the City's outfall structure or diffuser in the Sacramento River. Most of the construction activity would be at the main plant and would not have direct construction impacts on the Sacramento River; therefore, combined effects from a turbidity perspective are not expected and are considered less than significant.

During scoping, one commenter raised three issues of concern: fish zone of passage, entrainment of juveniles from the new plant, and the combined effects of the wastewater effluent with the proposed pumping plant. Review of the City's EIR indicates that there is a considerable zone of passage (estimated to be about 140 feet) on the right bank of river that allows salmon to avoid the city's wastewater outfall and continue upstream past the site of the new pump station. In addition, the fact that salmon successfully migrate up the Sacramento River to fish hatcheries and to their spawning grounds in numerous creeks is evidence that they are able to navigate past several wastewater outfalls along the Sacramento River. With regard to juvenile salmon migrating out of Big Chico Creek and the Sacramento River, the fish screens installed at the new pumping plant will be designed according to DFG and NMFS criteria; the pumping plant, therefore, is expected to beneficially impact juvenile salmon. The EIR prepared for the City of Chico WWTP included an analysis of the wastewater effects on juvenile salmon; the analysis found that juvenile salmon would not be impacted because of the depth at which the outfall is located in the river as well as the dilution and mixing of the wastewater with fresh water. Therefore, based on this analysis, cumulative effects from these reasonably foreseeable projects on fisheries resources are considered less than significant.

**Effects on Spring-Run Salmon**. Spring-run salmon had been proposed for listing in the state CESA; however, on April 4, 1996, the Commission denied the petition to list spring-run salmon. The fact that the species are being considered for listing implies that there may be a regional problem caused by numerous or cumulative factors. However, the proposed project would improve baseline conditions for spring-run juveniles and adults because the new pumping plant would be equipped with fish screens and would be located downstream on the Sacramento River. Additionally, the current pump station would be retired, avoiding potential effects on

spring-run fish. Therefore, potential cumulative effects on spring-run salmon are considered less than significant.

**Effects on Winter-Run Chinook Salmon**. Winter-run chinook salmon are a federally and state-listed endangered species. The fact that the species are listed implies that there is a regional problem caused by numerous or cumulative factors. However, the proposed project would improve baseline conditions for winter-run juveniles that use Big Chico Creek because the new pumping plant would be equipped with fish screens and would be located downstream on the Sacramento River. Additionally, the current pump station would be retired, avoiding potential effects on fish. Therefore, potential cumulative effects on winter-run salmon are judged less than significant.

**Wildlife Issues**

**Effects on Swainson's Hawks**. Swainson's hawks are a stated listed threatened species. The fact that the species are listed implies that there is a regional or statewide problem caused by numerous or cumulative factors. Several empty nests near the proposed site were observed during field surveys, although due to the timing of the surveys, they could not be confirmed as Swainson's hawk nests. The project applicants have agreed to conduct preconstruction surveys, and if hawks are found nesting in nests near the proposed site, they will abide by the DFG Mitigation Guidelines. Due to the proximity of the nests to the proposed site, project construction activities could cause short-term noise and other disturbances that potentially could disrupt nesting activities. It should be recognized that the nests are located in an agricultural area where large tractors, tractor rigs, and other similar equipment that create substantial noise are operating during the nesting season. Because the biologist could not confirm if the nests were Swainson's hawk nests, DFG has agreed to conduct preconstruction surveys. Surveys are anticipated in April 1996. If nesting birds are observed in the nests close to the site in April, by the time project construction is initiated two months later in early June, the young will most likely be at fledgling phase. Parents are unlikely to abandon nests with fledglings and are much more tolerant at this stage when compared to earlier nesting stages. Therefore, it is unlikely that the project's construction phase should have significant adverse cumulative effects on Swainson's hawks.

**Other Fishery Mitigation Projects**. Several other fisheries projects are being implemented by other private entities that will have beneficial cumulative impacts in the area. Western Canal Water District, located southwest of M&T, plans to remove four dams on Butte Creek and construct a siphon under the creek to improve anadromous fish migration. That project, which is also undergoing environmental review, would serve to improve conditions for spring-run chinook salmon in Butte Creek. The combined effects of the WCWD project with the proposed project would be beneficial for spring-run salmon. Also, DFG is making improvements to the Iron Canyon fish ladder this summer, which will also provide benefits to spring-run salmon.

15d. The project would not cause substantial adverse effects on human beings either directly or indirectly. The project would benefit humans indirectly by enhancing the fisheries on Big Chico Creek, Butte Creek, and the Sacramento River.

## CONCLUSIONS

The proposed project is considered by the lead agencies as a fisheries mitigation project for impacts associated with the existing M&T pumping plant. The project would have beneficial impacts on the fisheries of Big Chico Creek, Butte Creek, and the Sacramento River. In general, there are few significant adverse impacts of the project. Many of the impacts are typical construction-related issues that are common construction-related impacts associated with pumping plants or water diversion projects. In some instances, the lead agencies have modified the project to avoid potential environmental impacts or have included environmental mitigation requirements in the bid specifications for the contractor. Following is a summary of the potential significant impacts of the proposed project that are either being avoided through project design or requiring mitigation measures:

- potential disturbance of cultural artifacts observed near the outlet structure;
- potential exposure of cultural artifacts during pipeline excavation;
- potential disturbance of valley elderberry longhorn beetle habitat during construction; and
- potential disturbance of nesting Swainson's hawks during construction.

Mitigation measures have been recommended for each of these impacts. FWS, DFG, and the engineering contractor will be responsible for ensuring that mitigation is implemented.

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## PERSONAL COMMUNICATIONS

Belsky, Chris. Intern. Office of Planning and Research, Sacramento, CA. March 5, 1996 - telephone conversation and facsimile transmission.

Brown, Charlie. Fisheries biologist. California Department of Fish and Game, Red Bluff, California. February 15, 1996 - telephone conversation.

Buer, Koll. California Department of Water Resources, Northern District, Red Bluff, CA. January 17, 1996 - meeting at M&T offices.

Heringer, Les. Ranch manager. M&T Chico Ranch, Chico, CA. January 18, 1996 - telephone conversation.

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Manjii, A. Water resources control engineer. Central Valley Regional Water Quality Control Board, Sacramento, CA. February 15, 1996 - telephone conversation with Sandy Siems, Montgomery Watson, Sacramento, CA.

Mobley, Chris. Fisheries biologist. National Marine Fisheries Service, Santa Rosa, California. January 29, 1996 - telephone conversation.

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Sulik, Marc. Wastewater treatment supervisor, water pollution control plant. City of Chico General Services Department, Chico, CA. January 25, 1996 - telephone conversation.

Whitman, Marcyn. Engineer. State Reclamation Board, Sacramento, CA. March 4, 1996 - telephone conversation.

# Chapter 5. Report Preparation

This EA/IS was prepared by Jones & Stokes Associates, Inc., as a subconsultant to Montgomery Watson. Ducks Unlimited was the contract administrator for the project. The following individuals were responsible for preparing and reviewing the document.

**U.S. FISH AND WILDLIFE SERVICE**

Gary Kramer - Federal lead agency contact
Ramon Vega - Wildlife refuge manager

**CALIFORNIA DEPARTMENT OF FISH AND GAME**

John Nelson - State lead agency contact
Paul Ward - Fisheries biologist

**DUCKS UNLIMITED**

Jim Well - Contract administrator

**MONTGOMERY WATSON**

Neil Schild - Project manager, engineering

**JONES & STOKES ASSOCIATES**

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Douglas Brewer - Project manager

**Technical Team**

Stephanie Theis and Bill Mitchell - Fisheries
Todd Sloat - Wildlife
Petra Unger - Botany
Monique Magolske - Water quality and hydrology
Chris Konrad - Comanche Creek hydrology
Becky Rozumowicz - Geology and soils
Barry Scott - Cultural resources
Randy Stegen - Air quality, noise, and traffic

# Appendix A. Comment Letters Received during the Scoping Process


February 6, 1996

Mr. W. John Schmidt, Executive Director
Wildlife Conservation Board (WCB)
801 K Street, Suite 806
Sacramento, CA 95814

Dear John,

As you know, the WCB will be meeting this Thursday, February 8, to discuss the M & T/ Parrott Pumping Station and Fish Screen Project (agenda item #18). The Trust has a long-standing interest in this project and is hoping to have a representative at your meeting to discuss the Trust's concerns relative to this project. Unfortunately, it is unclear who that representative will be at this time. Due to a medical appointment for my daughter in San Francisco that same day, I'm afraid I will not be able to be that representative. There is a good chance, in fact, that we may not be able to have anyone in attendance. Therefore, I present our concerns below and request that you share them with the WCB on February 8.

The Trust believes that this project should not be approved until both the environmental review and the water rights agreement (referenced in the first paragraph on page 38 of the February 8 Agenda) have been subject to public scrutiny. Until those two documents have been subject to such review, the Trust believes that WCB funding for the project should be deferred.

In sum, the Trust is hereby requesting that the WCB postpone consideration of this project until their next regularly scheduled meeting. Based on conversations with a variety of parties, it is our belief that both of the documents mentioned above will be available for public review within that time.

In ending, I would like to assure both you and your staff that the Trust does not oppose this project per se. However, we do want to make sure that all the cards are on the table before public monies are spent in a fashion that will obviously benefit several very large agricultural interests who have yet to have their financial contributions to this project clearly identified.

Sincerely,

John B. Marz
Chair, Board of Directors

cc: Interested Parties

Earth Share of California
P.O. Box 3566, Chico, CA 95927
(916) 345-4050

2/5/96

Mr W John Schmict
Wildlife Conservation Board
801 K Street
Sacramento 95814

Dear Sir:

I am quite concerned with your project of moving a pumping station and decreasing the flow of water down Edgar Slough.

1. I have never seen an environmental evaluation of this project. Has an environmental impact statement been issued?
2. Some of the items that need to be addressed are;
 a. What is the environmental cost of pumping vs the cost of gravity flow water?
 b. What about the environmental impact of the loss of wetlands and wood duck habitat along Edgar Slough when flows are decreased?
 c. Has the question been addressed on how the water will reach the Sacramento River through the Butte Sink in dry years?
 d. Since the City of Chico uses Edgar Slough for flood control, will the decrease in flow increase the respective contamination of the remaining water in the watercourse?
 e. I have a water right on the ditch. How will this be affected?

I feel that you are moving too fast with too little information to the people involved

Sincerely,

Frank Solinsky
po box 1511
Chico 95927

**CALIFORNIA SPORTFISHING PROTECTION ALLIANCE**
**P.O. BOX 357**
**QUINCY, CALIFORNIA 95971**

Jones and Stokes Associates, Inc. January 8, 1995
2600 V Street, Suite 100
Sacramento, CA 95818

Re: Big Chico Creek; Relocation of M&T Pumps; Proposed CEQA and NEPA.

The California Sportfishing Protection Alliance were unable to attend the recent meeting in Chico, California, regarding the proposed initial study (CEQA) and environmental assessment (NEPA) being prepared by your company for the proposed relocation of the M&T Pumps from Big Chico Creek to the Sacramento River.

Please place the CSPA on the mailing list and forward a copy of the initial study and environmental assessment for the proposed project. Also, please provide the CSPA with the following information:

1. A list of the federal, state and local agencies, including interested parties that were provided with a copy of the Notice of Preparation (CEQA) for the subject project;

2. A list of the federal, state and local agencies, including interested parties that were provided with a copy of the Scoping Letter (NEPA) for the subject project;

3. A copy of the findings that required that an initial study and an environmental assessment would be prepared for the subject project and not an Environmental Impact Report or an Environmental Impact Statement and/or a combined EIR/EIS document for the subject project;

4. Information regarding what agencies are the lead agency and responsible agency under CEQA for the proposed project;

5. Information regarding what agency is the lead agency under NEPA for the subject project;

6. Information regarding whether the public will have the opportunity to provide written comments regarding the environmental information and environmental issues which will be studied in both the initial study and the environmental assessment for the subject project;

7. It is our understanding that the proposed relocation of the M&T Pumps will increase the capacity of diversion from 135 cfs to 150 cfs. A review of the SWRCB water rights data shows that M&T has six (6) appropriative rights, of which two (2) are permitted and four (4) are licensed with the SWRCB. Those two permitted rights are from Big Butte Creek. Those four licensed diversion are from Butte Creek and the Sacramento River. However, we could not find any rights that M&T may have under the name of M&T for Big Chico Creek. We need information from your company regarding whether M&T will file a petition to change the existing point of diversion; and whether M&T will file a new water right application for the increased diversion of 15 cfs of water. Also, the petition and application water rights process should also require a CEQA document.

The SWRCB records shows as follows:

ADJUD 008565
Name: M & T Incorporated
Source - Big Butte Creek
Direct Diversion Rate - 50 cfs
Use - Irrigation
Storage - 0
Direct Diversion Season - April 1 to June 1
Status - Permitted Right
Mandatory Fish Flow Requirements - 0

ADJUD 009735
Name: M & T Incorporated
Source - Big Butte Creek
Direct Diversion Rate - 50 cfs
Use - Irrigation
Storage - 0
Direct Diversion Season - June 1 to October 15
Status - Permitted Right
Mandatory Fish Flow Requirements - 0

APPLICATION 005109
Name: M & T Incorporated
Source - Butte Creek
Direct Diversion Rate - 20 cfs
Use - Irrigation
Storage - 0
Direct Diversion Season - January 1 to December 31
Status - Licensed Right
Mandatory Fish Flow Requirements - 0

APPLICATION 008188
Name: M & T Incorporated
Source - Butte Creek
Direct Diversion Rate - 100 cfs
Use - Irrigation and Stockwatering
Storage - 0

Direct Diversion Season - January 1 to December 31
Status - Licensed Right
Mandatory Fish Flow Requirements - 0

APPLICATION 008213
Name: M & T Incorporated
Source - Sacramento River
Direct Diversion Rate - 3 cfs
Use - Irrigation
Storage - 0
Direct Diversion Season - April 1 to December 30
Status - Licensed Right
Mandatory Fish Flow Requirements - 0

APPLICATION 015866
Name: M & T Incorporated
Source - Butte Creek
Direct Diversion Rate - 5.9 cfs
Use - Irrigation and Stockwatering
Storage - 0
Direct Diversion Season - March 1 to July 15
Status - Licensed Right
Mandatory Fish Flow Requirements - 0

We reference List of Current Water Right Holders and New Applicants Within The San Francisco Bay/Sacramento-San Joaquin Delta Hydrologic Basin; Volume 1; State Water Resources Control Board; March 16, 1987.

We reference Inventory of Instream Flow Requirements Related to Stream Diversions; Department of Water Resources; Bulletin 216; December 1982.

8. Please forward a copy of the intitial study and the environmental assessment, including the information requested in this letter to:

Bob Baiocchi, Consultant
For: California Sportfishing Protection Alliance
P.O. Box 357
Quincy, CA 95971

A written response is appreciated.

Bob Baiocchi

Robert J. Baiocchi, Consultant
For: California Sportfishing Protection Alliance
P.O. Box 357
Quincy, CA 95971
Bus Tel: 916-836-1115 (Graeagle Office) or 916-283-3767 (CSPA Quincy Office) or 916-283-1007 (Law Office)

cc: Edward Anton, Chief
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

John Merz, Chairman
Sacramento River Preservation Trust
P.O. Box 5366
Chico, CA 95927

Jim Crenshaw, President
California Sportfishing Protection Alliance
1248 East Oak Avenue, Suite "D"
Woodland, CA 95695

Bill Jennings, Chairman
California Sportfishing Protection Alliance
3536 Rainier Avenue
Stockton, CA 95204

Mike Jackson, Attorney-at-Law
P.O. Drawer 207
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Steve Evans
Friends of the River
128 J Street, 2nd Floor
Sacramento, CA 95814

Lorna Carriveau, CSPA
801 Brookside Drive
Woodland, CA 95695

Ray Cole, CSPA
2874 Calariva Drive
Stockton, CA 95204

Interested Parties

CALIFORNIA SPORTFISHING PROTECTION ALLIANCE
P.O. BOX 357
QUINCY, CALIFORNIA 95971

Mr. L. Ryan Broddrick
Regional Manager
Region II
Department of Fish and Game
1701 Nimbus Road
Rancho Cordova, CA 95670

February 16, 1996

Wayne White State Director
U.S. Fish and Wildlife Service
Department of the Interior
2800 Cottage Way
Sacramento, CA 95825

Re: Big Chico Creek; Relocation of M&T Pumps; Proposed Initial Study and Environmental Assessment; Scoping Comments by the California Sportfishing Protection Alliance.

Dear Gentlemen:

The following are the scoping comments of the CSPA regarding the above mentioned proposed project:

**CEQA and NEPA - The Lead Agencies**

1. The California Department of Fish and Game (hereinafter known as "CDFG") and the U.S. Fish and Wildlife Service (hereinafter known as "USFWS") are proposing the proposed M&T Pump Relocation Project on Big Chico Creek. The lead agency under CEQA is CDFG. The lead agency under NEPA is USFWS. CDFG and USFWS are proposing a joint CEQA/NEPA. Consequently, it has been determined by the CDFG and USFWS to prepare an Initial Study/Environmental Assessment for the proposed project.

**Description of the Proposed Project**

2. A description of the proposed project was not made available to the public in a written document which enabled the public to submit written scoping comments to the lead agencies (CDFG/USFWS) and its consultant (Jones & Stokes).

The proposed project was developed by public agencies and private diverters behind closed doors without any public imput. Considering the fact that the waters of the State of California belong to the people, and the public trust

resources are the property of the people, that closed door process was unreasonable. We reference the Butte Creek Water Supply and Fish Passage Study prepared by the USBR, dated June 1995.

**The Proposed Project - Pre-Project Evaluation - USFWS Rating**

3. According to the USFWS working paper of May, 1995, "a significant problem affecting the Big Chico Creek anadromous fishery results from diversions at the M&T Ranch pumps located at the end of a forebay just downstream of the Chico-Mud Creek confluence (Paul ward, DFG, Red Bluff, and Paul Maslin, CSU, Chico, pers. comms.) The five unscreened pumps at this diversion have a combined pumping capacity of approximately 135 cfs, whick often exceeds the creek flow. The resultant reversal of flow in the lower 0.75 mile of creek would be expected to divert outmigrants juveniles and make it unlikely that upstream migrating adults will find the creek. (See discussion under "Upstream passage of adults".) Even when the creek is not reversed, these unscreened pumps are believed to take many juvenile salmon, both from Big Chico Creek and from the Sacramento River, because many juveniles move into the lower Chico, Mud, and Rock Creeks for rearing (Maslin and McKinney). The M&T Ranch has been cooperating in trying to find alternative water and leave the pumps off at critical times (Herringer pers. comm.). However, data obtained by Julie Brown (pers. comm.) and Maslin and McKinney (1994) show that critical times are more extensive than originally thought and vary from year to year."

We reference Working Paper on Restoration Needs; Habitat Restoration Actions to Double Natural Production of Anadromous Fish in the Central Valley of California; Volume 3; Prepared for the U.S. Fish and Wildlife Service under the direction of the Anadromous Fish Restoration Program Core Group; at page 3-Xb-68.

In the USFWS Draft Restoration Plan of December 6, 1995, seven (7) action items were identified to correct adverse impacts to spring-run chinook salmon (all life stages) in Big Chico Creek. <u>The relocation and screening of the M&T Ranch diversion was rated medium in priority by the USFWS. However, four other action items were rated higher than the proposed project, and two other action items were rated on the same level of the proposed project</u>. Some of those action items are addressed in this scoping letter under "cumulative impacts". Disclose this information in the Initial Study and Environmental Assessment and discuss why the four (4) action items with higher priority rating were not proposed in conjuction with the proposed project or not proposed at all. (Our Emphasis)

We reference Draft Anadromous Fish Restoration Plan; A Plan to Increase Natural Production of Anadromous Fish in the Central Valley of California; Prepared for the Secretary of the Interior by the U.S. Fish and Wildlife Service with assistance from the Anadromous Fish Restoration Program Core Group under the authority of the Central Valley Project Improvement Act; December 6, 1995; at pages 48 and 49.

**NEPA Requirement - Environmental Assessment - Scoping Process**

4. NEPA requires public scoping regarding any project proposed by a federal agency. There are two (2) federal agencies involved in the proposed project. Those agencies are the USFWS and the U.S. Bureau of Reclamation (hereinafter known as "USBR"). Both agencies have developed over time a long list of interested parties regarding proposed projects involving chinook salmon and water rights. The CSPA is one of those interested parties. The failure of the USFWS and USBR to allow for a written scoping process for the proposed project violated the public scoping process under NEPA.

**Butte Creek Water Supply and Fish Passage Study - U.S. Bureau of Reclamation - June 1995**

5. The proposed project which is the relocation of the M&T Pumps on Big Chico Creek, the screening of the new pumps, and increased water diversion from the Sacramento River was developed by a Steering Committee. The Steering Committee consisted of: USBR, CDFG, California Department of Water Resources, Western Canal Water District, and M&T Chico Ranch. The chair of the steering was the USBR. The USFWS was not a member of the steering committee.

The proposed M&T Project is one part of the about 13 individual projects shown under "Action Plan 1" in the Butte Creek Water Supply and Fish Passage Study prepared by the USBR in June 1995. The other parts of the projects under "Action Plan 1" are being prepared separately under one project under CEQA and NEPA, with different lead agencies for each project. Consequently, the CDFG and USFWS are parties to the piecemealing of projects on Butte Creek and Big Chico Creek without allowing for written scoping comments from the public based on project descriptions.

**Water Rights - State Water Resources Control Board**

6. Without a description of the proposed project it is difficult to determine the complexed water right issues involved with the M&T Project and the Butte Creek Project, and how the projects relate to each other. However, it appears that the USBR will provide additional water for rediversion at the new M&T Pumps on the Sacramento River. In the event the USBR will allow for CVP water to be rediverted

at the new M&T Pumps, the USBR will need to file a petition with the State Water Resources Control Board for said rediversion of water, including a new purpose of use and place of use. The CSPA plan to file a formal protest against the USBR's petition for rediversion. i.e. Rediverion of water at the CHO on Stony Creek.

The Initial Study and Environmental Assessment should disclose the existing water rights and the validity of the water rights of the M&T Ranch to divert water from Big Chico Creek, and also from the Sacramento River (reversed flows) under the existing project conditions. Include in the disclosure the following M&T diversion and water use information and data: (1) monthly diversion in acre-feet from Big Chico Creek; (2) monthly diversion in acre-feet from the Sacramento River; (3) the season of diversion from Big Chico Creek; (4) the season of diversion from the Sacramento River; (5) the mandatory daily fish flow requirements below the point of diversion on Big Chico Creek; (6) the purpose of use from water diverted from Big Chico Creek; (7) the purpose of use from the water diverted from the Sacramento River; (8) the places of use from water diverted from Big Chico Creek; (9) the places of use from the water diverted from the Sacramento River; and (10) the combined monthly diversions in acre-feet from Butte Creek and its tributaries, Big Chico Creek and its tributaries, and the Sacramento River by M&T Ranch.

The M&T Project may require additional approval from the State Water Resources Control Board (hereinafter known as "SWRCB"). The SWRCB has a CEQA process. The proposed Initial Study must comply to the SWRCB CEQA requirements. In the event the Initial Study fails to provide the necessary water right data and information, hydrologic data and information, and environmental information, it may be necessary for another Initial Study and Environmental Assessment to be prepared.

Consequently, we are requesting the Initial Study and Environmental Assessment for the proposed project include water right information and data, including hydrologic information and data that complys with the SWRCB CEQA process.

The construction of the proposed project cannot commence until the expressed approval of the SWRCB, in the event applications for water rights and/or water right petitions are necessary and needed for the proposed project.

**The Initial Study - California Environmental Quality Act and its Guidelines**

7. The CDFG is the lead agency for the proposed project under CEQA and its Guidelines. It is unknown what agency is

the responsible agency under CEQA and its Guidelines because no written notice of the proposed project was submitted by the lead agency for public review and written comments. It is our understanding CDFG will have prepared an Initial Study for the proposed project by Jones & Stokes, and that an Enviromental Assessment will be prepared by Jones & Stokes for the USFWS for the proposed project. (per. comm. Doug Brewer, Jones and Stokes, and Bob Baiocchi, CSPA)

8. The initial study is the preliminary analysis that the lead agency prepares in order to determine whether to prepare a Negative Declaration or an Environmental Impact Report (EIR). We reference CEQA Guidelines, Section 15065 and Section 15063. However, in this case it appears the lead agency (CDFG) has already made the decision to prepare a negative declaration before completing the initial study.

When the initial study concludes that no EIR is necessary, the preliminary document must also "[p]rovide the documentation of the factual basis" for concluding that a negative declaration will suffice. Any person, such as the CSPA, may submit any information in any form to assist a lead agency in preparing an initial study. We reference CEQA Guidelines, Section 15063, subd. (e).) (Our Emphasis)

In some situations, a lead agency must defer the preparation of an initial study until the agency has developed a project discription based on preliminary consultants' reports, staff recommendations, public imput, and/or direction from appointed or elected decisionmakers. We reference Uhler v. City of Encinitas (4th Dist. 1991) 227 Cal.App.3d 795, 799-804 [278 Cal.Rptr. 157] and Stand Tall on Principles v. Shasta Union High School District (3d Dist. 1991) 235 Cal.App.3d 772 [1 cal.Rptr.2d 107].

To date the CSPA has not reviewed a project description prepared by the CDFG for the proposed project. The Initial Study and Environmental Assessment should include a copy of the project description that was prepared by CDFG prior to the commencement of the preparation of the CEQA and NEPA documents.

9. CDFG has determined that an initial study will be prepared for the proposed project. CDFG must consult informally with any responsible agencies and trustee agencies responsible for resources affected by the project. We reference Public Resources Code, Section 21080.3; CEQA Guidelines, Section 15063 subd.(g).

The CDFG should consult in writing with the Division of Water Rights (SWRCB), and that consultation should be shown in the Initial Study and the Environmental Assessment.

10. The initial study should contain an "environmental checklist form" that will satisfy the legal requirement of CEQA. However, the use of the "environmental checklist form" without supporting factual data and/or explanation is an unadequate basis for deciding to prepare a negative declaration. We reference Citizens Association for Sensible Development of Bishop Area v. County of Inyo (4th Dist. 1985) 172 Cal.App.3d. 151 [217 Cal.Rptr. 893; also Sundstrom v. County of Mendocino (1st Dist. 1988); and Topanga Association for a Scenic Community v. County of Los Angeles (1974).

An initial study is inadequate if it omits necessary information and inaccurately characterizes the proposed project. We reference Christward Ministry v. Superior Court (4th Dist. 1986) 184 Cal.App.3d 180, 197 [228 Cal,Rptr.868].

The Initial Study should include supporting factual information and data which supports the environmental checklist (Yes, No, Maybe, is not good enough).

**Cumulative Impacts - CEQA - The Heart of the CSPA Concerns With the Proposed Project**

11. The proposed project proposes to benefit spring-run chinook salmon by reducing entrainment to juvenile fish at the existing M&T Pumps by relocating the pumps and constructing state-of-the-arts fish screens. However, existing projects in the Big Chico Creek watershed are having cumulative impacts to spring-run chinook salmon. Though the proposed project may benefit spring-run chinook salmon juveniles at the proposed new point of relocation, the upstream cumulative impacts to spring-run (all life stages) in the Big Chico Creek watershed have the potential to reduce the benefits from the proposed project significantly, with reduced and limited beneficial improvements.

Consequently, the Initial Study and Environmental Assessment for the proposed project should disclose and evaluate the cumulative impacts to the spring-run chinook salmon resources and other public trust resources of the Big Chico Creek watershed resulting from existing projects and future projects in conjunction with the proposed project in the Big Chico Creek watershed.

The USFWS is proposing potential projects in the Big Chico Creek watershed to benefit the spring-run chinook salmon. However, without a committment and milestones to construct the projects by the USFWS, including preparing a Big Chico Creek Fish, Wildlife, and Water Use Management Plan, the proposed project may not beneficially improve environmental conditions for spring-run chinook salmon and other public trust resources of the Big Chico Creek watershed.

The duty to evaluate adverse environmental impacts does not depend upon a showing by the public [CSPA], or even other public agencies, that there will be impacts. The project proponent [CDFG/USFWS] must present substantial evidence from which a reasoned conclusion may be reached that there will not be significant adverse impacts. We reference Laurel Heights, supra 47 Cal 3d. at 405-406. The duty to provide evidence rests with the lead agency [CDFG/USFWS], and not with the public [CSPA]. Sundstrom v. County of Mendocino (1988) 202 Cal.App.3d 296, 304-305 Section 21002, Section 21080.5(d)(2)(1).

The burden is not shifted at the administrative level to those [CSPA] challenging a project to present evidence of adverse impacts before the agencies [CDFG/USFWS] can be required to assess whether such impacts exists. The failure to assemble adequate information for a meaningfully environmental review cannot be used to justify a finding of no significant impact. We reference Sundstrom v. County of Mendocino, supra, 202 Cal.App.3d at 311-312; Christward Ministry v. Superior Court (1986) 184 CalApp.ed. 180, 197 and Laurel Heights, supra, 47 Cal.ed at 405. Otherwise, the agencies [CDFG/USFWS] would be allowed to avoid an attack on the adequacy of the information simply by not requiring the submission of such information. We reference Kings County, supra, 221 Cal.App.ed at 723.

There are significant cumulative impacts to chinook salmon in the Butte Creek watershed which must be disclosed and evaluated in the Initial Study and Environmental Assessment to determine whether an EIR and EIS should be prepared.

A draft EIR must discuss "cumulative impacts" when they are significant. (CEQA Guidelines, section 15130, subd. (a).) These are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." (CEQA Guidelines, section 15355; see also section 21083, subd. (b).) "Individual effects may be changes resulting from a single project or a number of separate projects." (CEQA Guidelines, section 15355, subd. (a).) "The cumulative impacts from several projects is the change in the environment which results from the incremental impact of the project when added to the closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." (CEQA Guidelines, section 15355, subd. (b).)

A legally adequate "cumulative impacts analysis" thus is an analysis of a particular project viewed over time and in conjunction with other related past, present, and reasonably

foreseeable probable projects whose impacts might compound or interrelate with those of the project at hand. Such an analysis "assess cumulative damage as a whole greater than the sum of its parts." (Environmental Protection Information Center v. Johnson (1st Dist. 1985) 170 Cal.App.3d 604,625 [216 Cal,Rptr. 502].) Such an analysis is necessary because [t]he full environmental impact of a proposed.... action cannot be gauged in a vacuum." (Whitman v. Board of Supervisors (2d Dist. 1979) 88 Cal.App.3d 397, 408 [15] Cal.Rptr. 866), quoting Akers v. Resor (W.D. Tenn. 1978) 443 F.Supp. 1355, 1360.) " [A]n agency may not....[treat] a project as an isolated "single shot' venture in the face of persuasive evidence that it is but one of several substantially similar operations....To ignore the prospective cumulative harm under such circumstances could be to risk ecological disaster." (Whitman, supra, 88 Cal.App.3d at 408 [151] Cal.Rptr. 866], quoting Natural Resources Defense Council v. Callaway (2d Cir. 1975) 524 F.2d 79,88.)

Unless cumulative impacts are analyzed, agencies tend to commit resources to a course of action before understanding its long-term impacts. Thus, a proper cumulative impact analysis must be prepared "before a project gains irreversible momentum." (City of Antioch v. City Council (1st Dist. 1986) 187 Cal.App.3d 1325, 1333 [232 Cal. Rptr. 507], citing Bozung v. Local Agency Formation Commission (1975) 13 Cal.3d 263, 282 [118 Cal.Rptr. 249].)

One court has described as follows the danger of approving projects without first preparing adequate cumulative impact analyses:

"The purpose of this requirement is obvious: consideration of the effects of a project or projects as if no other existed would encourage the piecemeal approval of several projects that taken together, could overwhelm the natural environment and disastrously overburden the man-made infrastructure and vital community services. This would effectively defeat CEQA's mandate to review the actual effect of the project upon the environment." (Las Virgenes Homeowners Federation, Inc. v. County of Los Angeles (2d Dist. 1986) 177 Cal.App.3d 300, 306 [223 Cal.Rptr. 18].)

Like every aspect of CEQA, "[t]he requirement for a cumulative impact analysis must be interpreted so as to afford the fullest possible protection of the environment within the reasonable scope of the statutory and regulatory language." (Citizens to Preserve the Ojai v. Board of Supervisors (2d Dist. 1985) 176 Cal.App.3d 421, 431-432 [222 Cal.Rptr. 247], citing Friends of Mammoth v. Board of Supervisors (1972) 8 Cal.3d 247, 259 [104 Cal.Rptr. 761].) In Citizens to Preserve the Ojai, the Court explained:

"[I]t is vitally important that an EIR avoid minimizing the cumulative impacts. Rather, it must reflect a conscientious effort to provide public agencies and the general public with adequate and relevant detailed information about them. A cumulative impact analysis which understates information concerning the severity and significance of cumulative impacts impedes meaningful public discussion and skews the decisionmaker's perspective concerning the environmental consequences of a project, the necessity for mitigation measures, and the appropriateness of project approval. An inadequate cumulative impact analysis does not demonstrate to an apprehensive citizenry that the governmental decisionmaker has in fact fully analyzed and considered the environmental consequences of its action." (176 Cal.App.3d at 431 [222 Cal.rptr.247]. quoting San Franciscans for Reasonable Growth v. City and County of San Francisco ("SFRG 1") (1st Dist. 1984) 151 Cal.App.3d 61,79[198 Cal.Rptr. 634].)

"Past, present, and reasonably future projects" include not only projects under construction, but also related "unapproved project currently under environmental review". Some project may be "reasonably foreseeable" even though they may never be built and approved. The Initial Study should disclose and evaluate the cumulative impacts to the environment from the proposed project, existing projects and future projects. What matters is whether they [projects] appear foreseeable at the time of EIR preparation. We reference CEQA Guidelines Section 15130. (City of Antioch v. City Council (1st Dist. 1986) 187 Cal.App.3d 1325, 1333 [232 Cal. Rptr. 507].); see also Mountain Lion Coalition v. California Fish and Game Commission (1st Dist. 1989) 214 Cal.App.3d 1043, 1048, 1050 [263 Cal.Rptr. 104].)

By far the most important recent case on cumulative impacts is Kings County Farm Bureau et al. v. City of Hanford (5th Dist. 1990) 221 Cal. App. 3d 692; 222 Cal. App. 3d 516a [270 Cal. Rptr. 650] The Court of Appeal held inadequate the cumulative impact analysis prepared for an EIR for a proposed coal-fired cogeneration power plant. The EIR's approach to assessing the significance of cumulative air quality impacts was based on a misunderstanding of the applicable legal requirements.

We believe the failure of the Initial Study (CDFG) and Environmental Assessment (USFWS) to disclose, evaluate, and mitigate cumulative impacts to spring-run chinook salmon resources from existing projects in the Big Chico Creek watershed renders the Initial Study not in compliance with CEQA and its Guidelines, and the Environmental Assessment not in compliance with NEPA. The CSPA believes that full public disclosure is needed and necessary in this process given the

set of circumstances that this project was developed privately and avoiding a written NEPA public scoping process.

**The Cumulative Impacts - Big Chico Creek Watershed**

**Five Mile Recreation Area (Bidwell Park) - Big Chico Creek and Lindo Channel**

12. At the Five-Mile Recreation Area (Bidwell Park), a 1963 Corps flood control project splits Big Chico Creek floodflows into three channels. The project provides flood control protection for the City of Chico. Box culverts were designed to limit the maximum flow that can pass down Big Chico Creek and Lindo Channel to 1,500 cfs and 6,000 cfs, respectfully. Flows in excess of 7,500 cfs spill over an open weir through the Sycamore Diversion into Mud Creek. The California Department of Water Resources is currently investigating [May, 1995] whether the highflow split still meets design capacity. A base flow was also designed into the 1963 flood control project. The combined width of the box cilverts in the Big Chico Creek channel is 20 feet. A low concrete weir, with a 12-foot-wide notch at the same elevation as the bottom of the Chico box culverts, was constructed across the channel leading to the Lindo Channel box culvert and Sycamore weir. This design was intended to split 12/32 of base flow down Lindo Channel, leaving 20/32 in Big Chico Creek. Design of the flow control structures creates an upstream stilling basin during flood events. This causes gravel to fall out above the diversion, creating a gravel bar that blocks subsequent low flows to Lindo Channel unless gravel is mechanically removed following each high water event. Because of variability in size and shape of the gravel bar, the minimum total flow that still has some spillage down Lindo Channel varies. Lindo Channel has often ceased to flow while total flow was still in excess of 200 cfs, sometimes trapping adults and downstream migrants several times during a season. (Our Emphasis)

It clearly shows that the 1963 Army Corps Flood Control Project violated California Fish and Game Code 5937 for Lindo Channel. The CDFG is required by Fish and Game Code 702 to enmforce Section 5937, which is mandatory.

Disclose and evaluate the above mentioned cumulative impacts to spring-run chinook salmon in the Initial Study and Environmental Assessment. Prepare a Big Chico Creek Spring-Run Chinook Salmon Cumulative Impact Analysis and include this analysis in the Initial Study and Environmental Assessment. Include milestones (timeframe) in the Initial Study and Environmental Assessment, and disclose when the above mentioned cumulative impacts will be corrected by CDFG, USFWS, and other local, state, and federal agencies agencies

in conjunction with full public participation, and CEQA and NEPA compliance.

**Upstream Passage of Adult Spring-Run Chinook Salmon - Existing M&T Pumps**

13. When flow is reversed in the lower 0.75 mile of Big Chico Creek by the existing M&T Pumps, upstream migrating adult spring-run chinook salmon are unlikely to find the creek. This should be disclosed in the Initial Study and Environmental Assessment, and an evaluation should be made to determine whether the proposed relocation of the M&T Pumps has the potential to affect spring-run chinook salmon migrating into Big Chico Creek during the diversion season.

Disclose and evaluate the above mentioned potential direct impact to spring-run chinook salmon in the Initial Study and Environmental Assessment.

**Upstream Passage of Adult Spring-Run Chinook Salmon - Upper Bidwell Park - Iron Canyon Fish Ladder**

14. At about Stream Mile 13, in Upper Bidwell Park, Big Chico Creek has cut through the Lovejoy Basalt into softer marine sandstone, causing jumbles of house-size boulders to tumble into the channel, making upstream passage of salmonids difficult. The Iron Canyon fish ladder, build in the late 1950's to facilitate fish passage through this zone, has been severely damaged [May 1995], delaying or preventing upstream migration of spring-run chinook salmon in low-flow years and thereby forcing the adult spring-run to hold or even oversummer downstream of the ladder where temperatures, human harassment, and poaching are serious problems. (Our Emphasis)

Disclose and evaluate the above mentioned cumulative impacts to spring-run chinook salmon in the Initial Study and Environmental Assessment. Prepare a Big Chico Creek Spring-Run Chinook Salmon Cumulative Impact Analysis and include this analysis in the Initial Study and Environmental Assessment. Include milestones (timeframe) in the Initial Study and Environmental Assessment, and disclose when the above mentioned cumulative impacts will be corrected by CDFG, USFWS, and other local, state, and federal agencies agencies in conjunction with full public participation, and CEQA and NEPA compliance.

**Upstream Passage of Adult Spring-Run Chinook Salmon - Five Mile Recreation Area Flood Control Project**

15. The Five-Mile Recreation Area Flood Control Project also delays or impedes upstream movement of adult spring-run chinook salmon. Downcutting (approximately eight (8) feet) immediately below the Lindo culvert has resulted in

fracturing of the concrete apron, making fish passage difficult in situations other than high flows. (Our Emphasis)

Disclose and evaluate the above mentioned cumulative impacts to spring-run chinook salmon in the Initial Study and Environmental Assessment. Prepare a Big Chico Creek Spring-Run Chinook Salmon Cumulative Impact Analysis and include this analysis in the Initial Study and Environmental Assessment. Include milestones (timeframe) in the Initial Study and Environmental Assessment, and disclose when the above mentioned cumulative impacts will be corrected by CDFG, USFWS, and other local, state, and federal agencies agencies in conjunction with full public participation, and CEQA and NEPA compliance.

**Poor Spawning Habitat in Lower Big Chico Creek - Spawning Gravel**

16. The Five-Mile Recreation Area Flood Control Project also impedes gravel movement downstream. Only reduced amounts of relatively small gravel pass the Big Chico box culverts, very little gravel passes through the Lindo box culverts, and no gravel pases over Sycamore weir. Poor gravel recruitment and absence of flushing flows have resulted in armoring, compaction, and siltation of spawning gravel through the Chico channel. (Our Emphasis)

Disclose and evaluate the above mentioned cumulative impacts to spring-run chinook salmon in the Initial Study and Environmental Assessment. Prepare a Big Chico Creek Spring-Run Chinook Salmon Cumulative Impact Analysis and include this analysis in the Initial Study and Environmental Assessment. Include milestones (timeframe) in the Initial Study and Environmental Assessment, and disclose when the above mentioned cumulative impacts will be corrected by CDFG, USFWS, and other local, state, and federal agencies agencies in conjunction with full public participation, and CEQA and NEPA compliance.

**One-Mile Pool - Big Chico Creek Channel - Violations of State Water Quality Standards - Spawning Gravel**

17. Cleaning of the One-Mile Pool (public swimming pool in Chico Channel) during the summer low flows creates turbidity and silt build-up downstream, causing further deterioration of spawning gravels. Present [May 1995] downstream siltation levels during pool cleaning exceeds standards set up by the California Valley Regional Water Quality Control Board. Lindo Channel is scoured to bedrock from the weir to the Longfellow Bridge, but still has good spawning gravel further downstream [May 1995]. (Our Emphasis)

Disclose and evaluate the above mentioned cumulative impacts to spring-run chinook salmon in the Initial Study and Environmental Assessment. Prepare a Big Chico Creek Spring-Run Chinook Salmon Cumulative Impact Analysis and include this analysis in the Initial Study and Environmental Assessment. Include milestones (timeframe) in the Initial Study and Environmental Assessment, and disclose when the above mentioned cumulative impacts will be corrected by CDFG, USFWS, and other local, state, and federal agencies agencies in conjunction with full public participation, and CEQA and NEPA compliance.

**Mud Creek - Spawning Gravel**

18. The high flow volume of diverted Big Chico Creek flood water has scoured essentially all gravel from Mud Creek downstream of the Sycamore Flood Diversion Channel.

Disclose and evaluate the above mentioned cumulative impacts to spring-run chinook salmon in the Initial Study and Environmental Assessment. Prepare a Big Chico Creek Spring-Run Chinook Salmon Cumulative Impact Analysis and include this analysis in the Initial Study and Environmental Assessment. Include milestones (timeframe) in the Initial Study and Environmental Assessment, and disclose when the above mentioned cumulative impacts will be corrected by CDFG, USFWS, and other local, state, and federal agencies agencies in conjunction with full public participation, and CEQA and NEPA compliance.

**Adult Spring-Run Chinook Salmon - Summer Holding Water Temperatures - Upstream Watershed Cumulative Impacts**

19. <u>There is some evidence that water temperatures in the summer holding reach for spring-run chinook salmon adults, from Iron Canyon to Higgin's Hole, may approach critical levels in late summer, particularly in low-flow years (May 1995)</u>. It is not known if summer water temperatures currently average higher than existed historically when spring-run chinook salmon were more abundant in the creek. <u>Possibly human-induced changes in the upper Big Chico Creek watershed (such as logging, development, grazing, and road building) have altered base flows and summer temperatures, however an upper watershed management plan could correct those environmental problems</u>. (Our Emphasis)

Disclose and evaluate the above mentioned cumulative impacts to spring-run chinook salmon in the Initial Study and Environmental Assessment. Prepare a Big Chico Creek Spring-Run Chinook Salmon Cumulative Impact Analysis and include this analysis in the Initial Study and Environmental Assessment. Include milestones (timeframe) in the Initial Study and Environmental Assessment, and disclose when the

above mentioned cumulative impacts will be corrected by CDFG, USFWS, and other local, state, and federal agencies agencies in conjunction with full public participation, and CEQA and NEPA compliance.

**Spring-Run Chinook Salmon Degraded Rearing Habitat - Mud Creek and Rock Creek**

20. The principal anadromous fisheries reach of Mud Creek, from Highway 99E downstream, has been straightened, levied, and kept free of riparian vegetation by annual controlled burns or herbicide applications to facilitate its function as a flood diversion channel. Consequently, shade and cover are scarce, contributing to critically warm temperatures in late afternoons from mid-April through early May in most years. The high volume of diverted Big Chico Creek floodwater has also scoured this reach of Mud Creek to bedrock or clay, prohibiting salmonid spawning and further reducing diversity for rearing. To add to the problem for fish, existing regulations pertaining to riparian protection and waste disposal are poorly enforced with respect to Mud Creek and Rock Creek. Hazardous materials are often clandestinely dumped from bridges, particularly in Mud Creek, and some land owners along Rock Creek have damaged or eliminated riparian vegetation by bulldozing, burning, or spraying. (Our Emphasis)

Rock Creek has not been modified as a flood channel, but in several reaches has been straightened and levied to maximize agricultural land. These straight, canal-like reaches provide far less habitat for rearing salmonids than do unmodified reaches. Rock Creek receives sporadic inputs of agricultural overflow water between Highway 32 and West Sacramento Avenue. Under certain conditions, this may facilitate outmigration of juveniles.

Mud Creek and Rock Creek dry to intermittent pools as summer approaches. This may be due to water diversions. In years with adequate late-season precipitation, this occurs in May, by which time most juvenile salmon have outmigrated. In low precipitation years, the creeks dry down earlier and many young salmon, particularly fall-run juveniles, are trapped in isolated pools and ultimately devoured by avian predators. (Our Emphasis)

Disclose and evaluate the above mentioned cumulative impacts to spring-run chinook salmon in the Initial Study and Environmental Assessment. Prepare a Big Chico Creek Spring-Run Chinook Salmon Cumulative Impact Analysis and include this analysis in the Initial Study and Environmental Assessment. Include milestones (timeframe) in the Initial Study and Environmental Assessment, and disclose when the

above mentioned cumulative impacts will be corrected by CDFG, USFWS, and other local, state, and federal agencies agencies in conjunction with full public participation, and CEQA and NEPA compliance.

**Water Quality**

21. Storm drain discharges in Big Chico Creek in the City of Chico has the potential to adversely impact water quality, fish and aquatic species and their habitat. Evaluations need to be conducted to determine the condition of water quality, and fish and aquatic species and their habitat below the storm drains, and a management plan need to be implemented to reduce impacts as well as to evaluate and reduce future impacts from future storm drain projects.

The USFWS in its working paper and Draft Restoration Plan did not disclose and address potential water quality problems associated with storm drains in Big Chico Creek in the City of Chico area.

Disclose and evaluate the above mentioned cumulative impacts to water quality, and fish and aquatic species and their habitat in the Initial Study and Environmental Assessment. Prepare a Big Chico Creek Spring-Run Chinook Salmon Cumulative Impact Analysis and include this analysis in the Initial Study and Environmental Assessment. Include milestones (timeframe) in the Initial Study and Environmental Assessment, and disclose when the above mentioned cumulative impacts will be corrected by CDFG, USFWS, and other local, state, and federal agencies agencies in conjunction with full public participation, and CEQA and NEPA compliance.

**Water Quantity**

22. The proposed relocation of the M&T Pumps will allow for the new pumps to divert Sacramento River water. Consequently, the removal of the M&T pumps from Big Chico Creek has the potential to allow for future water appropriations in Big Chico Creek. Future water diversions as a result of the relocation of the M&T Pumps to the Sacramento River has the potential to cause adverse impacts to spring-run chinook salmon (all life stages), including adult upstream migration and downstream juvenile outmigration, and other public trust resources in Big Chico Creek.

The Initial Study and Environmental Assessment should disclose and describe how the CDFG and USFWS will prevent other parties from obtaining water rights and diverting water that would otherwise been diverted by the existing M&T Pumps.

The Initial Study and Environmental Assessment should disclose the existing daily and monthly diversions from Big Chico Creek by the M&T Pumps.

Other existing water diversions in the Big Chico Creek watershed may be a limiting factor to the improvement of spring-run chinook salmon population levels and habitat during certain water year types and low water conditions. There is the potential that existing water diversions may not have mandatory daily minimum fish flow requirements, and diversions may not be sceened to prevent juvenile spring-run and other fish and aquatic species from being entrained and harmed.

The Initial Study and Environmental Assessment should disclose the number of diversions and water related projects, the season of those diversions, and the amount of water diverted for other beneficial uses in the Big Chico Creek watershed. This disclosure should include the mandatory daily minimum flow requirements at all water diversions and water related projects in the Big Chico Creek watershed.

**Proposed Relocation of the M&T Pumps - The New Fish Screen**

23. It is our understanding the proposed new M&T Pumps will have state-of-the arts fish screens to prevent the entrainment of juvenile spring-run chinook salmon and other fish species.

Disclose in the Initial Study and Environmental Assessment the number (estimate) of juvenile spring-run chinook salmon which are entrained annually into the existing M&T Pumps. Disclose in the Initial Study and Environmental Assessment the cumulative impacts to juvenile spring-run chinook salmon in numbers (estimates) of fish trapped and/or destroyed at other upstream projects and areas in the Big Chico Creek watershed. Determine the relationship with the loss of juvenile fish at the existing M&T Pumps, and the losses of juvenile fish at other upstreams projects and areas. In other words, does the entrainment at the existing M&T Pumps show a greater loss of juvenile fish or are there greater losses in the upstream areas.

**Adult Chinook Salmon Attraction Flows - New M&T Pumps**

24. The proposed relocation of the M&T pumps has the potential to attract adult chinook salmon that would be migrating into Big Chico Creek, as well as attracting other races of chinook salmon who are migrating up the Sacramento River. Attraction of chinook salmon has the potential to delay upstream migration resulting in adverse impacts to them.

Disclose and evaluate this attraction issue in the Initial Study and Environmental Assessment.

**M&T Diversion and Irrigation System**

25. Disclose in the Initial Study and Environmental Assessment, under existing conditions, the method of diversion and irrigation, and whether the M&T irrigation system is lined to prevent the loss of surface flows from the point of diversion to the points of use. i.e. seepage and leakage.

Disclose and evaluate in the Initial Study and Environmental Assessment whether the proposed project will include the lining of the existing M&T diversion and irrigation system to prevent the waste of the state's water. Disclose the amount of water loss annually from seepage and leakage under existing conditions, and under project conditions.

Disclose in the Initial Study and Environmental Assessment whether under the proposed project conditions specific conservation measures will be implemented by M&T to conserve water.

**Cumulative Impact - Chinook Salmon Lower Sacramento River and Bay Delta Estuary - Monitoring Program**

26. The proposed project may benefit spring-run juvenile fish and allow the young fish to migrate from Big Chico Creek down the Sacramento River into the Bay Delta Estuary and to the Pacific Ocean, and return as adults to the Big Chico Creek watershed. The number of juvenile spring-run chinook salmon lost at the new M&T Pumps can be documented, based on the efficiency of the new screens. However, fish screens are not 100% effective. In order to determine the success to spring-run chinook salmon from relocating the M&T Pumps with state of the arts fish screens, there needs to be a monitoring program which identifys the number of returning adults into the Big Chico Creek watershed. The benefits and success of the proposed project is the number of adult spring-run returning from the Pacific Ocean to Big Chico Creek, and not simply providing for the young fish to escape being entrained at the M&T Pumps.

The benefits that may be envisioned by the CDFG and USFWS from the proposed project may not occur because of the upstream cumulative impacts to spring-run chinook salmon (all life stages) noted in this scoping letter.

Disclose and evaluate the above mentioned issues and include a juvenile and adult spring-run chinook salmon monitoring program in the Initial Study and Environmental Assessment.

**Existing Fish Species Entrained in the M&T Diversion and Irrigation System**

27. The Initial Study and Environmental Assessment should disclose, evaluate, and mitigate the cumulative impacts to existing fish species already entrained in the existing M&T diversion and irrigation system as a result of the proposed project. i.e. How will the fish species presently entrained in the diversion and irrigation system be protected and managed by CDFG, USFWS, and M&T during the post project period. It should be noted that fish are the property of the people of California, and are trust assets.

**Alternatives**

28. Both CSQA and NEPA requires a range of alternatives be evaluated including the "no project" alternative. The proposed project may benefit the juvenile spring-run chinook salmon, however an alternative which includes additional beneficial projects and measures to improve spring-run chinook salmon (all life stages) and other public trust resources in the Big Chico Creek watershed would be far more beneficial, and should be implemented.

The CSPA recommends that the Initial Study and Environmental Assessment evaluate the following alternatives:

An alternative which includes a Fish, Wildlife, and Water Use Management Plan for the Big Chico Creek watershed. This alternative would also include correcting the upstream cumulative impacts as noted in this scoping letter. As envisioned by the CSPA, under this alternative, the proposed project would be implemented followed by the development of a final management plan. The management plan would include correction actions to "fix" the upstream cumulative impacts to spring-run chinook salmon, and correct other public trust resource problems such as water quantity, water quality, riparian habitat, aquatic species, other fish species and their habitat, wildlife species and their habitat, sedimentation, spawning gravel, threatened and endangered species and their habitat, etc. This alternative would include public involvement and the formation of a Big Chico Creek Task Force made up of members of the public, environmental groups and other local, state, and federal agencies, including land owners and water diverters.

Another alternative that should be disclosed and evaluated in the Initial Study and Environmental Assessment is the shutting down of the existing M&T Pumps during the downstream migration period of juvenile spring-run chinook salmon in conjunction with correcting the upstream cumulative impacts to spring-run chinook salmon as noted in this scoping letter.

**Listing of Spring-Run Chinook Salmon**

29. Disclose in the Initial Study and EA the effects to activities adversely affecting spring-run chinook salmon (all life stages) in the Big Chico Creek watershed as a result of the listing of spring-run chinook salmon under the federal and state Endangered Species Acts.

**The Draft Anadromous Fish Restoration Plan - U.S. Department of the Interior**

30. The draft Anadromous Fish Restoration Plan prepared by the Department of the Interior for the USFWS provides potential actions for Big Chico Creek as well as Butte Creek. The draft plan for Big Chico Creek provides seven (7) action items (proposed projects) and two (2) evaluation items. Excluding the proposed project, the other six action items (projects) in the Restoration Plan do not have firm committments and firm milestones when the projects will be implemented.

The Restoration Plan is solely for chinook salmon restoration and not for the management of the ecosystem of the Big Creek Creek watershed. As explained beforehand, a Fish and Wildlife and Water Use Management Plan as envisioned by the CSPA brings the public and all interest parties collectively together to put together a management plan for the watershed.

The Restoration Plan cites tools for each action, however there are a number of other state and federal statutes that would work as tools for the preparation of a management plan. i.e. Public Trust Doctrine, California Water Code, California Fish and Game Codes, state and federal water quality acts, etc.

The Restoration Plan for Big Chico Creek for each action item under involved parties brings together the local, state, and federal agencies. It does not include the public who own the public trust assets such as the water and the fish and wildlife resources. The CSPA management plan would allow for full public participation by any interested party. The CSPA management plan would also allow the public not only to participate in the process in the developing the management plan, but it would also allow the public to view upfront exactly what the agencies will do, and will not do.

The Initial Study and Environmental Assessment should disclose the 7 action items and 2 evaluation items and include firm committments and firm milestones when those projects will be implemented.

**The Restoration Plan - The Proposed Project - Big Chico Creek Watershed - Butte Creek Watershed**

31. The Restoration Plan for the relocation and screening of the M&T diversion shows seven parties involved with the proposed project. Many of the involved parties are also part of the proposed project on Butte Creek. It appears both projects are connected and interrelated. Consequently, the Initial Study and Environmental Assessment for this project should include the potential cumulative impacts to spring-run chinook salmon and other public trust resources from existing projects in the Butte Creek watershed as noted in the CSPA scoping letter to the Western Canal Water District.

**Mandatory Daily Fish Flow Requirements - Big Chico Creek**

32. The records as of December, 1982, show there are no mandatory daily fish flow requirements from any diversion on Big Chico Creek.

**CSPA Standing**

33. As stated beforehand, the USFWS and CDFG did not allow for scoping comments. NEPA requires and allow for scoping comments from the public and other interested parties. Any person, such as the CSPA, may submit any information in any form to assist a lead agency in preparing an initial study. We reference CEQA Guidelines, Section 15063, subd. (e).) This CSPA scoping letter is being submitted for administrative and legal standing.

Please forward to me copies of the Initial Study and Environmental Assessment for our review and comments. Also, please forward copies of any negative declaration and decision notice to me for the proposed project.

If there are any questions, I can be reached at either 916-836-1115 or 916-283-1007.

Respectfully Submitted

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## References


1. Butte Creek Water Supply and Fish Passage Study; U.S. Bureau of Reclamation; June 1995.

2. Working Paper on Restoration Needs; Habitat Restoration Actions to Double Natural Production of Anadromous Fish in the Central Valley of California; Volume 3; Prepared for the U.S. Fish and Wildlife Service under the direction of the Anadromous Fish Restoration Program Core Group; May 1995; From pages 3-Xb-68 to 3-Xb-77.

3. Draft Anadromous Fish Restoration Plan; A Plan to Increase Natural Production of Anadromous Fish in the Central Valley of California; Prepared for the Secretary of the Interior by the U.S. Fish and Wildlife Service with assistance from the Anadromous Fish Restoration Program Core Group under the authority of the Central Valley Project Improvement Act; December 6, 1995; at pages 48 and 49.

4. Inventory of Instream Flow Requirements Related to Stream Diversions; Bulletin 216; Department of Water Resources; California Resources Agency; December 1982.

5. Stony Creek Draft(s) Fish, Wildlife, and Water Use Management Plan; U.S. Bureau of Reclamation; 1995-96.

6. Stony Creek Task Force and Stony Creek Technical Team.

7. California Environmental Quality Act and its Guidelines.

8. National Environmental Policy Act.

9. California Water Code.

10. California Fish and Game Code 5937.

11. Public Trust Doctrine.

**Certificate of Service**

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Interested Parties

# Appendix B. Plant, Wildlife, and Fish Species Lists

Table B-1. Plant Species Mentioned in the Text or Observed at the Project Site

| Common Name | Scientific Name |
|---|---|
| Amaranth | *Amaranthus* sp. |
| Autumn willow-weed | *Epilobium brachycarpum* |
| Barbara's sedge | *Carex barbarae* |
| Bermuda grass | *Cynodon dactylon* |
| Bog rush | *Juncus effusus* |
| Box-elder | *Acer negundo* |
| California bay laurel | *Umbellularia californica* |
| California blackberry | *Rubus ursinus* |
| California wild grape | *Vitis californica* |
| Chain fern | *Woodwardia fimbriata* |
| Cheeseweed | *Malva parviflora* |
| Chickweed | *Stellaria media* |
| Coast redwood | *Sequoia sempervirens* |
| Cocklebur | *Xanthium strumarium* |
| Curly dock | *Rumex crispus* |
| Dallisgrass | *Paspalum dilatatum* |
| Deergrass | *Muhlenbergia rigens* |
| Dutchman's pipe | *Aristolochia californica* |
| English ivy | *Hedera helix* |
| Filaree | *Erodium* spp. |
| Fluellin | *Kickxia elatine* |
| Foothill pine | *Pinus sabiniana* |
| Four-angled spike rush | *Eleocharis quadrangulata* |
| Fox sedge | *Carex vulpinoidea* |
| Fremont cottonwood | *Populus fremontii* |
| Giant horsetail | *Equisetum telmateia* |
| Goodding's black willow | *Salix gooddingii* |
| Himalayan blackberry | *Rubus discolor* |
| Hoary coffeeberry | *Rhamnus tomentella* |
| Hoary nettle | *Urtica dioica* ssp. *holoserica* |
| Horehound | *Marrubium vulgare* |
| Interior live oak | *Quercus wislizenii* |
| Iris | *Iris pseudachorus* |
| Johnson grass | *Sorghum halepense* |
| Mexican elderberry | *Sambucus mexicana* |
| Milk thistle | *Silybum marianum* |
| Miner's lettuce | *Claytonia perfoliata* |
| Mugwort | *Artemisia douglasiana* |
| Oregon ash | *Fraxinus latifolia* |
| Pampas grass | *Cortaderia jubata* |
| Poison oak | *Toxicodendron diversilobum* |

Table B-1. Continued

| Common Name | Scientific Name |
|---|---|
| Prickly lettuce | *Lactuca serriola* |
| Rose-mallow | *Hibiscus lasiocarpus* |
| Sanford's arrowhead | *Sagittaria sanfordii* |
| Spicebush | *Calycanthus occidentalis* |
| Sycamore | *Platanus racemosa* |
| Toyon | *Heteromeles arbutifolia* |
| Turkey mullein | *Eremocarpus setigerus* |
| Valley oak | *Quercus lobata* |
| Vetch | *Vicia* sp. |
| Western verbena | *Verbena lasiostachys* |
| White alder | *Alnus rhombifolia* |
| Wild cucumber | *Marah fabaceus* |
| Wild oats | *Avena fatua* |
| Wild mustard | *Brassica* sp. |
| Willow | *Salix* spp. |
| Woolly mullein | *Verbascum thapsus* |
| Yellow star-thistle | *Centaurea solstitialis* |

Table B-2. Wildlife Species Mentioned in the Text or Observed at the Project Site

| Common Name | Scientific Name |
|---|---|
| Conservancy fairy shrimp | *Branchinecta conservatio* |
| Vernal pool fairy shrimp | *Branchinecta lynchie* |
| Vernal pool tadpole shrimp | *Lepidurus packardi* |
| Antioch Dunes anthicid beetle | *Anthicus antiochensis* |
| Sacramento anthicid beetle | *Anthicus sacramento* |
| Valley elderberry longhorn beetle | *Desmocerus californicus dimorphus* |
| Giant garter snake | *Thamnophis gigas* |
| Western spadefoot | *Scaphiopus hammondi* |
| California red-legged frog | *Rana aurora draytoni* |
| Northwestern pond turtle | *Clemmys marmorata marmorata* |
| Great blue heron[a] | *Ardea herodias* |
| White-faced ibis | *Plegadis chihi* |
| Aleutian Canada goose | *Branta canadensis leucopareia* |
| Wood duck[a] | *Aix sponsa* |
| Mallard[a] | *Anas platyrhynchos* |
| Northern pintail[a] | *Anas acuta* |
| American wigeon[a] | *Anas americana* |
| Ring-necked duck[a] | *Aythya collaris* |
| Lesser scaup[a] | *Aythya affinis* |
| Bufflehead[a] | *Bucephala albeola* |
| Common merganser[a] | *Mergus merganser* |
| Ruddy duck[a] | *Oxyura jamaicensis* |
| Turkey vulture | *Cathartes aura* |
| White-tailed kite[a] | *Elanus caeruleus* |
| Bald eagle | *Haliaeetus leucocephalus* |
| Northern harrier[a] | *Circus cyaneus* |
| Sharp-shinned hawk | *Accipiter striatus* |
| Cooper's hawk | *Accipiter cooperii* |
| Red-shouldered hawk[a] | *Buteo lineatus* |
| Swainson's hawk | *Buteo swainsoni* |
| Red-tailed hawk[a] | *Buteo jamaicensis* |
| Ferruginous hawk | *Buteo regalis* |
| Golden eagle | *Aquila chrysaetos* |
| Merlin | *Falco columbarius* |
| Peregrine falcon | *Falco peregrinus* |
| Ring-necked pheasant[a] | *Phasianus colchicus* |
| American coot[a] | *Fulica americana* |
| Greater sandhill crane[a] | *Grus canadensis tabida* |
| Killdeer[a] | *Charadrius vociferus* |
| Mourning dove[a] | *Zenaida macroura* |
| Western yellow-billed cuckoo | *Coccyzus americanus occidentalis* |

Table B-2. Continued

| Common Name | Scientific Name |
|---|---|
| Burrowing owl | *Athene cunicularia* |
| Belted kingfisher[a] | *Ceryle alcyon* |
| Acorn woodpecker[a] | *Melanerpes formicivorus* |
| Nuttall's woodpecker[a] | *Picoides scalaris* |
| Northern flicker[a] | *Colaptes auratus* |
| Little willow flycatcher | *Empidonax trailii* |
| Black phoebe[a] | *Sayornis nigricans* |
| Yellow warbler | *Dendroica petechia* |
| Bank swallow | *Riparia riparia* |
| Scrub jay[a] | *Aphelocamo coerulescens* |
| American crow[a] | *Corvus brachyrhynchos* |
| Plain titmouse[a] | *Parus inornatus* |
| Bushtit[a] | *Psaltriparus minimus* |
| White-breasted nuthatch[a] | *Sitta carolinensis* |
| Ruby-crowned kinglet | *Regulus calendula* |
| Western bluebird[a] | *Sialia mexicana* |
| Hermit thrush[a] | *Catharus guttatus* |
| American robin[a] | *Turdus migratorius* |
| Cedar waxwing[a] | *Bombycilla cedrorum* |
| Eurpoean starling[a] | *Sturnus vulgaris* |
| Rufous-sided towhee[a] | *Pipilo erythrophthalmus* |
| California towhee[a] | *Pipilo crissalis* |
| Song sparrow[a] | *Melospiza melodia* |
| Golden-crowned sparrow[a] | *Zontrichia atricapilla* |
| White-crowned sparrow[a] | *Zonotrichia leucophrys* |
| Dark-eyed junco[a] | *Junco hyemalis* |
| Tricolored blackbird | *Agelaius tricolor* |
| American goldfinch[a] | *Carduelis tristis* |
| Virginia opossum | *Didelphis virginiana* |
| Long-eared myotis | *Myotis evotis* |
| Fringed myotis | *Myotis thysanodes* |
| Long-legged myotis | *Myotis volans* |
| Small-footed myotis | *Myotis leibii* |
| Townsend's western big-eared bat | *Plecotus townsendii townsendii* |
| Black-tailed hare[a] | *Lepus californicus* |
| Marysville kangaroo rat | *Dipodomys heermanni eximius* |
| San Joaquin pocket mouse | *Perognathus inornatus inornatus* |
| Raccoon | *Procyon lotor* |

[a] Observed during field surveys.

Table B-3. Special-Status Plant Species with Potential to Occur at the M&T Pump Station and Comanche Creek Project Site, Butte County.

| Species | Status Fed/State/CNPS | California Distribution | Habitats | Period Identifiable |
|---|---|---|---|---|
| Fox sedge *Carex vulpinoidea* | --/--/2 | Butte, Shasta, Siskiyou, and Trinity Counties, Arizona and Oregon | Marshes and riparian woodland | June |
| Four-angled spikerush *Eleocharis quadrangulata* | --/--/2 | Butte, Merced and Tehama Counties | Freshwater marshes | July - September |
| Rose mallow *Hibiscus lasiocarpus* | --/--/2 | Butte, Contra Costa, Colusa, Glenn, Sacramento, San Joaquin, Solano, Sutter and Yolo Counties | Freshwater marshes | August - September |
| Sanford's arrowhead *Sagittaria sanfordii* | C2/--/1B | Butte, Del Norte, Fresno, Kern, Merced, Marin, Sacramento, Shasta, San Joaquin and Tehama Counties | Shallow areas in freshwater marshes | May - August |



* Status explanations

**Federal**

C2 = Category 2 candidate for federal listing. Category 2 includes species for which USFWS has some biological information indicating that listing may be appropriate but for which further biological research and field study are usually needed to clarify the most appropriate status. Species that are possibly extinct are indicated with an asterisk (*). Category 2 species are not necessarily less rare, threatened, or endangered than Category 1 species or listed species; the distinction relates to the amount of data available and is therefore administrative, not biological.

-- = no status listing.

**State**

-- = no status listing.

**California Native Plant Society**

| | | |
|---|---|---|
| 1B | = | List 1B species: rare, threatened, or endangered in California and elsewhere. |
| 2 | = | List 2 species: rare, threatened, or endangered in California but more common elsewhere. |

Table B-4. Special-Status Wildlife Species with the Potential to Occur at the Proposed M&T Pumping Station and Comanche Creek Project Site, Butte County

| Species | Status* Federal/State | California Distribution | Habitats | Reason for Decline or Concern |
|---|---|---|---|---|
| Vernal pool fairy shrimp *Branchinecta lynchi* | T/-- | Central Valley, Central and South Coast Ranges from Tehama County south to Santa Barbara County; isolated populations in Riverside County | Vernal pools; ephemeral stock ponds | Habitat loss to agricultural and urban development |
| Conservancy fairy shrimp *Branchinecta conservatio* | E/-- | Disjunct occurrences in Solano, Merced, Tehama, Butte, and Glenn Counties | Large, deep vernal pools in annual grasslands | Habitat loss to agricultural and urban development |
| Vernal pool tadpole shrimp *Lepidurus packardi* | E/-- | Shasta County south to Merced County | Vernal pools; ephemeral stock ponds | Habitat loss to agricultural and urban development |
| Valley elderberry longhorn beetle *Desmocerus californicus dimorphus* | T/-- | Streamside habitats below 3,000 feet through the Central Valley of California | Riparian and oak savanna habitats with elderberry shrubs; elderberries and host plants | Loss and fragmentation of riparian habitats |
| Antioch Dunes anthicid (beetle) *Anthicus antiochensis* | C2/-- | Known only from Grand Island and from in and around Sandy Beach County Park, Sacramento County | Loose sand on sand bars and sand dunes | |
| Sacramento anthicid (beetle) *Anthicus sacramento* | C2/-- | Restricted to a dune area at mouth of Sacramento River; western tip of Grand Island, Sacramento County; dunes near Rio Vista, Solano County; Ord Ferry Bridge, Butte County; upper Putah Creek | Found in sand slip-faces among willows | Alteration of delta dunes; limited range |
| Western spadefoot *Scaphiopus hammondii* | C2/SSC | Sierra Nevada foothills, Central Valley Coast Range, coastal counties in southern California | Shallow streams with riffles and seasonal wetlands, such as vernal pools in annual grasslands and oak woodlands | Alteration of stream habitats by urbanization and hydroelectric projects, loss of seasonal wetlands and vernal pools |
| California red-legged frog *Rana aurora draytoni* | PE/SSC | Found along the coast and coastal mountain ranges of California from Humboldt to San Diego County, and formerly in the Sierra Nevada foothills and midelevations from Butte County to Fresno County | Permanent and semipermanent aquatic habitats, such as creeks and coldwater ponds, with emergent and submergent vegetation and riparian species along the edges; may estivate in rodent burrows or cracks during dry periods | Alteration of stream and wetland habitats, overharvesting (historically), habitat destruction, competition and predation by fish and bullfrogs |
| Northwestern pond turtle *Clemmys marmorata marmorata* | C2/SSC | In California, range extends from Oregon border of Del Norte and Siskiyou Counties south along coast to San Francisco Bay, inland through Sacramento Valley, and on the western slope of Sierra Nevada; range overlaps with that of southwestern pond turtle through the Delta and Central Valley to Tulare County | Woodlands, grasslands, and open forests; occupies ponds, marshes, rivers, streams, and irrigation canals with muddy or rocky bottoms and with watercress, cattails, water lilies, or other aquatic vegetation | Loss and alteration of aquatic and wetland habitats, habitat fragmentation |
| Aleutian Canada goose *Branta canadensis leucopareia* | T/-- | The entire population winters in Butte Sink then moves to Los Banos, Modesto, the Delta, and East Bay reservoirs; stages near Crescent City during spring before migrating to breeding grounds | Roosts in large marshes, flooded fields, stock ponds, and reservoirs; forages in pastures, meadows, and harvested grainfields; corn is especially preferred | Introduction of predators on breeding grounds, loss of traditional wintering habitat |

| Species | Status* Federal/State | California Distribution | Habitats | Reason for Decline or Concern |
|---|---|---|---|---|
| White-tailed kite<br>Elanus leucurus | --/FP | Lowland areas west of Sierra Nevada from head of Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border | Low foothills or valley areas with valley or live oaks, riparian areas, and marshlands near open grasslands for foraging | Loss of grassland and wetland habitats to agriculture and urban development |
| Bald eagle<br>*Haliaeetus leucocephalus* | T/E | Nests in Siskiyou, Modoc, Trinity, Shasta, Lassen, Plumas, Butte, Tehama, Lake, and Mendocino Counties and in the Lake Tahoe Basin; reintroduced into central coast; winter range includes the rest of California, except the southeastern deserts, very high altitudes in the Sierras, and east of the Sierra Nevada south of Mono County; range expanding | In western North America, nests and roosts in coniferous forests within 1 mile of a lake, a reservoir, a river, or the ocean | Nest sites vulnerable to human disturbance, pesticide contamination |
| Northern harrier<br>*Circus cyaneus* | --/SSC | Throughout lowland California; has been recorded in fall at high elevations | Grasslands, meadows, marshes, and seasonal and agricultural wetlands providing tall cover | Loss of habitat to agricultural and urban development |
| Sharp-shinned hawk<br>*Accipiter striatus* | --/SSC | Permanent resident on the Sierra Nevada, Cascade, Klamath, and north Coast Ranges at mid-elevations, and along the coast in Marin, San Francisco, San Mateo, Santa Cruz, and Monterey Counties; winters over the rest of the state except very high elevations | Dense canopy ponderosa pine or mixed-conifer forest and riparian habitats | Human disturbance at nest sites, pesticide contamination, timber harvesting near nesting sites |
| Cooper's hawk<br>*Accipiter cooperi* | --/SSC | Throughout California except high altitudes in the Sierra Nevada; winters in the Central Valley, southeastern desert regions, and plains east of the Cascade Range; permanent residents occupy the rest of the state | Nests primarily in riparian forests dominated by deciduous species; also nests in densely canopied forests from digger pine-oak woodland up to ponderosa pine; forages in open woodlands | Human disturbance at nest sites; loss of riparian habitats, especially in the Central Valley; pesticide contamination |
| Swainson's hawk<br>*Buteo swainsoni* | --/T | Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley; the state's highest nesting densities occur near Davis and Woodland, Yolo County | Nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain fields | Loss of riparian, agriculture, and grassland habitats; vulnerable to human disturbance at nest sites |
| Ferruginous hawk<br>*Buteo regalis* | C2/SSC | Does not nest in California; winter visitor along the coast from Sonoma County to San Diego County, eastward to the Sierra Nevada foothills and southeastern deserts, the Inyo-White Mountains, the plains east of the Cascade Range, and Siskiyou County | Open terrain in plains and foothills where ground squirrels and other prey are available | Conversion of grasslands for agriculture and urban development |
| Golden eagle<br>*Aquila chrysaetos* | PR/SSC, FP | Foothills and mountains throughout California; uncommon nonbreeding visitor to lowlands such as the Central Valley | Cliffs and escarpments or tall trees for nesting; annual grasslands, chaparral, and oak woodlands with plentiful medium and large-sized mammals for prey | Habitat loss to urbanization, vulnerable to disturbance at nest sites |

| Species | Status* Federal/State | California Distribution | Habitats | Reason for Decline or Concern |
|---|---|---|---|---|
| Merlin<br>*Falco columbarius* | --/SSC | Does not nest in California; rare but widespread winter visitor to the Central Valley and coastal areas | Forages along coastlines, open grasslands, savannas, and woodlands; often forages near lakes and other wetlands | Unclear; possible chemical contamination; illegal take of young |
| American peregrine falcon<br>*Falco peregrinus anatum* | E/E | Permanent resident on the north and south Coast Ranges; may summer on the Cascade and Klamath Ranges south through the Sierra Nevada to Madera County; winters in the Central Valley south through the Transverse and Peninsular Ranges and the plains east of the Cascade Range | Nests and roosts on protected ledges of high cliffs, usually adjacent to lakes, rivers, or marshes that support large populations of other bird species | Pesticide contamination, population recovering |
| Greater sandhill crane<br>*Grus canadensis tabida* | --/T | Breeds on the plains east of the Cascade Range and south to Sierra County; winters in the Central Valley, southern Imperial County, Lake Havasu National Wildlife Refuge, and the Colorado River Indian Reserve | Summers in open terrain near shallow lakes or freshwater marshes; winters in plains and valleys near bodies of fresh water | Loss of freshwater marsh nesting habitat, disturbance by cattle during nesting, illegal hunting |
| Western yellow-billed cuckoo<br>*Coccyzus americanus occidentalis* | --/E | Nests along the upper Sacramento, lower Feather, south fork of the Kern, Amargosa, Santa Ana, and Colorado Rivers | Wide, dense riparian forests with a thick understory of willows for nesting; sites with a dominant cottonwood overstory are preferred for foraging; may avoid valley-oak riparian habitats where scrub jays are abundant | Loss of riparian habitat to agriculture and water control development, possible pesticide contamination |
| Western burrowing owl<br>*Athene cunicularia hypugea* | C2/SSC | Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast | Rodent burrows in sparse grassland or desert habitats | Loss of habitat, human disturbance at nesting burrows |
| Little willow flycatcher<br>*Empidonax traillii brewsteri* | C2/E | Summer range includes a narrow strip along the eastern Sierra Nevada from Shasta County to Kern County, another strip along the western Sierra Nevada from El Dorado County to Madera County; widespread in migration | Riparian areas and large, wet meadows with abundant willows for breeding; usually found in riparian habitats during migration | Loss of riparian breeding habitat; nest parasitism by brown-headed cowbirds |
| Bank swallow<br>*Riparia riparia* | --/T | The state's largest remaining breeding populations are along the Sacramento River from Tehama County to Sacramento County, along the Feather and lower American Rivers, in the Owens Valley; nesting areas also include the plains east of the Cascade Range south through Lassen County, northern Siskiyou County, and small populations near the coast from San Francisco County to Monterey County | Nests in bluffs or banks, usually adjacent to water, where the soil consists of sand or sandy loam to allow digging | Loss of natural earthen banks to bank protection and flood control, erosion control related to stream regulation by dams |

| Species | Status* Federal/State | California Distribution | Habitats | Reason for Decline or Concern |
|---|---|---|---|---|
| California yellow warbler *Dendroica petechia brewsteri* | --/SSC | Nests over all of California except the Central Valley, the Mojave Desert region, and high altitudes in the Sierra Nevada; winters along the Colorado River and in parts of Imperial and Riverside Counties; two small permanent populations in San Diego and Santa Barbara Counties | Nests in riparian areas dominated by willows, cottonwoods, sycamores, or alders or in mature chaparral; may also use oaks, conifers, and urban areas near streamcourses | Loss of riparian breeding habitats, nest parasitism by brown-headed cowbirds |
| Tricolored blackbird *Agelaius tricolor* | C2/SSC | Largely endemic to California; permanent residents in the Central Valley from Butte County to Kern County; at scattered coastal locations from Marin County south to San Diego County; breeds at scattered locations in Lake, Sonoma, and Solano Counties; rare nester in Siskiyou, Modoc, and Lassen Counties | Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grainfields; nesting habitat must be large enough to support 50 pairs; probably requires water at or near the nesting colony; requires large foraging areas, including marshes, pastures, agricultural wetlands, dairies, and feedlots where abundant insect prey are available | Loss of wetland and upland breeding habitats from conversion to agriculture and urban development and to water development projects; pesticides contamination; human disturbance of nesting colonies |
| Fringed myotis *Myotis thysanodes* | C2/-- | Sierra Nevada, Klamath Mountains, Coast Range, and Transverse and Peninsula Ranges | Open woodlands | |
| Long-eared myotis *Myotis evotis* | C2/-- | Sierra Nevada, Klamath Mountains, Coast Range, and Transverse and Peninsula Ranges | Woodlands | |
| Small-footed myotis *Myotis ciliolabrum* | C2/-- | Sierra Nevada, south Coast Range, Transverse and Peninsula Ranges, and the Great Basin | Open stands in forests and woodlands, as well as shrublands; uses caves, crevices, and abandoned buildings | |
| Long-legged myotis *Myotis volans* | C2/-- | Mountains throughout California | Most common in woodlands and forests above 4,000 feet, but occurs from sea level to 11,000 feet | |
| Greater western mastiff-bat *Eumops perotis californicus* | C2/SSC | Occurs along the eastern San Joaquin Valley from El Dorado County through Kern County; also found along the south Coast, Peninsular, and Transverse Ranges from San Francisco to the Mexico border | Roosts and breeds in deep, narrow rock crevices; may also use crevices in trees, buildings, and tunnels; forages in a variety of semiarid to arid habitats | Unclear; possible insecticide contamination and loss of foraging habitat; possible disturbance to roosting sites |
| Pacific Townsend's (= western) big-eared bat *Plecotus townsendii townsendii* | C2/SSC | Coastal regions from Del Norte County south to Santa Barbara County | Roosts in caves, tunnels, mines, and dark attics of abandoned buildings; very sensitive to disturbances and may abandon a roost after onsite visit | Decline unclear; possible human disturbance to roost sites |
| Pale Townsend's (= western) big-eared bat *Plecotus townsendii pallescens* | C2/SSC | Klamath Mountains, Cascades, Sierra Nevada, Central Valley, Transverse and Peninsular Ranges, Great Basin, and the Mojave and Sonora Deserts | Mesic habitats; gleans insects from brush or trees and feeds along habitat edges | Unclear; possible human disturbance |

| Species | Status* Federal/State | California Distribution | Habitats | Reason for Decline or Concern |
|---|---|---|---|---|
| Marysville California (= M. Heerman's k.r.) kangaroo rat *Dipodomys californicus (= heermanni) eximius* | C2/SSC | Sutter Buttes, Sutter County; could be extinct | Grassland and sparse chaparral habitats above the valley floor on slopes with well-drained soils | May be extinct |
| San Joaquin pocket mouse (includes all ssp.) *Perognathus inornatus* | C2/-- | Occurs along the eastern side of the San Joaquin Valley | Favors grasslands and oak savannas with friable soils | |

* Status explanations

**Federal**

C2 = Category 2 candidate for federal listing. Category 2 includes species for which USFWS has some biological information indicating that listing may be appropriate but for which further biological research and field study are usually needed to clarify the most appropriate status. Species that are possibly extinct are indicated with an asterisk (*). Category 2 species are not necessarily less rare, threatened, or endangered than Category 1 species or listed species; the distinction relates to the amount of data available and is therefore administrative, not biological.

E = listed as endangered under the federal Endangered Species Act.

PR = protected under the Bald Eagle Protection Act.

PE = proposed for federal listing as endangered under the federal Endangered Species Act.

T = listed as threatened under the federal Endangered Species Act.

-- = no status listing.

**State**

E = listed as endangered under the California Endangered Species Act.

T = listed as threatened under the California Endangered Species Act.

FP = fully protected under the California Fish and Game Code.

SSC = species of special concern.

-- = no status listing.

Table B-5. Legal Status of Fish Species of the Sacramento River

| Common Name | Scientific Name | Status* | | Native (N) or Introduced (I) |
|---|---|---|---|---|
| | | Federal | State | |
| Chinook salmon | *Onchorhynchus tshawytscha* | | | N |
| winter-run | | FE | SE | |
| spring-run | | FP | CSC, SP | |
| fall-run | | FP | ---- | |
| late-fall-run | | FP | ---- | |
| Steelhead trout | *Oncorhynchus mykiss* | FC | ---- | N |
| Striped bass | *Morone saxatilus* | ---- | ---- | I |
| American shad | *Alosa sapidissima* | ---- | ---- | I |
| White sturgeon | *Acipenser transmontanus* | ---- | ---- | N |
| Green sturgeon | *Acipenser medirostris* | FC | ---- | N |
| Channel catfish | *Ictalurus punctatus* | ---- | ---- | I |
| White catfish | *Ictalurus catus* | ---- | ---- | I |
| Yellow bullhead | *Ictalurus natalis* | ---- | ---- | I |
| Brown bullhead | *Ictalurus nebulosus* | ---- | ---- | I |
| Black crappie | *Pomoxis nigromaculatus* | ---- | ---- | I |
| White crappie | *Pomoxis annularis* | ---- | ---- | I |
| Green sunfish | *Lepomis cyanellus* | ---- | ---- | I |
| Bluegill | *Lepomis macrochirus* | ---- | ---- | I |
| Redear sunfish | *Lepomis microlophus* | ---- | ---- | I |
| Largemouth bass | *Micropterus salmoides* | ---- | ---- | I |
| Smallmouth bass | *Micropterus dolmieui* | ---- | ---- | I |
| Rainbow trout | *Oncorhynchus mykiss* | ---- | ---- | N |
| Brown trout | *Salmo trutta* | ---- | ---- | I |
| Pacific brook lamprey | *Lampetra pacifica* | ---- | ---- | N |
| Pacific lamprey | *Lampetra tridentata* | FC | ---- | N |
| River lamprey | *Lampetra ayresi* | FC | ---- | N |
| Sacramento blackfish | *Orthodon microlepidotus* | ---- | ---- | N |
| Hardhead | *Mylopharodon conocephalus* | ---- | CSC | N |
| Hitch | *Lavinia exilicauda* | ---- | ---- | N |
| Sacramento squawfish | *Ptychocheilus grandis* | ---- | ---- | N |

Table B-5. Continued

| Common Name | Scientific Name | Status* | | Native (N) or Introduced (I) |
|---|---|---|---|---|
| | | Federal | State | |
| California roach | *Hesperoleucus symmetricus* | ---- | CSC | N |
| Speckled dace | *Rhinichthys osculus* | ---- | ---- | N |
| Sacramento sucker | *Catostomus occidentalis* | ---- | ---- | N |
| Tule perch | *Hysterocarpus traski* ssp. | ---- | ---- | N |
| Prickly sculpin | *Cottus asper* | ---- | ---- | N |
| Riffle sculpin | *Cottus gulosus* | ---- | ---- | N |
| Threadfin shad | *Dorosoma petenense* | ---- | ---- | I |
| Carp | *Cyprinus carpio* | ---- | ---- | I |
| Goldfish | *Carassius auratus* | ---- | ---- | I |
| Golden shiner | *Notemigonus crysaleucas* | ---- | ---- | I |
| Red shiner | *Notropis lutrensis* | ---- | ---- | I |
| Fathead minnow | *Pimephales promelas* | ---- | ---- | I |
| Mosquitofish | *Gambusia affinis* | ---- | ---- | I |
| Mississippi silversides | *Menidia audens* | ---- | ---- | I |
| Threespine stickleback | *Gasterosius aculeatus* | ---- | ---- | |
| Bigscale logperch | *Percina macrolepida* | ---- | ---- | I |

* Status explanations

**Federal:**

FP = Federal petition for listing as threatened or endangered.
FC = Federal candidate for listing.
FE = Federally listed as endangered.
FT = Federally listed as threatened.

**State:**

SP = State petition for listing as threatened or endangered.
CSC = California Department of Fish and Game speicies of special concern.
SE = State listed as endangered.
ST = State listed as threatened.

Sources: Hazel and Kelley 1966, Moyle 1976, McGriff 1983.

# Appendix C. Swainson's Hawk Mitigation

# Staff Report regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California

## INTRODUCTION

The Legislature and the Fish and Game Commission have developed the policies, standards and regulatory mandates which, if implemented, are intended to help stabilize and reverse dramatic population declines of threatened and endangered species. In order to determine how the Department of Fish and Game (Department) could judge the adequacy of mitigation measures designed to offset impacts to Swainson's hawks in the Central Valley, Staff (WMD, ESD and Regions) has prepared this report. To ensure compliance with legislative and Commission policy, mitigation requirements which are consistent with this report should be incorporated into: (1) Department comments to Lead Agencies and project sponsors pursuant to the California Environmental Quality Act (CEQA); (2) Fish and Game Code Section 2081 Management Authorizations (Management Authorizations); and (3) Fish and Game Code Section 2090 Consultations with State CEQA Lead Agencies.

The report is designed to provide the Department (including regional offices and divisions), CEQA Lead Agencies and project proponents the context in which the Environmental Services Division (ESD) will review proposed project specific mitigation measures. This report also includes "model" mitigation measures which have been judged to be consistent with policies, standards and legal mandates of the Legislature and Fish and Game Commission. Alternative mitigation measures, tailored to specific projects, may be developed if consistent with this report. Implementation of mitigation measures consistent with this report are intended to help achieve the conservation goals for the Swainson's hawk and should complement multi-species habitat conservation planning efforts currently underway.

The Department is preparing a recovery plan for the species and it is anticipated that this report will be revised to incorporate recovery plan goals. It is anticipated that the recovery plan will be completed by the end of 1995. The Swainson's hawk recovery plan will establish criteria for species recovery through preservation of existing habitat, population expansion into former habitat, recruitment of young into the population, and other specific recovery efforts.

During project review the Department should consider whether a proposed project will adversely affect suitable foraging habitat within a ten (10) mile radius of an active (used during one or more of the last 5 years) Swainson's hawk nest(s). Suitable Swainson's hawk foraging habitat will be those habitats and crops identified in Bechard (1983), Bloom (1980), and Estep (1989). The following vegetation types/agricultural crops are considered small mammal and insect foraging habitat

for Swainson's hawks:

- alfalfa
- fallow fields
- beet, tomato, and other low-growing row or field crops
- dry-land and irrigated pasture
- rice land (when not flooded)
- cereal grain crops (including corn after harvest)

The ten mile radius standard is the flight distance between active (and successful) nest sites and suitable foraging habitats, as documented in telemetry studies (Estep 1989, Babcock 1993). Based on the ten mile radius, new development projects which adversely modify nesting and/or foraging habitat should mitigate the project's impacts to the species. The ten mile foraging radius recognizes a need to strike a balance between the biological needs of reproducing pairs (including eggs and nestlings) and the economic benefit of development(s) consistent with Fish and Game Code Section 2053.

Since over 95% of Swainson's hawk nests occur on private land, the Department's mitigation program should include incentives that preserve agricultural lands used for the production of crops, which are compatible with Swainson's hawk foraging needs, while providing an opportunity for urban development and other changes in land use adjacent to existing urban areas.

## LEGAL STATUS

### Federal

The Swainson's hawk is a migratory bird species protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in Section 50 of the Code of Federal Regulations (C.F.R.) Part 10, including feathers or other parts, nests, eggs or products, except as allowed by implementing regulations (50 C.F.R. 21).

### State

The Swainson's hawk has been listed as a threatened species by the California Fish and Game Commission pursuant to the California Endangered Species Act (CESA), see Title 14, California Code of Regulations, Section 670.5(b)(5)(A).

## LEGISLATIVE AND COMMISSION POLICIES, LEGAL MANDATES AND STANDARDS

The FGC policy for threatened species is, in part, to: "Protect and preserve all native species...and their habitats...." This policy also directs the Department to work with all interested persons to protect and preserve sensitive resources and their habitats. Consistent with this policy and direction, the Department is enjoined to implement measures that assure protection for the Swainson's hawk.

The California State Legislature, when enacting the provisions of CESA, made the following findings and declarations in Fish and Game Code Section 2051:

> a) "Certain species of fish, wildlife, and plants have been rendered extinct as a consequence of man's activities, untempered by adequate concern and conservation";
>
> b) "Other species of fish, wildlife, and plants are in danger of, or threatened with, extinction because their habitats are threatened with destruction, adverse modification, or severe curtailment because of overexploitation, disease, predation, or other factors (emphasis added)";and
>
> c) "These species of fish, wildlife, and plants are of ecological, educational, historical, recreational, esthetic, economic, and scientific value to the people of this state, and the conservation, protection, and enhancement of these species and their habitat is of statewide concern" (emphasis added).

The Legislature also proclaimed that it "is the policy of the state to conserve, protect, restore, and enhance any endangered or threatened species and its habitat and that it is the intent of the Legislature, consistent with conserving the species, to acquire lands for habitat for these species" (emphasis added).

Section 2053 of the Fish and Game Code states, in part, "it is the policy of the state that state agencies should not approve projects as proposed which would jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species and or its habitat which would prevent jeopardy" (emphasis added).

Section 2054 states "The Legislature further finds and declares that, in the event specific economic, social, and or other conditions make infeasible such alternatives, individual projects may be approved if appropriate mitigation and enhancement measures are provided" (emphasis added).

Loss or alteration of foraging habitat or nest site disturbance which results in:

(1) nest abandonment; (2) loss of young; (3) reduced health and vigor of eggs and/or nestlings (resulting in reduced survival rates), may ultimately result in the take (killing) of nestling or fledgling Swainson's hawks incidental to otherwise lawful activities. The taking of Swainson's hawks in this manner can be a violation of Section 2080 of the Fish and Game Code. This interpretation of take has been judicially affirmed by the landmark appellate court decision pertaining to CESA (DFG v. ACID, 8 CA App.4, 41554). The essence of the decision emphasized that the intent and purpose of CESA applies to all activities that take or kill endangered or threatened species, even when the taking is incidental to otherwise legal activities. To avoid potential violations of Fish and Game Code Section 2080, the Department recommends and encourages project sponsors to obtain 2081 Management Authorizations for their projects.

Although this report has been prepared to assist the Department in working with the development community, the prohibition against take (Fish and Game Code Section 2080) applies to all persons, including those engaged in agricultural activities and routine maintenance of facilities. In addition, sections 3503, 3503.5, and 3800 of the Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs.

To avoid potential violation of Fish and Game Code Section 2080 (i.e. killing of a listed species), project-related disturbance at active Swainson's hawk nesting sites should be reduced or eliminated during critical phases of the nesting cycle (March 1 - September 15 annually). Delineation of specific activities which could cause nest abandonment (take) of Swainson's hawk during the nesting period should be done on a case-by-case basis.

CEQA requires a mandatory findings of significance if a project's impacts to threatened or endangered species are likely to occur (Sections 21001 (c), 21083, Guidelines Sections 15380, 15064, 15065). Impacts must be avoided or mitigated to less than significant levels unless the CEQA Lead Agency makes and supports findings of Overriding Consideration. The CEQA Lead Agency's Findings of Overriding Consideration does not eliminate the project sponsor's obligation to comply with Fish and Game Code Section 2080.

## NATURAL HISTORY

The Swainson's hawk (*Buteo swainsoni*) is a large, broad winged buteo which frequents open country. They are about the same size as a red-tailed hawk (*Buteo jamaicensis*), but trimmer, weighing approximately 800-1100 grams (1.75 - 2 lbs). They have about a 125 cm. (4+foot) wingspan. The basic body plumage may be highly variable and is characterized by several color morphs - light, dark, and rufous. In dark phase birds, the entire body of the bird may be sooty black. Adult birds generally have dark backs. The ventral or underneath sections may be light with a characteristic dark, wide "bib" from the lower throat down to the upper

breast, light colored wing linings and pointed wing tips. The tail is gray ventrally with a subterminal dusky band, and narrow, less conspicuous barring proximally. The sexes are similar in appearance; females however, are slightly larger and heavier than males, as is the case in most sexually dimorphic raptors. There are no recognized subspecies (Palmer 1988).

The Swainson's hawk is a long distance migrator. The nesting grounds occur in northwestern Canada, the western U.S., and Mexico and most populations migrate to wintering grounds in the open pampas and agricultural areas of South America (Argentina, Uruguay, southern Brazil). The species is included among the group of birds known as "neotropical migrants". Some individuals or small groups (20-30 birds) may winter in the U.S., including California (Delta Islands). This round trip journey may exceed 14,000 miles. The birds return to the nesting grounds and establish nesting territories in early March.

Swainson's hawks are monogamous and remain so until the loss of a mate (Palmer 1988). Nest construction and courtship continues through April. The clutch (commonly 3-4 eggs) is generally laid in early April to early May, but may occur later. Incubation lasts 34-35 days, with both parents participating in the brooding of eggs and young. The young fledge (leave the nest) approximately 42-44 days after hatching and remain with their parents until they depart in the fall. Large groups (up to 100+ birds) may congregate in holding areas in the fall and may exhibit a delayed migration depending upon forage availability. The specific purpose of these congregation areas is as yet unknown, but is likely related to: increasing energy reserves for migration; the timing of migration; aggregation into larger migratory groups (including assisting the young in learning migration routes); and providing a pairing and courtship opportunity for unattached adults.

## Foraging Requirements

Swainson's hawk nests in the Central Valley of California are generally found in scattered trees or along riparian systems adjacent to agricultural fields or pastures. These open fields and pastures are the primary foraging areas. Major prey items for Central Valley birds include: California voles (*Microtus californicus*), valley pocket gophers (*Thomomys bottae)*, deer mice (*Peromyscus maniculatus*), California ground squirrels (*Spermophilus beecheyi)*, mourning doves (*Zenaida macroura*), ring-necked pheasants (*Phasianus colchicus*), meadowlarks (*Sturnella neglecta*), other passerines, grasshoppers (*Conocephalinae* sp.), crickets (*Gryllidae* sp.), and beetles (Estep 1989). Swainson's hawks generally search for prey by soaring in open country and agricultural fields similar to northern hariers (*Circus cyaneus*) and ferruginous hawks (*Buteo regalis*). Often several hawks may be seen foraging together following tractors or other farm equipment capturing prey escaping from farming operations. During the breeding season, Swainson's hawks eat mainly vertebrates (small rodents and reptiles), whereas during migration vast numbers of insects are consumed (Palmer 1988).

Department funded research has documented the importance of suitable foraging habitats (e.g., annual grasslands, pasture lands, alfalfa and other hay crops, and combinations of hay, grain and row crops) within an energetically efficient flight distance from active Swainson's hawk nests (Estep pers. comm.). Recent telemetry studies to determine foraging requirements have shown that birds may use in excess of 15,000 acres of habitat or range up to 18.0 miles from the nest in search of prey (Estep 1989, Babcock 1993). The prey base (availability and abundance) for the species is highly variable from year to year, with major prey population (small mammals and insects) fluctuations occurring based on rainfall patterns, natural cycles and agricultural cropping and harvesting patterns. Based on these variables, significant acreages of potential foraging habitat (primarily agricultural lands) should be preserved per nesting pair (or aggregation of nesting pairs) to avoid jeopardizing existing populations. Preserved foraging areas should be adequate to allow additional Swainson's hawk nesting pairs to successfully breed and use the foraging habitat during good prey production years.

Suitable foraging habitat is necessary to provide an adequate energy source for breeding adults, including support of nestlings and fledglings. Adults must achieve an energy balance between the needs of themselves and the demands of nestlings and fledglings, or the health and survival of both may be jeopardized. If prey resources are not sufficient, or if adults must hunt long distances from the nest site, the energetics of the foraging effort may result in reduced nestling vigor with an increased likelihood of disease and/or starvation. In more extreme cases, the breeding pair, in an effort to assure their own existence, may even abandon the nest and young (Woodbridge 1985).

Prey abundance and availability is determined by land and farming patterns including crop types, agricultural practices and harvesting regimes. Estep (1989) found that 73.4% of observed prey captures were in fields being harvested, disced, mowed, or irrigated. Preferred foraging habitats for Swainson's hawks include:

- alfalfa;
- fallow fields;
- beet, tomato, and other low-growing row or field crops;
- dry-land and irrigated pasture;
- rice land (during the non-flooded period); and
- cereal grain crops (including corn after harvest).

Unsuitable foraging habitat types include crops where prey species (even if present) are not available due to vegetation characteristics (e.g. vineyards, mature orchards, and cotton fields, dense vegetation).

## Nesting Requirements

Although the Swainson's hawk's current nesting habitat is fragmented and unevenly distributed, Swainson's hawks nest throughout most of the Central Valley floor. More than 85% of the known nests in the Central Valley are within riparian systems in Sacramento, Sutter, Yolo, and San Joaquin counties. Much of the potential nesting habitat remaining in this area is in riparian forests, although isolated and roadside trees are also used. Nest sites are generally adjacent to or within easy flying distance to alfalfa or hay fields or other habitats or agricultural crops which provide an abundant and available prey source. Department research has shown that valley oaks (*Quercus lobata*), Fremont's cottonwood (*Populus fremontii*), willows (*Salix* spp.), sycamores (*Platanus* spp.), and walnuts (*Juglans* spp.) are the preferred nest trees for Swainson's hawks (Bloom 1980, Schlorff and Bloom 1983, Estep 1989).

## Fall and Winter Migration Habitats

During their annual fall and winter migration periods, Swainson's hawks may congregate in large groups (up to 100+ birds). Some of these sites may be used during delayed migration periods lasting up to three months. Such sites have been identified in Yolo, Tulare, Kern and San Joaquin counties and protection is needed for these critical foraging areas which support birds during their long migration.

## Historical and Current Population Status

The Swainson's hawk was historically regarded as one of the most common and numerous raptor species in the state, so much so that they were often not given special mention in field notes. The breeding population has declined by an estimated 91% in California since the turn of the century (Bloom 1980). The historical Swainson's hawk population estimates are based on current densities and extrapolated based on the historical amount of available habitat. The historical population estimate is 4,284-17,136 pairs (Bloom 1980). In 1979, approximately 375 ($\pm$ 50) breeding pairs of Swainson's hawks were estimated in California, and 280 (75%) of those pairs were estimated to be in the Central Valley (Bloom 1980). In 1988, 241 active breeding pairs were found in the Central Valley, with an additional 78 active pairs known in northeastern California. The 1989 population estimate was 430 pairs for the Central Valley and 550 pairs statewide (Estep, 1989). This difference in population estimates is probably a result of increased survey effort rather than an actual population increase.

## Reasons for decline

The dramatic Swainson's hawk population decline has been attributed to loss of

native nesting and foraging habitat, and more recently to the loss of suitable nesting trees and the conversion of agricultural lands. Agricultural lands have been converted to urban land uses and incompatible crops. In addition, pesticides, shooting, disturbance at the nest site, and impacts on wintering areas may have contributed to their decline. Although losses on the wintering areas in South America may occur, they are not considered significant since breeding populations outside of California are stable. The loss of nesting habitat within riparian areas has been accelerated by flood control practices and bank stabilization programs. Smith (1977) estimated that in 1850 over 770,000 acres of riparian habitat were present in the Sacramento Valley. By the mid-1980s, Warner and Hendrix (1984) estimated that there was only 120,000 acres of riparian habitat remaining in the Central Valley (Sacramento and San Joaquin Valleys combined). Based on Warner and Hendrix's estimates approximately 93% of the San Joaquin Valley and 73% of the Sacramento Valley riparian habitat has been eliminated since 1850.

## MANAGEMENT STRATEGIES

Management and mitigation strategies for the Central Valley population of the Swainson's hawk should ensure that:

- suitable nesting habitat continues to be available (this can be accomplished by protecting existing nesting habitat from destruction or disturbance and by increasing the number of suitable nest trees); and

- foraging habitat is available during the period of the year when Swainson's hawks are present in the Central Valley (this should be accomplished by maintaining or creating adequate and suitable foraging habitat in areas of existing and potential nest sites and along migratory routes within the state).

A key to the ultimate success in meeting the Legislature's goal of maintaining habitat sufficient to preserve this species is the implementation of these management strategies in cooperation with project sponsors and local, state and federal agencies.

## DEPARTMENT'S ROLES AND RESPONSIBILITIES IN PROJECT CONSULTATION AND ADMINISTRATION OF CEQA AND THE FISH AND GAME CODE

The Department, through its administration of the Fish and Game Code and its trust responsibilities, should continue its efforts to minimize further habitat destruction and should seek mitigation to offset unavoidable losses by (1) including the mitigation measures in this document in CEQA comment letters and/or as

management conditions in Department issued Management Authorizations or (2) by developing project specific mitigation measures (consistent with the Commission's and the Legislature's mandates) and including them in CEQA comment letters and/or as management conditions in Fish and Game Code Section 2081 Management Authorizations issued by the Department and/or in Fish and Game Code Section 2090 Biological Opinions.

The Department should submit comments to CEQA Lead Agencies on all projects which adversely affect Swainson's hawks. CEQA requires a mandatory findings of significance if a project's impacts to threatened or endangered species are likely to occur (Sections 21001 (c), 21083. Guidelines 15380, 15064, 15065). Impacts must be: (1) avoided; or (2) appropriate mitigation must be provided to reduce impacts to less than significant levels; or (3) the lead agency must make and support findings of overriding consideration. If the CEQA Lead Agency makes a Finding of Overriding Consideration, it does not eliminate the project sponsor's obligation to comply with the take prohibitions of Fish and Game Code Section 2080. Activities which result in (1) nest abandonment; (2) starvation of young; and/or (3) reduced health and vigor of eggs and nestlings may result in the take (killing) of Swainson's hawks incidental to otherwise lawful activities (urban development, recreational activities, agricultural practices, levee maintenance and similar activities. The taking of Swainson's hawk in this manner may be a violation of Section 2080 of the Fish and Game Code. To avoid potential violations of Fish and Game Code Section 2080, the Department should recommend and encourage project sponsors to obtain 2081 Management Authorizations.

In aggregate, the mitigation measures incorporated into CEQA comment letters and/or 2081 Management Authorizations for a project should be consistent with Section 2053 and 2054 of the Fish and Game Code. Section 2053 states, in part, "it is the policy of the state that state agencies should not approve projects as proposed which would jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species and or its habitat which would prevent jeopardy" . Section 2054 states: "The Legislature further finds and declares that, in the event specific economic, social, and or other conditions make infeasible such alternatives, individual projects may be approved if appropriate mitigation and enhancement measures are provided."

State lead agencies are required to consult with the Department pursuant to Fish and Game Code Section 2090 to ensure that any action authorized, funded, or carried out by that state agency will not jeopardize the continued existence of any threatened or endangered species. Comment letters to State Lead Agencies should also include a reminder that the State Lead Agency has the responsibility to consult with the Department pursuant to Fish and Game Code Section 2090 and obtain a written findings (Biological Opinion). Mitigation measures included in Biological Opinions issued to State Lead Agencies must be consistent with Fish and Game

Code Sections 2051-2054 and 2091-2092.

## NEST SITE AND HABITAT LOCATION INFORMATION SOURCES

The Department's Natural Diversity Data Base (NDDB) is a continually updated, computerized inventory of location information on the State's rarest plants, animals, and natural communities. Department personnel should encourage project proponents and CEQA Lead Agencies, either directly or through CEQA comment letters, to purchase NDDB products for information on the locations of Swainson's hawk nesting areas as well as other sensitive species. The Department's Nongame Bird and Mammal Program also maintains information on Swainson's hawk nesting areas and may be contacted for additional information on the species.

Project applicants and CEQA Lead Agencies may also need to conduct site specific surveys (conducted by qualified biologists at the appropriate time of the year using approved protocols) to determine the status (location of nest sites, foraging areas, etc.) of listed species as part of the CEQA and 2081 Management Authorization process. Since these studies may require multiple years to complete, the Department shall identify any needed studies at the earliest possible time in the project review process. To facilitate project review and reduce the potential for costly project delays, the Department should make it a standard practice to advise developers or others planning projects that may impact one or more Swainson's hawk nesting or foraging areas to initiate communication with the Department as early as possible .

## MANAGEMENT CONDITIONS

Staff believes the following mitigation measures (nos. 1-4) are adequate to meet the Commission's and Legislature's policy regarding listed species and are considered as preapproved for incorporation into any Management Authorizations for the Swainson's hawk issued by the Department. The incorporation of measures 1-4 into a CEQA document should reduce a project's impact to a Swainson's hawk(s) to less than significant levels. Since these measures are Staff recommendations, a project sponsor or CEQA Lead agency may choose to negotiate project specific mitigation measures which differ. In such cases, the negotiated Management Conditions must be consistent with Commission and Legislative policy and be submitted to the ESD for review and approval prior to reaching agreement with the project sponsor or CEQA Lead Agency.

Staff recommended Management Conditions are:

1. No intensive new disturbances (e.g. heavy equipment operation associated with construction, use of cranes or draglines, new rock crushing

activities) or other project related activities which may cause nest abandonment or forced fledging, should be initiated within 1/4 mile (buffer zone) of an active nest between March 1 - September 15 or until August 15 if a Management Authorization or Biological Opinion is obtained for the project. The buffer zone should be increased to 1/2 mile in nesting areas away from urban development (i.e. in areas where disturbance [e.g. heavy equipment operation associated with construction, use of cranes or draglines, new rock crushing activities] is not a normal occurrence during the nesting season). Nest trees should not be removed unless there is no feasible way of avoiding it. If a nest tree must be removed, a Management Authorization (including conditions to off-set the loss of the nest tree) must be obtained with the tree removal period specified in the Management Authorization, generally between October 1- February 1. If construction or other project related activities which may cause nest abandonment or forced fledging are necessary within the buffer zone, monitoring of the nest site (funded by the project sponsor) by a qualified biologist (to determine if the nest is abandoned) should be required . If it is abandoned and if the nestlings are still alive, the project sponsor shall fund the recovery and hacking (controlled release of captive reared young) of the nestling(s). Routine disturbances such as agricultural activities, commuter traffic, and routine facility maintenance activities within 1/4 mile of an active nest should not be prohibited.

2. Hacking as a substitute for avoidance of impacts during the nesting period may be used in unusual circumstances after review and approval of a hacking plan by ESD and WMD. Proponents who propose using hacking will be required to fund the full costs of the effort, including any telemetry work specified by the Department.

3. To mitigate for the loss of foraging habitat (as specified in this document), the Management Authorization holder/project sponsor shall provide Habitat Management (HM) lands to the Department based on the following ratios:

(a) Projects within 1 mile of an active nest tree shall provide:

• <u>one acre of HM land</u> (at least 10% of the HM land requirements shall be met by fee title acquisition or a conservation easement allowing for the active management of the habitat, with the remaining 90% of the HM lands protected by a conservation easement [acceptable to the Department] on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk) <u>for each acre of development authorized (1:1 ratio);</u> or

• <u>one-half acre of HM land</u> (all of the HM land requirements shall be met by fee title acquisition or a conservation easement

[acceptable to the Department] which allows for the active management of the habitat for prey production on the HM lands) for each acre of development authorized (0.5:1 ratio).

(b) Projects within 5 miles of an active nest tree but greater than 1 mile from the nest tree shall provide 0.75 acres of HM land for each acre of urban development authorized (0.75:1 ratio). All HM lands protected under this requirement may be protected through fee title acquisition or conservation easement (acceptable to the Department) on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk.

(c) Projects within 10 miles of an active nest tree but greater than 5 miles from an active nest tree shall provide 0.5 acres of HM land for each acre of urban development authorized (0.5:1 ratio). All HM lands protected under this requirement may be protected through fee title acquisition or a conservation easement (acceptable to the Department) on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk.

4. Management Authorization holders/project sponsors shall provide for the long-term management of the HM lands by funding a management endowment (the interest on which shall be used for managing the HM lands) at the rate of $400 per HM land acre (adjusted annually for inflation and varying interest rates).

Some project sponsors may desire to provide funds to the Department for HM land protection. This option is acceptable to the extent the proposal is consistent with Department policy regarding acceptance of funds for land acquisition. All HM lands should be located in areas which are consistent with a multi-species habitat conservation focus. Management Authorization holders/project sponsors who are willing to establish a significant mitigation bank (> 900 acres) should be given special consideration such as 1.1 acres of mitigation credit for each acre preserved.

## PROJECT SPECIFIC MITIGATION MEASURES

Although this report includes recommended Management Measures, the Department should encourage project proponents to propose alternative mitigation strategies that provide equal or greater protection of the species and which also expedite project environmental review or issuance of a CESA Management Authorization. The Department and sponsor may choose to conduct cooperative, multi-year field studies to assess the site's habitat value and determine its use by nesting and foraging Swainson's hawk. Study plans should include clearly defined criteria for judging the project's impacts on Swainson's hawks and the methodologies (days of monitoring, foraging effort/efficiency, etc.) that will be used.

The study plans should be submitted to the Wildlife Management Division and ESD for review. Mitigation measures developed as a result of the study must be reviewed by ESD (for consistency with the policies of the Legislature and Fish and Game Commission) and approved by the Director.

## EXCEPTIONS

Cities, counties and project sponsors should be encouraged to focus development on open lands within already urbanized areas. Since small disjunct parcels of habitat seldom provide foraging habitat needed to sustain the reproductive effort of a Swainson's hawk pair, Staff does not recommend requiring mitigation pursuant to CEQA nor a Management Authorization by the Department for infill (within an already urbanized area) projects in areas which have less than 5 acres of foraging habitat and are surrounded by existing urban development, unless the project area is within 1/4 mile of an active nest tree.

## REVIEW

Staff should revise this report at least annually to determine if the proposed mitigation strategies should be retained, modified or if additional mitigation strategies should be included as a result of new scientific information.

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# Appendix D. National Marine Fisheries Service Biological Opinion Regarding Effects on Sacramento River Winter-run Chinook Salmon of the M&T/Parrott Pump Station and Fish Screen Project

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213
TEL (310) 980-4000; FAX (310) 980-4018

MAR 27 1998

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Mr. Gary Kramer
Refuge Manager
Sacramento National Wildlife Refuge Complex
725 County Road 99W
Willows, California 95988

Dear Mr. Kramer:

Enclosed is a biological opinion that addresses the potential effects on Sacramento River winter-run chinook salmon from the construction and long-term operation of the M&T/Parrott Pumping Station and Fish Screen Project on the Sacramento River at River Mile 192.8.

Based on the best available scientific information, the biological opinion concludes that this project is not likely to jeopardize the continued existence of the Sacramento River winter-run chinook salmon or result in the destruction or adverse modification of its critical habitat. Very little or no incidental take of winter-run chinook salmon is expected, provided that the fish screens are properly installed and maintained according to National Marine Fisheries Service and California Department of Fish and Game anadromous fish screen criteria. Any minor incidental take of this species that may occur during construction or operation of the diversion facility is authorized provided that you comply with all terms and conditions of the incidental take statement.

Consultation must be reinitiated if: (1) the amount or extent of taking specified in the incidental take statement is exceeded, (2) new information reveals that the M&T/Parrott Pumping Station may affect winter-run chinook salmon in a manner or to an extent not previously considered, or (3) a new species is listed or critical habitat is designated that may be affected by this action.

If you have any questions regarding this opinion, please contact Mr. Chris Mobley at (707) 575-6056.

Sincerely,

Hilda Diaz-Soltero
Regional Director

Enclosure

Endangered Species Act
Section 7 Consultation - Biological Opinion

**Agency:** U.S. Fish and Wildlife Service, Sacramento National Wildlife Refuge Complex

**Activity:** Construction and Operation of M & T/Parrott Pumping Station and Fish Screen at Sacramento River Mile 102.8

**Consultation conducted by:** National Marine Fisheries Service
Southwest Region

**Date Issued:** MAR 27 1996

Background

In order to reduce habitat impacts to Big Chico Creek and Butte Creek and provide benefits for spring-run chinook salmon (a population that has declined precipitously), the U.S. Fish and Wildlife Service (FWS) proposes to retire an existing unscreened water diversion on Big Chico Creek and install a new, screened diversion on the Sacramento River at River Mile 192.8. Completion of the project will provide a reliable surface water supply for the newly developed Llano Seco refuge lands which are managed by the California Department of Fish and Game (CDFG) and the FWS.

This project was designed and developed with the support and assistance of several agencies, including the U.S. Bureau of Reclamation (Bureau), the National Marine Fisheries Service (NMFS), and CDFG. The facility will be owned and operated by M & T Chico Ranch, 3964 Chico River Road, Chico, California 95928-9633.

Proposed Activity

The proposed construction would occur between May 15 and August 15, 1996. Initial investigations at the site indicate that there would be no significant impacts to terrestrial or in-river wildlife or vegetation from project construction. A cut will be made through the levee to allow installation of the water supply intake. Erosion and sediment controls to be implemented include installation of sheet piles in the river prior to site dewatering, and use of straw bales and silt fences to control sediment flow to the river. The proposed sediment control measures should minimize increased turbidity. Increased turbidity levels resulting from the construction activity are not anticipated to be measurable up to 200 feet downstream of the project site. Following construction, the levee and river bank will be returned to preconstruction conditions.

The maximum diversion rate at the facility will be 150 cubic feet per second (cfs). The proposed screens will consist of an array of 4 stainless steel cylindrical t-screens. They will be installed so the tops of the screens are 3 feet below the low-water elevation. All NMFS screening criteria, including maximum screen slot width, minimum open area, sweeping velocity, and approach velocity requirements are met by the project design specifications. The screen cleaning system is an Air Burst system that will clean each screen a minimum of once every five minutes.

Listed Species and Critical Habitat

The Sacramento River winter-run chinook salmon (Oncorhynchus tshawytscha) is a unique population of chinook salmon in the Sacramento River. It is distinguishable from the other three Sacramento chinook runs by the timing of its upstream migration and spawning season. NMFS listed winter-run chinook salmon as threatened under emergency provisions of the Endangered Species Act (ESA) in August 1989 and the species was formally listed as threatened in November 1990. The State of California listed winter-run chinook salmon as endangered in 1989 under the California State Endangered Species Act. On June 19, 1992, NMFS proposed that the winter-run chinook salmon be reclassified as an endangered species pursuant to the ESA (57 FR 27416). On August 14, 1992, NMFS proposed critical habitat for the winter-run chinook from Keswick Dam (Sacramento river mile 302) to the Golden Gate Bridge (57 FR 36626).

Prior to construction of Shasta and Keswick Dams in 1945 and 1950, respectively, winter-run chinook salmon were reported to spawn in the upper reaches of the Little Sacramento, McCloud, and lower Pit Rivers (Moyle et al. 1989). Specific data relative to the historic run sizes of winter-run chinook prior to 1967 are sparse and mostly anecdotal. Numerous fishery researchers have cited Slater (1963) to indicate that the winter-run chinook salmon population may have been fairly small and limited to the spring fed areas of the McCloud River before the construction of Shasta Dam. However, recent CDFG research in California State Archives has cited several fisheries chronicles that indicate the winter-run chinook salmon population may have been much larger than previously thought. According to these qualitative and anecdotal accounts, the winter-run chinook salmon reproduced in the McCloud, Pit and Little Sacramento Rivers and may have numbered over 200,000 (Rectenwald 1989). Construction of Shasta and Keswick Dams blocked access to all of the winter-run chinook salmon's historic spawning grounds.

Completion of the Red Bluff Diversion Dam in 1966 enabled accurate estimates of all salmon runs to the upper Sacramento River based on fish counts at the fish ladders. These annual fish counts document the dramatic decline of the winter-run

chinook salmon population. The estimated number of winter-run chinook salmon passing the dam from 1967-1969 averaged 86,509. During 1992, 1993, 1994, and 1995 the spawning escapement of winter-run past the dam was estimated at 1,180, 341, 189, and 1,361 adults, respectively.

The first winter-run chinook salmon upstream migrants appear in the Sacramento-San Joaquin Delta during the early winter months (Skinner 1972). On the upper Sacramento River, the first upstream migrants appear during December (Vogel and Marine 1991). Due to the lack of fish passage facilities at Keswick Dam adults tend to migrate to and hold in deep pools between Red Bluff Diversion Dam and Keswick before initiating spawning activities. The upstream migration of winter-run chinook salmon typically peaks during the month of March, but may vary with river flow, water-year type, and operation of Red Bluff Diversion Dam.

Since the construction of Shasta and Keswick Dams, winter-run chinook salmon spawning has primarily occurred between Red Bluff Diversion Dam and Keswick Dam. The spawning period of winter-run chinook salmon generally extends from mid-April to mid-August with peak activity occurring in June (Vogel and Marine 1991). Aerial surveys of spawning redds have been conducted annually by the CDFG since 1987. These surveys have shown that the majority of winter-run chinook salmon spawning in the upper Sacramento River has occurred between the Anderson-Cottonwood Irrigation District (ACID) dam at RM 298 and the upper Anderson Bridge at RM 284. However, significant numbers of winter-run chinook salmon may also spawn below Red Bluff (RM 245) in some years. In 1988, for example, winter-run chinook salmon redds were observed as far downstream as Woodson Bridge (RM 218).

Winter-run chinook salmon eggs hatch after an incubation period of about 40-60 days depending on ambient water temperatures. Maximum survival of incubating eggs and pre-emergent fry occurs at water temperatures between 40°F and 56°F. Mortality of eggs and pre-emergent fry commences at 57.5°F and reaches 100 percent at 62°F (Boles 1988). Other potential sources of mortality during the incubation period include redd dewatering, insufficient oxygenation, physical disturbance, and water-borne contaminants.

The pre-emergent fry remain in the redd and absorb the yolk stored in their yolk-sac as they grow into fry. This period of larval incubation lasts approximately 2 to 4 weeks depending on water temperatures. Emergence of the fry from the gravel begins during late June and continues through September. The fry seek out shallow nearshore areas with slow current and good cover, and begin feeding on small terrestrial and aquatic insects and aquatic crustaceans. As they grow to 50 to 75 mm in length, the juvenile salmon move out into deeper, swifter water, but continue

to use available cover to minimize the risk of predation and reduce energy expenditure.

The emigration of juvenile winter-run chinook salmon from the upper Sacramento River is highly dependent on streamflow conditions and water year type. Once fry have emerged, storm events may cause en masse emigration pulses. Thus, emigration past Red Bluff may occur as early as late July or August, generally peaks in September, and can continue until mid-March in drier years (Vogel and Marine 1991). Emigration past Glenn Colusa Irrigation District (GCID) at river mile 206 is monitored daily by CDFG with a rotary screw trap in the GCID oxbow. The CDFG trap data shows that juvenile winter-run chinook salmon emigration past GCID begins as early as mid-July and may continue through April (HDR Engineering Inc., 1993). Data combined from 1981-1992 trapping and seining efforts show that winter-run chinook salmon outmigrants occur between early July and early May from Keswick to Princeton (RM 302 to RM 158), and data combined from trawling, seining and State and Federal water project fish salvage records in the Delta show that winter-run chinook salmon outmigrants occur from October to early May in the Sacramento-San Joaquin Delta (CDFG, 1993).

Assessment of Impacts

The proposed May 15 to August 15, 1996, construction window is expected to eliminate virtually all construction-related impacts on winter-run chinook salmon. Although some juvenile winter-run chinook salmon may be in the construction area after mid-July, construction will be close to completion at this time, such that there should be minimal turbidity impacts or other in-water impacts. A brief sediment plume may occur during sheetpile wall removal at the end of the construction period, but any adverse impacts will be limited, and few juvenile winter-run chinook salmon are expected to be exposed to the plume.

Based on experience with similar cylindrical screen facilities installed on the Sacramento River, such as the screens at Maxwell Irrigation District (River Mile 158), the proposed screening facility is not expected to entrain or otherwise take any juvenile winter-run chinook salmon provided it is maintained in good working condition.

Water diversions reduce instream flows, and may thereby reduce habitat quality. However, since this facility will relocate an existing diversion, minimum flows between the facility in the mainstem Sacramento River up to the confluence with Big Chico Creek at River Mile (0.2 miles upstream) should increase slightly (from a minimum of around 4,000 to 4,150 cfs). Minimum flows in the Sacramento River are regulated by the California State Water Resources Control Board, and will be maintained with or without construction of the project.

## Conclusion

Based on the analysis in this opinion, the proposed intallation and long-term operation of the M&T/Parrott Parrott Pumping Plant are not likely to jeopardize the continued existence of the winter-run chinook salmon or result in the destruction or adverse modification of its critical habitat.

## Conservation Recommendations

None are recommended.

## Reinitiation of Consultation

Reinitiation of formal consultation is required if: (1) the amount or extent of taking specified in any incidental take statement is exceeded, (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered, (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action.

Incidental Take Statement

Section 7 (b)(4) of the ESA provides for the issuance of an incidental take statement to the action agency if the biological opinion concludes that the proposed action is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat. In such a situation, NMFS will issue an incidental take statement specifying the impact of any incidental taking of endangered or threatened species, providing for reasonable and prudent measures that are necessary to minimize impacts, and setting forth the terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures. Incidental takings resulting from the agency action, including incidental takings caused by activities authorized by the agency, are authorized under the incidental take statement only if those takings are in compliance with the specified terms and conditions.

This statement authorizes minimal incidental take (less than 10 fish per year) that may occur from construction or long-term operation of the M&T/Parrott Pumping Plant and Fish Screen project. This level of incidental take is authorized by NMFS provided the Fish and Wildlife Service complies with the following terms and conditions:

(1) Prior to operation of the facility, a NMFS-approved maintenance and operation plan must be completed that includes: (a) screen inspections by a diver at least once per year, or whenever abnormal head loss is experienced, (b) thorough cleaning by brush or pressure washer at least once per year, or more frequently as necessary to maintain acceptable approach velocities over the entire screen area, (c) operation and maintenance of the air burst automatic cleaning system, (d) and maintenance of a detailed log of all maintenance, repair, and operational records.

(2) The diversion facility shall be operated and maintained as necessary to maintain acceptable screen performance. Diversions shall be reduced as necessary to avoid exceeding approach velocity criteria in the event that some of the screen elements need cleaning or are taken off-line for repairs. In the event that screen elements are lost or breached, diversion through the element should be halted until the screen can be repaired. NMFS shall be notified prior to any unavoidable partially-screened or unscreened water diversion. NMFS shall also be notified when repairs are completed and normal operations are resumed.

(3) NMFS engineering and diving personnel shall be granted access to the site for screen performance evaluations at least once per year. NMFS will notify the Fish and Wildlife Service and the local landowner prior to visiting the site.

# Appendix E. Opinion of Office of Historic Preservation Regarding M&T/Parrott Pump Station and Fish Screen Project

STATE OF CALIFORNIA — THE RESOURCES AGENCY

PETE WILSON, *Governor*

**OFFICE OF HISTORIC PRESERVATION**
**DEPARTMENT OF PARKS AND RECREATION**
P.O. BOX 942896
SACRAMENTO 94296-0001
(916) 653-6624
FAX: (916) 653-9824

March 7, 1996

Reply to FWS960223A

Gary W. Kramer, Deputy Refuge Manager
Fish and Wildlife Service
Sacramento National Wildlife Refuge Complex
752 County Road 99W
WILLOWS CA 95988

Subject: M & T Ranch Pumping Plant and Fish Screen Project, Butte County

Dear Mr. Kramer:

Pursuant to 36 CFR 800, implementing regulations for Section 106 of the National Historic Preservation Act (NHPA), the Fish and Wildlife Service (FWS) requests I concur with adequacy of its identification efforts regarding the subject undertaking. Thank you for consulting me.

I concur with the FWS finding that there appear to be no historic properties within the undertaking's Area of Potential Effect (APE). Additionally, I am of the opinion that the FWS efforts to identify historic properties conform to the applicable standards.

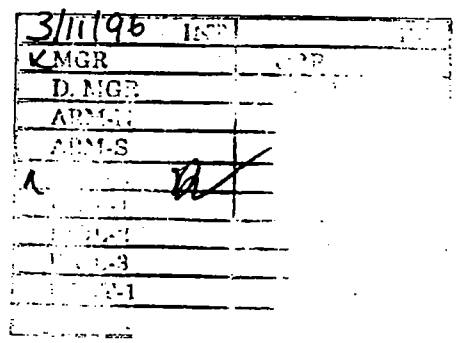
Accordingly, the FWS has satisfied its identification responsibilities pursuant to 36 CFR 800. Be advised, however, that the FWS may have additional Section 106 responsibilities under certain circumstances set forth in 36 CFR 800.

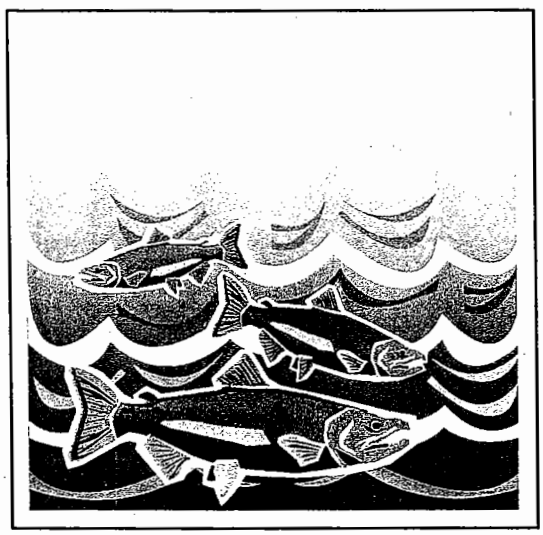
Thank you for considering historic properties during project planning. If you have questions about this review, please contact staff archaeologist Steven Grantham at (916) 653-8920.

Sincerely,

Ms. Cherilyn E. Widell
State Historic Preservation Officer

cc: Anan Raymond





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State of California
The Resources Agency
Department of Fish and Game

NEGATIVE DECLARATION
FOR THE PROPOSED

M&T PUMP RELOCATION AND FISH SCREEN

The Project: Anadromous fish including spring-, fall- late fall- and winter-run chinook salmon and steelhead trout in the Sacramento River and Big Chico Creek are adversely impacted by the existing M&T pumps.

The existing unscreened M&T pumping station is located on Big Chico Creek approximately 3/4 mile upstream from the confluence with the Sacramento River. Water diverted by the M&T pumps is used on land owned and operated by the Department of Fish and Game (DFG), U.S. Fish and Wildlife Service (FWS), as well as the M&T Chico Ranch (M&T) and Parrott Investment Company (PIC). Substantial streamflow reversals occur during juvenile salmon emigration. During these periods, all downstream migrants are lost. Substantial entrainment of juvenile salmon occurs even during periods of positive out flow from Big Chico Creek due to the lack of screens and location of the existing diversion in a dead-end backwater. Adult spring-run chinook salmon migrating up the Sacramento River on their return have difficulty locating the mouth of Big Chico Creek when out flows are reduced or are reversed.

The M&T pump station and diversion will be relocated to the Sacramento River. Fish screens meeting DFG and National Marine Fisheries Service criteria would be placed on the intake structures.

The diversion will be increased from 135 cfs to 150 cfs. Additionally the Ranches (M&T and PIC) will generally decrease their diversion rate at the Parrott-Phelan diversion on Butte Creek by 40 cfs from October 1 through June 30, providing 40 cfs through Butte Creek to the Sacramento River for salmon and steelhead trout restoration. The water bypassed at Parrott-Phelan dam will be transferred to the M&T pumps. The water transfer would be with the U.S. Bureau of Reclamation.

The Finding: Although the project may have the potential to cause minor short-term impacts on soil, vegetation, wildlife, water quality, and aquatic life, the measures to avoid significant impacts will be incorporated into the project will lessen such impacts to less-than-significant levels (see Environmental Assessment/Initial Study).

Basis for the Finding: Based on the Environmental Assessment/Initial Study, it was determined that there would not be significant adverse environmental effects resulting from implementing the proposed project. The project is expected to

achieve a net benefit to the environment by preventing the entrainment and loss of anadromous salmonids, including winter-run chinook salmon (endangered species), spring-run chinook salmon (Proposed for listing as an endangered species) and steelhead trout.

The Department of Fish and Game finds that implementing the proposed project will have no significant environmental impact.

This negative declaration is filed pursuant to the California Environmental Quality Act Guidelines.

John L. Turner

5 - 21 - 96

John Turner, Chief
Environmental Services Division
Department of Fish and Game

Date

## Notice of Determination

To: (X) Office of Planning and Research
1400 Tenth Street
Sacramento, California 95814

( ) County Clerk
County of

From (Public Agency)
Department of Fish and Game
1416 Ninth Street
Sacramento, CA 95814

**Subject:** Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

**Project Title:** M&T/Parrott Pumping Plant and Fish Screen

**State Clearing Number (If submitted to State Clearinghouse)**
SCH 96042024

**Project Location:** Southwest of the City of Chico, immediately downstream of the confluence of Big Chico Creek and the Sacramento River, Butte County.

**Project Description:** The existing M&T pump station and diversion will be relocated to the Sacramento River. Fish screens will be placed on the pump intake structures. Additionally, diversion out of Butte Creek will generally be decreased by 40 cfs from October 1 through June 30 and that flow would be provided in Butte Creek for salmon and steelhead resources.

This is to advise that the Lead Agency - Department of Fish and Game has approved the above described project and has made the following determinations regarding the above described project:

1. The project [( ) will, (x) will not] have a significant effect on the environment.
2. ( ) An Environmental Impact Report was prepared for this project pursuant to the provision of CEQA.
   (x) A Negative Declaration was prepared for this project pursuant to the provisions of CEQA. The Negative Declaration and record of project approval may be examined at:
   Department of Fish and Game, Fisheries Management,
   1701 Nimbus Road, Rancho Cordova, CA 95670
3. Mitigation measures [(x) were, ( ) were not] made a condition of approval for this project.
4. A statement of Overriding Considerations [( ) was, (x)was not] adopted for this project.
5. Findings [(x) were, ( ) were not] made pursuant to the provisions of CEQA.

| Signature (Public Agency) | Date | Title |
|---|---|---|
| | 5-21-96 | CHIEF, ESD |

Date received for filing at OPR:

RECEIVED
MAY 21 1996

# Notice of Completion

Appendix F

See NOTE below

SCH # 96042024

*Mail to:* State Clearinghouse, 1400 Tenth Street, Sacramento, CA 95814 916/445-0613

Project Title: M & T Parrott Pumping Station and Fish Screen Project

Lead Agency: California Department of Fish and Game — Contact Person: John Nelson

Street Address: 1701 Nimbus Dam Road — Phone: (916) 358-2939

City: Rancho Cordova, CA — Zip: 95670 — County: Sacramento

**Project Location**

County: Butte — City/Nearest Community: Chico

Cross Streets: Chico River Road — Total Acres:

Assessor's Parcel — Section: — Twp. — Range: — Base:

Within 2 Miles: State Hwy #: — Waterways: Sacramento R., Big Chico Crk, Butte Crk, Comanche Crk.

Airports: — Railways: — Schools:

**Document Type**

CEQA: [ ] NOP [ ] Supplement/Subsequent [ ] Early Cons [ ] EIR (Prior SCH ) [x] Neg Dec [ ] [ ] Draft EIR

NEPA: [ ] NOI [ ] EA [ ] Draft EIS [x] FONSI

Other: [x] Joint Document [ ] Final Document [ ]

**Local Action Type**

[ ] General Plan Update [ ] General Plan Amendment [ ] General Plan Element [ ] Community Plan

[ ] Specific Plan [ ] Master Plan [ ] Planned Unit Development [ ] Site plan

[ ] Rezone [ ] Prezone [ ] Use permit [ ] Land Division (Subdivision) Parcel Map; Tract Map, etc.

[ ] Annexation [ ] Redevelopment [ ] Coastal Permit [x] Other

RECEIVED MAY 24 2001 STATE CLEARINGHOUSE

**Development Type**

[ ] Residential: Units Acres

[ ] Office: Sq.ft. Acres Employees

[ ] Commercial: Sq.ft. Acres Employees

[ ] Industrial: Sq.ft. Acres Employees

[ ] Educational

[ ] Recreational

[x] Water Facilities: Type pumping sta. MGD 150 cfs

[ ] Transportation: Type

[ ] Mining: Mineral

[ ] Power: Type Watts

[ ] Waste Treatment: Type

[ ] Hazardous Waste: Type

[ ] Other:

**Project Issues Discussed in Document**

[x] Aesthetic/Visual
[x] Agricultural Land
[x] Air Quality
[x] Archaeological/Historical
[ ] Coastal Zone
[ ] Drainage/Absorption
[x] Economic/Jobs
[ ] Fiscal
[ ] Flood Plain/Flooding
[ ] Forest Land/Fire Hazard
[x] Geologic/Seismic
[ ] Minerals
[x] Noise
[x] Population/Housing Balance
[x] Public Services/Facilities
[x] Recreation/Parks
[x] Schools/Universities
[ ] Septic Systems
[x] Sewer Capacity
[x] Soil Erosion/Compaction/Grading
[ ] Solid Waste
[x] Toxic/Hazardous
[x] Traffic/Circulation
[x] Vegetation
[x] Water Quality
[x] Water Supply/Groundwater
[x] Wetland/Riparian
[x] Wildlife
[x] Growth Inducing
[x] Land Use
[x] Cumulative Effects
[ ] Other

**Present Land Use/Zoning/General Plan Use**

Land use at the proposed site is agricultural.

**Project Description**

The M & T pumping station and diversion would be relocated from Big Chico Creek to the Sacramento River to protect chinook salmon and steelhead trout. Fish screens meeting Department of Fish and Game and National Marine Fisheries Service criteria would be placed on the intake structures.

*NOTE:* Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. from a Notice of Preparation or previous draft document), please fill it in.

*Revised October 1989*

Your comments are deeply appreciated and we hope that our response has provided you with enough insight to garner your

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME
Region 2
1701 Nimbus Road, Suite A
Rancho Cordova, California 95670

UNITED STATES DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
Sacramento National Wildlife Refuge Complex
752 County Road 99W
Willows, California 95988

May 21, 1996

Ms. Emily Alma
2300 Estes Road
Chico, CA 95928

Dear Ms. Alma:

Thank you for responding to the environmental document for the M&T/Parrott Pumping Plant and Fish Screen Project. The U.S. Fish and Wildlife Service (FWS) and California Department of Fish and Game (DFG) appreciate your input and concerns regarding the project. We received several letters from landowners who live or own property along Comanche Creek. After reviewing the letters, we summarized the comments into the following concerns: (1) impacts to riparian vegetation and wildlife, (2) urban runoff pollution, (3) water rights, (4) property values, (5) requests for a public hearing and public notification of the project, and (6) mosquito production. The responses to each of these concerns are discussed below.

Issue 1: Riparian vegetation and wildlife

It is both FWS and DFG responsibility and policy to preserve and enhance riparian vegetation. While the proposed project will provide much-needed water to the Llano Seco refuges for wetland development, the agencies share your concern regarding preservation and maintenance of the existing riparian vegetation along Comanche Creek. We will not sacrifice the existing vegetation and its wildlife values for the sake of implementing this project. The proposed project is a significant benefit to all fish and wildlife and their habitat.

The primary concern regarding riparian vegetation is centered around the fact that the diversion from Butte Creek (maximum 150 cubic feet per second [cfs]) may be decreased by up to 40 cfs resulting in dead riparian vegetation. The Butte Creek water exchange will only be in effect from October through June to benefit spring- and fall-run chinook salmon and steelhead trout in Butte Creek and will only decrease diversions by up to 40 cfs.