Initial Study/Mitigated Negative Declaration

Infiltration Gallery Project in Special Run Pool 9

prepared for:

Turlock Irrigation District
Water Planning Department
333 East Canal Drive
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Turlock, California 95381-0949

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February 2001

PROPOSED MITIGATED NEGATIVE DECLARATION

PROPOSED MITIGATED NEGATIVE DECLARATION

DATE: **February 7, 2001**

PROJECT: **INFILTRATION GALLERY PROJECT IN SPECIAL RUN POOL 9**

Project Description

The Turlock Irrigation District (TID), as managing partner for the New Don Pedro Project, is proposing to install and operate a surface water diversion in accordance with the Federal Energy Regulatory Commission (FERC) Settlement Agreement to increase the natural salmon production in the Tuolumne River. The project is an infiltration gallery diversion facility located at Special Run Pool 9 downstream of Fox Grove County Park near River Mile (RM) 26. The proposed project would allow an increase in river flow downstream of La Grange Dam for the benefit of salmon and other fish species. The proposed infiltration gallery would divert water for agricultural use that is now being diverted 26 miles upstream at the La Grange Dam. The infiltration gallery would be constructed in coordination with a separate habitat restoration project at Special Run Pool 9 to minimize disturbance to the river. The proposed project would result in the benefit of improving conditions for salmon habitat by allowing water to flow 26 miles through salmon spawning areas downstream of La Grange Dam before diversion.

Environmental Determination

Based upon the attached Initial Study (IS), TID finds as follows:

> The infiltration gallery project will not have a significant adverse effect on the environment. The project is expected to achieve a net benefit to the environment by improving salmon spawning habitat conditions from increased flows in the lower Tuolumne River between La Grange Dam and Special Run Pool 9.

This finding is contingent upon mitigation measures that will be incorporated into the project as identified in the attached IS. Therefore, this Mitigated Negative Declaration is proposed to be adopted pursuant to State CEQA Guidelines §15074.

Public Review and Comment

The IS and other supporting environmental documents are available for public review at the address shown below. Please submit comments within 30 days of the date above to:

William B. Fryer, P.E.
Water Planning Department Manager
Turlock Irrigation District
333 East Canal Drive (Post Office Box 949)
Turlock, California 95381-0949

Table of Contents

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

Tables

Exhibits

1 INTRODUCTION

1 INTRODUCTION

This Initial Study (IS) has been prepared by the Turlock Irrigation District (TID). The purpose of the IS is to assist TID in planning and decision making, and to provide sufficient evidence and analysis for adoption of a Mitigated Negative Declaration (MND) for installation of a water diversion facility (proposed project) at Mile 26 of the Tuolumne River in Special Run Pool 9 (SRP 9) (Exhibit 1). The purpose of the diversion facility is to provide an alternate location to divert surface water for agricultural irrigation that benefits fall run Chinook salmon. The IS has been completed in compliance with the California Environmental Quality Act (CEQA).

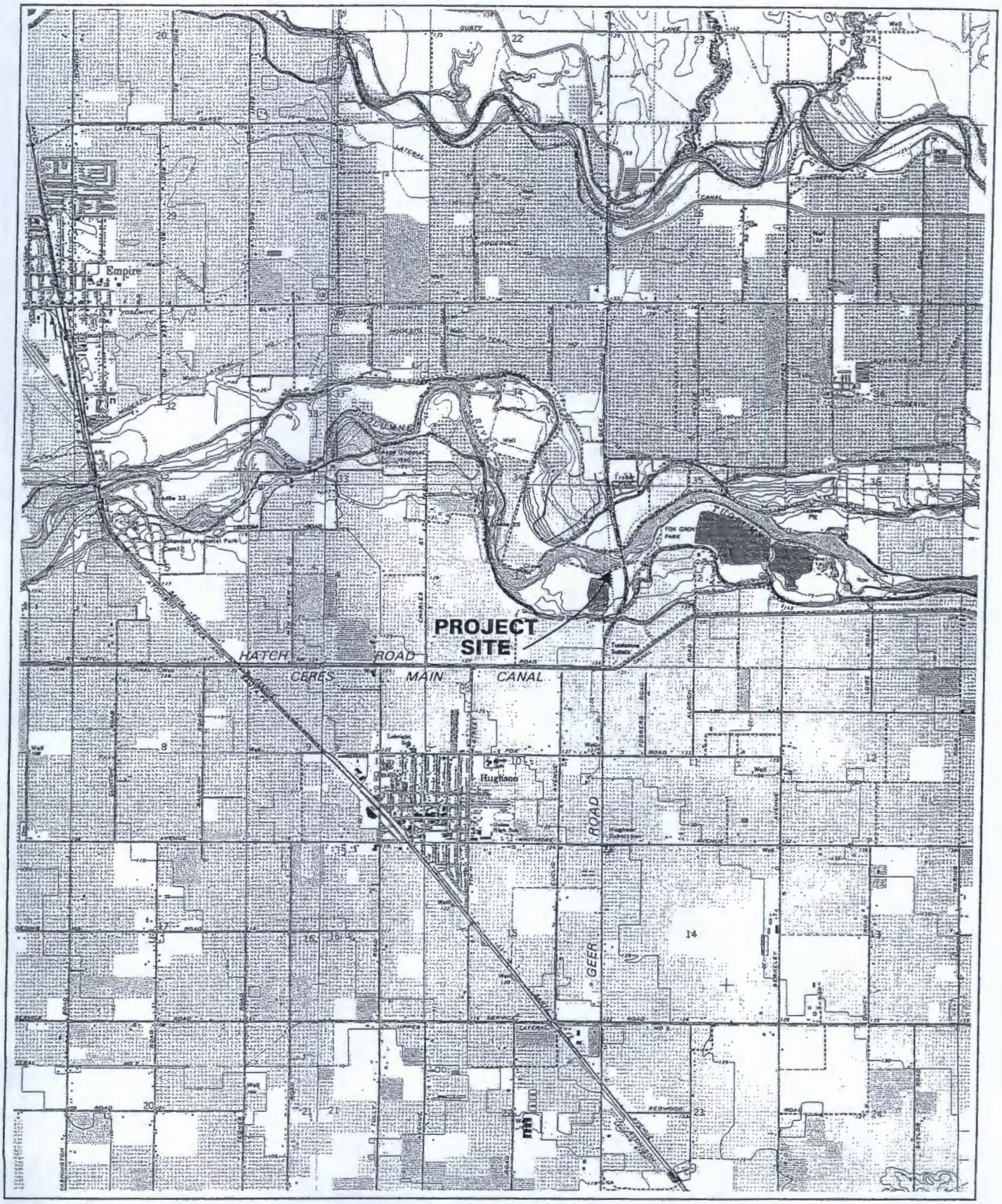
As allowed by CEQA, this IS relies, in part, on information from prior environmental documents, specifically: 1) *Final Environmental Impact Statement for the Reservoir Release Requirements for Fish at the New Don Pedro Project* (1996), prepared for the Federal Energy Regulatory Commission (FERC); and 2) *Tiered Environmental Assessment and IS/MND, Gravel Mining Reach and Special Run Pools 9/10 Restoration and Mitigation Projects* (May 1998), prepared for TID and USFWS. Therefore, these documents are incorporated into this IS by reference. A brief explanation or reference to analysis in these prior documents can be sufficient in this IS, in some cases, to demonstrate that the proposed project would have no significant environmental effects.

1.1 LEAD AGENCY

TID is the project sponsor and lead agency under CEQA. TID is a publicly-owned irrigation district and electric utility, established in 1887 by State legislation. It is located approximately 100 miles east of San Francisco and 90 miles south of Sacramento. TID delivers approximately 600,000 acre-feet of irrigation water through a water distribution system that contains 250 miles of canals. The main storage reservoir for TID is New Don Pedro Reservoir on the Tuolumne River. In addition, TID owns and operates a network of electric generation, transmission, and distribution facilities.

TID has prepared this IS in coordination with the U.S. Fish and Wildlife Service (USFWS). TID and USFWS are jointly implementing the Tuolumne River Restoration Project, which includes restoration of SRP 9, the diversion facility project site. While there is no major federal action required for construction of the infiltration gallery, TID has coordinated with the USFWS to help ensure that the infiltration gallery does not adversely affect the restoration project.

USFWS is also a party to the New Don Pedro Project Settlement Agreement with TID and others, as a result of the re-licensing of the New Don Pedro Dam. In accordance with the Agreement, USFWS has secured funding grants through its Anadromous Fish Restoration Program (AFRP) to support the Tuolumne River Restoration projects and implementation of the Settlement Agreement. TID is providing all the funding for the project, so no federal funds are required for it.



Base Map Source: Denair, Riverbank, Ceres, and Waterford, California Topographic Maps, U.S.G.S., 1987.

Site Vicinity

EXHIBIT 1

TID Water Diversion Project IS
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0' 2000' 4000' FEET

NORTH

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USFWS is assisting with technical input and review of the prior Endangered Species Act (ESA) consultation with the National Marine Fisheries Service to assure consistency of the infiltration gallery with the Biological Opinion for the Tuolumne River Restoration Project to protect endangered species.

1.2 PURPOSE/LEGAL AUTHORITY

In compliance with CEQA, this IS provides the information needed by TID for its environmental reviews of the proposed project.

1.2.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT

This document constitutes an IS prepared pursuant to CEQA (Public Resources Code §21000 *et seq.*), and in accordance with the State CEQA Guidelines (California Code of Regulations §15000 *et seq.*), as amended. The purpose of this IS is to: 1) determine whether implementation of the proposed project would result in significant effects on the environment, and 2) incorporate mitigation measures into the design of the proposed project, as necessary, to reduce or eliminate the project's significant or potentially significant effects.

As provided in CEQA §21064.5, an MND may be prepared for a project subject to CEQA when an initial study has identified significant effects on the environment, if:

> "(1) Revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed Negative Declaration is released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur; and
>
> (2) there is no substantial evidence before the agency that the project, as revised, may have a significant effect on the environment."

Consistent with the State CEQA Guidelines, this IS identifies certain potentially significant effects that could be caused by the proposed project. However, mitigation measures are incorporated into the project that would reduce these impacts to less-than-significant levels. Thus, the Proposed project does not require further evaluation or preparation of an environmental impact report. Therefore, TID proposes to adopt the MND. The proposed MND is included at the front of this document.

1.2.2 NATIONAL ENVIRONMENTAL POLICY ACT

This document is not prepared for compliance with the National Environmental Policy Act (NEPA), because the project does not require a major federal action and it is being implemented consistent with prior federal actions for restoration of the Tuolumne River addressed in a previous NEPA document (USFWS and TID 1998). The USFWS has been consulted by TID during the preparation of the IS to help ensure that the proposed project is consistent with the restoration project funded by USFWS.

1.3 SCOPE AND CONTENT

Based on an initial evaluation, TID staff have identified the environmental issues listed below as requiring evaluation in this IS (please refer to Section 3, Existing Setting and Environmental Impacts):

- Aesthetics
- Air Quality
- Agricultural Resources
- Terrestrial Biological Resources
- Aquatic Biological Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Recreation
- Transportation/Traffic

The Proposed project and facility alternatives would involve the development of an alternative location for a surface water diversion facility for agricultural irrigation, rather than the development of a new water supply for housing, commercial, industrial or other uses that would create or attract population and jobs. Therefore, the Proposed project and facility alternatives would not alter existing population or housing, or create a demand for public services or utilities. For these reasons, TID staff have determined that the issues of population/housing, public services, and utilities need not be evaluated further in this IS.

1.4 RESPONSIBLE AND TRUSTEE AGENCIES

The MND, supported by this IS, is intended to serve as the CEQA environmental document for the Proposed project. TID has the primary authority for approval of the project. Responsible and trustee agencies will have the opportunity to review this document during the public and agency review period and will use this information in consideration and issuance of permits and approvals required for the Proposed project.

1.4.1 STANISLAUS COUNTY

Stanislaus County does not have an approval authority over the proposed water diversion facility. TID is coordinating with Stanislaus County to help address any County issues in this IS/EA. Stanislaus County may comment on the IS during the public review period.

1.4.2 OTHER REGULATORY AGENCIES

Several other agencies have jurisdiction over the Proposed project and/or resources affected by the Proposed project. These other agencies include: U. S. Army Corps of Engineers; U.S. Fish and Wildlife Service; National Marine Fisheries Service; Regional Water Quality Control Board; State Water Resources Control

Board; California Department of Fish and Game; California Department of Water Resources, Reclamation Board; California State Lands Commission; and California State Office of Historic Preservation. The IS will be used by these agencies during their review and consideration of the necessary permits/approvals. All permits required for the project have been or will be obtained by TID prior to project implementation.

1.5 PUBLIC REVIEW PROCESS

In accordance with CEQA, a good faith effort has been made during the preparation of this environmental document to contact affected agencies, organizations and persons that may have an interest in this project. In reviewing this IS/EA, affected public agencies, organizations and the interested public should focus on whether the document sufficiently identifies and analyzes the possible impacts on the environment and describes the ways in which significant effects of the project are proposed to be avoided or mitigated.

Comments on the IS/EA may be made in writing before the end of the comment period. A 30-day review and comment period has been established in accordance with §15205(d) of the State CEQA Guidelines and the NEPA procedures of USFWS. Following the close of the comment period, TID will consider the IS/EA and public comments on the document for potential adoption of an MND.

Written comments should be sent to:

Turlock Irrigation District
Wilton Fryer
Water Planning Department Manager
Turlock Irrigation District
P.O. Box 949
333 East Canal Drive
Turlock, CA 95381

2 PROPOSED PROJECT AND ALTERNATIVES

2 PROPOSED PROJECT AND ALTERNATIVES

This section describes the Proposed Project, including proposed phasing. The Turlock Irrigation District (TID) considers the Proposed Project to be the most feasible and reasonable approach to provide an alternate diversion for an existing surface water supply for agricultural use in Stanislaus County. The proposed infiltration gallery allows increased flows in the Tuolumne River from La Grange Dam to Special Run Pool (SRP) 9 by moving the diversion location downstream. For the purposes of this analysis, three alternatives to the Proposed Project are identified in Section 2.2, including:

No Action Alternative
Alternative Pipeline Route
Alternative Diversion Facility Location

Consistent with §15126.6 of the State CEQA Guidelines, this IS identifies and evaluates a range of reasonable alternatives to the Proposed Project, or to the location of the Proposed Project, which would feasibly attain most of the basic objectives of the project and could avoid or substantially lessen any of the significant effects of the project.

2.1 PROPOSED PROJECT

2.1.1 BACKGROUND

The diversion facility is proposed is in response to the Federal Energy Regulatory Commission (FERC) Settlement Agreement (FSA) of 1995. Section 11, page 5 of the FSA requires that TID promote a plan to divert water for irrigation from a downstream location on the Tuolumne River (the proposed project) as a condition to provide additional water in the river to improve fish habitat (as part of the Tuolumne River Restoration Project). Under the FSA, flows would remain in the Tuolumne River channel rather than being diverted from an upstream location to the TID Main Canal. This would provide an addition 100 cfs in the Tuolumne River from La Grange Dam to SRP 9 during salmon spawning and rearing seasons once the diversion project is in place. A portion of the existing irrigation withdrawals from La Grange Dam, which reduce releases to the Tuolumne River, would be replaced by the diversion from the Tuolumne River downstream of the reach with important fish spawning and rearing habitat. The additional water left in the river would substantially improve salmon spawning and rearing conditions, particularly during drought periods.

Section 11, page 5 of the FSA indicates that the diversion project would be constructed between river miles 19 and 26, and that financial support from USFWS and CDFG would be expected for the design and construction of the diversion facilities. Section 18, page 14 of the FSA requires The Tuolomne River Technical Advisory Committee (TRTAC) participants to support the relocation of irrigation diversions. The proposed infiltration gallery would be consistent with the FSA.

TID is implementing a separate project, the Tuolumne River Restoration Project (Restoration Project) to improve habitat conditions for salmon. The Restoration Project involves reestablishing natural channel dynamics and filling mine pits captured by the river. The proposed infiltration gallery is located at the site of one of the restoration projects, the filling of SRP 9 (a captured mine pit). Construction of the Restoration Project provides the opportunity to install the proposed diversion facility without substantial additional disturbance of the river channel.

2.1.2 LOCATION

The Restoration Project includes channel restoration at two in-channel mine pits captured by the river, called Special Run Pools (SRP) 9 and 10.

Both SRP 9 and 10 (at river mile 26 of the Tuolumne River) were reviewed by TID as potential water diversion sites. SRP 9 is the preferred site to locate a diversion facility because of its proximity to highway access and an existing power line right-of-way. As indicated in Exhibit 2, SRP 9 extends from Geer Road to approximately 1,800 feet downstream. SRP 9 is 400 feet wide, 800 feet long, and currently varies from 6 to 19 feet deep.

2.1.3 PURPOSE, NEED, AND OBJECTIVES

The purpose of the Proposed Project is to continue to provide participating jurisdictions with water for agricultural irrigation while at the same time improving salmon habitat in the Tuolumne River. The goal for the Proposed Project is to increase the flow left in the 26-mile-long upstream portion of the Tuolumne River by not diverting that water to the TID Main Canal at La Grange Dam. The objectives of the Proposed Project are to: 1) provide an alternative diversion location for existing agricultural irrigation that allows an increase flow in the salmon spawning areas of the river, 2) minimize disturbance of the Tuolumne River channel by construction of the proposed diversion in conjunction with restoration of SRP 9, and 3) protect the Tuolumne River as an active cold-water fishery. The water would come from existing irrigation water supplies and would not constitute additional irrigation diversions.

The Proposed Project would achieve the purpose and need by: 1) diverting 100 cfs of water from the river downstream of important salmon spawning and rearing habitat to meet the agricultural irrigation demand, and 2) meeting the FSA pre-condition for Don Pedro Reservoir to improve salmon habitat in the upper reaches of the Tuolumne River.

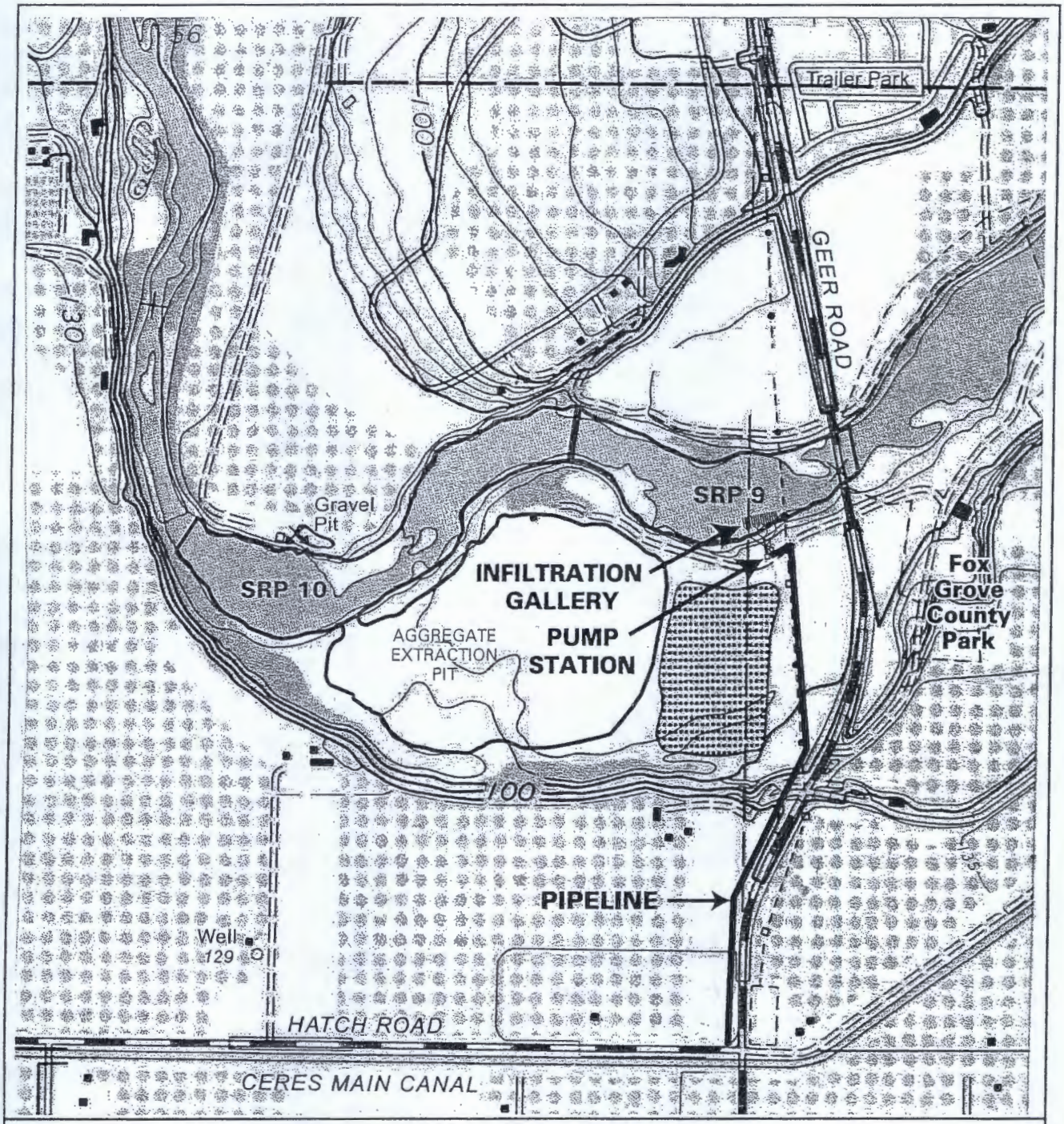
The re-construction of the stream channel at SRP 9 as part of the Restoration Project provides the unique opportunity to install an engineered infiltration gallery that would provide the least environmentally damaging method of diverting water from the Tuolumne River for agricultural irrigation. Listed below are the advantages for installing an infiltration gallery facility at SRP 9 during construction of the Restoration Project:

1. Installation of the infiltration gallery would not damage riverine and riparian habitat, if it occurs as part of the construction process for SRP 9 restoration.
2. Installation in conjunction with restoration of SRP 9 would save an estimated $1,867,000 over the cost of installation after the area is restored.
3. The draft EIR of June 1992 for the proposed TID domestic water plant, which was not finalized or certified, indicated that the river diversion option was the most environmentally beneficial water source alternative.
4. Installation of the irrigation diversion in a manner that also benefits salmon has the potential for future operational cost share with Modesto Irrigation District and the City and County of San Francisco.
5. Construction of an engineered backfill around the diversion facility provides best assurance of long-term flow characteristics with a minimum footprint in the river, compared to placement of the facility on "natural" riverbed geologic formations.

2.1.4 DESCRIPTION/CHARACTERISTICS

The proposed diversion would include an infiltration gallery, which is a set of permeable horizontal or inclined conduits into which water can infiltrate from an overlying or adjacent source. It can be constructed below a river channel where the permeability of the natural soils is sufficient to transmit this amount of water to the gallery under the existing head (water pressure) conditions. The feasibility of an infiltration system to produce the assumed flow rate is a function of the permeability and transmissivity of the overlying strata. According to a USGS open file report, the transmissivity of the sand strata in the vicinity of the proposed water diversion at SRP 9 ranges from 105,000 to 135,000 gallons per day per foot (gpd/ft) or an average of 120,000 gpd/ft. Based on this transmissivity, implementation of an infiltration gallery is considered feasible at this location.

The proposed infiltration gallery would consist of a system of 16 horizontal, 24-inch diameter by 40-foot-long, spiral-wound stainless steel well casings with a capacity of 100 cfs (65 million gallons per day [mgd]) (Exhibit 2). The infiltration gallery would be developed as 4 modular galleries, each with a flow capacity of 25 cfs. (This could allow development of galleries according to available funding.) TID would install the infiltration gallery during construction of the SRP 9 Restoration Project, which involves backfilling of the SRP 9 deep pool in the riverbed. This backfill would be for use as a filter pack in the proposed infiltration gallery system, and would be placed a minimum of 4 feet over the 16 well casings in a 160-foot-long by 40-foot-wide area of the river bed. This backfill would need to be screened, and possibly graded in lifts around the well casings, to minimize the transport of fines to the casings. These 16 well casings would be extended with solid pipe and in groups of four, and would be connected on the south side of SRP 9 to a series of 36-inch diameter collector pipes, which would in turn connect to a proposed pump station. Future cleaning requirements might result in an adjustment to the final configuration of this pipe manifold. All of the piping would be buried.



Base Map Source: Denair, California Topographic Map, U.S.G.S., 1987.

Proposed Action

EXHIBIT 2

TID Water Diversion Project IS
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The size of the proposed infiltration gallery piping system would allow for some degradation of capacity over time due to fine materials accumulating in the gravels around the buried screen system, and possibly along the bottom of the horizontal screen sections. A backwash system would be installed as part of the gallery to clean out the system. If the backwash system results in a net movement of gravel off the infiltration gallery site, clean gravel may occasionally be imported and placed at the upstream end of SRP 9 as part of a long-term maintenance program to ensure that adequate filter material is available above the infiltration gallery piping. This gravel addition is also consistent with maintenance fluvial processes of the Restoration Project for SRP9.

The Restoration Project proposes a dynamic river channel in the area of SRP 9. A dynamic river channel is conducive to the development of salmon rearing habitat. However, over time a dynamic channel could move off of the proposed infiltration gallery piping, thus reducing or eliminating the water diversion capability of the infiltration gallery. Therefore, the restoration plan for SRP 9 would be modified to accommodate the infiltration gallery by including some hard toe materials along the banks with bioengineering on portions of the south floodplain bench.

The proposed pump station would pump diverted water from the infiltration gallery to the conveyance pipeline. The pump station would consist of up to four electric pumps totaling 1,100 horsepower and a transformer to be located on a 24-foot by 36-foot footprint, with a fenced enclosure and vegetative screening. An existing electrical service line in the area would need to be upgraded. Construction of the pump station would need a temporary easement.

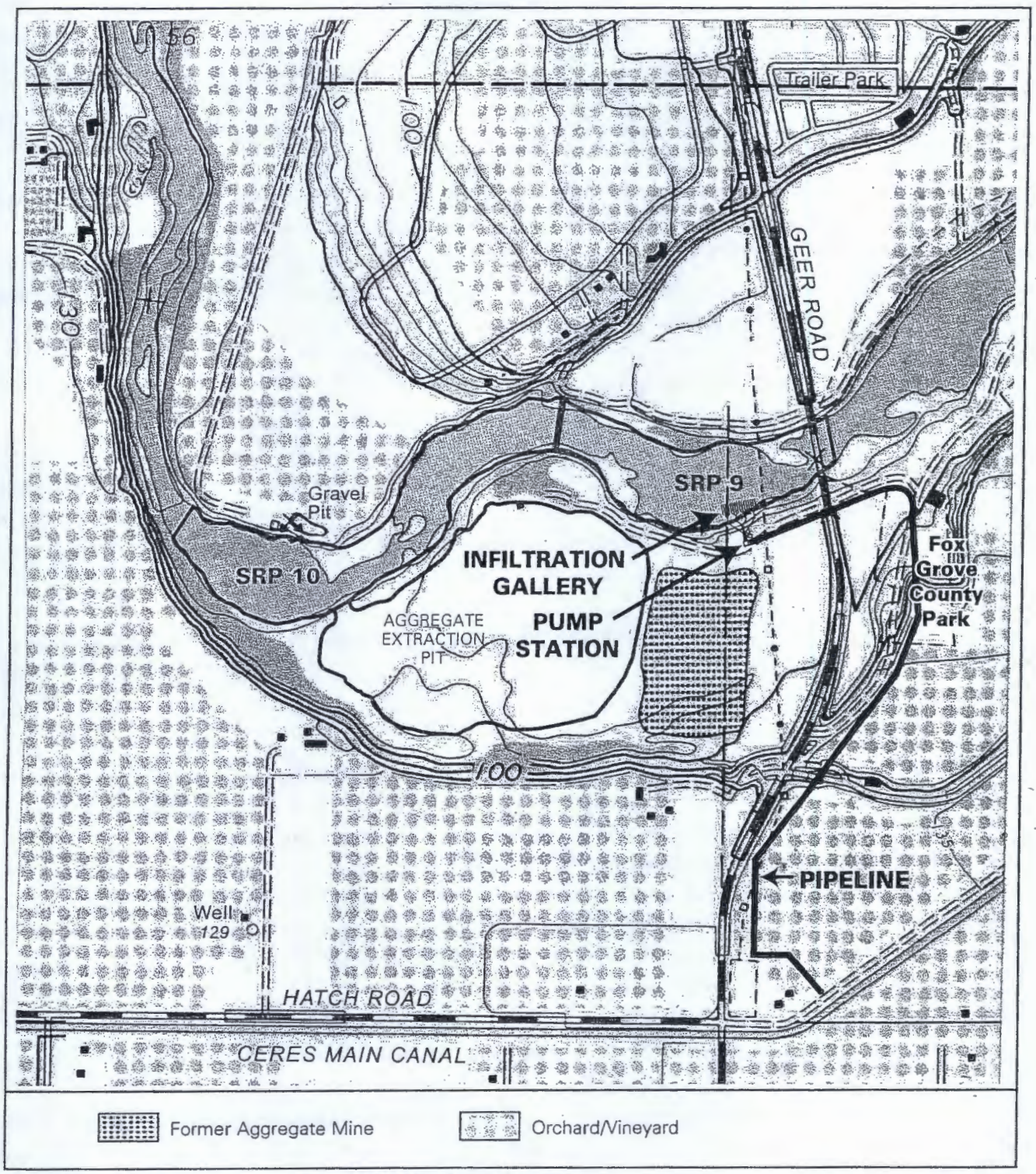
A 2,800-foot-long, 48- to 54-inch-wide underground conveyance pipeline is part of the Proposed Project, to be constructed from the pump station to a point of connection with the TID Main Canal to the south. The pipeline would convey diverted water to agricultural users in the TID service area, and would follow a southerly route to the west of Geer Road within an existing TID power pipeline easement. The connection point along the TID Canal would occur near Drop 6 (just west of the intersection of Geer Road and the Canal).

The Proposed Project would be implemented in two phases. The infiltration gallery would be developed in the first phase, in concert with the Restoration Project, with the collector pipes stubbed and capped along the south side of SRP 9 for future connection to the proposed pump station. The pump station and conveyance pipeline would be developed, and the cleaning/maintenance plan implemented, in the second phase, after completion of the Restoration Project.

2.2 Alternatives to The Proposed Project

2.2.1 No-Action Alternative

Under the No Action alternative no water diversion facility would be installed, and the only action occurring within the project area would be the Restoration Project. Under this alternative, water would continue to be diverted at La Grange Dam. No water would be diverted from the downstream Tuolumne River location to



Base Map Source: Denair, California Topographic Map, U.S.G.S., 1987.

Alternative Pipeline Route

EXHIBIT 3

TID Water Diversion Project IS
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0' 250' 500' 1000' FEET

NORTH

EDAW

address TID irrigation demand; therefore, salmon or steelhead rearing habitat would not benefit from greater flow maintained in the river between La Grange Dam and SRP 9.

2.2.2 Alternative Pipeline Route

The alternative pipeline route involves routing the pipeline from the pump station near SRP 9, underneath the Geer Road Bridge and along an existing park/service road on the east side of Geer Road, to the point of connection with the TID Main Canal (Exhibit 3). This alternative route would require a longer pipeline (4,200 feet), and would have a higher pumping cost for long-term operation and maintenance. Land would need to be acquired for a pipeline easement.

2.2.3 Alternative Diversion Facility Location

The Alternative Diversion Facility location involves the development of the proposed infiltration gallery, pump station and pipeline at SRP 10. This location is considered as an alternative because it is the other place at river mile 26 where the diversion facility could be installed in coordination with the Restoration Project. SRP 10 is further downstream from Geer Road than is SRP 9 and would have more distant highway access during construction.

2.3 Alternatives Considered but Eliminated from Detailed Consideration

2.3.1 Fish Screens Within SRP 9

TID evaluated the placement of conventional fish-screened intake facilities and a low-flow weir structure (dam) in the channel to provide the necessary submergence for the pumps, as a mechanism of water diversion required to meet project objectives. The Tuolumne River is considered an active cold water fishery. TID rejected the use of screened intakes and the weir due to fish entrapment issues that ran counter to the objectives of the Restoration Project. In addition, construction of a fish screen could require removal of substantial riparian vegetaiton. TID also eliminated this alternative because, based on data from the floods of 1969, it determined that the inclusion of a weir would increase the potential for flooding (Brown and Caldwell 1992).

2.3.2 Infiltration Gallery Under Geer Road Bridge

As part of the formulation of the Proposed Project, TID considered placing the infiltration galleries under the Geer Road Bridge, located at the upper reaches of SRP 9, as a mechanism of water diversion required to meet project objectives. It was thought that the more confined and stable channel at this location would be more conducive to operation of the galleries as it would prevent occasional migration of the channel to other locations within the larger river bed. However, the river channel at this location is too narrow to permit the development and operation of the proposed infiltration gallery system. This alternative was thus eliminated from further consideration as being infeasible.

2.3.3 RANNEY COLLECTORS

TID evaluated installation of Ranney Collectors under the river as a mechanism of surface water diversion required to meet project objectives. This type of diversion system would include a series of collector wells consisting of a vertical well caisson located outside of the river channel and a series of perforated collector laterals extending beneath the river bed. Each well would include one or more pumps that would be enclosed and housed on top of the vertical well caisson.

The Ranney Collector test sites were located downstream of SRPs 9 and 10 between river mile 20 and 21. The soils underlying the river were found to be unsuitable for the Ranney Collectors to function (i.e., low permeability and transmissivity). The same geologic conditions are present at the SRP 9 site. This alternative was thus eliminated from further consideration as being infeasible.

3 EXISTING SETTING AND ENVIRONMENTAL IMPACTS

3 EXISTING SETTING AND ENVIRONMENTAL IMPACTS

3.1 INTRODUCTION

The following section provides: 1) a summary of the potentially significant environmental impacts of the proposed project and alternatives, along with proposed mitigation measures; 2) a completed Environmental Checklist for the proposed project; and 3) a description of the affected environment and the potential environmental consequences of the proposed project and each alternative. The description of the affected environment and potential environmental consequences of the proposed project and alternatives covers 14 separate environmental issues that the lead agency (TID) anticipated could have potential effects on the environment. These include the following:

- Aesthetics
- Air Quality
- Agricultural Resources
- Terrestrial Biological Resources
- Aquatic Biological Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Recreation
- Transportation/Traffic

Because the proposed project and facility alternatives would involve an alternative location for an existing agricultural water diversion facility for irrigation, rather than water supply for housing, commercial, industrial or other types of development that would create jobs or attract population, it would not alter existing population or housing or create a demand for public services or utilities. Therefore, the proposed project and alternatives would result in a less-than-significant impact or no impact with respect to these issues, and therefore do not require further evaluation in this IS under CEQA.

3.1.1 SUMMARY OF ENVIRONMENTAL IMPACT ANALYSIS

The environmental impact analysis contained in this IS indicates that there is no substantial evidence in the record before TID that the proposed infiltration gallery project, as revised by mitigation measures described herein, would have a significant effect on the environment. Where potentially significant effects may occur, mitigation measures have been identified and incorporated into the project that would avoid the effects, or reduce them to less-than-significant levels. TID proposes to adopt a Mitigated Negative Declaration for CEQA compliance.

3.1.2 ENVIRONMENTAL CHECKLIST

A completed Environmental Checklist for the proposed project follows. One of four boxes is checked in response to each question: Significant Impact, Less Than Significant Impact With Mitigation Incorporated, Less Than Significant Impact, or No Impact. Explanations and supporting information for each of the

answers are provided in the balance of Section 3 of this IS. The checked items in the checklist relate to the proposed project. The explanation following the checklist questions addresses both the proposed project and the alternatives. To assist the reader, the end of each written answer includes, in parentheses, a letter symbol indicating one of the four checklist determinations for the proposed project. The letter symbols are as follows:

SI = Significant Impact
LSM = Less Than Significant Impact With Mitigation Incorporated
LTS = Less Than Significant Impact
NI = No Impact

ENVIRONMENTAL CHECKLIST

PROJECT INFORMATION

1. Project Title: TID Infiltration Gallery Project

2. Lead Agency Name and Address: CEQA Lead Agency
Turlock Irrigation District (TID)
333 East Canal Drive
P.O. Box 949
Turlock, CA 95381-0949

3. Contact Person and Phone Number: TID
Wilton Fryer
Water Planning Department Manager
(208) 883-8316

4. Project Location: Special Run Pool (SRP) 9 (Tuolumne River, mile 26), Stanislaus County, California.

5. Project Sponsor's Name and Address: See Lead Agency above.

6. General Plan Designation: Agriculture

7. Zoning: Z-2-40

8. Description of Project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.)

Infiltration gallery, pump station and pipeline. See Section 2.0 of this EA/IS for further description.

9. Surrounding Land Uses and Setting:
North: Tuolumne River, farmland, vacant area, one farm residence.
South: Vacant land, grassland, farmland, one farm residence.
East: Vacant land, Geer Road, Fox Grove Park.
West: Vacant land, inundated former mining pit.

10: Other public agencies whose approval is required:

U.S. Fish and Wildlife Service
U.S. Army Corps of Engineers
National Marine Fisheries Service
Regional Water Quality Control Board
State Water Resources Control Board
California Department of Fish and Game
California Department of Water Resources, Reclamation Board
California State Lands Commission
California State Office of Historic Preservation

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Agriculture Resources	☐	Air Quality
☐	Biological Resources	☐	Cultural Resources	☐	Geology / Soils
☐	Hazards & Hazardous Materials	☐	Hydrology / Water Quality	☐	Land Use / Planning
☐	Mineral Resources	☐	Noise	☐	Population / Housing
☐	Public Services	☐	Recreation	☐	Transportation / Traffic
☐	Utilities / Service Systems	☐	Mandatory Findings	☒	None

DETERMINATION

On the basis of this initial evaluation:

The proposed project **COULD NOT** have a significant effect on the environment, and a **NEGATIVE DECLARATION** (CEQA) and **FINDING OF NO SIGNIFICANT IMPACT** (NEPA) will be prepared.	☐
Although the proposed project **COULD** have a significant effect on the environment, there **WILL NOT** be a significant effect in this case because revisions in the project have been made by or agreed to by the proponent. A **MITIGATED NEGATIVE DECLARATION** CEQA) and **MITIGATED FINDING OF NO SIGNIFICANT IMPACT** (NEPA) are proposed for adoption.	☒
The proposed project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** CEQA) and **ENVIRONMENTAL IMPACT STATEMENT** (NEPA) or its functional equivalent is required.	☐

ENVIRONMENTAL ISSUES *(see attachments for information sources)*	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS — Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒
II. AGRICULTURAL RESOURCES				
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? (The Farmland Mapping and Monitoring Program in the California Resources Agency, Department of Conservation, maintains detailed maps of these and other categories of farmland.)	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

ENVIRONMENTAL ISSUES *(see attachments for information sources)*		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
	c) Involve other changes in the existing environment which, due to their location or nature, could individually or cumulatively result in loss of Farmland, to non-agricultural uses?	☐	☐	☐	☒
III.	**AIR QUALITY**				
	Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
	a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
	b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
	c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
	d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
	e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒
IVa.	**TERRESTRIAL BIOLOGICAL RESOURCES** — Would the project:				
	a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
	b) Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
	c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
	d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?	☐	☐	☒	☐

ENVIRONMENTAL ISSUES *(see attachments for information sources)*		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒
IVb.	**AQUATIC BIOLOGICAL RESOURCES** — Would the project:				
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
b)	Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
c)	Interfere substantially with the movement of any native resident or migratory fish species or with established resident or migratory corridors, or impede the use of nursery sites?	☐	☐	☒	☐
d)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
e)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒
V.	**CULTURAL RESOURCES** — Would the project:				
a)	Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☒	☐	☐
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d)	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

ENVIRONMENTAL ISSUES *(see attachments for information sources)*	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. GEOLOGY AND SOILS — Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Div. of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
VII. HAZARDS and HAZARDOUS MATERIALS — Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐

ENVIRONMENTAL ISSUES *(see attachments for information sources)*		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f)	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h)	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐
VIII.	**HYDROLOGY AND WATER QUALITY** — Would the project:				
a)	Violate any water quality standards or waste discharge requirement?	☐	☒	☐	☐
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☒	☐	☐
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
e)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☒	☐	☐
f)	Otherwise substantially degrade water quality?	☐	☒	☐	☐
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h)	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☒	☐

ENVIRONMENTAL ISSUES *(see attachments for information sources)*	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☒	☐
k) Will the project adversely affect river geomorphology and geomorphic processes from those envisioned for the Tuolumne River under the Restoration Project?	☐	☐	☐	☐
IX. LAND USE AND PLANNING — Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒
d) Result in land use incompatibilities with adjacent land uses?	☐	☐	☒	☐
e) Result in the displacement of existing land uses?	☐	☐	☒	☐
X. MINERAL RESOURCES — Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒
XI. NOISE — Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐

ENVIRONMENTAL ISSUES *(see attachments for information sources)*		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f)	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
XII.	**POPULATION AND HOUSING** (Dismissed as not relevant to the proposed project.)	☐	☐	☐	☒
XIII.	**PUBLIC SERVICES** (Dismissed as not relevant to the proposed project.)	☐	☐	☐	☒
XIV.	**RECREATION**				
a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b)	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒
c)	Have a substantial adverse effect on recreational values?	☐	☐	☐	☒
XV.	**TRANSPORTATION/TRAFFIC** — Would the project:				
a)	Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☒	☐	☐
b)	Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☒	☐	☐
c)	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d)	Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
e)	Result in inadequate emergency access?	☐	☒	☐	☐
f)	Result in inadequate parking capacity?	☐	☐	☐	☒
g)	Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
XVII.	**MANDATORY FINDINGS OF SIGNIFICANCE**				
a)	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☒	☐	☐
c)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Authority: Public Resources Code Sections 21083 and 21087.
Reference: Public Resources Code Sections 21080(c), 21080.1, 21080.3, 21082.1, 21083, 31083.3, 21093, 21094, 21151; *Sundstrom v. County of Mendocino*, 202 Cal. Approximately. 3d 296 (1988); *Leonoff v. Monterey Board of Supervisors*, 222 Cal. Approximately. 3d 1337 (1990).

3.2 AESTHETICS

3.2.1 AFFECTED ENVIRONMENT

Key visual features in the vicinity of the infiltration gallery and pump station sites include SRPs 9 and 10 (part of the Tuolumne River), agricultural fields and orchards, native grassland, the Geer Road bridge, and scattered farm buildings. Within the current river channel, mining activities have removed riparian vegetation and altered the natural landforms into various pits, piles, and ponds that feature unnatural, engineered berms. SRPs 9 and 10 represent two of these mined pits that have been captured by the river. On the south side of the SRPs is a large off-channel aggregate extraction pit that has been inundated. Riparian vegetation (trees, shrubs) borders the southern side of SRP 10. The dominant landscape feature in the area is the orchards. The infiltration gallery and pump station sites are visible from Geer Road and from the river, but are not visible from most adjacent farm residences, except one residence on the south side of the river.

Key landscape features along the proposed pipeline routes include native grassland and orchards to the west, and the elevated Geer Road to the east. Key visual features along the proposed project pipeline route include the elevated Geer Road to the west, and vineyards and orchards to the east. Visual resources along the alternative pipeline route include orchards, Fox Grove Park, and vineyards. Both pipeline routes are visible from Geer Road and from several farm residences along the pipeline routes.

The visual character of the project area is rural, with both agricultural areas and disturbed natural areas (i.e., the Tuolumne River and valley floor, which have been substantially altered by mining operations). Scenic resources in the project area include the surrounding orchards, vineyards, and Fox Grove Park. The mining-related disturbance in the project area has diminished the scenic value of this stretch of the river.

3.2.2 ENVIRONMENTAL CONSEQUENCES

a) Would the project have a substantial adverse effect on a scenic vista?

Proposed Project

Under the proposed project, the construction of the infiltration gallery and pump station would occur concurrently with Restoration Project improvements to SRP 9, thereby creating no substantial additional construction disturbance. Therefore, construction of the infiltration gallery and pump station under the proposed project would not have a substantial adverse effect on a scenic vista. (LTS)

Because the infiltration gallery and pipelines would be underground and because the proposed pump station would be small (50' x 50'), they would not have a substantial adverse effect on a scenic vista, once constructed. Although a potentially significant scenic effect would not occur, TID could still plant trees to screen the pump station's already limited visibility. (LTS)

Alternative Pipeline Route

Same impacts as the proposed project. (LTS)

Alternative Diversion Facility Location

Same as impacts as the proposed project. (LTS)

No Action

Under the No Action Alternative, the appearance of in the project area would remain unchanged. Therefore, this alternative would have no adverse effect on a scenic vista. (NI)

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

Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

Proposed Project

Under the proposed project, the construction of the infiltration gallery and pump station would occur concurrently with Restoration Project improvements to SRP 9, so it would result in minimal additional construction disturbance. In addition, as indicated above, the portion of the Tuolumne River in which the infiltration gallery and pump station are proposed has diminished scenic value at this time. Therefore, construction of the proposed infiltration gallery and pump station would not substantially damage a scenic resource or substantially degrade the existing visual character of the area. (LTS)

The proposed pipeline alignment would pass along an existing powerline right-of-way and currently open fields located west of Geer Road. Because the pipeline would be underground, and because construction of the pipeline would be temporary and small in scale, the pipeline would not substantially degrade the visual character of the area. Because the pipeline would be located within an existing TID easement that is free of orchard trees or other important landscape features, it would not substantially damage scenic resources. (LTS)

Alternative Pipeline Route

The effects of the infiltration gallery and pump components would be the same as the proposed project. (LTS)

The alternative pipeline alignment is located primarily along existing farm roads and the Fox Grove Park access road, but could also pass through several landscape features, including oak trees in Fox Grove Park, vineyards, and orchards located east of Geer Road. Because the pipeline would be underground, and because construction activities would be temporary and small in scale, the pipeline would not substantially degrade the visual character of the area. However, construction of this pipeline could require the removal of trees within the park and thus substantially damage scenic resources. The mitigation measure below would avoid significant impacts to scenic resources associated with this alternative. (LSM)

AESTH-1: If the alternative pipeline route is selected, TID will replace any Fox Grove Park trees removed as a result of pipeline construction on a one-to-one basis within the vicinity.

Alternative Diversion Facility Location

Same impacts as the proposed project. (LTS)

No Action

Under the No Action Alternative, the visual character and scenic resources of the area would remain unchanged. Therefore, this alternative would not damage scenic resources or degrade the visual character of the area. (NI)

d) Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Proposed Project

The proposed project would not include any lighting or substantial reflective surfaces that could cause glare. Therefore, this alternative would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. (NI)

Alternative Pipeline Alignment

Same impacts as the proposed project. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

No Action

Same impacts as the proposed project. (NI)

3.3 AGRICULTURAL RESOURCES

3.3.1 AFFECTED ENVIRONMENT

Land uses in the project area include a mix of open space, aggregate mining operations, and agriculture. SRPs 9 and 10 and their immediate environs are not designated by the California Resources Agency as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The southern halves of the proposed and alternative pipeline routes cross land designated as Prime Farmland and farmland under Williamson Act contracts. All of the land in the project area is zoned by Stanislaus County as A-20-40 (Agriculture) (Ford, pers. comm., 2000)

3.3.2 ENVIRONMENTAL CONSEQUENCES

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

Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?

Proposed Project

The proposed infiltration gallery and pump station would be developed on lands that are not designated farmland, and that are not under Williamson Act contracts (Ford, pers. comm., 2000). While these facilities would be developed on land zoned by the County for agriculture, they are utilities and ancillary agricultural uses that are permitted by such zoning. The purpose of the proposed diversion facility is to provide water for agricultural irrigation. Furthermore; 1) the County had determined that these facilities are not inconsistent with said zoning (Ford, pers. comm., 2000); and 2) these facilities are proposed within and adjacent to the Tuolumne River channel, areas that are not suitable for agriculture. Therefore, these components of the proposed project would not convert designated farmland to a non-agricultural use, would not conflict with Williamson Act contracts, and would not conflict with agricultural zoning. (NI)

The southern half of the proposed pipeline route west of Geer Road would cross designated prime farmland and farmland under Williamson Act contracts (Ford, pers. comm., 2000). However, the proposed pipeline would be developed within an existing TID utility easement that is neither under active agriculture nor subject to Williamson Act agreements. Furthermore, the purpose of the pipeline is to convey water to be used for irrigation. It would be consistent with the County's agricultural zoning of the pipeline corridor and its environs. Therefore, the pipeline component of the proposed project would not convert designated farmland to a non-agricultural use, would not conflict with Williamson Act contracts, and would not conflict with agricultural zoning. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

Alternative Pipeline Route

The infiltration gallery and pump station components would have the same impacts as the proposed project. (NI)

The majority of the alternative pipeline route would follow existing roads east of Geer Road. However, portions of the southern half of the pipeline route would cross designated prime farmland and farmland under Williamson Act contracts (Ford, pers. comm., 2000). Because a TID easement would be established associated with this pipeline, a small amount of existing agricultural land within the easement would be converted to a non-agricultural use. Although the pipeline easement

would be acquired from property under Williamson Act contracts, it would not conflict with the contract. Because the purpose of the pipeline is to convey water for irrigation use, it supports continued agricultural operations in the area. (NI)

No Action

Under the No Action Alternative, land uses in the project area would remain unchanged. Therefore, this alternative would not convert designated farmland to a non-agricultural use, would not conflict with Williamson Act contracts, and would not conflict with agricultural zoning. (NI)

3.4 AIR QUALITY

3.4.1 AFFECTED ENVIRONMENT

The project area is located in the eight-county San Joaquin Valley Air Basin (Basin). The Basin's air quality has been designated non-attainment by the EPA for federal O_3 (ozone) and PM_{10} (fine particulate matter, dust) standards. The California Air Resources Board (ARB) has designated the Basin as non-attainment for state ozone and PM_{10} standards. The Federal Clean Air Act (CAA) and the California Clean Air Act require areas that are designated non-attainment to reduce emissions until federal and state standards are met. The San Joaquin Valley Air Pollution Control District (SJVAPCD) has jurisdiction over air quality in the Basin. SJVAPCD's interim thresholds for the ozone precursors ROG (reactive organic gases) and NO_x (oxides of nitrogen) are 10 tons/year for each pollutant. Specifically, ozone precursor emissions are generated from both heavy and light duty vehicle use. The action is also subject to SJVAPCD Regulation VIII (Fugitive Dust Prohibitions). The purpose of Regulation VIII is to reduce the amount of PM_{10} entrained into the ambient air from anthropogenic sources. SJVAPCD's approach to analyses of short-term construction impacts is to require implementation of effective and comprehensive control measures in compliance with SJVAPCD Regulation VIII, rather than to require detailed quantification of emissions. Short-term construction impacts would be considered significant, if feasible SJVAPCD construction control mitigation measures are not included as part of the action.

3.4.2 ENVIRONMENTAL CONSEQUENCES

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

Proposed Project

The proposed project would not involve the construction or long-term operation of any major stationary sources of emissions. The proposed pump station would be electrically powered and too small to generate substantial emissions. Also, the proposed project would not result in an increase in projected growth and employment for the region, because the water diverted from the river at the project site is already currently diverted upstream and would be used for irrigation only.

The use of construction equipment and vehicles would result in a short-term generation of air emissions. Short-term emissions of PM_{10} could contribute to the region's existing non-attainment of the state and federal PM_{10} standard. The proposed project's construction activities do not include the implementation of feasible SJVAPCD construction control mitigation measures as part of the

action. Because construction significance is determined by means of whether SJVAPCD construction mitigation measures are implemented, construction emissions would be considered a short-term, potentially significant air quality impact. Implementation of the mitigation measure identified below would ensure that the proposed project would not conflict or obstruct implementation of any applicable air quality plans (refer to "b" below for a more detailed discussion of short-term air quality impacts and proposed mitigation). (LSM)

AIR-1: SJVAPCD has determined that implementation of the following PM_{10} control measures (Regulation VIII) would reduce short-term construction related emissions to less than significant levels. The purpose of Regulation VIII is to reduce anthropogenic PM_{10} generation.

- All disturbed areas, including storage piles, that are not being actively utilized for construction purposes, will be effectively stabilized for dust emissions, using water, chemical stabilizer/suppressant, or vegetative ground cover.
- All on-site unpaved roads and off-site unpaved access roads will be effectively stabilized for dust emission using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities will be effectively controlled for fugitive dust emissions by application of water or by presoaking.
- With the demolition of buildings up to six stories in height, all exterior surfaces of the building will be wetted during demolition.
- When materials are transported off-site, all materials will be covered or effectively wetted to limit visible dust emissions, or at least six inches of freeboard space from the top of the container will be maintained.
- All operations will limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage pile(s), said piles will be effectively stabilized for fugitive dust emissions by application of sufficient water or chemical stabilizer/suppressant.

Alternative Pipeline Route

The Alternative Pipeline Route would include the construction of a longer pipeline than the proposed project, and thus result in slightly higher construction emissions. However, the impacts of the alternative would be generally the same as the proposed project. (LSM)

Alternative Diversion Facility Location

The Alternative Diversion Facility Location would include a longer off-highway haul route for construction vehicles from Geer Road to the infiltration gallery (at SRP 10), and thus result in slightly higher construction emissions. However, the impacts of the alternative would be generally the same as the proposed project. (LSM)

No Action Alternative

No new project-related emissions would result from the No Action Alternative, because no construction would occur. Therefore, this alternative would not conflict with or obstruct implementation of any applicable air quality plans. (NI)

b) ***Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?***

Proposed Project

The use of equipment and vehicles to construct the proposed facility would result in the short-term generation of regional air emissions that could potentially contribute to the region's existing and projected non-attainment of the California 24-hour PM_{10} standard. Project implementation would proceed in two phases. The first phase would include construction of the infiltration gallery in conjunction with the previously approved Restoration Project. The second phase would include the construction of the pump station and the conveyance pipeline. The pipeline would be 2,800 feet in length and 48-54 inches in diameter and would convey diverted water from the proposed pump station to the TID Main Canal for use in agricultural irrigation.

Short Term Construction Emissions

Construction, grading, and excavation activities are sources of fugitive dust (PM_{10}) emissions that can have a substantial temporary impact on local air quality. Fugitive dust emissions would be primarily associated with land clearing, ground excavation, material handling, and heavy equipment travel on unpaved roadways. Grading activity required for the diversion facility would be minimal, because its installation would be coordinated with the construction of SRP 9's Restoration Project. The proposed project would also result in the short-term generation of mobile-source emissions associated with the operation of onsite and offsite construction equipment. Exhaust emissions from construction activities include mobile source emissions associated with the transport of workers, machinery and supplies, and emissions produced onsite as the equipment is used. Construction-generated emissions could vary substantially from day to day depending on the specific activities being conducted. Construction specifications have not yet been prepared, so the proposed project's description of construction activities does not yet include the implementation of feasible SJVAPCD construction control mitigation measures. Because construction significance is determined by means of whether SJVAPCD construction mitigation measures are implemented, construction emissions would be considered a short-term, potentially significant air quality impact. Implementation of Mitigation Measure Air-1 would ensure that the proposed project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation. (LSM)

Long-term Operational Impacts

Operation of the proposed diversion facility would require occasional motor vehicle trips associated with maintenance and repair activities, but these trips would amount to several per month at most and thus generate a negligible amount of air emissions. Pumps operating the infiltration gallery would be powered by electricity and would be too small to produce substantial emissions during operation. Because emissions associated with electricity generation either occur at plants that are located outside the SJVAB or are offset through the use of pollution credits, the resultant increases in emissions attributable to increased electrical demand would be less than significant. As a result, operational emissions associated with implementation of the proposed project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation. (LTS)

Alternative Pipeline Route

Under this alternative, the infiltration and pump station components would be the same as the proposed project components. The alternative pipeline would be located to the east of Geer Road and be longer than the proposed project pipeline (4,200 feet vs. 2,800 feet). Construction activities associated with the alternative pipeline route would be incrementally greater than with the proposed project due to the increase in pipe length. Construction emissions would be generally the same as the proposed project. (LSM)

Long-term operational emissions would be slightly greater than the proposed project, because larger pump motors would be needed. (LTS)

Alternative Diversion Facility Location

Under this alternative, the pump station and pipeline components would be the same as the components of proposed project. The infiltration gallery under this alternative would be developed at SRP 10, which is further away from the primary access to the project area (Geer Road) than is SRP 9 and the site of the infiltration gallery under the proposed project. Construction trips associated with the pipeline under this alternative would take place on temporary dirt roads for a greater distance than under the proposed project. However, construction emissions would be generally the same as the proposed project. (LSM)

Long-term operational emissions would be slightly greater than the proposed project, because larger pump motors would be needed. (LTS)

No Action Alternative

No new project-related emissions would result from the No Action Alternative, because no construction would occur under this alternative. Therefore, this alternative would not violate any air quality standard or contribute substantially to an existing or projected air quality violation. (NI)

c) ***Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?***

Proposed Project

The use of construction equipment and vehicles would result in a short-term generation of air emissions. Short-term emissions of PM_{10} could contribute to the region's existing and projected non-attainment of the state and federal PM_{10} standard. Construction specifications have yet to be prepared, so the proposed project's description of construction activities does not yet include the implementation of feasible SJVAPCD construction control mitigation measures. Because construction significance is determined by means of whether SJVAPCD construction mitigation measures are implemented, construction emissions would be considered a short-term, potentially significant air quality impact. Implementation of Mitigation Measure AIR-1 would assure that construction activities under the proposed project would not result in a cumulatively considerable net increase in any criteria pollutants for which the project region is non-attainment. (LSM)

As discussed under "a" and "b" above, the proposed project would not involve the development or long-term operation of any major stationary sources of emissions. As a result, long-term air quality impacts associated with the operation of the proposed project would not result in a cumulatively considerable net increase in any criteria pollutants for which the project region is non-attainment. (LTS)

Alternative Pipeline Route

Same impacts as the proposed project. (LSM/LTS)

Alternative Diversion Facility Location

Same impacts as the proposed project. (LSM/LTS)

No Action Alternative

No new emissions would result from the No Action Alternative, because no construction would occur under this alternative. Therefore, this alternative would not result in a cumulatively considerable net increase in any criteria pollutants for which the project region is non-attainment. (NI)

*d) **Would the project expose sensitive receptors to substantial pollutant concentrations?***

Proposed Project

Construction activities associated with the proposed project would generate short-term emissions of PM_{10} that could potentially affect nearby sensitive receptors. There are no sensitive receptors within the vicinity of the proposed infiltration gallery and pump station. However, one farm residence is located approximately 400 feet west of the proposed pipeline route. This residence could be exposed to short-term emissions of PM_{10} during construction of the pipeline. Implementation of Mitigation Measure AIR-1 would ensure that the proposed project would not expose this sensitive receptor to substantial pollutant concentrations during construction. (LSM)

As discussed under "a" and "b" above, the proposed project would not involve the construction or long-term operation of any major stationary sources of air emissions. Therefore, the proposed project would not expose sensitive receptors to substantial pollutant concentrations during operation. (LTS)

Alternative Pipeline Route

Construction activities associated with the Alternative Pipeline Route would generate short-term emissions of PM_{10} that could potentially affect nearby sensitive receptors. Under this alternative, the infiltration gallery and pump station components would be the same as the proposed project (i.e., no sensitive receptors within the proximity). The pipeline component would be developed along the east side of Geer Road within the proximity of two sensitive receptors, including Fox Grove Park and an adjacent farm residence. Under this alternative, both the park and farm residence along the pipeline route could be exposed to short-term emissions of PM_{10} during construction. Implementation of Mitigation Measure AIR-1 would ensure that this alternative would not expose these sensitive receptors to substantial pollutant concentrations during construction. (LSM)

Long-term operational emissions would be the same as the proposed project. (LTS)

Alternative Diversion Facility Location

Construction activities associated with the Alternative Diversion Facility Location would generate short-term emissions of PM_{10} that could potentially affect nearby sensitive receptors. Under this alternative, the pipeline component would be the same as the proposed project (i.e., farm residence within 400 feet). The infiltration gallery and pump station components would be developed at SRP 10, which is between 200 and 500 feet from three farm residences located to the south. Both the farm residence along the pipeline route and the farm residences south of SRP 9 could be exposed to short-term emissions of PM_{10} during construction. Implementation of Mitigation Measure AIR-1 would ensure that this alternative would not expose these sensitive receptors to substantial pollutant concentrations during construction. (LSM)

Long-term operational emissions would be the same as the proposed project. (LTS)

No Action Alternative

No new emissions would result from the No Action Alternative, because no construction or operation of facilities would occur under this alternative. Therefore, this alternative would not expose sensitive receptors to substantial pollutant concentrations. (NI)

e) Would the project create objectionable odors affecting a substantial number of people?

Proposed Project

As described in the responses above, the proposed project would result in short-term increases in pollutants associated with construction activities. Nuisance odors resulting from diesel-powered construction equipment could be noticeable to some individuals. The only sensitive receptor within the vicinity of the proposed facilities is a single farm residence located approximately 400 feet west

of the proposed pipeline route. Given the distance to this receptor, the temporary nature of the effect, and that the farm residence does not represent "a substantial number of people", construction activities associated with the proposed project would not create objectionable odors affecting a substantial number of people. (NI)

Operation of the proposed project would not generate objectionable odors affecting a substantial number of people because no facilities are proposed that would generate odors. (NI)

Alternative Pipeline Route

As described in the responses above, the Alternative Pipeline Route would result in short-term increases in pollutants associated with construction activities. Nuisance odors resulting from diesel-powered construction equipment may be noticeable to two sensitive uses along the alternative pipeline route, including Fox Grove Park and one farm residence. Construction equipment could generate objectionable odors affecting guests at the park. Implementation of the mitigation measure below would ensure that the Alternative Pipeline Route would not generate objectionable odors affecting a substantial number of people. (LSM)

AIR-2: TID will avoid construction of the alternative pipeline segment proposed through Fox Grove Park during the peak recreation use season of the park (June through August).

Operations-related odors would be the same as the proposed project. (NI)

Alternative Diversion Facility Location

As described in the responses above, the Alternative Diversion Facility Location would result in short-term increases in pollutants associated with construction activities. Nuisance odors resulting from diesel-powered construction equipment may be noticeable to several sensitive receptors, including a farm residence located approximately 400 feet west of the proposed pipeline, and three farm residences located from 200 to 500 feet south of SRP 10. Given the distance to these receptors, the temporary nature of the effect, and that four farm residences do not represent "a substantial number of people", construction activities associated with this alternative would not create objectionable odors affecting a substantial number of people. (LTS)

Operations-related odors would be the same as the proposed project. (NI)

No Action Alternative

No new emissions would result from the No Action Alternative because no construction or operation of facilities would occur. Therefore, this alternative would not generate objectionable odors affecting a substantial number of people.

3.5 TERRESTRIAL BIOLOGICAL RESOURCES

3.5.1 AFFECTED ENVIRONMENT

Proposed Project

Vegetation

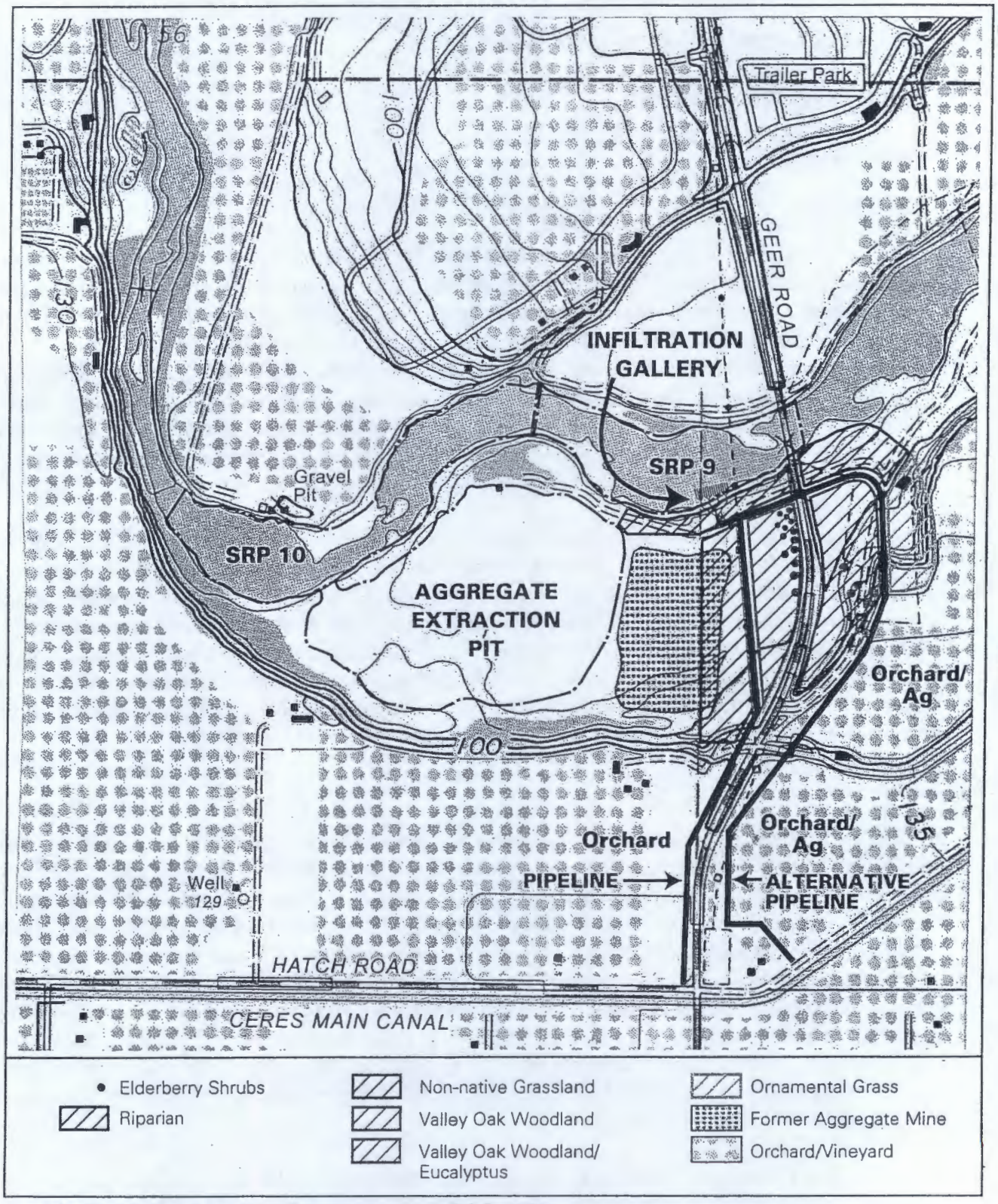
As indicated in Exhibit 4, riparian vegetation at SRP 9 is restricted to a narrow margin along the river banks and on the gravel mining pit embankment that borders the site on the south (left) bank. A total of 27.2 acres of native riparian vegetation occurs in the project area. Vegetation series encountered at the site include arroyo willow (*Salix lasiolepis*), black willow (*Salix gooddingii*), blue elderberry (*Sambucus mexicana*), box elder (*Acer negundo var. californicum*), button bush (*Cephalanthus occidentalis*), Fremont cottonwood (*Populus fremontii*), narrow-leaf willow (*Salix exigua*), and valley oak (*Quercus lobata*). Tree of heaven (*Ailanthus altissima*), a non-native species, is also present. Fragmented stands of remnant late successional stage Fremont cottonwood, valley oak, and Oregon ash, which are relicts of pre-dam hydrologic conditions and are not frequently inundated under the existing hydrologic regime, also occur in the project vicinity.

Vegetation communities identified within the proposed pipeline route include riparian, orchards, and non-native grassland. Riparian habitat is present along the south bank of the Tuolumne River at the northern end of this pipeline route. Species found within this habitat include Fremont's cottonwood, elderberry shrubs (*Sambucus mexicana*), and willow (*Salix* sp.). Orchards dominant the western side of the proposed pipeline. The habitat on the northern portion of the proposed pipeline is non-native grassland. Dominant species present within the non-native grassland are similar to those discusses above. Several live oaks (*Quercus wislizeni*), eucalyptus trees (*Eucalyptus* sp.), and elderberry shrubs occur along the north eastern side of the proposed pipeline route. Approximately 15 elderberry shrubs are present in this area.

Wildlife

In California, valley foothill riparian habitat supports at least 50 amphibian and reptile species, 147 bird species, and 55 mammal species (Mayer and Laudenslayer 1988). The bird and mammal biodiversity found in valley foothill riparian vegetation represents the highest found in the state (Tietje et al. 1991). Examples of wildlife species that may be found in valley foothill riparian vegetation in Stanislaus County include ensatina (*Ensatina eschscholtzii*), common garter snake (*Thamnophis sirtalis*), warbling vireo (*Vireo gilvus*), and ringtail (*Bassariscus astutus*) CDFG 1997), mule deer (*Odocoileus hemionus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), muskrat (*Ondatra zibethicus*), California ground squirrel (*Spermophilus beecheyi*), striped skunk (*Mephitis mephitis*), and several small mammal species. Raptors, resident and migratory birds, California quail (*Callipepla californica*), great blue herons (*Ardea herodias*), snowy egrets (*Egretta thula*), great egrets (*Casmerodius albus*), and black-crowned night herons (*Nycticorax nycticorax*) also frequent areas in the project vicinity.

Grasslands typically support a relatively low diversity and abundance of wildlife species compared to other habitats. Common wildlife species expected or observed onsite include mourning dove (*Zenaida macroura*), western meadowlark (*Sturnella neglecta*), European starling (*Sturnus vulgaris*), American crow (*Corvus brachyrhyncos*), and Brewer's blackbird (*Euphagus cyanocephalus*).



Base Map Source: Denair, California Topographic Map, U.S.G.S., 1987.

Terrestrial Biological Resources

EXHIBIT 4

TID Water Diversion Project IS
JN 0T004.01 1/01

0' 250' 500' 1000' FEET

NORTH

EDAW

Wildlife diversity found within ornamental vegetation is extremely low. Common wildlife observed using these areas include northern mockingbird (*Mimus polyglottos*), American crow, yellow-billed magpie (*Pica nuttalli*), house finch (*Carpodacus mexicanus*), and Brewer's blackbird.

Threatened, Endangered, and Special-Status Species

Threatened, endangered, or special-status plant species present or potentially present at the proposed project site (SRP 9 and pipeline route B) include: **delta button-celery** (*Eryngium racemosum*); **red-flowered lotus** (*Lotus rubriflorus*); **Merced monardella** (*Monardella leucocephala*); **Hartweg's golden sunburst** (*Pseudobahia bahiifolia*); and **Sanford's arrowhead** (*Sagittaria sanfordii*). A discussion of each species, its habitat requirements, and potential for occurrence are provided below. Those species that are determined to be unlikely to occur onsite or that will not be adversely affected by the proposed project are not discussed further.

Delta button-celery; CNPS List 1B. This species is typically found in riparian scrub habitats and blooms between June and August. There are no known occurrences in Stanislaus County and it is believed to be extirpated from Tuolumne and San Joaquin counties (Skinner, et al., 1994.). Appropriate habitat to support this species is present at SRP 9 and the pipeline route, specifically at the placement of the pump station. A focused survey for this species was completed at SRP 9 in 1999 and it was not observed onsite. Because the SRP 9 survey concluded that the species was absent there, it would not be expected along the pipeline routes; however, the pipelines route have not been surveyed for this species.

Red-flowered lotus; CNPS List 1B. Red-flowered lotus occurs in cismontane woodlands and valley and foothill grasslands (Skinner et al., 1994). Appropriate habitat to support this species is present at SRP 9 and portions of the pipeline route. A focused survey for this species was completed at SRP 9 in 1999 and it was not observed onsite. Because the SRP 9 survey concluded that the species was absent there, it would not be expected along the pipeline routes; however, the pipelines route have not been surveyed for this species

Merced monardella; CNPS List 1B. Merced monardella is restricted to sandy or subalkaline soils in valley and foothill grasslands and riverbeds (Skinner et al., 1994). There are no know extant populations within Stanislaus County (Skinner et al., 1994). Appropriate habitat to support this species is present at SRP 9 and the portions of the pipeline routes. A focused survey for this species was completed at SRP 9 in 1999 and it was not observed onsite. Because the SRP 9 survey concluded that the species was absent there, it would not be expected along the pipeline routes; however, the pipelines route have not been surveyed for this species

Hartweg's golden sunburst; Federal Endangered, State Threatened, CNPS 1B. This species typically occurs in clay soils in cismontane woodlands and non-native grasslands (Skinner, et al., 1994). There are no known occurrences of this species within Stanislaus County; however, it is known to occur in surrounding USGS quadrangles (CNDDB 1999). Appropriate habitat to support this species is present at SRP 9 and a portion of the pipeline route. A focused survey for this species was completed at SRP 9 in 1999 and it was not observed onsite. Because the SRP 9 survey concluded that the species was absent there, it would not be expected along the pipeline routes; however, the pipelines route have not been surveyed for this species

Sandford's arrowhead; CNPS List 1B. Sandford's arrowhead typically occurs in shallow freshwater marsh habitats and slow-moving sloughs and streams (Skinner et al., 1994). There are no known occurrences of

this species in Stanislaus County (CNDDB 1999). Appropriate habitat to support this species is present at SRP 9. A focused survey for this species was completed at SRP 9 in 1999 and it was not observed onsite. Because the SRP 9 survey concluded that the species was absent there, it would not be expected along the pipeline routes; however, the pipelines route have not been surveyed for this species

Threatened, endangered, or special-status wildlife species present or potentially present at the proposed project (SRP 9 and the pipeline route B) include: **valley elderberry longhorn beetle** (*Desmocerus californicus dimorphus*); **California tiger salamander** (*Ambystoma californiense*); **California red-legged frog** (*Rana aurora draytonii*); **foothill yellow-legged frog** (*Rana boylii*); **western pond turtle** (*Clemmys marmorata*); **double-crested cormorant rookery** (*Phalacrocorax auritus*); and **raptors**. A discussion of each species, their habitat requirements, and their potential for occurrence onsite are provided below. Those species that are determined to be unlikely to occur onsite or that will not be adversely affected by the proposed project are not discussed further.

Valley elderberry longhorn beetle; Federal Endangered, California Species of Special Concern. Suitable habitat for the valley elderberry longhorn beetle consists of elderberry shrubs, which are usually present within riparian habitats. Adult beetles of this subspecies feed and lay eggs on the elderberry shrubs in riparian communities of the Central Valley. The larva remain within the elderberry stems until they emerge through exit holes as adults. An elderberry shrub survey was completed in 1999 at the SRP 9 location that included mapping the location of the shrubs. This survey did not include a stem count as required to establish mitigation measures under the USFWS *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (1999). Neither a mapping survey nor a stem count has been completed for the pipeline route. Appropriate habitat for this species is found at SRP 9 and the pipeline route.

California tiger salamander; Federal Candidate, California Species of Special Concern. This amphibian is most commonly found in annual grasslands, but also occurs in the grass understory of valley-foothill woodland habitats. The California tiger salamander spends the dry summer months in subterranean refuge sites (e.g., small mammal burrows). Following late winter and spring rains, this species moves to deep rain pools to breed. Suitable habitat must be free of predatory fish species (e.g., large- and small-mouth bass). There is no suitable breeding habitat at SRP 9 or the proposed pipeline route for this species. The small amount of non-native grassland habitat present along the proposed pipeline route is highly degraded and it is unlikely this species would find refuge in this area.

California red-legged frog; Federal Endangered, California Species of Special Concern. California red-legged frog habitat is characterized by dense, shrubby riparian vegetation associated with deep, still or slow moving water (Jennings and Hayes 1994). This species usually breeds in aquatic environments dominated by arroyo willow, cattails, or bulrushes. There is no suitable habitat for this species at SRP 9 or the proposed pipeline route. Implementation of the restoration projects described in the *EA/IS/MND Gravel Mining Reach and Special Run Pools 9/10 Restoration and Mitigation Projects* (USFWS and TID 1998) will result in an overall increase in habitat for this species.

Foothill yellow-legged frog; California Species of Special Concern. The foothill yellow-legged frog requires shallow flowing water, and prefers small to moderate-sized streams with some cobble-substrate (Jennings and Hayes 1994). Adults often bask on exposed rock surfaces near streams (Zeiner, et al., 1988). There is no appropriate habitat to support this species at SRP 9 or the proposed pipeline route.

Western pond turtle; California Species of Special Concern. This aquatic turtle generally occurs in streams, ponds, freshwater marshes, and lakes. Pond turtles requires still water ponds and slow moving streams with bank snags or instream emergent woody debris for resting sites. Appropriate habitat to support this species is present at SRP 9.

Double-crested cormorant rookery; California Species of Special Concern. This species is a yearlong resident along the entire coast of California and on inland lakes, in fresh, salt and estuarine waters. Cormorants are often found along riverine habitats of the Central Valley. This species requires wide rock ledges on cliffs, rugged slopes, and live or dead trees for nesting. Appropriate habitat to support this species is present at SRP 9.

Raptors are considered sensitive by the California Department of Fish and Game and are protected under State Fish and Game Code Section 3503.5. Removal or destruction of an active raptor nest is a violation of the State Code and the federal Migratory Bird Treaty Act. SRP 9 and the proposed pipeline route represent appropriate nesting habitat for many raptor species. The raptors that could potentially nest onsite include: osprey (*Pandion haliaetus*), white-tailed kite (*Elanus caeruleus*), golden eagle (*Aquila chrysaetos*), Cooper's hawk (*Accipiter cooperii*), Swainson's hawk (*Bueto swainsoni*), American kestrel (*Falco sparverius*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Bueto jamaicensis*), barn owl (*Tyto alba*), western screech owl (*Otus kennicotti*), northern pygmy-owl (*Glaucidium gnoma*), great horned owl (*Bubo virginianus*), and burrowing owl. The nesting season for these species is February-August.

Burrowing owl (*Athene cunicularia*)**; California Species of Special Concern.** These small owls inhabit open grasslands and other habitats throughout North and South America. This year-round resident lives in small colonies and typically nests and roosts in burrow systems created by medium-sized mammals (e.g., ground squirrels) or in artificial sites (e.g., drain pipes, culverts), or they occasionally dig burrows themselves. Marginal nesting habitat is present at SRP 9 and along the pipeline route; however this small amount of non-grassland habitat is adjacent to an existing access road and/or Geer Road, which is heavily traveled. EDAW biologists have spent an extensive amount of survey time in 1999 and 2000 within this area and no burrowing owls or signs of activity have been observed. Therefore, it is highly unlikely this species occurs onsite.

Loggerhead shrike (*Lanius ludovicianus*); **Federal Special Concern Species, California Species of Special Concern.** Shrikes prefer open habitats with scattered shrubs, trees, posts, fences, or other perches, and nest in densely-foliated trees or shrubs adjacent to open areas. Appropriate habitat to support this species is present within SRP 9 and the pipeline route.

Yellow warbler (*Dendroica coronata*); **Species of Special Concern.** The yellow warbler arrives in California for breeding and nesting in April and usually departs by October. This species is found in riparian habitats consisting of cottonwoods, willows, alders and other small trees and shrubs typical of riparian woodlands. Marginal habitat to support this species is present at SRP 9 and along the northern portion of the pipeline route. Because the proposed project would not result in the loss of riparian habitat and the placement of the infiltration galley within SRP 9 would occur in conjunction with the Tuolumne River Restoration Projects, this species is not expected to be adversely affected.

Yellow-breasted chat (*Icteria virens*); **California Species of Special Concern.** This species is an uncommon summer migrant that occupies riparian habitats. It usually arrives in April and departs by late September for wintering grounds in Mexico and Guatemala (Zeiner, et al., 1990a). This species typically nests in dense riparian vegetation dominated by shrub species. Marginal habitat to support this species is present at SRP 9 and along the northern portion of the pipeline route.

Tricolored blackbird (*Agelaius tricolor*); **California Species of Special Concern.** Mostly a resident species in California, the tricolored blackbird is common locally throughout the Central Valley and in coastal areas south of Sonoma County. Preferred nesting habitat is dense cattails or tules. Thickets of willows, blackberry, and wild rose may also be suitable (Zeiner, et al., 1990a). There is no suitable nesting habitat within SRP 9 or the pipeline route for this species.

San Joaquin kit fox (*Vulpes macrotis mutica*); **Federal Endangered, State Threatened.** San Joaquin kit fox occurs in the dry plains of the San Joaquin Valley from Tracy to southern Kern County. They inhabit grassland and other sparsely vegetated, shrubby habitats that allow easy mobility and good visibility of ground-dwelling prey. This species occupies dens, which provide shelter and escape cover. These dens are often excavated in friable soils or created by enlarging ground squirrel burrows. Dens may also be man-made structures such as culverts and pipes. Marginal habitat to support this species is present in the non-native grassland south of SRP 9. However, this small amount of non-grassland habitat is adjacent to an existing access road that is utilized heavily by humans. EDAW biologists have spent an extensive amount of survey time in 1999 and 2000 within this area and no kit fox or signs of activity have been observed. Therefore, this species is not expected to use or inhabit the project site.

Alternative Pipeline Route

Vegetation

The vegetation present at SRP 9 is discussed above in proposed project.

Vegetation communities identified within the Alternative Pipeline Route include riparian, agriculture, ornamental, and valley oak woodland. Riparian habitat is present along the south bank of the Tuolumne River at the northern end of this pipeline route. Species found within this habitat include Fremont's cottonwood, elderberry shrubs (*Sambucus mexicana*), and willow (*Salix* sp.). Agriculture, including orchards and grapes, are located along the eastern side of the pipeline route. Ornamental shrubs and grass are located on a small portion of the southwestern and northeastern side of the proposed pipeline route. Valley oak woodland is found east of Geer Road and west of the proposed pipeline route near the entrance to Fox Grove Park. The valley oak woodland is dominated by large valley oaks (*Quercus lobata*) with an understory of non-native grasses including wild oats (*Avena* sp.), brome grasses (*Bromus* sp.), hare barley (*Hordeum murinum* ssp. *leporinum*), yellow star thistle (*Centaurea solstitialis*), filaree (*Erodium* sp.), and black mustard (*Brassica nigra*). Approximately six elderberry shrubs are present within the valley oak woodland.

Wildlife

The wildlife occurring along the Alternative Pipeline Route is expected to be the same as that described above in proposed project.

Threatened, Endangered, and Special-Status Species

The wildlife occurring along the Alternative Pipeline Route is expected to be the same as that described above in proposed project.

Alternative Diversion Facility Location

Vegetation

The vegetation communities present at the Alternative Diversion Facility location is similar as discussed above in proposed project.

Wildlife

The vegetation communities present at the Alternative Diversion Facility location is similar as discussed above in proposed project.

Threatened, Endangered, and Special Status Species

The threatened, endangered, and special-status species discussed in proposed project are the same for the Alternative Diversion Facility Location.

No Action Alternative

Vegetation

With the No Action Alternative, the riparian habitat present at SRP 9/10 would be restored as per the *EA/IS/MND Gravel Mining Reach and Special Run Pools 9/10 Restoration and Mitigation Projects* (USFWS and TID1998) and *Monitoring Plan* (EDAW and Stillwater Sciences 1999). This would include filling SRP 9 to reduce habitat for non-native warm water fishes and restoration of riparian habitat.

Wildlife

With the No Action Alternative the riparian habitat present at SRP 9/10 would be restored as per the *EA/IS/MND Gravel Mining Reach and Special Run Pool s 9/10 Restoration and Mitigation Projects* (USFWS and TID 1998) and *Monitoring Plan* (EDAW and Stillwater Sciences 1999). Following restoration of the site there would be an increase in the value of the habitat for common wildlife species.

Threatened, Endangered, and Special Status Species

With the No Action Alternative the riparian habitat present at SRP 9/10 would be restored as per the *EA/IS/MND Gravel Mining Reach and Special Run Pool s 9/10 Restoration and Mitigation Projects* (USFWS and TID 1998) and *Monitoring Plan* (EDAW and Stillwater Sciences, 1999). Following restoration of the site, there would be an increase in the value of the habitat for special-status wildlife species. This includes, but is not limited to, yellow warbler, yellow-breasted chat, and California red-legged frog.

3.5.2 ENVIRONMENTAL CONSEQUENCES

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

Proposed Project

Surveys were conducted at SRP 9 in 1999 for Delta button-celery, red-flowered lotus, Merced monardella, Hartweg's golden sunburst, California hibiscus, and Sandford's arrowhead. None of these plant species were found at SRP 9. The pipeline route represents appropriate habitat for Delta button-celery, red-flowered lotus, Merced monardella, and Hartweg's golden sunburst. These sensitive plant species have the potential to occur within the proposed pipeline route. The proposed project may have a substantial effect, either directly or through habitat modification, on Delta button-celery, red-flowered lotus, Merced monardella, and Hartweg's golden sunburst. This impact is considered potentially significant unless mitigation is incorporated. With the implementation of mitigation measure BIO-1 this impact would be reduced to a less-than-significant level. (LSM)

Elderberry shrubs that are present at SRP 9 and the pipeline route represent appropriate habitat for the valley elderberry longhorn beetle. An elderberry shrub survey was completed in 1999 at SRP 9 that included mapping the location of the shrubs. This survey did not include a stem count as required to determine mitigation measures under USFWS *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (1999). Turlock Irrigation District (TID) has received the USFWS Biological Opinion accepting the first phase of the Restoration Project (7/11 Reach). TID is currently developing a programmatic Section 7 under ESA for all phases of the Tuolumne River restoration projects. Neither a mapping survey nor a stem count has been completed for the pipeline route. This impact is considered potentially significant unless mitigation is incorporated. With the implementation of mitigation measure BIO-2 this impact would be reduced to a less-than-significant-level. (LSM)

Large trees at SRP 9 and along the pipeline route could be used as nest sites by osprey, white-tailed kite, golden eagle, Cooper's hawk, Swainson's hawk, American kestrel, red-shouldered hawk, red-tailed hawk, barn owl, western screech owl, northern pygmy-owl, great horned owl, and loggerhead shrike. The removal or destruction of active raptor nests is considered a violation of the California Fish and Game Code (Section 3503.5). Although no nests were identified on the project site during 1999 or 2000 raptor nest surveys, the site contains sufficient habitat to assume nesting could occur onsite in the future. Removal of active raptor nests or loggerhead shrike nests during the breeding season (February 1-August 31) would be considered a potentially significant impact unless mitigation is incorporated. With the implementation of mitigation measure BIO-3 this impact would be reduced to a less-than-significant level. (LSM)

Cormorant rookeries are protected by the California Department of Fish and Game. SRP 9 represents appropriate nesting habitat for this species. Individual cormorants have been observed within SRP 9; however, no rookery or colony of cormorants has been observed at this location. Surveys conducted in 1999 and 2000, in conjunction with raptor nest surveys, found no cormorant

rookeries onsite. It is predicated that cormorants only winter in the project area. Disturbance, whether direct or indirect, to a cormorant rookery would be considered potentially significant unless mitigation is incorporated. With the implementation of mitigation measure BIO-4 this impact would be reduced to a less-than-significant level. (LSM)

Appropriate habitat to support western pond turtle is present at SRP 9. The proposed project may have a substantial effect, either directly or through habitat modification, on western pond turtle. This impact is considered potentially significant unless mitigation is incorporated. With the implementation of mitigation measure Bio-5 this impact would be reduced to a less-than-significant level. (LSM)

BIO-1: Prior to grading, a focused plant survey for Delta button-celery, red-flowered lotus, Merced monardella, and Hartweg's golden sunburst will be conducted along the proposed pipeline route to determine presence and distribution. This survey will be conducted during the blooming season (March-September) by a qualified botanist. If these species are not found during surveys, no further mitigation would be required.

If special-status plants species are found onsite, impacts to these species will be avoided to the extent possible. Avoidance measures will include: protective fencing placed at or beyond 25 feet from the special-status species population (as determined by a qualified biologist). This fence will be maintained until the proposed project activities are complete within the area. if avoidance of special-status plants is infeasible, consultation with CDFG and/or USFWS will be required to determine appropriate mitigation measures to be implemented to avoid and reduce adverse impacts; and if Hartweg's golden sunburst, a federal endangered and State threatened species, is found onsite and cannot be avoided, federal consultation under the Endangered Species Act Section 7 will be initiated and a state California Endangered Species Act Section 2081 incidental take permit will be obtained.

BIO-2: A survey that includes mapping the location of all elderberry shrubs on a 1"=200' aerial photograph will be conducted along the pipeline route. Because no elderberry shrubs are currently planned for removal as part of the project a protocol-level survey is not required.

All elderberry shrubs will be avoided and protected. The USFWS Guidelines have established two levels of avoidance: core and buffer. The core avoidance area includes all the area within 20 feet of the dripline of the elderberry shrub. The core avoidance area will not be disturbed during grading on the project site. The buffer avoidance area includes the area within 80 feet of the core area. In buffer areas, the guidelines require that disturbance from grading be minimized, and any damaged area be restored following construction. Because the proposed project is occurring in conjunction with the Tuolumne River Restoration Projects, riparian habitat will be restored and created within the buffer grading area, restoration within the buffer area would occur. The following measures apply to these specific avoidance areas.

- Orange mitigation fencing will be installed 20 feet from the dripline of the elderberry shrubs (core avoidance area). Signs will be posted along the edge of this avoidance area that will state, as required by the mitigation guidelines, "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act. Violators will be subject to prosecution, fines and imprisonment." Signs will be clearly readable from a distance of 20 feet and will be maintained for the duration of grading activities.

- Contractors and work crews will be instructed to comply with signage and will be notified of the status and need to protect the valley elderberry longhorn beetle host plants.

- Heavy equipment will not access the core avoidance area. A qualified biologist will be present to monitor any activity and ensure mitigation compliance within the core avoidance area.

If the project were to result in the removal of one or more elderberry shrubs, a full protocol-level survey will be conducted and consultation under ESA Section 7 will occur leading to the implementation of mitigation in accordance with USFWS Conservation Guidelines for valley elderberry longhorn beetle.

BIO-3: Prior to tree removal and grading within the proposed project site, a determination will be made as to whether grading or tree removal is proposed during the raptor nesting season (February 1 to August 31). If no grading or tree removal will occur during the raptor nesting season, no further mitigation will be necessary. If grading or tree removal is proposed during the raptor nesting season, a pre-construction survey for raptor nests will be conducted by a qualified biologist during the nesting season to identify active nests on the project site. The survey will be conducted no less than 14 days, and no more than 30 days, prior to the beginning of grading or tree removal. The results of the survey will be summarized in a written report to be submitted to CDFG prior to the beginning of grading.

If nesting raptors are found during the focused survey, no grading or tree removal will occur within 500 feet of an active nest until the young have fledged (as determined by a qualified biologist), or until the project applicant receives written authorization from CDFG to proceed. If impacts to nest trees are unavoidable, they will not be removed during the breeding season.

BIO-4: Prior to commencement of construction activities within the proposed project site, a determination will be made as to whether construction activities are proposed during the cormorant nesting season (April 1 to August 31). If no construction activities will occur during the cormorant nesting season, no further mitigation will be necessary.

If construction activities are proposed during the cormorant nesting season, a pre-construction survey will be completed to determine of this species is nesting within SRP 9. The survey will be conducted no less than 14 days, and no more than 30 days, prior to the beginning of construction activities. The results of the

survey will be summarized in a written report to be submitted to CDFG prior to the beginning of construction activities.

If it is determined that cormorants are nesting within SRP 9, construction activities will not occur within 500 feet of an active nest until the young have fledged (as determined by a qualified biologist).

BIO-5: A preconstruction survey will be conducted by a qualified biologist to determine if western pond turtles occur within SRP 9. The survey will be conducted no more than 30 days prior to the beginning of grading. If the pre-construction survey results in negative findings, no further mitigation will be required.

If western pond turtles are found within the project site, a qualified biologist will relocate the turtles to suitable habitat within the project vicinity.

Alternative Pipeline Route

Placement of the infiltration gallery at SRP 9 and use of the alternate pipeline route would have the same effects on natural resources as the proposed project. (LSM)

No Action Alternative

Under the Tuolumne River Restoration Projects, approximately 4.14 acres of riparian habitat will be created at SRP 9. As part of these projects, habitat for the special-status species, discussed under the proposed project, would be created. Without the alternative resulting from the proposed diversion facility, habitat conditions would remain the same as planned for the Restoration Project. Refer to the *EA/IS/MND Gravel Mining Reach and Special Run Pool s 9/10 Restoration and Mitigation Projects* and *Monitoring Plan* (EDAW and Stillwater Sciences, 1999). (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (LSM)

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

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

Proposed Project

The proposed project would be implemented in conjunction with the Tuolumne River Restoration Projects, which have already been approved by TID. Approximately 4.14 acres of riparian habitat would be created at SRP 9 with the restoration project. Installing the infiltration gallery in the substrate of the restored SRP 9 would not decrease the amount of value of this restored wetland. SRP 9 is considered a Waters of the U.S. and is regulated by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act. A wetland delineation was completed and verified by

the U.S. Army Corps of Engineers in 1999 that included SRP 9. Because the proposed project would be implemented at the same time as the Restoration Project and the impacts have already been permitted as part of the Restoration Project, the placement of the infiltration gallery at SRP 9 would not result in any additional effects to wetlands. (NI)

A reconnaissance-level survey was completed for the pipeline route and no jurisdictional Waters of the U.S., including wetlands, were identified onsite. The proposed project would not result in the loss of riparian habitat. Placement of the infiltration gallery within SRP 9 would not result in any additional impacts to riparian or jurisdictional Waters of the U.S. not already discussed in the Tuolumne River Restoration Projects and Monitoring Plan (EDAW and Stillwater Sciences 1999). Impacts to both of these sensitive habitats resulting from the Restoration Project would be mitigated under the Tuolumne River Restoration Projects and Monitoring Plan (EDAW and Stillwater Sciences 1999). Because the proposed project would not result in a loss of additional riparian habitat or jurisdictional Waters of the U.S., beyond that already addressed in the Restoration Project, no additional effects to riparian habitat or Waters of the U.S. would occur. (NI)

Alternative Pipeline Route

Same impacts as the proposed project. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

No Action Alternative

Under the already approved Tuolumne River Restoration Projects, approximately 4.14 acres of riparian habitat will be created at SRP 9. No changes would occur as a result of this alternative. Refer to the *EA/IS/MND Gravel Mining Reach and Special Run Pools 9/10 Restoration and Mitigation Projects and Monitoring Plan (*EDAW and Stillwater Sciences 1999). (NI)

d) Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites? (Wildlife corridors are described below; refer to Section 3.6 for a description of fisheries.)

Proposed Project

A wildlife corridor is generally a topographical/landscape feature or movement area that connects two open space habitat parcels that would otherwise be entirely fragmented or isolated from one another. Wildlife corridors link areas of suitable wildlife habitat that are otherwise separated by changes in vegetation, rugged terrain, or human disturbance.

Implementation of the proposed project would not permanently impede wildlife movement. Impacts associated with SRP 9 and the pipeline route will be a short-term temporary impediment to wildlife movement. Construction associated with the pipeline route and placement of the infiltration gallery, may have a short-term temporary effect on wildlife. However, the construction activities associated with SRP 9 and the pipeline routes would be occurring along existing access

roads that do not act as a migratory route or corridor. The project site does not contain any known terrestrial wildlife migration corridors or dispersal routes Wildlife often utilize riparian corridors as wildlife corridors. With the implementation of the *Tuolumne River Restoration Projects* and the *Monitoring Plan* (EDAW and Stillwater Sciences 1999) there would be an overall increase in riparian habitat at SRP 9. Therefore, this impact would be considered less than significant. (LTS)

Alternative Pipeline Route

Same impacts as the proposed project. (LTS)

Alternative Diversion Facility Location

Same impacts as the proposed project. (LTS)

No Action Alternative

Under the already approved Tuolumne River Restoration Projects, approximately 4.14 acres of riparian habitat will be created at SRP 9. No changes would occur as a result of this alternative. As part of these projects, there will be an overall increase in riparian habitat and its value to wildlife species.. Refer to the *EA/IS/MND Gravel Mining Reach and Special Run Pools 9/10 Restoration and Mitigation Projects* and *Monitoring Plan* (EDAW and Stillwater Sciences 1999)

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

Proposed Project

The proposed project would not conflict with any local policies or ordinances protecting biological resources. Biological impacts of the proposed project are either less than significant or mitigated to a less-than-significant level, which is consistent with policies protecting biological resources. One purpose of the proposed diversion facility is to implement a provision of the New Don Pedro Reservoir settlement agreement to convey water farther downstream to gain biological benefits. There is no impact. (NI)

Alternative Pipeline Route

Same impacts as the proposed project. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

No Action Alternative

Same impacts as the proposed project. (NI)

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

Proposed Project

The proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, there is no impact. (NI)

Alternative Pipeline Route

Same impacts as the proposed project. (NI)

No Action Alternative

Same impacts as the proposed project. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

3.6 AQUATIC BIOLOGICAL RESOURCES

3.6.1 AFFECTED ENVIRONMENT

Fish Species

The lower Tuolumne River supports 35 species of fish, 13 (37%) of which are native (Brown and Ford 1992). Information on fish distribution and abundance in the Tuolumne River is available from records of biweekly seining surveys conducted by the Districts from January through May at multiple locations throughout the river (TID/MID 1997, 1998, 1999, 2000), as well as winter and spring trapping. Five threatened, endangered, or sensitive fish species or their habitats were identified as potentially occurring in the vicinity of SRPs 9 and 10 in the Biological Resources Technical Background Report in Appendix D of the Restoration Project EA/IS/MND (Stillwater Sciences 1998). These are: fall run chinook salmon (*Oncorhynchus tshawytscha*), Central Valley steelhead (*Oncorhynchus mykiss*), Kern brook lamprey (*Lampetra hubbsi*), Pacific lamprey (*Lampetra tridentata*), and Sacramento splittail (*Pogonichthys macrolepidotus*). Of these five fishes, only the steelhead and Kern brook lamprey have not been documented in the vicinity of the proposed project. An additional species, hardhead (*Mylopharodon conocephalus*), was not listed in the aforementioned Background Report, but has been documented in the project vicinity (Stillwater Sciences 1998, McBain & Trush and Stillwater Sciences 2000). The status of each of these fishes is shown in Table 1. Information on the distribution, abundance habitat requirements, and life history of each species is summarized below.

Table 1 Candidate, Sensitive, and Special Status Fish Species Potentially Occurring at SRPs 9 and 10		
Species	Status [1]	Source
Fall Run Chinook Salmon, Central Valley ESU (*Oncorhynchus tshawytscha*)	FC, CSC	NMFS (1999), CDFG (2000)
Central Valley Steelhead (*Oncorhynchus mykiss*)	FT	USFWS (1998), CDFG (2000)
Sacramento Splittail (*Pogonichthys macrolepidotus*)	FT, CSC	USFWS (1999), CDFG (2000)
Kern Brook Lamprey (*Lampetra hubbsi*)	FSC, CSC	HM [2], CDFG (2000)
Pacific Lamprey (*Lampetra tridentata*)	FSC	HM [2]
Hardhead (*Mylopharodon conocephalus*)	CSC	CDFG (2000)

[1] FC Federal candidate species.
FSC Federal species of concern.
FT Listed as threatened under the federal Endangered Species Act.
CSC Considered a species of special concern by the state of California.

[2] HM Harry Mossman, personal communication, 2000, biological technician, USFWS, Sacramento.

Fall run Chinook Salmon

Chinook salmon spawn in rivers from Kotzebue Sound, Alaska to the San Joaquin River system (Healey 1991). In the San Joaquin River system, adult fall run chinook typically enter spawning streams from October through December, with spawning activity peaking in early to mid-November. The duration of incubation varies depending on water temperature but generally extends over a two to three month period. Alderdice and Velsen (1978) (as cited in Healey 1991) documented time to 50 % hatching ranging from 159 days at 37°F to 32 days at 61°F. Alevins remain in the gravel for two to three weeks after hatching, absorbing most of their yolk sac before emerging into the water column. Upon emergence, fry swim or are displaced downstream (Healey 1991). In general, fry (length <50 mm) and juveniles (length >50 mm) outmigrate from the spawning areas between January and May. Outmigration of larger juveniles generally occurs from April though June with smolts entering the ocean between April and July (Leet et al 1992). A small number of juveniles may remain in freshwater over the summer and outmigrate as yearlings.

Fall run chinook salmon has been the focus of extensive study and management in the Tuolumne River due to its recent population declines and susceptibility to degradation of their freshwater habitat. Tuolumne River fall run chinook salmon belong to the Central Valley Fall and Late Fall Run Evolutionarily Significant Unit (ESU), which is a candidate for listing under the federal Endangered Species Act (NMFS 1999). Spawning occurs in riffles, and is generally concentrated upstream of river mile 40. For this and other reasons, annual CDFG spawning surveys have been conducted only upstream of the Geer Road bridge (river mile 26), immediately upstream of the proposed infiltration gallery site, since 1990. In 1988 and 1989, however, redds were documented by CDFG at or below Riffle 72 (TID/MID 1997), which is located within the SRPs 9 and 10 restoration reach; however, there is currently no documented spawning at SRPs 9 and 10 (Vasques, pers. comm., 2000).

Rearing and outmigrant chinook salmon have been recorded throughout the lower Tuolumne River. Seining at multiple locations in the river and rotary screw trapping immediately downstream of SRP 10 have documented fry and juvenile chinook salmon in the project reach during the winter and spring rearing and outmigration period (TID/MID 1997, 1998, 1999, 2000; Stillwater Sciences 1999, 2000). Rearing and outmigrating chinook salmon generally occur in the vicinity of SRPs 9 and 10 from early- to mid-February through April, or as late as late-May in some years. Fry (< 50 mm) typically comprise the majority of the chinook salmon captured in this reach prior to late March or early April, after which time the average size increases to a maximum of about 85–100 mm by May.

Central Valley Steelhead

Steelhead (*Oncorhynchus mykiss*) is the anadromous form of rainbow trout. Steelhead exhibit one of the most complex life histories of any Pacific salmonid species. Steelhead typically migrate to the ocean after spending 1 to 4 (usually 2) years in fresh water and may remain at sea for 1 to 3 years before returning to spawn in freshwater. Unlike most other salmonid species, steelhead are iteroparous, or capable of returning to spawn more than once before dying. However, most individuals spawn only once. Redds (nests) are constructed in gravel substrate, and spawning typically occurs from December through June. The eggs incubate in the gravels and hatch as alevins (larval fish that are nourished by a yolk sac), which remain in the gravel for several weeks, after which they emerge as free-swimming fry.

The historical distribution of steelhead in the San Joaquin Basin, including the Tuolumne River, is poorly known. The only clear documentation of the historical occurrence of steelhead in the Tuolumne River is provided by CDFG salmon escapement counts in the early 1940s. These counts were conducted at Dennett Dam (RM 16.2) near Modesto and documented 66 steelhead in 1940 and five in 1942 (CDFG, unpublished data).

Despite extensive field surveys, resource agencies and the Districts have documented few *O. mykiss* that may be steelhead. Field surveys have included biweekly seining from January through May throughout the river, winter and spring trapping using fyke nets (a bag-shaped fish trap) or rotary screw traps, snorkeling, and electrofishing. In 1997, 1998 and 1999, the California Department of Fish Game (CDFG) found *O. mykiss* during their fall chinook salmon carcass surveys and outmigrant monitoring, but analyses that would be required to differentiate between rainbow trout and steelhead have not yet been performed. In 1999, CDFG captured what they believe to be a steelhead smolt in their rotary screw trap at Grayson River Ranch (RM 5.2). In January 1999, an outmigrating steelhead smolt was captured in the rotary screw trap operated by the Districts and the Tuolumne River Technical Advisory Committee (TRTAC) at river mile 38.5 (Stillwater Sciences 2000). Rainbow trout have been documented in the Tuolumne River (Brown and Ford 1992), where they occur primarily in the upstream, cooler reaches within 10 miles (16 km) downstream of La Grange Dam. Most observations have been of age 0+ trout seen in early spring and summer during seining, snorkeling, and stranding surveys (TID/MID, unpublished data). Fewer age 1+ trout have been observed.

Few detailed studies have been conducted regarding the interrelationships between resident rainbow trout and anadromous steelhead populations (NMFS 1996). As a result of this uncertainty, the National Marine Fisheries Service, which enforces Endangered Species Act (ESA) protection of this species, currently considers rainbow trout that are not physically isolated from the ocean to be steelhead (Chris Mobley, pers. comm., 1998). Taking this approach, steelhead have the potential to occur at the project site. Central Valley

steelhead, whose range includes the Tuolumne River, were listed as a federally threatened species in 1998 (USFWS 1998). In addition, NMFS has recently designated the Tuolumne River as critical habitat for Central Valley steelhead (NMFS 2000a). Critical habitat on the Tuolumne River includes the water, substrate, and adjacent riparian zone. In June 2000, NMFS issued final no-take standards under Section 4(d) of the federal ESA and identified specific conservation programs where limited exceptions to the take prohibitions are allowed (NMFS 2000b).

Sacramento Splittail

The Sacramento splittail (*Pogonichthys macrolepidotus*) is endemic to the California Central Valley, including the Sacramento-San Joaquin Delta, Suisun Bay, Suisun Marsh, and other portions of the Sacramento-San Joaquin estuary. The species' original range included much of the San Joaquin Valley. Splittail primarily inhabit fresh water, but are also found in water with salinities of 10–18 ppt (Moyle et al. 1995). Abundance of splittail is greatest in slow-moving waters of the Sacramento-San Joaquin Delta, including sloughs and the lower reaches of rivers. Splittail are believed to spawn from February through April, at which time they may move into the lower reaches of the Sacramento and San Joaquin Rivers and their tributaries (especially during wet years) (Moyle et al. 1995). The adults tend to congregate for two to three months before spawning in areas of inundated floodplain vegetation. After spawning, adults move into the lower Delta, where they remain until the fall rains begin. Larvae rear in the vicinity of the spawning grounds (Wang 1986, as cited in Moyle et al. 1995) and move downstream during May. Juvenile splittail spend their first year of life in the lower Delta and lower reaches of streams. Splittail forage benthically for invertebrates and detrital material, and are thought to feed extensively on opossum shrimp (*Neomysis mercedis*) (Moyle et al. 1995).

Splittail have generally been documented only in the lowermost reaches of the Tuolumne River; the majority of the splittail captured in the Tuolumne have been taken at or below river mile 6.0 (TID, unpublished data). However, in 1999 a single splittail was documented during pre-project fish population monitoring at SRP 9 (McBain & Trush and Stillwater Sciences 2000). Prior to this record, splittail had been found only as far upstream as Modesto, at river mile 17.2 (TID, unpublished data).

Kern Brook Lamprey

The Kern brook lamprey (*Lampetra hubbsi*) is a non-parasitic lamprey endemic to the San Joaquin River basin (Moyle et al. 1995). This species is found in the lower reaches of the Merced, Kaweah, Kings, and San Joaquin rivers. Although similar in anatomy to other lampreys, it is much smaller than other parasitic, anadromous lamprey species. Adults range in length from 3.2 to 5.5 inches, and ammocoetes (larval stage lamprey) from 4.6 to 5.6 inches (Moyle et al. 1995). Ammocoetes are generally larger than adults because non-parasitic lampreys shrink following metamorphosis (Vladykov and Kott 1976, as cited in Moyle et al. 1995).

The life history of this species has not been documented (Moyle et al. 1995). However, certain life history traits can be deduced based on its apparent similarity to other related lamprey species. This species requires silty backwaters located in large rivers. The ammocoetes, which rear in freshwater for 4 to 5 years prior to metamorphosis, are usually found in shallow pools along the edge of run habitats (Moyle et al. 1995). Common substrates used by ammocoetes include sand, gravel, and rubble. The ammocoetes bury themselves

up to the head in mud and sand substrates, where they apparently feed by filtering diatoms, algae, and protozoa from the water (Moyle et al. 1995). Adults are thought to require gravel and rubble substrate for spawning.

The Kern brook lamprey has been documented in the Merced River, but has not yet been documented in the Tuolumne River (T. Ford, pers. comm., 1998). However, the lack of documented occurrences in the Tuolumne River may result from a lack of appropriate surveys. Brown and Ford (1992) do not identify this species as occurring in the project area. Because the Kern brook lamprey has been recorded in the Merced River in habitat similar to the lower Tuolumne River, it has potential to occur in the restoration project area.

Pacific Lamprey

The Pacific lamprey (*Lampetra tridentata*) occurs in most Pacific coast streams from the Santa Ana River (Orange County) north. However, large spawning runs are unusual south of Monterey, California. In the Central Valley, this lamprey has been recorded in the San Joaquin River downstream of Friant Dam and in the Tuolumne River (Moyle 1976, Lee et al. 1980).

Little is known of the oceanic life of California populations of Pacific lamprey, except that they parasitize blood and body fluids from a wide variety of larger fishes. This is accomplished by attaching themselves to their host with a round, sucking mouth, and rasping their file-like tongue until the skin is penetrated. After a period of from 6 months to 2.5 years in the ocean, Pacific lamprey return to freshwater from May to September. Often lampreys will migrate for several months before spawning. Most are believed to spend a summer and winter in the stream prior to becoming sexually mature and spawning in the spring of the year following their re-entry into fresh water (Beamish 1980). Spawning generally occurs from April to July. Nests are constructed by both sexes in gravel or gravel and sand substrates on the upstream end of riffles or the tails of pools (Beamish 1980, Scott and Crossman 1973). Pacific lamprey nests are generally 8–16 inches in diameter and 1–3 inches deep (Scott and Crossman 1973, Moyle 1976, Farlinger and Beamish 1984). The female releases between 20,000 and 200,000 eggs into the nest, which range in size from 0.04 to 0.06 inches in diameter (Pletcher 1963). The adults then cover the eggs with a layer of fine silt and die soon after spawning.

Eggs take 2 to 3 weeks to hatch, depending on water temperatures, and produce a larval form known as an ammocoete. Pletcher (1963) reports that eggs begin to hatch after 19 days at 15°C (59°F). Ammocoetes spend two to three weeks in the nest gravel before emerging and rising into the current and drifting downstream (Pletcher 1963). This initial movement of ammocoetes usually occurs at night. The lamprey ammocoetes settle in slow backwater areas such as pools and eddies (Pletcher 1963, Farlinger and Beamish 1984) where they use their tails to burrow into mud or sand. They may also occasionally lie on top of the substrate and move from place to place. Larval lampreys, burrowed in fine substrates, filter feed on diatoms, detritus, bacteria, algae, and protozoa suspended above and within the substrate (Moyle 1976, Whyte et al. 1993). The length of time spent in freshwater as a larvae prior to metamorphosis to the juvenile or young adult life stage is difficult to estimate due to their lack of bony structures and the inconsistency of length-frequency data. The ammocoete stage has been estimated to last from 4 to 6 years (Pletcher 1963); but may extend up to 7 years (Beamish and Levings 1991).

During the ammocoete stage, the larvae may periodically move to new locations in response to changing water levels, channel adjustments, or the movements of substrate (ULEP 1998). This generally results in a gradual downstream movement that may lead to higher densities of ammocoetes in downstream reaches of a stream. Ammocoetes may move downstream throughout the year, with the largest numbers migrating in May and June, after the main migration of adults going to the ocean (Beamish and Levings 1991). Pacific lamprey are about 0.3–0.4 inches in length upon emergence from the nest gravels (Pletcher 1963). During the ammocoete stage, the lamprey grow to approximately 2.0–4.7 inches in length prior to metamorphosis (Beamish 1980). Transformation from the larval to young adult life stage takes approximately 2 months and occurs from July through October or early November (Beamish 1980). During metamorphosis, Pacific lamprey move from the mud and silt habitats occupied as ammocoetes to habitats with larger-sized substrates such as gravel, cobbles, or boulders, and swifter water velocities (Beamish 1980). Upon completion of metamorphosis to the young-adult stage in the summer or fall, migration to salt water occurs. Young adult lampreys may migrate downstream over an extended period from late September to June (Beamish 1980, Beamish and Levings 1991). The main migration of young adults may occur coincident with high discharge in the spring (Beamish and Levings 1991).

The Pacific lamprey has ben documented upstream to La Grange during numerous fish surveys in the Tuolumne River (TID/MID 1997, Stillwater Sciences 1998, 2000). In 1998 and 1999, lamprey ammocoetes (which were likely Pacific lamprey) were captured in the rotary screw trap operated immediately downstream of SRP 10 during April and May.

Hardhead

Hardhead are large cyprinids (minnows) native to the Sacramento and San Joaquin River basins, where they occupy undisturbed areas of larger middle- and low-elevation streams (Moyle and Nichols 1973, as cited in Moyle et al. 1995). Hardhead are believed to be relatively intolerant of low oxygen levels, and prefer deep pools in areas with slow water velocities and bottom substrates ranging from sand to boulders (Moyle et al. 1995). River-dwelling adult hardhead are typically found in the lower half of the water column (Knight 1985, as cited in Moyle et al. 1995), whereas juveniles primarily occupy shallow areas near the channel margins (Moyle and Baltz 1985, as cited in Moyle et al. 1995). Hardhead forage benthically for invertebrates and aquatic plant material in slow water. Hardhead become mature after two years and, based on upstream migration timing and juvenile recruitment, are thought to spawn from May–June (Moyle et al. 1995). Although spawning activity has not been observed, hardhead are thought to spawn in gravel riffles in upstream areas (Moyle 1976).

In the San Joaquin River system hardhead are found in the tributary streams but are absent from the valley reaches of the mainstem San Joaquin River (Moyle and Nichols 1973, Saiki 1984, Brown and Moyle 1987, all as cited in Moyle et al. 1995). Hardhead are listed by Brown and Ford (1992) as occurring in the lower Tuolumne River, and have been documented at the proposed project site by electrofishing, snorkeling, and rotary screw trap surveys conducted by the Districts and the TRTAC. Summer electrofishing and snorkeling surveys recorded hardhead immediately downstream of SRP 10 (at river mile 24.9) in 1991 and 1994 (TID/MID 1997), and hardhead were captured at the same location during rotary screw trap sampling in 1998 (Stillwater Sciences 1998). Hardhead were also documented at SRP 9 during pre-project fish population monitoring in September 1998 and September 1999 (McBain & Trush and Stillwater Sciences 1999, 2000).

Fish Habitat

Instream habitat in the area of the proposed infiltration gallery consists of two large, deep, lake-like mining pits (SRPs 9 and 10) separated by approximately one half mile of narrower channel with a slightly steeper gradient and greater habitat diversity (the middle reach). Salmon and bass habitat in this reach has been mapped in detail for the Restoration Project baseline monitoring (McBain & Trush and Stillwater Sciences 1999, 2000). The bed substrate in SRPs 9 and 10 generally consists of sand with intermittent patches of cobble and gravel. Very little riparian vegetation is present within the active channel along SRPs 9 and 10, and floodplains are virtually nonexistent. The SRP units currently contain little or no habitat suitable for salmonids or other native fish species, but provide suitable habitat for non-native predatory bass. The middle reach, which has not been subject to instream or floodplain mining, has a rectangular channel cross section and consists primarily of glide and pool habitat sequences and four separate riffles (designated Riffles 70, 71 72A, and 72B). The channel bed in the middle reach is primarily sand, with gravel in the riffles and other isolated areas. In general, the section of channel between the SRPs contains much greater habitat diversity than the SRPs, including backwater areas suitable for salmonid rearing and lateral bars that provide refuge habitat for juvenile salmonids during high flows.

Flow reductions and regulation subsequent to dam construction have altered the temperature regime of the Tuolumne River below the dams. Minimum instream flows in the lower Tuolumne River are regulated by Article 37 of the FERC license for the New Don Pedro Project. The minimum flow requirements were revised as part of the 1995 FERC Settlement Agreement (FSA) in order to provide lower summer water temperatures and increased habitat suitability for all chinook salmon life stages. The FSA increased minimum flow conditions (especially in the spring and summer), required that flows remain constant from mid-October through November (to prevent dewatering of chinook salmon redds), and limited flow ramping rates. Compared to the previous minimum flows required under the New Don Pedro Project FERC license, the current flow requirements increase flows from April through September for all water year types and provide a fall attraction pulse flow in most (68.7%) years. In addition, a spring pulse flow is provided in all but critical and dry years to stimulate emigration of chinook salmon smolts. Under the FSA, minimum flows through May 31 range from 150 to 300 cfs and flows from June through September range from 50 to 250 cfs, depending on the water year type.

Water temperatures anticipated to occur under the 1995 FSA minimum flow schedule have been predicted by the Tuolumne and Modesto Irrigation Districts (TID and MID, or collectively, "the Districts") using the Tuolumne River temperature model. In most years, water temperatures suitable for salmonid oversummering occur throughout the summer for several miles downstream of La Grange Dam. Water temperatures further downstream, however, may exceed those suitable for rearing fry and juvenile chinook salmon (65–68°F) during the summer flow period.

3.6.2 Environmental Consequences

The Restoration Project EA/IS/MND (USFWS and TID 1998) identified steelhead and fall run chinook salmon as the only threatened, endangered, or sensitive fish species whose populations or habitats may be affected by restoration activities at SRPs 9 and 10. Because construction of the proposed infiltration gallery would take place concurrently with restoration activities at SRPs 9, the effects of infiltration gallery construction on sensitive or special-status fish species would be minimal, because the SRP would already

be disturbed for the Restoration Project. The potential effects of operation and maintenance of the proposed infiltration gallery differ from the potential effects resulting from the one-time channel restoration activities. In addition, since the EA/IS/MND was prepared, Sacramento splittail have been documented to occur in the project vicinity and have been listed as a federally threatened species. Therefore, the environmental consequences of the proposed infiltration gallery on fish and fish habitat have been assessed below for each of the six candidate, sensitive, or special status fish species identified in Table 1.

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

Proposed Project

The proposed project is in response to the Federal Energy Regulatory Commission (FERC) Settlement Agreement (FSA) which requires TID to promote a plan to divert water out of the Tuolumne River for irrigation (the proposed project) in place of existing water diversions upstream at La Grange Dam. This change in the location where water diversions currently take place would allow water that is currently diverted from the dam to instead by diverted from the lower reaches of the Tuolumne River, thus providing additional water in the upper 26 miles of the river to improve fish habitat under the Restoration Project. This would represent a beneficial impact of the proposed project.

Several aspects of the proposed project have the potential to result in adverse impacts to candidate, sensitive, or special status fish species and/or their habitat. These are: 1) disturbance (i.e., turbidity) during construction of the project, 2) mobilization of fine sediment due to backflushing of the infiltration gallery piping, and 3) potential for entrainment or impingement of juveniles (e.g., chinook salmon alevins, fry, or smolts) at the infiltration gallery intake pipes. In addition, the proposed project would result in a slight modification of the SRP 9 Restoration Project design, however, the potential to affect salmonid spawning habitat at the site would be offset by improved habitat resulting from the Restoration Project.

Disturbance (i.e., turbidity) During Construction

Construction of the proposed infiltration gallery would take place concurrently with the restoration efforts at SRPs 9 and 10 under the Restoration Project. Therefore, no net increase in disturbance to the river channel or turbidity resulting from infiltration gallery construction is expected to occur beyond that associated with the Restoration Project, and no substantial adverse effect on candidate, sensitive, or special status species would occur. (NI)

Mobilization of Fine Sediment Due to Backflushing

Backflushing of the infiltration gallery to clear fine sediments from the pipes and intakes could potentially result in impacts to chinook salmon and other fish, as well as local and downstream impacts to habitat for salmonids and other fishes. Potential impacts could result from increased

concentrations of total suspended solids (TSS) and increased sediment deposition and infiltration into bed substrates. The potential impacts of the backflushing on fish and instream habitat would depend on the timing and duration of the backflushing, the amount and size of sediment flushed from the pipes and the overlying substrates, and the velocity of the backflush and river flow conditions during backflushing. Potential salmonid effects of exposure to elevated TSS concentrations considered in the analysis include: (1) avoidance of turbid waters in homing adult anadromous salmonids, 2) avoidance or alarm reactions by juvenile salmonids, 3) displacement of juvenile salmonids, 4) reduced feeding and growth rates, 5) physiological stress and respiratory impairment, 6) damage to gills, 7) reduced tolerance to disease and toxicants, 8) reduced survival, and 9) direct mortality. The severity of these effects depends on both the magnitude and the duration of the exposure.

Potential increases in TSS concentrations resulting from gallery backflushing are not expected to have substantial adverse effects on native fishes in the Tuolumne River. The timing of backflushing would be controlled by TID to occur during or after most juvenile salmon have emigrated from the river and before adults enter the river to spawn. Turbidity provides cover for predators for out migrating juvenile salmon. Likewise, since the majority of juvenile splittail have moved downstream toward the Delta by May, potential increases in TSS resulting from backflushing are not expected to have adverse affects on Sacramento splittail. Steelhead and hardhead, because they primarily occupy upsteam areas, would not be subject to increased TSS concentrations that may result from backflushing. The potential effects on lamprey, which may be present as adults or ammecoetes in the vicinity of the proposed project during backflushing, are not known, but are expected to be minor. In addition, the low summer flows during gallery operation are not expected to be sufficient to mobilize large amounts of TSS for an appreciable distance downstream. Finally, any increase in TSS resulting from backflushing would be expected to be relatively short in duration. Previously recorded turbidity spikes in the Tuolumne River have dissipated within one to two days (Stillwater Sciences 1998, 2000). (LTS)

The proposed infiltration gallery would operate each year from April through September, which includes the period of low minimum summer flows as regulated by the FSA. As described in Chapter 2, Proposed Project and Alternatives, of this IS/MND, operation of the infiltration gallery would result in a net increase in river flow of up to 100 cfs upstream of the gallery. During gallery operation, flows downstream of the infiltration gallery would continue to meet the requirements of the FSA (50–250 cfs, depending on the water year type). In dry years, when minimum FSA summer flow requirements are lowest, the infiltration gallery could begin operating as early as April or May. Backflushing is anticipated to occur prior to initiation of diversion at the gallery, as well as periodically during gallery operation. Because the majority of juvenile chinook salmon emigrate from the river by the end of May, backflushing would generally not be expected to affect them. In dry years, however, when the gallery begins operating in April or May, outmigrating juvenile chinook salmon could still be in the river downstream of the infiltration gallery during the initial backflushing. Turbidity from backwash is anticipated to reduce juvenile salmon predation during outmigration. A small number of juvenile chinook may also remain in the river to rear during the summer, but would be expected to concentrate in upstream reaches where water temperatures remain lowest. These oversummering salmon would therefore not be expected to be subject to the effects

of gallery backflushing. Because adult chinook salmon begin migrating upstream in October, backflushing is not expected to affect adult salmon. (LTS)

Rearing steelhead, which could be present in the Tuolumne River during summer, and hardhead, which are year-round residents in the Tuolumne River, would be expected to occupy the reach upstream of the SRPs 9 and 10 where water temperatures are coolest and suitable habitat is most plentiful. The effects of backflushing on stealhead and hardhead are therefore expected to be less than significant. Lamprey, which may be present as migrating adults and rearing ammocoetes downsteam and in the vicinity of the proposed infiltration gallery, could be subject to increased TSS concentrations that may result from gallery backflushing. The Restoration Project is expected to increase spawning habitat suitability in the restoration reach for lamprey and other native species (including chinook salmon, splittail and hardhead), thus increasing the likelihood that adult lamprey and ammocoetes will be present at and downstream of SRPs 9 and 10. Although no information is available regarding the effects of elevated TSS concentrations on lamprey, adverse effects on these species are not expected because: (1) lamprey ammocoetes rear in rivers for 4-6 years, and these fish have therefore evolved in conjunction with extreme natural increases in TSS such as those associated with winter floods and spring snowmelt runoff; (2) potential TSS increases that may result from backflushing are expected to be of short duration and relatively limited in magnitude and downsteam extent; and (3) the proposed project would facilitate implementation of the Restoration Project and thus result in a net improvement of fish habitat in the upper Tuolumne River. (LTS)

Juvenile Sacramento splittail could be present downstream of the proposed project, although splittail spawning has not been documented in the Tuolumne River. Because the majority of juvenile splittail move downsteam to the Delta by the end of May, backflushing would not be expected to affect splittail. In dry years, however, when the galley would begin to operate in April or May, juvenile splittail could still be in the river downsteam of SRPs 9 and 10 during initial backflushing. Evidence has not been found to indicate that a short duration of turbidity in a limited reach of the river would have an adverse effect on splittail. (LTS)

Per the above paragraphs, the proposed project would not have substantial adverse effect on candidate, sensitive, or special status fish species associated with TSS from backflushed sediment. (LTS)

Increased TSS concentrations downstream of the proposed infiltration gallery would have the potential to beneficially affect chinook salmon in the Tuolumne River. Studies by the Districts have shown that increased turbidity can result in reduced predation success by largemouth bass, which prey extensively on fry and juvenile chinook salmon (TID/MID 1991). Predation by introduced bass is believed to be one of the primary factors affecting survival of fry and juvenile chinook salmon in the Tuolumne River (TID/MID 1992, McBain & Trush 2000, McBain & Trush and Stillwater Sciences 1999, 2000). Outmigrating smolts are especially susceptible to predation by bass in downstream reaches where higher water temperatures and the large, deep pools resulting from instream mining provide increased habitat quantity and quality for bass. An increase in turbidity caused by backflushing of the infiltration gallery, especially if timed to coincide with the chinook salmon smolt outmigration period (February through May in the vicinity of SRPs 9 and 10), could increase outmigration success by reducing bass predation efficiency downstream of the infiltration

gallery. Efforts to reduce predation efficiency by bass may be especially important in light of the large cohort of young-of-year bass documented in 1999 (McBain & Trush and Stillwater Sciences 2000). This large bass cohort will soon pose a major predation threat to juvenile chinook salmon as they reach the predatory size range (160–350 mm) (TID/MID 1992, McBain & Trush and Stillwater Sciences 2000). Therefore, backflushed sediment associated with the proposed project could have a potentially beneficial effect on salmonids.

There is the potential for sediment flushed from the gallery to redeposit on riffle surfaces or in pools downstream of the gallery. While this sediment could infiltrate into the channel bed, filling substrate interstices and potentially reducing the quality and quantity of spawning gravels, the fine sediments that would be temporarily mobilized are already present in the river. Any sediment deposited as a result of backflushing is not new sediment in the river, and it is expected to be localized and temporary. Low flow conditions during backflushing would prevent sediment transport and deposition downstream of the immediate vicinity of the restoration reach. In addition, the restoration of natural channel geometry and fluvial processes in the restoration reach would facilitate scour of deposited fine sediments during annual high flow events. Potential impacts associated with backflushed sediment on habitat for spawining and rearing salmonids, lamprey and hardhead, and on macroinvertebrates, are therefore expected to be less than significant. (LTS)

Increased sediment deposition from backflushing would have no adverse effects on lamprey ammocoetes since they prefer silty habitats throughout the multi-year rearing stage. The effects of sediment deposition on habitat suitability for Sacramento splittail are poorly known. Since splittail eggs adhere to vegetation, and young splittail are not believed to feed extensively in rivers, potential impacts to splittail habitat and macroinvertebrates associated with backflushed sediment would be expected to be less than significant. (NI/LTS)

Entrainment or Impingement of Fish

When fish rear or migrate in close proximity to water diversion facilities the chance of entrainment is increased. Newly-hatched salmon (alevins) remain in the gravel for two to three weeks before emerging into the water column. Salmonid fry (< 50 mm) use interstitial spaces for cover, often increasing proximity to infiltration galleries. There is a high likelihood that chinook fry, juveniles, and smolts will be in close proximity to the proposed infiltration gallery site. Currently there is no documented chinook salmon spawning at SRPs 9 or 10 (Vasques, pers.comm., 2000.), so the likelihood of alevins in the project vicinity is low. Salmon emerging from redds several miles upstream of SRPs 9 and 10, however, may come within close proximity to the proposed infiltration gallery as fry and juveniles, and as they migrate downstream as smolts.

Juvenile hardhead, which are benthic feeders, are nonetheless unlikely to be in close proximity to the substrates overlying the proposed infiltration gallery. Most hardhead in the Tuolumne River occur upsteam of the restoration reach. In addition, because juvenile hardhead occupy shallow water habitat at the stream margins, they are not expected to be present in mid-channel or on the river bottom at the proposed infiltration gallery location. Lamprey eggs may be present in the gravels overlying the infiltration gallery if the reconstructed habitat is suitable for lamprey spawning.

Lamprey ammocoetes, however, rear in silty backwater areas and are therefore not expected to be present in or near the substrates overlying the infiltration gallery.

The likelihood of juvenile Sacramento splittail coming into close proximity to the proposed infiltration gallery is not known, but there has not been documented spawning in the Tuolumne River.

Salmonid fry less than 40 mm can sustain swimming speeds of 0.4 feet per second (fps) for periods long enough to avoid obstacles (Smith and Carpenter 1987, as cited in Nordlund 1996). Swimming speeds increase as salmonids grow larger. When velocities of water diversion facilities exceed 0.4 fps salmonid fry can be entrained or impinged, particularly if high water temperatures or low dissolved oxygen levels decrease swimming stamina. The swimming velocities of juvenile hardhead, lamprey ammocoetes, and adult and juvenile splittail are not known. The intake velocity of the infiltration gallery (at the gravel surface) under the proposed project would be approximately 0.01 fps, which is well below the minimum swimming speeds of salmonid fry, juveniles, or smolts. Also, several feet of gravel separates the gallery pipes from the river bed. The design velocity at the gallery pipes themselves, which would be fed by gravity and not by pumping, is 0.02 fps. In addition, the mesh size of the gallery intake pipes would be approximately 0.06 inches, thereby excluding items as large as chinook salmon eggs (0.18–0.34 inches in diameter) (Weatherly and Gill 1995). Lamprey eggs, however, which for Pacific lamprey range between 0.04 and 0.06 inches in diameter (Pletcher 1963), may pass through the intake mesh and become entrained in the diversion. The National Marine Fisheries Service's fish screening criteria indicate that salmonid fry can become entrained when screen mesh sizes are less than 0.09 inches (NMFS 1997). No known screening criteria exist for the other species.

Per the above paragraphs, swimming speed and mesh size are therefore expected to be sufficient to prevent entrainment of free-swimming chinook salmon and unhatched eggs, or impingement of chinook salmon at the channel bed surface or at the gallery intake pipes, should they become exposed by scour of the overlying fill. Impingement of eggs is possible if successful spawning takes place in the gravel overlying the proposed infiltration gallery. However, egg impingement is considered highly unlikely because of the low intake velocity and the gravity-fed operation of the infiltration gallery. Therefore, the proposed infiltration gallery would be expected to have less than significant entrainment or impingement impacts on salmonids. (LTS)

Per the above paragraphs, no adverse entrainment-related effects on Sacramento splittail or hardhead are expected due to the avoidance of mid-channel habitats by juveniles of these species. (NI)

Per the above paragraphs, entrainment of lamprey eggs is possible; however, the magnitude would depend on the abundance and frequency of nest building and spawing by lamprey in the gravels directly overlying the proposed infiltration gallery as facilitated by the Restoration Project. Because the proposed project would facilitate implementation of the Restoration Project and thus result in a net improvement of fish habitat in the upper Tuolumne River, this impact would be less than significant. (LTS)

Modification of Fish Habitat

Flow increases of approximately 100 cfs (the diversion capacity of the proposed infiltration gallery) are expected to occur upstream of the proposed infiltration gallery during gallery operation. These flow increases would occur during summer, when flows in the Tuolumne River are lowest and water temperatures are generally highest. The additional 100 cfs of water would be released from New Don Pedro Reservoir and allowed to flow through the 26-mile reach to the proposed infiltration gallery, rather than being diverted into the TID Main Canal directly from La Grange Dam. This cold, dam-released water would help reduce summer water temperatures in this portion of the river and increase the downstream extent of suitable habitat for juvenile salmonids and potentially for other native species (a beneficial impact).

Water temperatures expected to occur in the upper 26-mile reach under the Restoration Project and the proposed project have been modeled using the Tuolumne River temperature model. This model, which is a river-specific model developed using SNTEMP (Theurer et al. 1984), predicts 5-day mean water temperatures at 3.1-mile intervals from New Don Pedro Dam to RM 2.3 based on meteorological conditions, flow, shading, channel geometry, and channel network. As predicted by the temperature model, the downstream extent of suitable rearing temperatures for fry and juvenile chinook salmon (65–68°F) would be increased by 3–6 miles from June 1–September 30, depending on water year type. In the wettest years, which comprise nearly half of all previously recorded water year types, suitable rearing temperatures would be provided from La Grange Dam downstream to approximately river mile 33.4. Without the proposed flow increase, suitable rearing temperatures would be present only downstream as far as river mile 39.6. In dryer years, suitable rearing temperatures would occur downstream to river mile 45.8, an increase of 6.2–3.1 miles relative to conditions modeled under existing FSA minimum summer flows, depending on water year type.

By increasing flows in the upper 26 miles of the Tuolumne River, the Restoration Project and the proposed project are therefore expected to have beneficial effects on rearing salmonids and other native fishes that require cool water temperatures. Under the proposed project flows, and therefore water temperatures, would remain unchanged in the river downstream of the proposed infiltration gallery. (NI)

Alternative Pipeline Route

Same impacts as under the proposed project. [beneficial impact/NI/LTS]

Alternative Diversion Facility Location

Same impacts as under the proposed project. [beneficial impact/NI/LTS]

No Action

Under the No Action Alternative, no candidate, sensitive, or special status species or their habitats would be altered or otherwise affected. Therefore, this alternative would not have a substantial adverse effect, either directly or through habitat modifications, on any such species or habitats.

However, this alternative would also not permit increased flows in the upper reaches of the Tuolumne River with associated beneficial impacts on aquatic habitat. (NI)

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

Proposed Project

Under the proposed project, restoration of native riparian vegetation would generally follow the restoration efforts for SRPs 9 and 10 called for under the Restoration Project (USFWS and TID 1998). Restoration of SRPs 9 and 10 would include restoration and preservation of natural riparian vegetation, as well as removal of invasive exotic riparian vegetation. However, the need for rock slope protection (i.e., bank hardening) to prevent bank erosion at the proposed infiltration gallery would result in minor changes to the riparian vegetation planned at the site under the Restoration Project. Compared to existing conditions, there would still be a net increase in riparian habitat with these minor changes. Stream shading, overhead cover, nutrient input, and other beneficial fish habitat features provided by riparian vegetation would not be adversely affected by the proposed project. (LTS)

Alternative Pipeline Route

Infiltration gallery component - same impacts as under the Proposed Project. (LTS)

Under the Alternative Pipeline Route Alternative, the southern bank of the Tuolumne River would require rock slope protection from the infiltration gallery to the Geer Road bridge to prevent bank erosion at the proposed pipeline route. This would result in changes in the riparian vegetation planned along the south side of SRP 9 from the infiltration gallery to the bridge under the Restoration Project. Compared to existing conditions, these changes would not result in adverse impacts to instream or overhead cover for fish. Critical habitat for listed fish species, which includes Tuolumne River riparian areas, would therefore not be adversely affected by the proposed project, and would in fact benefit from restoration at SRPs 9 and 10 (although the benefit would not be as great as under the proposed project). (LTS)

Alternative Diversion Facility Location

Same impacts as under the proposed project. (NI)

No Action

Under the No Action Alternative, no riparian habitat or other sensitive natural community would be altered or otherwise affected. Therefore, this alternative would not have a substantial adverse effect on any such habitats or communities. (NI)

c) ***Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?***

Proposed Project

Construction of the proposed infiltration gallery would take place concurrently with restoration activities at SRP 9. Restoration activities are scheduled to occur from July–September, and are timed to avoid periods of chinook salmon smolt outmigration (February–May) and upstream spawning migration (October–December). Gallery operations, including backflushing, would also generally be timed to avoid chinook salmon spawning migration periods. Backflushing that may occur during the spring outmigration period could provide benefits to outmigrating salmon by reducing predation by bass. No adverse effects on chinook salmon migration are therefore anticipated. Likewise, no adverse effects on migration corridors or nursery sites for chinook salmon are anticipated. (LTS)

Juvenile steelhead and Sacramento splittail, as well as young adult lamprey (post-metamorphosis), could potentially be migrating downstream during gallery construction and/or operation. Spawning migration of hardhead, which is believed to occur during spring and summer, could also coincide with gallery operations. However, because construction of the infiltration gallery would take place concurrently with restoration activities already planned at SRP 9, no substantial net increase in impacts on these species would result during construction. (LTS)

Backflushing associated with the proposed infiltration gallery could impact juvenile steelhead, Sacramento splittail and young adult lampreys. However, because turbidity that may result from gallery backflushing is expected to be limited in magnitude and downstream extent, and because it would mimic natural turbidity that occurs during spring snowmelt runoff from the Sierra Nevada, it is unlikely that it would have adverse effects on steelhead outmigration or downstream movement of splittail and lampreys. Turbidity can provide cover to juvenile steelhead to avoid predation. (LTS)

Because the proposed infiltration gallery would be below the river bed and the pipeline would be undergrounded, they would not interfere with the movement of any native fish or wildlife species. (NI)

Alternative Pipeline Route

Same impacts as under the proposed project. (LTS)

Alternative Diversion Facility Location

Same impacts as under the proposed project. (LTS)

No Action

Under the No Action Alternative, no native resident or migratory fish species, migratory corridors, or nursery sites would be affected. Therefore, this alternative would not interfere with any such species or corridors, nor with the use of any native nursery sites. (NI)

*d) **Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?***

Proposed Project

Because the proposed project would take place in unincorporated Stanislaus County, the only applicable local policy or ordinance is the Stanislaus County General Plan (Stanislaus County 1994). The Stanislaus County General Plan contains several policies that apply to the biological resources of the Tuolumne River and the project site. These policies are intended to:

- Protect from development areas of sensitive wildlife habitat and plant life, including riparian habitats (Policy Three);
- Preserve vegetation to protect waterways from bank erosion and siltation (Policy Six);
- Maintain adequate water flows in the County's rivers to allow salmon migration (Policy Twenty-nine); and
- Protect habitats of rare and endangered fish and wildlife species (Policy Thirty).

The proposed project would not conflict with any of these policies. Because no development is proposed under the proposed project, there would be no conflict with Policy Three. The proposed project would take place in conjunction with restoration at SRPs 9 and 10 under the Restoration Project. These restoration efforts would include restoration and preservation of natural riparian vegetation, as well as removal of invasive exotic riparian vegetation. In addition to restoration and preservation of native riparian vegetation, restoration of SRPs 9 and 10 under the Restoration Project would reduce bank erosion by reconfiguring the channel geometry to conform to the current flow regime, restoring functional floodplains, and reestablishing natural riparian regeneration processes. Therefore, the proposed project would not conflict with Policy Six. (NI)

The effects of the proposed infiltration gallery on Tuolumne River flows and habitat for candidate, sensitive, or special status fish species are addressed under "a" above. As discussed above, the proposed project would not conflict with Policies Twenty-nine or Thirty of the Stanislaus County General Plan. (NI)

Alternative Pipeline Route

Same impacts as under the proposed project. (NI)

Alternative Diversion Facility Location

Same impacts as under the proposed project. (NI)

No Action

Under the No Action Alternative, no biological resources would be affected. Therefore, this alternative would not conflict with any local policies or ordinances protecting such resources. However, this alternative would also not permit increased flows in the upper reaches of the Tuolumne River with associated beneficial impacts on aquatic habitat. (NI)

e) ***Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?***

Proposed Project

There are no known Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans that are applicable to the Tuolumne River in the vicinity of the proposed project. Therefore, the proposed project would not conflict with any such plans. (NI)

Alternative Pipeline Route

Same impacts as under the proposed project. (NI)

Alternative Diversion Facility Location

Same impacts as under the proposed project. (NI)

No Action

Under the No Action Alternative, no habitats or natural communities would be affected. Also, there are no known Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans that are applicable to the Tuolumne river in the vicinity of the proposed project. Therefore, this alternative would not conflict with an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. (NI)

3.7 CULTURAL RESOURCES

3.7.1 AFFECTED ENVIRONMENT

The project area is located in the eastern San Joaquin Valley within a rural portion of Stanislaus County just southeast of the City of Modesto (Denair USGS 7.5-minute quadrangle). Existing land uses in the project area include the Tuolumne River (Mile 26), the associated river banks and floodplain, aggregate extraction pits, orchards/vineyards, Fox Grove County Park, several farm residences, and farm roads. The project area has been highly disturbed by past mining and past/current agricultural activities, which likely has destroyed evidence of prior use of the area. Access to the area is provided by Geer Road.

Under the proposed project, the infiltration gallery and pump station would be developed within and along the southern bank of Special Run Pool (SRP) 9, respectively. The 2,800-foot pipeline would be developed within an existing TID power line easement from SRP 9 southward, on the west side of Geer Road, through an aggregate pit overgrown with native grasses, and through orchards to its southern terminus at the TID Ceres Main Canal near Hatch Road.

Under the Alternative Pipeline Route Alternative, the infiltration gallery and pump station would be developed at the same locations as under the proposed project. The 4,200-foot pipeline would be developed from SRP 9 eastward along the south side of the Tuolumne River, under the Geer Road Bridge, and then southward on the east side of Geer Road, through Fox Grove Park and a vineyard to the canal. The northern half of the pipeline, east of Geer Road, would follow an existing public access road to Fox Grove Park.

Under the Alternative Diversion Facility Alternative, the pipeline would be developed at the same location as under the proposed project, while the infiltration gallery and pump station would be developed within and along the southern bank of SRP 10.

The project area is located along one of the many Sierra rivers favored for prehistoric habitation, within an area known as the Southern Mines of the 1849-60s Gold Rush, and within an agricultural and transportation area dating from the mid-late 1800s. Prehistoric and historic-era finds have been recorded in nearby areas.

A Records Search was performed for the project at the Central California Information Center of the California Historical Records Information System at California State University, Turlock. The purpose of the Records Search was to identify any previously recorded cultural resource sites in the project area. A field survey was conducted of the sites of the proposed facilities on June 23, 2000 to identify any surficial evidence of cultural resources. Archival investigations were also undertaken to determine previous uses and disturbances in the project area, and to identify the types of artifactual materials, if any, that could be expected to be found. A report containing the findings of the above, an evaluation of potential project impacts on cultural resources, mitigation requirements, references, photographs, and site records has been prepared and is on file at TID, USFWS, and the Central California Information Center at CSU, Turlock (Cultural Resources Unlimited 2000).

According to the Records Search, no prehistoric or historic resources have been recorded on the sites of the facilities proposed under the proposed project or facility alternatives. The closest recorded prehistoric sites are located over a mile to the north where Native American milling features (P-50-000329), tools (P-50-000276), and a midden (P-50-000277) were found. Several historic sites have been mapped within the project vicinity. These include: 1) an east-west road and trail located approximately one-eighth of a mile north of Hatch Road; 2) two farm residence buildings located along the east side of the Fox Grove Park public access road (one of which now houses the Stanislaus Wildlife Care Center); 3) a landing strip located on the bluff above Fox Grove Park; and 4) a gravel pit located just north of Fox Grove Park. In addition, several now abandoned mining sites exist in the area. The Information Center has not received site maps for, nor has it assigned record numbers to, any of these sites. The project archaeologist has determined that none of these sites represent significant "historical resources" as defined by §15064.5 of the State CEQA Guidelines (i.e., not eligible for listing in the California Register or National Register, not listed in any local register of historic places, not identified as significant in a historical resource survey, etc.).

No cultural resources were observed during field surveys of the project site.

3.7.2 Environmental Consequences

a-d) ***Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?***

Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Would the project disturb any human remains, including those interred outside of formal cemeteries?

Proposed Project

As indicated above, there are no recorded archaeological or historical resources located on or within the proximity of the project site, no archaeological or historical resources were observed during field surveys of the project site, and the four historic sites that have been identified within the vicinity do not represent significant "historical resources." The proposed pipeline would bisect the recorded location of one identified historic site, that of a road and trail identified on historic maps one-eighth mile north of Hatch Road. However, the road and trail no longer exist, and do not represent a significant "historical resource". Therefore, the proposed project would not cause a substantial adverse change in the significance of a known historical or archaeological resource pursuant to §15064.5 of the State CEQA Guidelines, would not destroy a known unique paleontological resource, and would not disturb known sites of human remains.

Construction activities associated with the proposed project could potentially affect as of yet undiscovered historical resources, archaeological resources, paleontological resources, or human remains. The mitigation measures identified below would ensure that project construction activities would not cause a substantial adverse change in the significance of, or destroy/disturb, any such resources or remains. (LSM)

CULT-1: If any archaeological resources, historical resources, paleontological resources, or human remains are unearthed during project construction activities, TID will immediately stop work at and within 150 feet of the find, and will call in a professional archaeologist to evaluate the find and determine appropriate treatment measures in accordance with applicable federal, state and local regulations.

CULT-2: If any human bones are unearthed during any phase of project construction, operation or maintenance, the Stanislaus County Coroner and Native American Heritage Commission will be notified immediately in accordance with federal and state law.

Alternative Pipeline Route

Infiltration gallery and pump station components - same as under the proposed project. (LSM)

Under the Alternative Pipeline Route Alternative, in addition to the impacts identified under the proposed project, the alternative pipeline route would bring construction activities within close proximity to two farm residence buildings located along the east side of the Fox Grove Park public access road. These two buildings are identified in historic maps. Although these buildings are not recorded historic resources, and do not represent significant "historical resources", they may contain architectural attributes or otherwise have historical elements worthy of further study. The mitigation measure identified below would ensure that project construction activities would not adversely affect these buildings. (LSM)

CULT-3: If the Alternative Pipeline Route is selected, pipeline construction activities will avoid any damage to the two farm residence buildings located along the east side of the Fox Grove Park public access road just south of the Tuolumne River.

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI/LSM)

No Action Alternative

Under the No Action Alternative, no changes would occur in the project area. No construction or development would take place. Therefore, this alternative would not cause

a substantial adverse change in the significance of a known historical or archaeological resource pursuant to §15064.5 of the State CEQA Guidelines, would not destroy a known unique paleontological resource, and would not disturb known sites of human remains. (NI)

3.8 GEOLOGY AND SOILS

3.8.1 AFFECTED ENVIRONMENT

The project area is located within the alluvial valley developed along the Tuolumne River in eastern Stanislaus County. The headwaters of the river are formed in the mountainous area of the Sierra Nevada east of the project site. The headwaters drain granitic terrain of the Sierran Batholith in the core of the mountain range. Flowing westward, the river dissects Tertiary volcanic and sedimentary rocks that overlie older Jurassic methovolcanic and metasedimentary materials of the foothills. Eventually, the river emerges onto the Great Valley. At this regional break in slope, the river has deposited large alluvial fans.

The project area is located in an area of moderate seismic hazard. The area is within Uniform Building Code (UBC) Seismic Zone 3. By comparison, most of coastal California is designated as Seismic Risk Zone 4. No active faults have been identified within the project area. The Ortigalita Fault is the closest (34 miles southwest) active fault. The California Division of Mines and Geology indicates that the estimated peak horizontal acceleration generated by seismic activity affecting the area would be 0.1 to 0.2 g. The project area does not contain a designated Alquist-Priolo Earthquake Fault Zone.

The active floodplain of the Tuolumne River is the geomorphic setting for the project area and contains alluvial sediments of between 10 and 35 feet deep. The sediments are classified as Mineral Resource Zones (MRZs) by the California Division of Mines and Geology, and contain concrete-grade aggregate resources (Higgins and Dupras 1993). Large deposits of dredger tailings are located in the river, along the banks, and within the vicinity associated with past mining activity.

3.8.2 ENVIRONMENTAL CONSEQUENCES

a) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking, seismic-related ground failure including liquefaction, or landslides?

Proposed Project

The proposed project consist of a water diversion facility, rather than residential, commercial, or other land uses with substantial structures and people; therefore the proposed project would not expose people or structures to substantial adverse effects involving seismic activity. Substantial environmental consequences would not occur related to risk of loss, injury or death. The proposed facility would divert water for irrigation, so the consequences of seismic damage could be temporary disruption of agricultural water. While the proposed facilities would not be subject to fault rupture as no faults are known

to exist in the area, they could potentially be subject seismic ground shaking and seismic-related ground failure. (LTS).

Alternative Diversion Facility Location

Same impacts as the proposed project. (LTS)

Alternative Pipeline Route

Same impacts as the proposed project. (LTS)

No Action

Under the No Action Alternative, existing conditions in the project area would remain unchanged. Therefore, this alternative would not expose people or structures to substantial adverse effects involving fault rupture, strong seismic ground shaking, seismic-related ground failure including liquefaction, or landslides. (NI)

b) Would the project result in substantial soil erosion or the loss of topsoil?

Proposed Project

The proposed project would include construction activities at SRP 9 and along the proposed pipeline corridor that could generate soil erosion during construction. These construction activities would include the placement of infiltration gallery pipelines within SRP 9, the covering of the infiltration gallery pipelines with aggregate as part of the plan under the Restoration Project to improve fishery habitat conditions in SRPs 9 and 10, and the development of a small 50' by 50' pump station on the south bank of the river. Construction of the proposed infiltration gallery would occur at the same time and place as the channel improvements proposed for the Restoration Project, and thus would result in little, if any, increase in earth moving activities. Construction of the proposed pump station and pipeline from the pump station to the TID Main Canal would result in additional earth moving activities not evaluated in the Restoration Project EA/IS. The pipeline corridor could be subject to erosion by water or air during storm events or high winds. The Restoration Project EA/IS identifies as mitigation the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) under the state-wide General Permit for Storm Water Discharges Associated with Construction Activities. The SWPPP will identify soil stabilization and sediment control practices, revegetation requirements for disturbed areas, and monitoring methodologies. Compliance of the proposed project with the requirements of the Restoration Project's SWPPP would avoid substantial soil erosion during construction of the proposed project, as described in mitigation measure GEO-1. (LSM)

GEO-1: All construction activities associated with the proposed project will occur consistent with the requirements of the Restoration Project's Storm Water Pollution Prevention Plan (SWPPP). The SWPPP will include, but not necessarily be limited to, a description of the proposed construction sites, best management practices (BMPs) that will be applied to reduce pollutant runoff, means of waste disposal, implementation of approved local plans, post-construction sediment and erosion control measures and maintenance responsibilities, and non-storm water management controls. The SWPPP will meet all requirements of the Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activities. The SWPPP will be kept at the project site at all times and be made available to the Central Valley Regional Water Quality Control Board representatives. It is encouraged that a single SWPPP be prepared for both the proposed project and the Restoration Project.

Under the proposed project, a maintenance program is proposed for the infiltration gallery that would include both backflushing of the infiltration gallery pipes and the occasional depositing by truck of clean gravel upstream of SRPs 9 and 10 to ensure and adequate aggregate cover for the infiltration gallery. Although the backflushing could temporarily increase erosion of the river bed over the gallery, the normal hydrologic functions of the river and the planned deposition of clean gravel upstream of the infiltration gallery would offset any erosion of materials from the river bed associated with proposed backflushing activities. Therefore, the proposed maintenance program would not result in substantial soil erosion during operation of the proposed project. (LTS)

Alternative Diversion Facility Location

Same impacts and mitigation measures as the proposed project. (LSM/LTS)

Alternative Pipeline Route

Same impacts and mitigation measures as the proposed project. (LSM/LTS)

No Action

Under the No Action Alternative, existing conditions in the project area would remain unchanged. Therefore, this alternative would not result in substantial soil erosion or the loss of topsoil. (NI)

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

Proposed Project

The proposed facilities would be developed on alluvial deposits of between 10 and 35 feet thick that consist of a heterogeneous mixture of interbedded cobbles, boulders, gravel, sand, silt and clay, and on dredger tailings. These materials could normally represent a range of characteristics and range from stable to unstable. However, the construction of the proposed facilities within the SRP 9 restoration area allows the facilities to be placed on stable, engineering-design materials that would prevent on- or off-site lateral spreading, subsidence, liquefaction or collapse. (LTS)

The proposed facilities would be developed on the flat valley floor away from steep slopes, and would not develop steep slopes of their own. The pipes of the proposed infiltration gallery would be developed under channel slopes associated with the Restoration Project where the pipes exit the river and connect to the proposed pump station. However, these slopes would be properly engineered to appropriate construction and compaction specifications as part of the diversion project. Therefore, the proposed project would not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide. (LTS)

Alternative Diversion Facility Location

Same impacts as the proposed project. (LTS)

Alternative Pipeline Route

Infiltration gallery and pump station components would have the same impacts as the proposed project. (LTS)

The alternative pipeline route would follow an alignment from the proposed pump station eastward along the southern bank of the Tuolumne River, under Geer Road Bridge, and then south on the east side of Geer Road to the TID Main Canal. This alignment could expose the proposed pipeline to risk of damage from erosion of the river's southern bank during extreme flood flow events. Under the Restoration Project, the banks of the river at this location would be stabilized through a combination of structural and vegetative techniques. Furthermore, the banks will be designed and constructed based on engineering recommendations of geotechnical reports required as mitigation in the Restoration Project EA/IS. Therefore, the alternative pipeline alignment would not be located on a geologic unit or soil that is unstable with implementation of the bank stabilization proposals and geotechnical requirements of the Restoration Project. (LTS)

No Action

Under the No Action Alternative, existing conditions in the project area would remain unchanged. Therefore, this alternative would not result in development on unstable soils, or result in any instabilities, which could potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse. (NI)

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

Proposed Project

The proposed facilities would be developed on an engineering-design base material within the SRP 9 Restoration Project, so no expansive soil material would be present. Also, the proposed pipeline would be constructed with a design that avoids the potential for risk of damage from expansive materials. The proposed facilities would not be located on expansive soils that could create substantial risks to life or property. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

Alternative Pipeline Route

Same impacts as the proposed project. (NI)

No Action

Under the No Action Alternative, existing conditions in the project area would remain unchanged. Therefore, this alternative would not result in development on expansive soils that could create substantial risks to life or property. (NI)

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

Proposed Project

The proposed project does not include proposals for septic tanks or alternative waste disposal systems. Therefore, the proposed project would have no impacts associated with soils incapable of adequately supporting the use of such systems. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

Alternative Pipeline Route

Same impacts as the proposed project. (NI)

No Action

Same impacts as the proposed project. (NI)

3.9 HAZARDS AND HAZARDOUS MATERIALS

3.9.1 AFFECTED ENVIRONMENT

The project area is dominated by agricultural uses and disturbed open space. SRPs 9 and 10 and their environs include the Tuolumne River, inundated mining pits, and river banks and a floodplain that contain some riparian vegetation and which have been disturbed by past mining activities. Approximately 200 to 500 feet south of SRP 10 are several farm residences. Farmland and a farm residence exist Along the proposed pipeline route, which is located within an existing TID easement just west of Geer Road. Along the alternative pipeline route, which would follow existing streets for part of the route, are Fox Grove Park, one farm residence, and farmland.

A records search was conducted of government databases compiled pursuant to Government Code §65962.5 in order to identify any government-listed hazardous materials/waste sites located on or within a one-mile radius of the project area (Vista 2000). The records search indicates that there are no listed hazardous materials/waste sites on the project site or within the one-mile search radius (i.e., no NPL, SPL, CERCLIS, LUST, SWLF, CORTESE sites, etc.). The records search indicates that several groundwater wells and underground storage tanks (USTs) are located within the one-mile search radius, but also indicates that these wells are not contaminated, and that these USTs are not leaking. A former Stanislaus County municipal landfill, the Geer Road landfill, is located on the north side of the Tuolumne River west of Geer Road, within one mile of the proposed infiltration gallery. The landfill has been closed and capped according to state regulations. The landfill is unlined and volatile organic compounds (VOC) have been detected in the groundwater below it. Stanislaus County is monitoring the groundwater and implementing corrective actions (i.e., groundwater pumping and treatment). The distance that constituents have traveled in the groundwater is uncertain and they may be beneath the river near the project site; however, the river's hydrologic conditions indicate that constituents would not be expected to enter the river's surface flow (i.e., it is likely a "losing" river in this gravel-bedded/transitional reach where surface water is generally infiltrating to groundwater, rather than groundwater entering the surface flow. Past surface water sampling by the County to determine presence of constituents in the river was ceased because of non-detection. If any would reach the river, it is expected to be in small concentrations with considerable surface water dilution.

3.9.2 ENVIRONMENTAL CONSEQUENCES

a-b) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment

Proposed Project

Under the proposed project, construction equipment, construction crew vehicles, and maintenance equipment and vehicles would utilize fuel, oil, and other hydrocarbon products during construction. Properly managed, the potential to release these hazardous materials into the environment in the event of an accidental spill or leak can be avoided. The implementation of Mitigation Measures HYDRO-2 through -4 as identified in the Hydrology and Water Quality section of this IS, along with compliance with standard federal, state and local hazardous materials regulations, would avoid the creation of a significant hazard to the public or the environment associated with the routine transport, use, disposal, and/or accidental release of such materials during construction. (LSM)

Under the proposed project, the proposed facilities would not utilize fuels (the pump station would be electric, rather than diesel or gas powered). Small quantities of certain oils, lubricants and cleaning solutions would be utilized associated with project maintenance and repair activities. The implementation of Mitigation Measure HYDRO-4 as identified in the Hydrology and Water Quality section of this IS, along with compliance with standard federal, state and local hazardous materials regulations would avoid the creation of a significant hazard to the public or the environment associated with routine transport, use, disposal and/or accidental release of such materials during operation. (LSM)

Alternative Diversion Facility Location

Same impacts as the proposed project. (LSM)

Alternative Pipeline Route

Same impacts as the proposed project. (LSM)

No Action

Under the No Action Alternative, existing conditions in the project area would remain unchanged. Therefore, this alternative would not utilize hazardous materials, and would not create a significant hazard to the public or the environment through the routine transport, use, disposal, and/or accidental release of hazardous materials. (NI)

c, e-f) ***Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?***

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

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

Proposed Project

The project site is not located within ¼ mile of an existing or proposed school, within an airport land use plan area, within 2 miles of a public airport, or within the vicinity of a private airstrip. The nearest school (Ross School) is located approximately 0.8 miles to the southwest in the community of Hughson. The nearest public airport (Modesto County Airport) is located approximately 3.4 miles to the northwest near the City of Modesto. The nearest private airstrip is located approximately 1.7 miles to the northwest near the community of Empire. Therefore, the proposed project would not handle hazardous materials or result in a safety hazard in proximity to a school, airport, or to people residing or working in proximity to these uses. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

Alternative Pipeline Route

Same impacts as the proposed project. (NI)

No Action

Under the No Action Alternative, existing conditions in the project area would remain unchanged. Furthermore, the project area under this alternative is not located within the proximity of an airport or school. Therefore, this alternative would not handle hazardous materials or result in a safety hazard in proximity to a school, airport, or to people residing or working in proximity to these uses. (NI)

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

Proposed Project

As indicated by the records search conducted for the project, there are no listed hazardous materials/waste sites located on or within a one-mile radius of the project site (Vista 2000). Therefore, the proposed project would not be located on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and

would not create a significant hazard to the public or environment associated with any such sites. (NI)

The closed Geer Road Landfill north of SRP 9 may have contributed VOCs and other constituents to the groundwater beneath the river near the project site. Because the hydrologic conditions of the river do not indicate that substantial groundwater is entering the surface flow (rather, the river appears to contribute to the groundwater in this gravel-bedded/transitional reach), the potential for constituents in the river flow is very small. Dilution by river flow would be considerable, if small concentrations did somehow enter the river. Also, the proposed infiltration gallery would diver water for irrigation, not domestic use, so no health hazards would occur regardless. Consequently, no significant health hazard effect would occur.

Alternative Diversion Facility Location

Same impacts as the proposed project. (LTS)

Alternative Pipeline Route

Same impacts as the proposed project. (LTS)

No Action

Same impacts as the proposed project. (LTS)

g) Would the project impact implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Proposed Project

The proposed infiltration gallery and pipeline would be underground, while the proposed pump station would be too small (50' x 50') to physically interfere with an adopted emergency response plan or emergency evacuation plan during operation. Construction activities associated with the project would not physically interfere with such plans as they would occur away from existing streets, primarily in areas without public access (i.e., pipeline route). Therefore, no effects to emergency response as evacuation would occur. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

Alternative Pipeline Route

Infiltration gallery and pump station components would be the same as the proposed project. (NI)

The alternative pipeline would be underground and therefore would not have a potential to physically interfere with an adopted emergency response plan or emergency evacuation plan during operation. However, a portion of the pipeline route under this alternative would follow a public access road to Fox Grove Park. During pipeline construction, construction activities and/or equipment could potentially block access to the Park. The mitigation measure identified below would ensure that construction activities associated with the pipeline would not physically interfere with an adopted emergency response plan or emergency evacuation plan. (LSM)

HAZ-1: TID will adhere to all Stanislaus County traffic control requirements during construction of the pipeline under this alternative. Public access to and from Fox Grove Park will be maintained at all times during construction of the pipeline.

No Action

Under the No Action Alternative, existing conditions in the project area would remain unchanged. Therefore, this alternative would not interfere with an adopted emergency response plan or emergency evacuation plan. (NI)

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

Proposed Project

According to the Stanislaus County General Plan (Chapter V, Safety), the areas of potential wildland fires in the County are the Diablo Range, located west of Interstate 5, and the Sierra Nevada foothills in the eastern portion of the County. As indicated in this section of the General Plan, the California State Division of Forestry has stated that natural vegetation, along with steep topography and lack of access, produce overall wildland fire ratings of moderate to high in wildland fire areas (Stanislaus County 1990)

The project area is located in central Stanislaus County in an area dominated by agriculture, and is not located within a wildland fires area of the Sierra Foothills (i.e., not in oak savanna). The proposed infiltration gallery and pump station would be located in and adjacent to the Tuolumne River, respectively, in an area with little if any vegetation. The proposed pipeline would follow an existing vacant TID easement through farmland. The project area is relatively flat with nearby road access. These factors indicate that the project area is not within an area subject to a moderate to high risk of wildland fires. Furthermore,

none of the facilities being proposed would be a likely source of a fire, and none of the facilities are proposed directly adjacent to existing residences or other structures. Therefore, the proposed project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires. (LTS)

Alternative Diversion Facility Location

Same impacts as the proposed project. (LTS)

Alternative Pipeline Route

Infiltration Gallery and pump station components would be the same as the proposed project. (LTS)

A portion of the alternative pipeline would be routed through Fox Grove Park, which contains oaks and other vegetation. However, because the Park is flat and has road access, and because the proposed pipeline would be underground and would not represent a likely source of a fire, the alternative pipeline route under this alternative would not expose people or structures to a significant risk of loss, injury or death involving wildland fires. (LTS)

No Action

Under the No Action Alternative, existing conditions in the project area would remain unchanged. Therefore, this alternative would not expose people or structures to a significant risk of loss, injury or death involving wildland fires. (NI)

3.10 Hydrology, Water Quality and Geomorphology

3.10.1 Affected Environment

Hydrology and Water Quality

The Tuolumne River, largest of the three main tributaries to the San Joaquin River, originates from the Sierra Nevada headwaters. Draining about 1,900 square miles of west-sloping mountains, the river flows southwesterly between the Merced River watershed to the south and the Stanislaus River watershed to the north. The sediment supply to the lower Tuolumne River has been cut off as a result of construction of upstream dams, including New Don Pedro Dam.

The mainstream channel and floodplain of the lower Tuolumne River have undergone significant changes in response to altered streamflow hydrology, reduced sediment supply, historic dredging across the river corridor, historic in-stream gravel mining, contemporary gravel mining in the floodplain and terraces, and agricultural encroachment. These alterations have disrupted ecological connectivity both longitudinally by fragmenting river reaches, and laterally by disconnecting floodplain and terraces from the active channel or eliminating them. The combination of direct (dredging, encroachment) and indirect (reduced sediment supply, altered streamflow regime)

impacts has greatly altered geomorphic processes responsible for maintaining healthy channel conditions.

From the 1850s to 1950s placer and dredger mining for gold occurred within the gravel-bedded reach up-stream, of Roberts Ferry (RM 39.3). Much of the dredger spoils (tailings) were removed in the late 1960's to construct New Don Pedro Dam. Large-scale aggregate extraction (sand and gravel) began in the 1930's, first with in-stream aggregate extraction leaving large pits within the active mainstem channel. These "Special Run Pools" (SRPs) transformed fast flowing reaches into slow moving deep pools that trap bedload transported from upstream reaches. This further starves reaches downstream of the SRP sites. Gravel extraction continues today by excavating large off-channel pits in former floodplains and terraces. These pits are separated from the mainstem by narrow dikes constructed of aggregate and/or topsoil, and are frequently breached during flood events larger than 8,000 cubic feet per second (cfs). Dynamic floodplain habitat is scarce or non-existent.

Impacts from reduced hydrologic variability have been severe. Elimination of peak flow events, which frequently scoured and re-deposited bed sediment and promoted channel migration, has allowed riparian vegetation to encroach onto gravel bars, essentially immobilizing these alluvial deposits. Lost sediment supply and infrequent high flows have produced a static channel with pre-dam channel dimensions out of balance with the contemporary flow regime.

Within the area of SRPs 9 and 10 (the "project area"), past in-steam mining has created an artificially wide low-water channel (400 feet) that is adequate for floodway conveyance of over 15,000 cfs. Under the Restoration Project, much of these pits will be filled in, although in-stream water elevations and channel capacity will be maintained.

Geomorphology

The Tuolumne River and its floodplain have an extensive history of flow regulation and diversion, gold and aggregate mining, levee construction, and land use conversion. Combined, flow regulation and in-channel and floodplain mining have altered large-scale physical and ecological processes in the lower river (i.e., downstream of La Grange Dam) and have altered channel and floodplain form. Since 1893, the La Grange Dam (followed by the Don Pedro and New Don Pedro dams) has intercepted the supply of coarse sediment from the upper watershed, producing sediment-depleted conditions downstream. Coarse sediment supply downstream of La Grange Dam is currently limited to contributions from two small tributaries and from sediments stored in contemporary channel, floodplain, and terrace deposits (McBain and Trush 2000). In addition, the Don Pedro and New Don Pedro dams have reduced the magnitude of peak flow events in the lower river. For example, the 2-year recurrence interval flow has been reduced from 21,000 cfs to 4,000 cfs. In response to reduced peak flows and elimination of coarse sediment supply, the Tuolumne River channel downstream of La Grange Dam has narrowed, and the bed has become armored and immobile. Peak flows sufficient to initiate bed movement occur periodically under the current regulated hydrologic regime, but the magnitude remains insufficient to initiate bed scour and redeposition (McBain & Trush 2000).

The proposed project and facility alternatives would be located at the upstream end of SRPs 9 and 10, which extends from the Geer Road bridge downstream approximately 4,000 feet (from river mile 25.2 to river mile 25.9). SRP 9 is 400 feet wide, 800 feet long, and ranges from 6 to 19 feet deep. SRP 10 is 300–400 feet wide, 1,200 feet long, and ranges from 10 to 36 feet deep. These pits are separated by 2,500 feet of less disturbed channel, consisting of 1,500 feet of riffle habitat (riffles 70, 71, 72A, and 72B), 1,000 feet of run-pool habitat (as delineated at 620 cfs), and an adjacent floodplain and terrace. A 43-acre inundated gravel extraction pit has been excavated on the south (left) bank of the river adjacent to the in-channel pits. This pit was formerly separated from the channel by a narrow berm, which was breached during the January 1997 flood. The pit is now connected to the channel by a 100-foot wide breach at the pit's downstream end. On the right (north) bank, the channel is bounded by tall, steep banks, and no floodplain is present. The terraces above the floodplain of the left (south) bank and on the right (north) bank have been converted to agriculture.

The proposed project and facility alternatives would include the development of an infiltration gallery at either SRP 9 or 10 in conjunction with channel restoration efforts to the Tuolumne River under the Restoration Project. Installation of the infiltration gallery would occur at the same time and place as these restoration improvements.

3.10.1 Environmental Consequences

a) Would the project violate any water quality standards or waste discharge requirements?

Proposed Project

Under the proposed project, the area disturbed for infiltration gallery construction would be no greater than that planned for the construction of SRP 9. Little additional earthwork would be needed within SRP 9, beyond that already approved for the Restoration Project. Nevertheless, some earth moving and excavation activities would be associated with the construction sites of the proposed infiltration gallery, pump station, and pipeline, would represent a potential source of water- and wind-born sediment that could make its way to the Tuolumne River or other surface waters and violate water quality standards and/or waste discharge requirements. In addition, the use of heavy construction equipment adjacent to the river could result in inadvertent spills or releases of petroleum products into waterways. The implementation of Mitigation Measure GEO-1 as identified in the Geology and Soils section of this IS, along with implementation of the mitigation measures identified below, would avoid violation of water quality standards associated with project construction activities. (LSM)

HYDRO-1: Prior to construction of the proposed facilities, TID will obtain an NPDES General Construction Activity Stormwater Permit for the proposed project, or include the proposed project in the NPDES Permit for the Restoration Project. All project construction activities will comply with the conditions of the Permit.

HYDRO-2: Staging/storage areas for construction vehicles, equipment, parts, and materials, including fuels, lubricants, and solvents, will be located outside of the floodplain where inundation of high flows will not cause these items to be deposited into the river. It is encouraged that the construction staging/storage areas for the proposed project be the same ones as those established for the Restoration Project.

HYDRO-3: All stationary equipment such as motors, pumps, generators, and welders located within or adjacent to the river will be positioned over drip pens, and all machinery will be property maintained and cleaned to prevent spills and leaks.

HYDRO-4: The cleanup of all spills will begin immediately using guidance provided by TID's Spill Cleanup guidelines (amended May 16, 1996). TID will be notified immediately by the contractors of any spills, and will be consulted regarding cleanup procedures.

The proposed infiltration gallery would be constructed within SRP 9 in concert with channel improvements proposed under the Restoration Project. Under the Restoration Project, in-stream channel improvements to SRP 9 would be conducted only after SRP 9 was isolated from the balance of the river by an earthen dike or temporary sheet piles. This will reduce, but not eliminate work in the water. According to the Restoration Project EA/IS, this isolation of SRP 9 from the balance of the river during construction, along with compliance with the required NPDES General Construction Activity Stormwater Permit and SWPPP, would avoid violation of water quality standards by effectively avoiding large amounts of construction-related sediment from reaching the river. Because construction of the infiltration gallery would occur consistent with the plans of the Restoration Project, and in accordance with the mitigation measures identified above, it would not violate any water quality standards or waste discharge requirements. (LSM)

Alternative Diversion Facility Location

Same impacts and mitigation measures as the proposed project. (LSM)

Alternative Pipeline Alignment

Same impacts and mitigation measures as the proposed project. (LSM)

No Action

Under the No Action Alternative, land uses in the project area would remain unchanged. Therefore, this alternative would not violate any water quality standards or waste discharge requirements. (NI)

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

Proposed Project

The proposed project is a surface water diversion project that would divert 100 cfs of water from the Tuolumne River for irrigation purposes in place of water withdrawals currently taking place at La Grange Dam. By diverting the water at SRP 9 instead of at Don Pedro Reservoir, the proposed project would help implement the Restoration Project by permitting a greater amount of water to be released from Don Pedro Reservoir into the Tuolumne River to improve fish habitat in the upper reach of the River. The proposed project would not increase existing water diversions; it would only change the location at which water diversions currently take place. The proposed project is not a water consuming project, and would not extract or otherwise adversely affect groundwater levels. Therefore, the proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

Alternative Pipeline Alignment

Same impacts as the proposed project. (NI)

No Action

Under the No Action Alternative, conditions in the project area would remain unchanged. Therefore, this alternative would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. (NI)

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

Proposed Project

The proposed project would include the development of an infiltration gallery, pump station, and pipeline. The infiltration gallery and pipeline would each be underground, and therefore would not substantially alter existing drainage patterns of the site or area, not substantially increase the rate or amount of surface runoff, and not result in flooding on- or off-site.

Given the small size of the proposed pump station (50' x 50'), it too would not substantially alter the existing drainage pattern of the site or area, would not substantially increase the rate or amount of surface runoff, and would not result in flooding on- or off-site. (LTS)

The proposed infiltration gallery would be developed below the river bed of the Tuolumne River in conjunction with the Restoration Project improvements to SRP 9. The installation of the infiltration gallery is planned so as to not alter the configuration of the river or riverbed at SRP 9 from that proposed under the Restoration Project. Therefore, the infiltration gallery would not alter the course of the Tuolumne River. (NI)

Project construction activities could temporarily affect surface runoff in a manner that would result in substantial erosion or siltation on- or off-site. The mitigation measures identified under Geology and Soils (GEO-1), and under "a" of Hydrology and Water Quality (HYDRO-1, 2, 3 and 4), would reduce these potential impacts to less than significant levels. (LSM)

Alternative Diversion Facility Location

Same impacts as the proposed project. (LTS/NI/LSM)

Alternative Pipeline Alignment

Same impacts as the proposed project. (LTS/NI/LSM)

No Action

Under the No Action Alternative, conditions in the project area would remain unchanged. Therefore, this alternative would not substantially alter the existing drainage pattern of the site or area, alter the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in substantial erosion or siltation on- or off-site. (NI)

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

Would the project otherwise substantially degrade water quality?

Proposed Project

See "c-d" above concerning flooding. (LTS) See "a" above concerning the issues of polluted runoff, degradation of water quality, and mitigation required (HYDRO-1, 2, 3 and 4). (LSM)

Alternative Diversion Facility Location

Same impacts and mitigation measures as the proposed project. (LTS/LSM)

Alternative Pipeline Alignment

Same impacts and mitigation measures as the proposed project. (LTS/LSM)

No Action

See "c-d" above concerning flooding. (NI) See "a" above concerning the issues of polluted runoff and degradation of water quality. (NI)

g-j) ***Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?***

Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Would the project be susceptible to inundation by seiche, tsunami, or mudflow?

Proposed Project

The proposed project would not include housing, and would not place housing within a 100-year flood hazard area. (NI)

The proposed infiltration gallery and pipeline would be underground and thus would not impede or redirect flood flows. The proposed pump station would be developed within a 100-year flood hazard area, but would be too small (50' x 50') to impede or redirect flood flows. (LTS)

The proposed project is a utility project and would include utility infrastructure but no people or structures. The proposed project would thus not expose people or structures to a significant risk of loss, injury, or death involving flooding. (NI)

The project area is located approximately 120 miles from the Pacific Ocean and is thus not subject to tsunamis. Proposed project facilities, especially the proposed infiltration gallery and pump station that would be located within the 100-year floodplain, could be subject to inundation but is not in an area that would be subject to mudflows and seiches. (LTS)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI/LTS)

Alternative Pipeline Route

Same impacts as the proposed project. (NI/LTS)

No Project

Under the No Action Alternative, conditions in the project area would remain unchanged. Therefore, this alternative would not substantially alter the existing drainage pattern of the site or area, alter the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in substantial erosion or siltation on- or off-site. (NI)

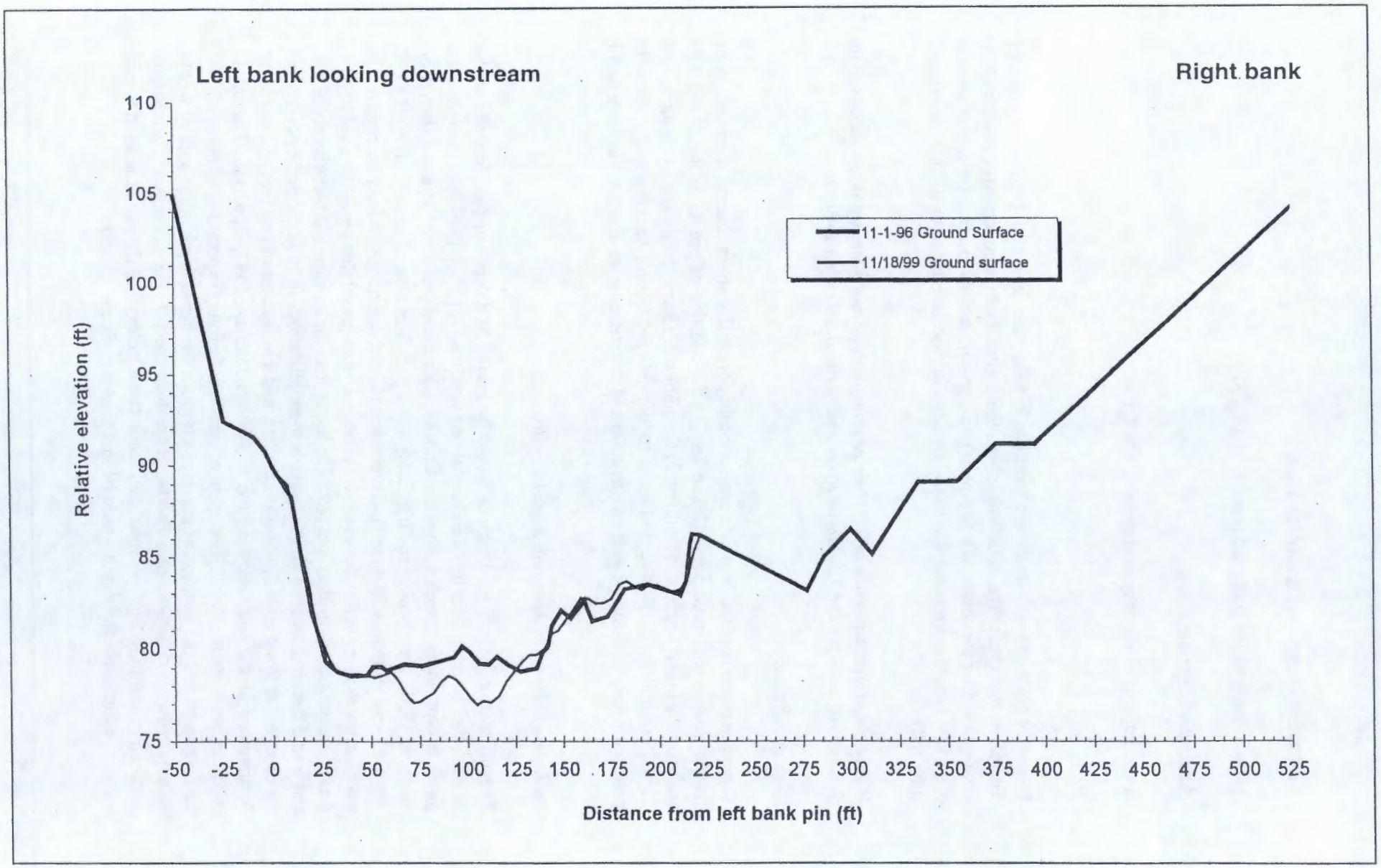
k) Would the project adversely affect river geomorphology and geomorphic processes from those envisioned for the Tuolumne River under the Restoration Project?

Proposed Project

Three components of the proposed project could potentially affect channel morphology or fluvial geomorphic processes. These are: 1) the addition of gravel to the channel to maintain the burial depth of the gallery, 2) the addition of bank stabilization measures, and 3) the remobilization of fine sediment to the channel during backflushing. Impacts potentially resulting from project construction and maintenance are discussed in more detail below.

Addition of Gravel to Maintain Burial Depth

The infiltration gallery intake pipes would be buried to a depth of four feet below the channel bed. It is unlikely that the channel bed would be sufficiently mobile to expose the pipes except under extreme flow conditions. Calculated bed shear stresses (based on Andrews 1994) in the project reach indicate that a post-dam flow of approximately 16,000 cfs (i.e., greater than a 25-year flood under regulated conditions) would be required to mobilize the existing bed at the site. The average size of gravel that would be used to bury the infiltration gallery intake pipes would be larger than the existing bed particles at the site, and would therefore be even less susceptible to mobilization. In addition, bed mobility was not observed at flows up to 8,600 cfs at the site, and a maximum of two feet of scour were documented at the site following the 60,000-cfs January, 1997, flood (see Exhibit 5) (McBain, pers. comm., 2000). Bed scour at the site is therefore expected to be minimal over the long-term, and the addition of gravel to maintain the burial depth of the gallery would be required only after extreme floods. Therefore the anticipated impacts to channel morphology resulting from potential bed scour at the gallery and the potential need to add gravel to maintain burial depth would be less than significant. (LTS)



Source: Stillwater, June 2000.

Cross Sections of the Tuolumne River Below Geer Road Bridge

EXHIBIT 5

Addition of Bank Stabilization Measures

One objective of the restoration design for SRPs 9 and 10 is to allow a more dynamic channel and improve geomorphic processes in the reach. The infiltration gallery project design includes bank stabilization on the left (south) bank and redesign of the channel cross section to increase channel stability. The bank stabilization would consist of a 2-foot-thick vegetative, rock layer along the bank. This bank stabilization is required to prevent lateral migration of the channel, which could damage the intake facility or impair intake function. While this stabilization would appear counter to the objectives of the Restoration Project, the actual impact to geomorphic processes is expected to be minor because 1) the project is situated at a location where the river channel is relatively straight and natural channel migration is be expected to be minimal, 2) the project is located adjacent to the Geer Road bridge, which is a "hard point" in the channel, and 3) the river bank at the project site is presently armored with concrete rubble. Lateral channel erosion typically occurs at the outside of river bends rather than at relatively straight locations. The bank at the proposed project site is therefore expected to be relatively stable and any channel migration is expected to occur downstream of the proposed site, at the river bend. The location of the project adjacent to the Geer Road bridge in a reach already armored with concrete rubble, an existing hard point in the river, further minimizes conflicts with the restoration project objectives. In addition, as indicated in Section 3.6, the proposed project would not result in significant impacts to aquatic biological resources. Therefore the anticipated impacts to channel morphology resulting from proposed bank stabilization would be less than significant. (LESS THAN SIGNIFICANT)

Introduction of Fine Sediment During Backflushing

The proposed project would create the potential for resuspension of fine sediment when the gallery is backflushed to clear fines from the infiltration gallery's pipes and intakes. The potential impacts of the backflushing on channel geomorphology would depend on the extent and duration of flushing, as well as the velocity of the backflush and river flow conditions during the backflush. There is the potential for fine sediment flushed from the gallery and overlying substrates to redeposit downstream of the gallery. Gravels would be too large to be moved substantially by backflushing. Fine sediment could be redeposited in pools or on riffle surfaces or could infiltrate into the channel bed. The specific degree to which redeposition would occur is uncertain, but the backflushing would be infrequent and brief in duration. If the backflushing occurs during high flows, it is expected that the fine sediment would be transported downstream in suspension, and have little effect on the restoration project. If the backflushing were to occur during low flows, fine sediment would likely deposit locally (i.e., within the restoration reach), which would result in simple redeposition near the place from where they were suspended. It is anticipated that the gallery would be backflushed once in spring or early summer, and occasionally during the summer when the gallery is in operation. Most sediment that is mobilized would therefore be expected to be redeposited immediately downstream of the gallery due to the relatively low summer flows in the river during the gallery operation period. Therefore, any changes

in geomorphological processes from backflushing would be limited in area affected and duration, resulting in a less-than-significant effect. (LTS)

Alternative Pipeline Route

Under this alternative the pipeline would run parallel to the Tuolumne River for approximately 1,000 feet along the existing road, set back from the river. Over time it is possible, but not expected in the short-term, that bank stabilization could be needed upstream of SRP 9 to protect the shoreline next to the pipeline. If this bank stabilization were needed, it would not be expected to significantly alter geomorphic processes because 1) channel migration is expected to be minimal since the river is relatively straight along the length of the proposed pipeline, 2) the Geer Road bridge (a "hard point" in the channel) is in the middle of the proposed pipeline, and 3) there is existing concrete rubble on the south bank in the vicinity of the Geer Road bridge. (LTS)

The potential for erosion of the gallery fill, and the potential movement of sediment and increased turbidity due to backflushing, would be expected to be similar to the proposed project. (LTS)

Alternative Diversion Facility Location

Moving the diversion facility to SRP 10 would have similar geomorphic effects as the proposed project. The potential for scour of the gallery fill and the addition of fine sediment to the Tuolumne River is expected to be the same as the proposed project. Because SRP 10 is downstream of SRP 9, any potential impacts from backflushing would affect the Restoration Project at SRP 10 and not at SRP 9 or the channel between SRPs 9 and 10. (LTS)

Under this alternative, bank stabilization would be required at SRP 10 to both project the infiltration gallery piping from erosion and possible damage, and to ensure that the river continues to flow over the infiltration gallery. Unlike SRP 9, which already has largely stable banks due to the relatively straight reach of the river at this location and the presence of an existing hardpoint (i.e., the Geer Road bridge), SRP 10 has no such bank stabilizing factors. The potential for conflicts with the Restoration Project would be increased with this alternative because development of the infiltration gallery at SRP 10 would require bank stabilization in a reach that currently contains little revetment and in which no revetment is proposed under the Restoration Project. Bank stabilization at this location would be counter to an objective of the Restoration Project to create a dynamic channel to improve aquatic habitat. Therefore, this alternative would have the potential to adversely affect river geomorphology from that envisioned for the Tuolumne River under the Restoration Project. (SI)

No Action

Under the No Action Alternative, the Restoration Project would proceed as planned. No alteration of the channel geomorphology as created by the Restoration Project and no changes in erosion beyond those already addressed in the EA and IS/MND for the Restoration Projects would occur (USFWS and TID 1998). Summer flows in the reach upstream of SRPs 9 and 10 would not be augmented. This alternative, therefore, would not have an impact on river geomorphology or geomorphic processes. (NI).

3.11 Land Use and Planning

3.11.1 Affected Environment

The valley floor along the Tuolumne River, which once supported native riparian vegetation, has been largely converted to aggregate extraction and agriculture. The area is known to contain substantial concrete-grade aggregate resources. Aggregate is currently being mined at 11 sites - extraction pits occupy 331 acres of the valley floor. Land use conversion has restricted riparian vegetation to a narrow strip along the river (USFWS and TID 1998).

SRPs 9 and 10 (two of the "extraction pits" discussed above) extend from river mile (RM) 25.2 to RM 25.9 of the Tuolumne River. These SRPs are located 15 miles east of Modesto, immediately downstream of the Geer Road bridge. SRP 9 extends from Geer Road to approximately 1,800 feet downstream, is 400 feet wide, and 6 to 19 feet deep. SRP 10 extends from the western end of SRP 9 downstream an additional 1,200 feet, is 400 feet wide, and 10 to 36 feet deep. Land uses adjacent to SRP 9 include farm roads followed by agriculture to the north, and non-native grassland and an inundated aggregate extraction pit to the south. Land uses adjacent to SRP 10 include agriculture and a decommissioned landfill to the north, and the inundated extraction pit and riparian vegetation to the south. Several single-family farm residences are located from 200 to 500 feet south of SRP 10.

The alternative pipeline alignment under the proposed project extends for 2,800 feet within an existing TID easement, from SRP 9 southward along the west of Geer Road to a point of connection with the TID Main Canal. Existing land uses along this alignment include natural grassland along the northern two-thirds of the alignment, and agriculture along the southern one-third. The alternative pipeline alignment extends for 4,200 feet, from SRP 9 eastward along the south side of the Tuolumne River, underneath the Geer Road Bridge, and then southward through Fox Grove Park along an existing park access road and through agricultural fields, to a point of connection with the TID Main Canal.

The project area is within the jurisdiction of Stanislaus County and is subject to the Stanislaus County General Plan and Zoning Ordinance. The project area is also subject to FERC Settlement Agreement (FSA). No other plans, policies or regulations have been adopted for the area to avoid or mitigate environmental effects. The project area is not subject to any habitat conservation plan or natural community conservation plan.

3.11.2 Environmental Consequences

a) Would the project physically divide an established community?

Proposed Project

Under the proposed project, the infiltration gallery and pipeline would each be underground and thus would not represent a visual, traffic, pedestrian, or other type of separation of one area from another. In addition, the project area consists primarily of vacant river area and farmland that would not be considered a "community" as the term is used in Appendix G of CEQA. Therefore, the proposed project would not have the potential to physically divide an established community. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

Alternative Pipeline Route

Same impacts as the proposed project. (NI)

No Action

Under the No Action Alternative, land uses in the project area would remain unchanged. Therefore, this alternative would not physically divide an established community. (NI)

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

Proposed Project

Under the proposed project, all the proposed facilities (i.e., infiltration gallery, pump station, and pipelines) would be developed on land designated by the County's General Plan Land Use Map as Agriculture, and zoned by the County's Zoning Map as A-2-40 (Stanislaus County 1990). These designations permit an range of agricultural, utility and recreation uses, including uses ancillary to agricultural operations. The proposed facilities are both utility systems and uses ancillary to agricultural operations (i.e., would provide irrigation water for agriculture). Stanislaus County has determined that the proposed facilities are not inconsistent with these designations (Ford, pers. comm., 2000). Therefore, the proposed project would not conflict with applicable plans, policies or regulations adopted for the purpose of avoiding or mitigating an environmental effect.

The proposed project would implement Section 11, page 5, of the FSA, which requires that TID promote a plan in concert with the Restoration Project to divert water from the Tuolumne River for irrigation. The proposed project would permit the release of water into the Tuolumne River that is currently being diverted at La Grange Dam and enable the diversion of this water downstream in order to provide more water in the upper Tuolumne for fisheries. The proposed project is consistent with the requirements of the FSA and would improve rather degrade environmental conditions in the Tuolumne River (a beneficial impact).

Based on the above, the proposed project would not conflict with applicable plans, policies or regulations adopted for the purpose of avoiding or mitigating an environmental effect, but rather would help implement such plans. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

Alternative Pipeline Route

Same impacts as the proposed project. (NI)

No Action

Under the No Action Alternative, land uses would remain unchanged. This would conflict with FSA and the Restoration Project, which are approved plans designed to enhance fisheries in the Tuolumne River and mitigate the effects of past mining activities. The conflict would involve not providing for diversion of irrigation water out of the Tuolumne River downstream of desired fish habitat, and thus continuing existing water diversions up steam of this desired habitat effectively preventing the enhancement of such habitat from the added flows. Therefore, this alternative would conflict with applicable plans, policies or regulations adopted for the purpose of avoiding or mitigating an environmental effect. (SI)

c) ***Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?***

Proposed Project

The project area is not subject to any habitat conservation plan or natural community conservation plan. Therefore, the proposed project would not conflict with any such plans. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

Alternative Pipeline Route

Same impacts as the proposed project. (NI)

No Action

Same impacts as the proposed project. (NI)

d) Would the project result in land use incompatibilities with adjacent land uses?

Proposed Project

The proposed project would include an underground infiltration gallery, a 50' x 50' pump station, and a 2,800 foot underground pipeline. There are no existing sensitive land uses (i.e., residential, parks, camp grounds) adjacent to the proposed SRP 9 infiltration gallery and pump station site, and thus the construction and operation of these facilities would not result in land use incompatibilities with adjacent land uses. Fox Grove County Park is located east of SRP 9 across Geer Road from the infiltration gallery, which is sufficiently distant from the proposed project to avoid land use impacts from its construction and operation. One existing sensitive land uses would experience temporary, short-term, disturbance (dust, noise, adverse aesthetic conditions) during construction of the proposed pipeline, that being a farm residence approximately 400 feet west of the proposed pipeline route. As indicated in Sections air quality, noise and aesthetics sections of this IS, project construction activities would result in less than significant air, noise and aesthetics impacts after mitigation. Construction of the proposed pipeline would thus not result in land use incompatibilities with adjacent land uses. (LSM)

Alternative Diversion Facility Location

The pipeline component would result in the same impacts as the proposed project. (LTS)

Under this alternative, the proposed infiltration gallery and pump station would be developed on the south side of SRP 10 within approximately 200-500 feet of several farm residences. These residences would experience temporary, short-term, disturbance (dust, noise, and adverse visual conditions) during construction. As indicated in the air quality, noise and aesthetics sections of this IS, construction activities under this alternative would result in less than significant air, noise and visual impacts. Construction of the infiltration gallery and pump station under this alternative would thus not result in land use incompatibilities. While the infiltration gallery would be underground and thus not generate operations-related land use incompatibilities, the pump station would emit noise during operation that could potentially be heard by the proximal residences. However, as indicated in the noise section, this noise would be at a level that is less than significant and thus would not result in land use incompatibilities. (LTS)

Alternative Pipeline Route

The infiltration gallery and pump station components would result in the same impacts as the proposed project. (LTS)

The alternative proposed pipeline would be developed on the east side of Geer Avenue adjacent to Fox Grove Park and a farm residence located at the entrance to the park. These land uses would experience temporary, short-term, disturbance (dust, noise, adverse visual conditions) during pipeline construction. As indicated in the air quality, noise, and aesthetics sections of this IS, construction activities associated with the pipeline would result in less than significant air, noise and visual impacts. Construction of the pipeline under this alternative would thus not result in land use incompatibilities with adjacent land uses. (LTS)

No Action

Under the No Action Alternative, land use would remain unchanged. Therefore, this alternative would not result in land use incompatibilities with adjacent land uses. (NI)

*e) **Would the project result in the displacement of existing land uses?***

Proposed Project

Under the proposed project, the sites of the proposed infiltration gallery and pump station are vacant. Therefore, the development of these facilities would not displace existing land uses. (NI)

Under the Proposed Project, the southern one-third of the proposed pipeline route would cross orchards. Although the pipeline would follow an existing TID easement across the orchards, pipeline construction activities could temporarily disrupt and/or displace agricultural operations along either side of the easement. The mitigation measure identified below would reduce this impact to less than significant levels. (LSM)

LU-1: TID will avoid construction of the pipeline during the planting and harvesting seasons of the orchard located at the northwest corner of the Geer Road/TID Main Canal intersection. Disruption of adjacent trees, and compaction of tree root systems affecting orchard trees adjacent to the pipeline will be avoided.

Alternative Diversion Facility Location

Same impacts and mitigation measures as the proposed project. (LSM)

Alternative Pipeline Route

Infiltration gallery and pump station components would result in the same impacts as the proposed project. (NI)

Under the Alternative Pipeline Route Alternative, the southern two-thirds of the alternative pipeline route would cross orchards. Although this pipeline would generally follow existing farming roads, its construction could displace orchard trees within its path and/or adjacent to the pipeline route. Implementation of Mitigation Measure IX-1 above would reduce this significant land use displacement impact to less than significant levels. (LSM)

No Action

Under the No Action Alternative, land use would remain unchanged. Therefore, this alternative would not displace existing land uses. (NI)

3.12 MINERAL RESOURCES

3.12.1 AFFECTED ENVIRONMENT

The project area is designated by the California Department of Conservation, Division of Mines and Geology (CDC) as a Mineral Resources Zone (MRZ) containing concrete-grade aggregate resources (MRZ-2a, -2b and -3a) (USFWS and TID 1998). Aggregate has been mined from the area since the early 1900s, and is currently being mined at 11 sites under six separately approved mining use permits mandated by the Surface Mining and Reclamation Act (SMARA) (Higgins and Dupras 1993). SRPs 9 and 10 (Tuolumne River mile 25.2-25.9) are two old extraction pits associated with previous mining operations in the project area.

No local general plan, specific plan or other land use plan delineates the project area as a locally-important mineral resource recovery site.

3.12.2 ENVIRONMENTAL CONSEQUENCES

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

Proposed Project

The proposed project would not restrict future aggregate extraction potential within a CDC-designated Mineral Resources Zone. Because the area has already been mined for aggregate and subsequently abandoned, the proposed project would not result in the loss of mineral resources of value to the region and the state. (NI)

Alternative Diversion Facility Location

Same impact as the proposed project. (NI)

Alternative Pipeline Alignment

Same impact as the proposed project. (NI)

No Action

Under the No Action Alternative, land use would remain unchanged. Therefore, this alternative would not result in the loss of mineral resources of value to the region and the state. (NI)

*b) **Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?***

Proposed Project

No local general plan, specific plan or other land use plan delineates the project area as a locally-important mineral resource recovery site. Therefore, the proposed project would not result in the loss of availability of such a designated area for future mining. (NI)

Alternative Diversion Facility Location

Same impact as the proposed project. (NI)

Alternative Pipeline Alignment

Same impact as the proposed project. (NI)

No Action

No local general plan, specific plan or other land use plan delineates the project area as a locally-important mineral resource recovery site. Also, no change would occur to existing land uses under this alternative. Therefore, this alternative would not result in the loss of availability of such a designated area for future mining. (NI)

3.13 NOISE

3.13.1 AFFECTED ENVIRONMENT

In general, noise levels measured at sensitive land uses within the unincorporated areas of Stanislaus County are typically low, ranging from approximately 37 to 60 dBA Ldn (Stanislaus County 1994). The quietest areas are those that are removed from major transportation-related noise sources and

local industrial or other stationary noise sources. Such areas include local farmland, natural areas along the Tuolumne River, and parks such as Fox Grove Regional Park. Stationary noise sources within the area are primarily sand and gravel extraction and processing operations. Vehicular traffic on State Highway 132 and Geer Road also contribute to noise levels in the project area. These roadways frequently experience moderate to high levels of truck traffic associated with nearby sand and gravel operations. In addition, occasional aircraft overflights from the Modesto City-County Airport and agricultural operations also contribute to the existing noise environment.

Noise sensitive receptors in the project area include: a farm residence located approximately 400 fee west of Geer Road to the south of SRP 9; Fox Grove Park and a farm residence located just east of Geer Road to the south of the Tuolumne River; and three farm residences located 200 to 500 feet south of SRP 10.

The County does not have a noise ordinance. However, the County typically restricts construction activities to between the hours of 7:00 AM and 10:00 PM (Ford, pers. comm., 2000). The Noise Element of the Stanislaus County General Plan (Stanislaus County 1994) includes noise level performance standards and requires that effective noise mitigation measures be incorporated into the design of projects to reduce noise levels using practical applications of best available noise-reduction technologies. The Noise Element identifies 60 dBA CNEL as the upper limit of acceptable long-term exterior noise levels for residential land uses. Based on the above, this section applies the following significance thresholds:

> Construction Noise: Significant construction noise impacts would occur if construction activities occur: 1) without the implementation of effective noise mitigation (including best available noise-reduction technologies); 2) outside the hours of 7:00 AM to 10:00 PM; or 3) generate a noticeable increase (>3dBA CNEL) in traffic noise levels along existing roadways.
>
> Operations Noise: Significant operations noise impacts would occur if operations result in: 1) exceedance of the 60 dBA CNEL noise level at nearby sensitive receptors; or 2) generate a noticeable increase (>3dBA CNEL) in traffic noise levels along existing roadways.

There are no federal, state, or local regulatory standards for vibration. Industry standards suggest that the heaviest construction equipment (impact equipment such as pile drivers and jack hammers) can generate peak groundborn particle velocities of 0.2 inches per second, and that buildings within 25 feet of continuous vibration at this level can experience vibration-related damage (Hendriks 1996). This vibration threshold is one-tenth the maximum safe level for single events, such as blasting. There are no industry standards for vibration impacts on people - vibration can cause annoyance to certain persons.

3.13.2 Environmental Consequences

a, c) ***Would the project exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?***

Would the project contribute to a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Proposed Project

Construction Impacts

Construction activities would require the use of a crane, excavator, dozer, hydraulic jacks, and other equipment. This construction equipment would generate maximum intermittent noise levels of approximately 92 dBA at a distance of 50 feet, and 60 dBA at a distance of 1,900 feet. Evening and nighttime construction activities could result in further disturbances given the lower ambient noise levels during these periods of the day. Sensitive receptors in the project area that would be exposed to construction noise (i.e., would be within 1,900 feet of the proposed infiltration gallery, pump station and pipeline) include a farm residence located 400 feet west of Geer Road, Fox Grove Park, and a farm residence located east of Geer Road. This would represent a potentially significant impact. Implementation of the mitigation measures identified below would avoid exposure of persons to or generation of construction noise in excess of applicable standards. (LSM)

NOISE-1: TID will limited construction activities to between the hours of 7:00 AM and 10:00 PM.

NOISE-2: All construction equipment will be equipped with mufflers.

NOISE-3: Construction equipment will not be allowed to idle when not in use.

Construction of proposed project would generate truck traffic during the construction period. Generally, long-term traffic noise levels along roadways do not noticeably increase until a substantial number of additional vehicle trips occur. Noticeable increases of 3 dBA (CNEL/Ldn) often require a doubling of roadway traffic volumes. However, high single event noise exposure would increase with the increased volumes of truck traffic along local truck routes associated with construction activities. Although these events could result in noticeable annoyance, they would not be considered significant noise impacts because they would not generate noise levels in excess of 3 dBA CNEL (i.e., would not generate noticeable noise increases when averaged over a 24-hour period). Because construction related traffic would not result in a doubling of traffic volumes along roadways in the vicinity of the project site, noticeable increases of 3 dBA CNEL or greater would not occur. Therefore, construction traffic under the proposed project would not expose persons to or generate construction noise in excess of applicable standards. (LTS)

Operations Impacts

The only operational noise-generating activity would be the proposed pump station. The pump station would contain four electric pumps totaling 1,100 horsepower. Pump motors associated with water pumping plants typically generate noise levels of approximately 90

dBA at a distance of 10 feet (Montgomery Watson 1998). Assuming the simultaneous operation of four non-enclosed pumping units, maximum operational noise levels associated with the pump station would be greater than 60 dBA at three sensitive noise receptors: 1) a farm residence located approximately 1,200 feet to the southeast (east of Geer Road); 2) Fox Grove Park; and 3) a farm residence located approximately 1,400 to the south (west of Geer Road). As a result, operations noise levels associated with the pump station would result in significant long-term noise impacts. Implementation of the mitigation measure identified below would avoid exposure of persons to or generation of operations noise in excess of applicable standards, and would avoid a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. (LSM)

NOISE-4: TID will fully enclose the infiltration gallery pump station to reduce noise levels at local sensitive receptors.

Noticeable increases (e.g., 3 dBA CNEL, or greater) in traffic noise levels typically require a doubling of roadway vehicle traffic volumes. The addition of vehicle traffic associated with the operation and routine maintenance of the proposed facilities would not result in a doubling of traffic volumes along roadways in the vicinity of the project area. As a result, the proposed project would not result in a noticeable increase in traffic noise levels, and would not expose persons to or generate noise in excess of applicable standards, and would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. (LTS)

Alternative Pipeline Route

Construction Impacts

Under the Alternative Pipeline Route Alternative, the infiltration and pump station would be developed at the same location as the proposed project. In addition, construction traffic would be the same as the proposed project. Therefore, the noise impacts associated with the construction of the infiltration gallery and pump station, and associated with construction traffic, would be the same as the proposed project. (LSM/LTS).

The alternative pipeline would be constructed along the east side of Geer Road, approximately 150 feet west of sensitive receptors, Fox Grove Park and one farm residence. Construction noise impacts on these two receptors would be significant. While the construction noise impacts on these receptors would be greater than under the proposed project given the close proximity of these uses to the alternative pipeline route, implementation of Mitigation Measures NOISE-1 through -3 would avoid exposure of persons to or generation of construction noise in excess of applicable standards. (LSM)

Operations Impacts

Under this alternative, the only proposed facility that would generate noise during operations (i.e., the pump station) would be developed at the same location as the proposed

project. Therefore, the operational noise impacts associated with this facility would be the same as the proposed project (LSM).

Under this alternative, operation and routine maintenance activities would be the same as the proposed project. Therefore, the traffic noise impacts associated with these activities would be the same as the proposed project. (LTS)

Alternative Diversion Facility Location

Construction Impacts

Under the Alternative Diversion Facility Location Alternative, the pipeline would be developed at the same location as the proposed project. In addition, construction traffic would be the same as the proposed project. Therefore, the noise impacts associated with the construction of the pipeline, and associated with construction traffic, would be the same as the proposed project. (LSM/LTS).

Under this alternative, the proposed infiltration gallery and pump station would be constructed on the south side of SRP 10, from 200-500 feet from three sensitive receptors (farm residences). Construction noise impacts on these three receptors would be significant. Implementation of Mitigation Measures NOISE-1 through -3 would avoid exposure of persons to or generation of construction noise in excess of applicable standards. (LSM)

Operations Impacts

Under the Alternative Diversion Facility Location Alternative, the proposed pump station would generate maximum intermittent noise levels of approximately 92 dBA at a distance of 50 feet and 60 dBA at a distance of approximately 1,900 feet. The closest receptors to the pump station under this alternative would be three farm residences located from 200 to 500 feet south of SRP 10. Long-term noise levels associated with the pump station would exceed 60 dBA at these noise receptors. As a result, the pump station would result in significant long-term operations-related noise impacts. Implementation of Mitigation Measure NOISE-4 would avoid exposure of persons to or generation of operations noise in excess of applicable standards, and would avoid a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. (LSM)

Under this alternative, operation and routine maintenance activities would be the same as the proposed project. Therefore, the traffic noise impacts associated with these activities would be the same as the proposed project. (LTS)

No Action Alternative

No new short-term or long-term noise sources would be introduced to the project area under the No Action Alternative. Therefore, this alternative would not expose persons to or generate noise in excess of applicable standards. (NI)

b) Would the project cause the exposure of persons or buildings to excessive groundborne vibration or groundborne noise levels?

Proposed Project

The majority of project construction activity would involve grading and excavation that would generate groundborne vibrations of less than 0.2 inches per second and thus not pose a threat to buildings or annoyance to persons. Some impact equipment could potentially be used associated with the construction of the proposed infiltration gallery to install piping. However, the nearest building and residents to the proposed SRP 9 infiltration gallery site are located approximately 1,200 feet away (a farm residence located on the east side of Geer Road near Fox Grove Park), which is substantially beyond the 25 foot impact threshold distance. Therefore, the proposed project would not expose persons or buildings to excessive groundborne vibration. (LTS)

See "a" above for an evaluation of noise impacts.

Alternative Pipeline Route

The infiltration gallery and pump station components would result in the same vibration impacts as the proposed project. (LTS)

Under the Alternative Pipeline Route Alternative, the proposed pipeline would follow a proposed alignment that would bring it to within 150 feet of persons and buildings (i.e., Fox Grove Park and one farm residence located east of Geer Road. Because neither of these uses are located within 25 feet of the proposed pipeline route, and because it is not anticipated that high impact equipment (pile drivers, jack hammers) would be required for pipeline construction, construction of the pipeline under this alternative would not expose persons or buildings to excessive groundborn vibration. (LTS)

See "a" above for an evaluation of noise impacts.

Alternative Diversion Facility Location

The pipeline component would result in the same vibration impacts as the proposed project. (LTS)

Under the Alternative Diversion Facility Location Alternative, the proposed infiltration gallery and pump station would be developed on the south side of SRP 10, between 200 and 500 feet from three farm residences located to the south. Some impact equipment could potentially be used associated with the construction of the proposed infiltration gallery to install piping. However, the three farm residences are located beyond the 25 foot impact threshold distance. Therefore, construction of the infiltration gallery under this alternative would not expose persons or buildings to excessive groundborne vibration. (LTS)

See "a" above for an evaluation of noise impacts.

No Action Alternative

No new groundbourne vibration or noise sources would be introduced under this alternative action. Therefore, this alternative would not expose persons or buildings to excessive groundborne vibration. (NI)

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

Proposed Project

During operation, occasional activities would be undertaken to ensure that the proposed facilities were maintained in good working order. Among these maintenance activities would be the occasional trucking of clean gravel and the dumping of this gravel upstream of SRP 9 to ensure both adequate gravel cover for the proposed infiltration and adequate fish habitat under the Restoration Project. This activity would generate period increases in ambient noise levels. However: 1) the occasional truck trips would not double existing traffic on area streets, and thus would not result in an audible (3 dBA CNEL) noise increase in local roadways over a 24-hour period; and 2) the occasional restoration work is already proposed under the Restoration Project, and therefore would not be an impact of the proposed project. The mitigation measure identified below would reduce this already less than significant periodic increase in ambient noise levels as much as possible. (LTS)

NOISE-5: TID will limit the occasional delivery and dumping of clean gravel immediately upstream of SRP 9, as part of its maintenance program, to between the hours of 7:00 AM and 10:00 PM.

Alternative Pipeline Route

Same impacts as the proposed project. (LTS)

Alternative Diversion Facility Location

Same impacts as the proposed project. (LTS)

No Action Alternative

Under the No Action Alternative, no facilities would be developed, and no maintenance program or other activity would be undertaken. Therefore, this alternative would not result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. (NI)

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

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

Proposed Project

The project area is not located within an airport land use plan, and is not located within 2 miles of a public airport or public use airport. The project is also not located within the vicinity of a private airstrip. The nearest public airport is Modesto City-County Airport located approximately 3.4 miles northwest of the project site. The nearest private airstrip is located approximately 1.7 miles to the northwest. In addition, the project would not generate an increase in airplane flights. Therefore, the proposed project would not expose people residing or working in the project area to excessive noise levels. (NI)

Alternative Pipeline Route

Same impacts as the proposed project. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

No Action Alternative

Same impacts as the proposed project. (NI)

3.14 RECREATION

3.14.1 AFFECTED ENVIRONMENT

Public recreational activities on the lower Tuolumne River in the area of SRPs 9 and 10 are limited primarily to motorized boating and fishing. Adjacent river property is privately owned, and private development and agricultural use of the river frontage makes river access difficult. The only developed public recreational site in the project area is the County-operated Fox Grove Regional Park that is located at the southeast corner of the Tuolumne River/Geer Road intersection.

Fishing is the most popular recreational activity along the lower Tuolumne River. Angling for large and smallmouth bass, blue gill, white catfish, and carp occurs year round in the project area. Motorized boat access is difficult due to the shallow, moderately swift water and lack of river access, except at Fox Grove Park. SRPs 9 and 10 closely resemble a lake environment due to past in-channel gravel mining, but the Restoration Project will return the channel to pre-mining conditions.

Private property along the river corridor and floodplain and lack of river access limit recreational value. There are no commercial rafting companies operating on the lower Tuolumne River.

3.14.2 Environmental Consequences

a-b) ***Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?***

Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Proposed Project

The proposed project is a water infrastructure project, would not create or attract any type of local population (resident, visitor, employee, etc.), and thus would not create a demand for recreational facilities. Therefore, the proposed project would not increase the use of existing parks or recreational facilities, or require new parks or recreational facilities. (NI)

Alternative Diversion Facility Location

Same impact as the proposed project. (NI)

Alternative Pipeline Route

Same impact as the proposed project. (NI)

No Action

Under the No Action Alternative, land use conditions would remain unchanged. There would be no increase in demand for park space. Therefore, this alternative would not increase the use of existing parks or recreational facilities, or require new parks or recreational facilities. (NI)

c) ***Would the project have a substantial adverse effect on recreational values?***

Proposed Project

As indicated under "a-b" above, the stretch of the Tuolumne River in the project area provides some opportunities for fishing and boating, although the river in this areas does not provide high quality recreational value. Under the proposed project, an infiltration gallery would be developed within the Tuolumne River. Because the infiltration gallery would be developed at the same time that Restoration Project improvements are to the portion of the Tuolumne River in the project area, and because the infiltration gallery would be

underground, it would not have a substantial adverse effect on the recreational values of the river during construction and operation, respectively. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

Alternative Pipeline Route

Same impacts as the proposed project. (NI)

No Action

Under the No Action Alternative, land use would remain unchanged. Therefore, this alternative would not have a substantial adverse effect on recreation values. (NI)

3.15 TRANSPORTATION/TRAFFIC

3.15.1 AFFECTED ENVIRONMENT

Transportation facilities in the project area include a 20-mile segment of State Route (SR) 132 in Stanislaus and Tuolumne counties, between Geer Road (Stanislaus County) and La Grange Road (Tuolumne County). Additionally, Geer Road 2.5 miles south of SR 132 south to Fox Grove Recreation Area, La Grange Road 2 miles north of SR 132 to Bond's Flat Road, as well as 2 miles of Bond's Flat Road, will be affected. Daily traffic volumes were obtained for study area roadways from Caltrans and the Stanislaus County Public Works Department (USFWS and TID 1998). Daily traffic volumes on SR 132 are 7,300 vehicles per day (vpd) just west of Geer Road, 10,100 vpd just east of Geer Road, and 1,900 vpd just west of La Grange Road. Daily volumes on Geer Road are 12,250 vpd just south of SR 132 and 7,740 vpd just north of Whitmore Avenue (the cross street nearest the Fox Grove Recreation Area). Daily volumes on La Grange Road are 1,920 vpd just north of SR 132 and on Bond's Flat Road are approximately 100 vpd.

3.15.2 ENVIRONMENTAL CONSEQUENCES

a) Would the project cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?

Proposed Project

Short-Term Construction Impacts

The proposed project involves the construction of the infiltration gallery, pump station and pipeline. The pipeline would convey diverted water to local agricultural users. The project

area would be undergoing a restoration effort under the Restoration Project during the same period that the proposed facilities would be constructed. All construction related traffic impacts would be temporary. As stated in the *EA/IS/MND Gravel Mining Reach and Special Run Pools 9/10 Restoration and Mitigation Actions* (USFWS and TID 1998), traffic impacts related to the restoration of SRP 9 and SRP 10 have already been identified as being a less than significant impact. (USFWS 1998)

The trips associated with the infiltration gallery construction would access SRP 9 via SR 132, Geer Road, and the Donovan property and/or Fox Grove County Park (from the south side of SRP 9). Engineers involved in the restoration action identified this as the most direct route. Access to the north side would be by a temporary, low water crossing from the south side. For revegetation, access may also be gained from the north side of the river.

The environmental assessment for the Restoration Project also identified a 'worse case' scenario of 10 inbound and 10 outbound action-generated trips for each day during the peak construction period. The proposed project would require 1-2 additional load carrying trucks to deliver the construction equipment for the infiltration gallery in addition to the material required for the Restoration Project. Traffic related to the Restoration Project and the infiltration gallery would impact local road conditions by increasing traffic volumes and truck queuing at intersections. Truck traffic could also damage roadway pavement. As stated in the *EA/IS/MND Gravel Mining Reach and Special Run Pools 9/10 Restoration and Mitigation Actions* (USFWS and TID 1998), traffic measures contained in the Restoration Project Monitoring Plan would reduce construction-related roadway use impacts associated with that project at SRPs 9 and 10 to less than significant levels (USFWS 1999). These measures are contained in the Restoration Project Construction Traffic Control Plan (CTCP). Because the proposed project would occur at the same time as the previously approved Restoration Project and would only result in an additional 1-2 daily trip, the measures contained in the Restoration Project CTCP as set forth below, along with the implementation of Mitigation Measure HAZ-1, would be sufficient to ensure that construction traffic under the proposed project would remain at less than significant levels. (LSM)

TRAF-1: TID will implement the following traffic control measures during construction:

- Use traffic control devices, including signs and markings.
- Adhere to Caltrans sight line criterion for stopping sight distance (wherever stopping sight distance is found to be insufficient, flagmen will be used to control the flow of through traffic).
- Provide detours (consider concurrent construction activities).
- Maintain access to adjacent properties.
- Emergency vehicle access.
- Provide sufficient pavement width to accommodate large truck turning movements within appropriate direction travel lanes.

- Provide a paved apron connecting an unsurfaced road to a paved public road to avoid pavement edge deterioration and allow soil on truck tires to fall prior to entering a public road.
- Provide rapid clean-up if gravel spills occur on affected roads;
- Restore construction-damaged pavements.

Long-Term Operational Impacts

Since no additional traffic activity other than a few occasional maintenance trips would occur under the proposed project after construction, the proposed project's operational traffic impacts would be less than significant. (LTS)

Alternative Pipeline Route

Same impacts as the proposed project. (LSM/LTS)

Alternative Diversion Facility Location

Same impacts as the proposed project. (LSM/LTS)

No Action Alternative

No new traffic would occur under the No Action Alternative because no construction or maintenance trips would be required. Therefore, no traffic impacts would occur.

b) Would the project exceed, either individually or cumulatively, a level of service standard established by the county congestion/management agency for designated roads or highways?

Proposed Project

As discussed above, construction of the proposed facilities would add an additional 1-2 daily truck trips to those already required for the SRP 9 and 10 restoration efforts under the Restoration Project. Implementation of Mitigation Measure TRAF-1 would reduce any construction traffic impacts to local roadways to less than significant levels. (LSM)

As discussed above, the incremental increase in traffic associated with operations under the proposed project would be less than significant. (LSM/LTS)

Alternative Pipeline Route

Same impacts as the proposed project. (LSM/LTS)

Alternative Diversion Facility Location

Same impacts as the proposed project. (LSM/LTS)

No Action Alternative

No new traffic would result from the No Action Alternative because no construction or maintenance would be required. Therefore, no traffic impacts would occur. (NI)

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

Proposed Project

This area is subject to occasional aircraft over flights from the Modesto County Airport and from private airfields. The proposed project would not generate any population or increase in air traffic. The proposed project would also not result in any type of restrictions on local airspace or air traffic patterns. Therefore, the proposed project would not result in a change in air traffic patterns that would result in substantial safety risks. (NI)

Alternative Pipeline Route

Same impacts as the proposed project. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

No Action Alternative

Same impacts as the proposed project. (NI)

d) ***Would the project substantially increase hazards due to design feature (e.g. sharp curves, or dangerous intersections) or incompatible land uses (e.g., farm equipment)?***

Proposed Project

Construction activities under the proposed project would include truck trips and the establishment of temporary truck routes. As discussed under "a" above, construction traffic impacts would be short term and less than significant with implementation of Mitigation Measure TRAF-1. (LSM)

No permanent traffic design features are proposed and no potential traffic safety impacts would occur during project operation. The proposed project would result in only a few occasional maintenance trips during operation. Therefore, the proposed project would not

substantially increase hazards due to design features or incompatible traffic during operation. (LTS)

Alternative Pipeline Route

The Alternative Pipeline Route Alternative would create a slightly longer construction zone given the extended length of the proposed pipeline under this alternative. However, the traffic hazard and incompatible traffic impacts would be generally the same as the proposed project. (LSM/LTS)

Alternative Diversion Facility Location

The Alternative Diversion Facility Location Alternative would create a slightly longer construction traffic route to the proposed infiltration gallery given the greater distance between Geer Road and SRP 10. However, the traffic hazard and incompatible traffic impacts would be generally the same as the proposed project. (LSM/LTS)

No Action Alternative

No new design features or traffic would result from the no action alternative, because no construction or operations would occur under this alternative. Therefore, this alternative would not substantially increase hazards due to design features or incompatible traffic during operation. (NI)

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

Proposed Project

Construction activities associated with the proposed project could effect emergency access on local streets, especially along Geer Road. Traffic could be delayed and lanes temporarily closed. Implementation of the traffic control requirements of Mitigation Measure TRAF-1 would avoid inadequate emergency access during construction. (LSM)

The proposed project would generate only occasional maintenance trips during operation, and would not result in lane closures or otherwise affect access during operation. Therefore, the proposed project would not result in inadequate emergency access during operation. (NI)

Alternative Pipeline Route

In addition to the temporary emergency access affects on Geer Road and other local roads during construction, the Alternative Pipeline Route Alternative would include construction activity along the public access road serving Fox Grove Park. Therefore, this alternative could result in temporary emergency access affects to an additional roadway that would not be affected by the proposed project. However, implementation of the traffic control

requirements of Mitigation Measures HAZ-1 and TRAF-1 under this alternative would avoid inadequate emergency access along this and other roads during construction. (LSM)

Alternative Diversion Facility Location

Same impacts as the proposed project. (LSM))

No Action Alternative

No new permanent structures affecting emergency access will result from the no action alternative, because no construction will occur under this scenario. Refer to the *EA/IS/MND Gravel Mining Reach and Special Run Pools 9/10 Restoration and Mitigation Projects* (EDAW and Stillwater Sciences 1998).

f) ***Would the project result in inadequate parking capacity?***

Proposed Project and Alternative Location

The proposed project would include construction staging areas that would provide parking for construction workers and equipment. Therefore the proposed project would not result in inadequate parking capacity during construction. (NI)

The proposed project would not generate a demand for parking during operation, and thus would not result in inadequate parking capacity during operation. (NI)

Alternative Pipeline Route

Same impacts as the proposed project. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

No Action Alternative

The No Action Alternative would not generate any construction or operational traffic. Therefore, this alternative would not result in inadequate parking capacity. (NI)

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

Proposed Project

The proposed project would not: include any housing, commercial, industrial, park, or other traffic generator; create a demand for public transportation; create a demand for bicycle or

other transportation facilities or access; and would not impact any existing public transit facilities. Therefore, the proposed project would not conflict with adopted policies, plans, or programs supporting alternative transportation. (NI)

Alternative Pipeline Route

Same impacts as the proposed project. (NI)

Alternative Diversion Facility Location

Same impacts as the proposed project. (NI)

No Action Alternative

Same impacts as the proposed project. (NI)

4 CUMULATIVE IMPACTS

4 CUMULATIVE IMPACTS

According to CEQA, a cumulative impact consists of an impact that is created as a result of the combination of a proposed project together with other projects, causing related impacts (Section 15130 of the State CEQA Guidelines). The evaluation of cumulative impacts must look at the incremental increase in impacts associated with a proposed project, and determine whether the project's contribution to the cumulative impacts is cumulatively considerable (i.e., significant). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The proposed project evaluated in this IS is the TID Infiltration Gallery Project. The project would include the development of an infiltration gallery, pump station and pipeline to divert water from the river for irrigation uses within the TID service area. The project would relocate an existing water diversion from La Grange Dam, rather than represent a new diversion. The proposed project is in response to, and consistent with, the Federal Energy Regulatory Commission (FERC) Settlement Agreement (FSA) of 1995 that requires that TID promote a plan to divert water from the Tuolumne River for irrigation as a condition for FERC, the U.S. Fish and Wildlife Service, TID and others to carry out the Tuolumne River Restoration Project (Restoration Project). The Restoration Project would provide additional water in the Tuolumne River to improve fish habitat in the river.

As the only other substantial project proposed in the area, and as a project that would be implemented at the same time and in the same area as the proposed project, the Restoration Project is the primary cumulative project against which the proposed project's incremental impacts are evaluated. This does not apply to traffic, air, and noise where future cumulative baseline projections exist based on regional growth. Cumulative actions related to salmon habitat improvements or water diversions that are outside the scope of this document include additional efforts downstream of the Tuolumne River on the mainstem San Joaquin and on the Stanislaus and Merced rivers.

Agricultural Resources, Mineral Resources, and Recreation: The proposed project would have no impacts in the areas of agricultural resources, mineral resources, and recreation. Therefore, the proposed project would not contribute to cumulative agricultural, mineral, or recreational impacts.

Air Quality: Construction activities associated with the construction of the infiltration gallery, pipeline, and pumping station at SRP 9 could result in temporarily significant impacts due to elevated emissions of PM_{10}. Sources of construction air quality impacts include clearing/demolition, excavation and grading, building construction, and vehicular emissions from construction vehicles. Construction air quality significance would be determined by means of whether the SJVAPCD PM_{10} construction mitigation measures are implemented for each project. For the purposes of this analysis, it is expected that such measures would be included in the construction of this project and the previously approved Restoration Project. Therefore, this cumulative development would not result in significant short-term air quality impacts. The mitigation measures recommended for the proposed infiltration gallery project would reduce short-term construction emissions to less-than-significant levels.

As indicated previously discussed, regional emissions produced by the proposed infiltration gallery project would be negligible. The pumping station would rely on electricity for power and the there would be a few maintenance related trips to the site. The daily emissions of ROG, NO_x, and PM_{10} are not anticipated to exceed the SJVAPCD daily thresholds. This would be considered a less-than-significant cumulative impact.

Aesthetics: The proposed project would contribute to cumulative aesthetic impacts during construction. These impacts would involve views of the infiltration gallery, pump station and pipeline construction sites (i.e., mounds of dirt, construction equipment, vegetation removal, etc.). Because the proposed infiltration gallery and pump station would be developed at the same time and location as the Restoration Project improvements to SRP 9, the proposed project would not substantially add to the construction activities and associated temporary and less-than-significant aesthetic impacts of the Restoration Project. The construction of the proposed pipeline would add to the area under construction and to the temporary adverse aesthetic impacts in the project area. Given the temporary nature of the construction activities and the small area to be excavated associated with the pipeline, this too would not add substantially to the less-than-significant aesthetic impacts of the Restoration Project. Therefore, cumulative aesthetic impacts during construction would be less than significant. Because the proposed infiltration gallery and pipeline would be underground, and because the Restoration Project would improve rather than degrade aesthetics in the project area, cumulative aesthetic impacts during operation would be either less than significant or beneficial.

Terrestrial and Aquatic Biological Resources: Development of the proposed project would be expected to only cause short term impacts to biological resources through a temporary reduction of habitat available within the project vicinity. It is expected that minimal loss of valley oak woodland, orchards, and non-native grassland habitat would be occur in the project area. Implementation of mitigation measures in Section 3.5.2 of the *EA/IS/MND TID Infiltration Gallery* and those identified in the *EA/IS/MND Gravel Mining Reach and Special Pools 9/10 Restoration and Mitigation Projects*, and *Monitoring Plan* (TID and USFWS 1998) have been committed to by TID and would ensure that the proposed project would not contribute to significant impacts on biological resources; therefore, it would not contribute considerably to cumulative impacts associated with biological resources.

Cultural Resources: Development of the proposed project would not result in cumulative effects to historic and archaeological resources. The extent of additional construction, beyond that anticipated for the Restoration Project, would be minimal, limited to the selected pipeline route. With the implementation of mitigation measures adopted for the Restoration Project and included in this document for the proposed infiltration gallery, potentially significant cultural resources effects would be avoided or fully mitigated.

Geology and Soils: Both the proposed project and the Restoration Project could potentially result in the exposure of structures and infrastructure to geologic hazards, soil erosion, or be located on an unstable geologic unit or expansive soils. However, because mitigation measures are identified in both the proposed project and Restoration Project EA/IS/MNDs requiring geotechnical studies, a Maintenance

and Operation Plan, and a SWPPP, and implementation of the requirements/recommendations of these studies/plans, neither project would result in geology and soils impacts after mitigation. Therefore, no cumulative geology and soils impacts would occur.

Hazards and Hazardous Materials: Both the proposed project and the Restoration Project would utilize small quantities of fuel, oil and other hydrocarbon products during construction. The proposed project would also utilize small quantities of oils, lubricants and cleaning solutions during operation (during maintenance and repair activities). However, because mitigation measures are identified in both the proposed project and Restoration Project EA/IS/MNDs requiring construction staging/storage areas to be located outside the flooplain, the positioning of all stationary equipment over drip pens, and emergency cleanup response, and because both projects would adhere to existing hazardous materials regulations, neither project would result in hazards and hazardous materials impacts after mitigation. Therefore, no cumulative hazardous materials impacts would occur.

The proposed project would not: 1) be located within the vicinity of an airport or school and would not emit hazardous emissions, 2) be located on or within a one-mile radius of a government-listed hazardous materials/waste site, 3) physically interfere with an adopted emergency response plan or emergency evacuation plan, or 4) be located within a wildlands fire area. Therefore, the proposed project would not contribute to cumulative hazards or hazardous materials impacts associated with these issues.

Hydrology and Water Quality: The proposed project and Restoration Project could each violate water quality standards and discharge requirements during construction associated with the generation of sediment and use of hazardous materials and fuels. However, because mitigation measures are identified in both the proposed project and Restoration Project EA/IS/MNDs requiring controls on hazardous materials usage (see Hazards and Hazardous Materials above), the obtaining of an NPDES General Construction Activity Stormwater Permit, and the implementation of a SWPPP, neither project would violate water quality standards and discharge requirements. Therefore, no cumulative water quality impacts would occur.

The proposed project is a surface water diversion project that would divert 100 cfs of water from the Tuolumne River for irrigation purposes in place of water withdrawals currently taking place at La Grange Dam. The proposed project would not result in an increase in surface diversions, would not affect infiltration rates, and would not extract, consume, or create a demand for groundwater. Therefore, the proposed project would not contribute to any cumulative impact on groundwater. In fact, because the proposed project would facilitate the implementation of the Restoration Project, it would contribute to more water in the upper reaches of the Tuolumne River and potentially more infiltration of surface water to the groundwater in the area (a beneficial impact).

Under the proposed project, the infiltration gallery and pipeline would be undergrounded, and only a small (50' by 50') above ground pump station would be developed. These facilities would thus not contribute to any cumulative flooding impacts (i.e., would not substantially increase runoff, alter drainage patterns, change the course of a stream or river, or develop housing within a 100-year

floodplain). Project construction activities could temporarily contribute to cumulative water-born erosion. However, the mitigation measures discussed previously would avoid this impact.

Land Use and Planning: The primary facilities under the proposed project would be underground and would not bisect an established community. Therefore, the proposed project would not contribute to the physical division of an established community. The proposed project would be consistent with applicable County General Plan land use designation, zoning, and the FERC FSA, while no habitat conservation plans or natural community conservation plans are applicable to the area. Therefore, the proposed project would not conflict with applicable plans.

The proposed project would not generate significant aesthetic, air quality or noise impacts during construction or operation (indicators of land use incompatibilities with adjacent uses) after mitigation. Therefore, the proposed project would not contribute to any cumulative land use incompatibilities.

The proposed project could result in the displacement of orchard trees outside of the TID pipeline easement. Mitigation is identified in this IS that would avoid displacement by requiring avoidance of pipeline construction during the planting and harvesting seasons, and the replacement of any disturbed or removed orchard trees on a one to one basis. The proposed project would not contribute to any potential cumulative land use displacements with implementation of this alternative.

Noise: Noise-generating activities during construction would include earth-moving and excavation, demolition, building construction, and construction traffic. Depending upon the phasing and location of cumulative projects, many of these activities could occur during the same time period and affect the same locations. Temporary increases in construction noise occurring during the simultaneous construction of more than one project in the project vicinity and surrounding region would be significant. Implementation of the noise control measures recommended for the proposed infiltration gallery project would reduce the project's contribution to short-term cumulative construction-generated noise to less-than-significant levels.

It is anticipated that although operation of the pumps associated with the infiltration gallery may be a source of stationary and area noise impacts, this project would result in less-than-significant cumulative impacts. This is because the project is located in a rural setting with no significant existing stationary noise sources and is not located too close to the nearest sensitive receptor. Consequently, cumulative operational noise impacts would be considered less than significant.

The noise analysis in Section 4.5 of this IS/EA accounts for the noise associated with cumulative traffic. The project would contribute a few maintenance trips to the project area. Although the proposed project would contribute, on a cumulative basis, to the increase in vehicle noise along other local roadways, significant contribution to cumulative traffic noise levels would not be anticipated. This would be a less-than-significant impact.

Transportation/Traffic: Construction activities associated with the proposed project would be short-term and occur concurrently with the previously approved Restoration Project. At most, this project would add one to two more truck trips in addition to those associated with the Restoration Project. These trips would add to the local traffic, but the limited number of trucks and short duration of the construction phase make this a less-than-significant impact.

Since no additional traffic activity other than a few maintenance trips for the infiltration gallery and pipeline would occur after the implementation of the action, cumulative operational traffic is anticipated to be a less-than-significant impact.

5 GROWTH-INDUCING IMPACTS

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The State CEQA Guidelines (§15126[d]) require an evaluation of the growth inducing impacts of a proposed project as follows:

> *"Discuss the way in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a waste water treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also, discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It is not assumed that growth in an area is necessarily beneficial, detrimental, or of little significance to the environment."*

A project can have direct and/or indirect growth inducement potential. Direct growth inducement would result if a project involved construction of new housing. Indirect growth inducement would result if a project resulted in: substantial new permanent employment opportunities (e.g., commercial, industrial or governmental enterprises); substantial construction effort with substantial short-term employment opportunities and indirectly stimulate the need for additional housing and services to support the new employment demand; and/or removal of an obstacle to additional growth and development, such as removing a constraint on a required public utility or service.

As indicated above, growth inducement itself is not an environmental effect, but may lead to environmental effects. Such environmental effects may include increased demand on other community and public services and infrastructure, increased traffic and noise, degradation of air or water quality, degradation or loss of plant or animal habitats, or conversion of agricultural and open space land to urban uses.

Growth inducement may constitute an adverse impact if the growth is not consistent with the land use plans and growth management plans and policies for the area affected. Local land use plans provide for land use development patterns and growth policies that allow for the orderly expansion of urban development supported by adequate urban public services, such as water supply, roadway infrastructure, sewer service and solid waste service. A project that would induce "disorderly" growth, in conflict with the local land use plans, could indirectly cause additional adverse environmental impacts and impacts to other public services. Thus, to assess whether a growth-inducing project would result in adverse environmental effects, it is important to assess the degree to which the growth accommodated by a project would or would not be consistent with applicable land use plans.

The proposed project would include the development of an infiltration gallery, pump station, and pipeline to divert water from the Tuolumne River for irrigation uses within the TID service area. The project represents relocation of existing water diversions from La Grange Dam, rather than a new diversion. The project would not: 1) construct new housing, 2) create substantial new employment opportunities, 3) create substantial short-term employment opportunities, 5) create a demand for new utilities and services that could foster growth, or 6) remove an obstacle to additional growth. Therefore, the proposed project would not be growth inducing.

6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The proposed project would utilize metals, concrete, wood, and fuel during construction. The use of these non-renewable resources would be temporary and insignificant in light of the quantity of such materials currently being used in the County, State, and Nation. The proposed project would also not commit future generations to similar uses because it would: 1) relocate existing water diversion facilities and operations rather than represent new such uses and operations, 2) not create a demand for new infrastructure or substantial additional resources, and 3) not deprive the use of lands for other purposes (such as for mineral extraction given the small size of the proposed facilities and that the mineral resources have already been extracted from the area). At the same time, the proposed project would provide irrigation water for continued agricultural productivity in the TID service area. The proposed project would thus not result in an irreversible and irretrievable commitment of resources.

7 SIGNIFICANT IMPACTS THAT CANNOT BE AVOIDED

The proposed project would not result in any significant impacts that cannot be avoided (see Section 3). All effects of the project are either less than significant or mitigated to a less-than-significant level.

8 REFERENCES CITED AND PERSONAL COMMUNICATIONS

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8.1 REFERENCES CITED

Alderdice, D. F., and F. P. J. Velsen. 1978. Relation between temperature and incubation time for eggs of chinook salmon (*Oncorhynchus tshawytscha*). Journal of the Fisheries Research Board of Canada 35: 69-75.

American Ornithologists' Union. 1998. *Check-list of North American Birds*. 7th edition. American Ornithologists' union, Washington D. C.

Andrews, E. D. 1994. Marginal bed load transport in a gravel bed stream, Sagehen Creek, California. Water Resources Research 30: 2241-2250.

Beamish, R. J. 1980. Adult biology of the river lamprey (*Lampetra ayresi*) and the Pacific lamprey (*Lampetra tridentata*) from the Pacific coast of Canada. Canadian Journal of Fisheries and Aquatic Sciences 37: 1906-1923.

Beamish, R. J., and C. D. Levings. 1991. Abundance and freshwater migrations of the anadromous parasitic lamprey, *Lampetra tridentata*, in a tributary of the Fraser River, British Columbia. Canadian Journal of Fisheries and Aquatic Sciences 48: 1250-1263.

Brown, L. R., and T. Ford. 1992. Native fishes issues. Draft report. San Joaquin River Management Program Fisheries Subcommittee.

Brown, L. R., and P. B. Moyle. 1987. Survey of fishes of mid-elevation streams of the San Joaquin Valley. Unpublished report. California Department of Fish and Game.

California Department of Fish and Game (CDFG). 2000. Special animals list. Natural Heritage Division, NDDB, Sacramento, California. January.

_____ 1997. *California Wildlife Habitat Relationships System.* State of California Resources Agency. Sacramento, CA.

California Native Plant Society (CNPS). 1999. *California Native Plant Society's Electronic Inventory of Rare and Endangered Plants.* Sacramento, California.

California Natural Diversity Data Base (CNDDB). 1999. Data Base Record Search for Information on Threatened, Endangered. Rare, or Otherwise Sensitive Species and Communities in the Vicinity of the City of Livermore. California Department of Fish and Game, State of California Resource Agency. Sacramento, California.

Cultural Resources Unlimited. 2000 (June). *Turlock Irrigation District: Infiltration Gallery Project EA/IS/MND - Turlock Irrigation District, Stanislaus County.* Prepared for EDAW, Inc.

EDAW. 1999. *Jurisdictional Delineation of Waters of the U. S. for the Proposed Tuolumne River Restoration Projects*. Prepared for U.S. Fish and Wildlife Service, Sacramento office, and Turlock Irrigation District.

EDAW and Stillwater Sciences. 1999 (June 15). *Monitoring Plan Gravel Mining Reach, Special Run Pools 9/10 and La Grange Reservoir Material Source Site Restoration and Mitigation Projects.* Prepared for U.S. Fish and Wildlife Service, Sacramento office, and Turlock Irrigation District.

EDAW and Stillwater Sciences. 1998 (May 15). *Tiered Environmental Assessment and Initial Study/Mitigated Negative Declaration Gravel Mining Reach and Special Run Pools 9/10 Restoration and Mitigation Projects.* Prepared for U.S. Fish and Wildlife Service, Sacramento office, and Turlock Irrigation District.

Farlinger, S. P., and R. J. Beamish. 1984. Recent colonization of a major salmon-producing lake in British Columbia by Pacific lamprey (*Lampetra tridentata*). Canadian Journal of Fisheries and Aquatic Sciences 41: 278-285.

Grinell, Joseph, and Alden Miller. 1986. *The Distribution of Birds of California.*

Healey, M. C. 1991. Life history of chinook salmon (Oncorhynchus tshawytscha). Pages 311-393 *in* Pacific salmon life histories, C. Groot and L. Margolis, editor. University of British Columbia Press, Vancouver, British Columbia.

Hendricks, Rudy. 1996 (June 13). *California Department of Transportation - Technical Advisory TAV-96-01-R9201, "Transportation Related Earthborn Vibrations".*

Hickman, J.C., Editor. 1993. *The Jepson Manuel: Higher Plants of California.* University of California Press, Berkeley and Los Angeles California.

Higgins C.T., and D.L. Dupras. 1993. *Mineral Land Classification of Stanislaus County, California, California Division of Mines and Geology Special Report 173*, 174 pp. + Appendices and Maps.

Jennings, Mark, and Marc Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California.* California Department of Fish and Game, a state of California Resource Agency.

Knight, N. J. 1985. Microhabitats and temperature requirements of hardhead (*Mylopharadon conodcephalus*) and Sacramento squawfish (*Ptychocheilus grandis*), with notes for some other native California stream fishes. Unpublished P.h.D. thesis. University of California, Davis.

Laudenslayer, W.F. Jr., et al. 1991. A Checklist of Amphibians, Reptiles, Birds, and Mammals of California. In California Fish and Game.

Lee, D. S., et al. 1980. Atlas of North American freshwater fishes. North Carolina State Museum of Natural History, Raleigh.

Leet, W. S., C. M. Dewees and C. W. Haugen, editor. 1992. California's living marine resources and their utilization. Sea Grant Extension Publication UCSGEP-92-12. Sea Grant Extension Program, Department of Wildlife and Fisheries Biology, University of California, Davis.

Mayer, Kenneth, and William Laudenslayer. 1988. *A Guide to Wildlife Habitats of California.* California Department of Fish and Game.

McBain and Trush. 2000. Habitat restoration plan for the lower Tuolumne River corridor. Prepared by McBain and Trush, Arcata, California, with assistance from U. S. Fish and Wildlife Service Anadromous Fish Restoration Program (AFRP) for the Tuolumne River Technical Advisory Committee (TRTAC).

McBain and Trush and Stillwater Sciences. 2000. Tuolumne River Restoration Project Monitoring: Special run pools 9/10, 7/11 mining reach, Ruddy mining reach. Prepared for the Tuolumne River Technical Advisory Committee (TRTAC), U. S. Fish and Wildlife Service Anadromous Fish Restoration Program (AFRP), and CALFED Ecosystem Restoration Program (CALFED) by McBain and Trush, Arcata, California and Stillwater Sciences, Berkeley, California. 26 May.

McBain and Trush and Stillwater Sciences. 1999. Tuolumne River restoration project monitoring: Special Run Pools 9/10 and gravel mining reach 7/11 phase. Prepared for Tuolumne River Technical Advisory Committee (TRTAC), U. S. Fish and Wildlife Service Anadromous Fish Restoration Program (AFRP), and CALFED Ecosystem Restoration Program (CALFED).

Montgomery Watson. 1998 (May). MCWRA Salinas Valley Water Project, Summary of Facilities.

Moyle, P. B., R. M. Yoshiyama, J. E. Williams and E. D. Wikramanayake. 1995. *Fish species of special concern in California.* Final Report. Prepared by Department of Wildlife and Fisheries Biology, University of California, Davis for California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova.

Moyle, P. B., and D. M. Baltz. 1985. Microhabitat use by an assemblage of California stream fishes: developing criteria for instream flow recommendations. Transactions of the American Fisheries Socity 114: 695-704.

Moyle, P. B. 1976. *Inland fishes of California*. First edition. University of California Press, Berkeley.

Moyle, P. B., and R. D. Nichols. 1973. Ecology of some native and introduced fishes of the Sierra Nevada foothills in central California. In Copeia 478-490.

Nordlund, B. 1996. *Designing fish screens for fish protection at water diversions.* National Marine Fisheries Service, Portland, Oregon.

National Marine Fisheries Service (NMFS). 2000a. Endangered and threatened species; threatened status for one steelhead evolutionarily significant unit (ESU) in California. Federal Register 65: 36074-36094.

_____ 2000b. Endangered and threatened species; Final rule governing take of 14 Threatened salmon and steelhead evolutionarily significant units (ESUs) in California. Federal Register 65: 42422-42481.

_____ 1999. Endangered and threatened species; threatened status for two chinook slamon evolutionarily significant units (ESUs) in California. Federal Register 64: 50394-50415

_____ 1997. Fish screening criteria for anadromous salmonids. NMFS, Southwest Region, Santa Rosa, California.

_____ 1996. West Coast steelhead briefing package.

Pletcher, F. T. 1963. The life history and distribution of lampreys in the Salmon and certain other rivers in British Columbia, Canada. Master's thesis. University of British Columbia, Vancouver.

Remsen, J.V. 1978. *Bird Species of Special Concern in California*. California Department of Fish and Game.

Saiki, M. K. 1984. Environmental conditions and fish faunas in low elevation rivers on the irrigated San Joaquin Valley floor, California. California Fish and Game 70: 145-157.

Scott, W. B., and E. J. Crossman. 1973. Pacific lamprey, *Entosphenus tridentatus* (Gairdner). Pages 42-55 *in* Freshwater fishes of North America. Holt, Rinehart and Winston, New York.

Skinner, M.W., and B. M. Pavlik, eds. 1994. *Inventory of Rare and Endangered Vascular Plants of California*. California Native Plant Society Special Publication No. 1 (Fifth Edition). Sacramento, CA. 338 pp.

Small, Arnold. 1994. *California Birds: Their Status and Distribution*. Ibis Publishing Company.

Smith, J. P., Jr. 1989. *California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California*. California Native Plant Society. Special Publication, No. 1, 4th ed.

Stanislaus County. 1994. General Plan.

Stanislaus County. Adopted June 23, 1987, Revised December 1990. *General Plan and Zoning Map*. Prepared by Stanislaus County Department of Planning & Community Development.

Stillwater Sciences. 2000. 1999 Tuolumne River outmigrant trapping report. Prepared by Stillwater Sciences, Berkeley, California with assistance from S. P. Cramer and Associates, Gresham, Oregon for the Tuolumne River Technical Advisory Committee.

_____ 1998. Tuolumne River restoration projects: biological resources technical background report. Prepared by Stillwater Ecosystem, Watershed & Riverine Sciences, Berkeley, California for EDAW, San Francisco, California.

_____ 1998. 1998 Tuolumne River outmigrant trapping report. Prepared by Stillwater Sciences and Turlock and Modesto Irrigation Districts, with assistance from S. P. Cramer and Associates.

Theurer, F. D., K. A. Voos, and W. J. Miller. 1984. Instream water temperature model. Instream Flow Information Paper No. 16, FWS/OBS-84/15. U. S. Fish and Wildlife Service, Western Energy and Land Use Team, Washington, D. C.

Tietje, W., R. Barret, E. Kleinfelter, and B. Carre. 1991. *Wildlife Diversity in oak riparian habitat: north central vs. Central coast California*. R. B. Standiford, editor. Proceedings of the symposium on oak woodlands and hardwood rangeland management. U.S. Forest Service, Pacific Southwest Research Station, Berkeley, Ca.

Turlock Irrigation District and Modesto Irrigation District (TID/MID). 2000. 1999 Spawning survey report. Report 99-2 *in* 1999 Lower Tuolumne River annual report, Volume II. Prepared by T.

Heyne, California Department of Fish and Game for the Tuolumne River Technical Advisory Committee.

_____ 1999. 1998 Juvenile salmon report and summary update. Report 98-2 *in* 1998 Lower Tuolumne River annual report. Annual report to the Federal Energy Regulatory Commission (FERC). Prepared by T. Ford, Turlock and Modesto Irrigation Districts and EA Engineering, Science, and Technology, Lafayette, California.

_____ 1998. 1997 Juvenile salmon report and summary update. Report 97-2 *in* 1997 FERC report: lower Tuolumne River. Volume II. Second annual report to the Federal Energy Regulatory Commission (FERC) as required by Section (F), amending Article 58, and Section (G) of the 31JUL96 FERC Order of Project License 2299 and by Section 15 of the 1995 Don Pedro Project FERC Settlement Agreement (FSA). Prepared by T. Ford, Turlock and Modesto Irrigation Districts and EA Engineering, Science, and Technology, Lafayette, California.

_____ 1997. Juvenile salmon summary report, supplement to 1992 FERC Report Appendix 12. Report 96-2 *in* 1996 FERC report: lower Tuolumne River. Volume II. Prepared by EA Engineering, Science, and Technology, Lafayette, California.

_____ 1997. Tuolumne River salmon summer flow fisheries reports, 1991-1994, supplement to 1992 FERC Report Appendix 27. Report 96-3 *in* 1996 FERC report: lower Tuolumne River. Volume II. Prepared by EA Engineering, Science, and Technology, Lafayette, California.

_____ 1992. Lower Tuolumne River predation study report. Appendix 22 to Don Pedro Project Fisheries Studies Report (FERC Article 39, Project No. 2299). *In* Report of Turlock Irrigation District and Modesto Irrigation District Pursuant to Article 39 of the License for the Don Pedro Project, No. 2299. Vol. VII. Prepared by EA Engineering, Science, and Technology, Lafayette, California.

_____ 1991. Effects of turbidity on bass predation efficiency. Appendix 23 to Don Pedro Project Fisheries Studies Report (FERC Article 39, Project No. 2299). *In* Report of Turlock Irrigation District and Modesto Irrigation District Pursuant to Article 39 of the License for the Don Pedro Project, No. 2299. Vol. VII. Prepared by EA Engineering, Science, and Technology, Lafayette, California.

Umpqua Land Exchange Project (ULEP). 1998. Mapping rules for Pacific lamprey (*Lampetra tridentata*). Draft Report. ULEP, Roseburg, Oregon.

U.S. Environmental Protection Agency. 1971 (Dec). *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances.*

U. S. Fish and Wildlife Service (USFWS). 1999. Endangered and threatened wildlife and plants; determination of threatened status for the Sacramento splittail. Federal Register 64: 5963-5981.

_____ 1998. Endangered and threatened wildlife and plants; listing of several evolutionarily significant units of west coast steelhead. Federal Register 63: 32996-32998.

USFWS and TID. 1998. *Tiered Environmental Assessment and Initial Study/Mitigated Negative Declaration for Gravel Mining Reach and Special Run Pools 9/10 Restoration and Mtigation*

Projects. Prepared for U.S. Fish and Wildlife Service, Sacramento Office, and Turlock Irrigation District.

Vista Site Assessment Plus Report. 2000 (June 21). *Tuolumne Irrigation District*.

Weatherly, A. H., and H. S. Gill. 1995. Growth. Pages 103-158 *in* Physiological ecology of Pacific salmon, C. Groot, L. Margolis and W. C. Clarke, editor. University of British Columbia Press.

Williams, Daniel. 1986. *Mammalian Species of Special Concern in California*. California Department of Fish and Game, a state of California Resource Agency.

Whyte, J. N. C., R. J. Beamish, N. G. Ginther, and C.E. Neville. 1993. Nutritional condition of the Pacific lamprey (*Lampetra tridentata*) deprived of food for periods of up to two years. Canadian Journal of Fisheries and Aquatic Sciences 50: 591-599.

Zeiner, D., W. Laudenslayer, Jr., K. Mayer, and M. White. 1990a. *California's Wildlife: Volume II: Birds*. California Department of Fish and Game, a state of California Resource Agency, Sacramento, CA.

Zeiner, D., W. Laudenslayer, Jr., K. Mayer, and M. White. 1990b. *California's Wildlife: Volume II: Mammals*. California Department of Fish and Game, a state of California Resource Agency, Sacramento, CA.

Zeiner, D., W. Laudenslayer, Jr., K. Mayer, and M. White. 1988. *California's Wildlife: Volume I: Amphibians and Reptiles*. California Department of Fish and Game, a state of California Resource Agency, Sacramento, CA.

8.2 PERSONS CONSULTED

Ford, T. Biologist, Turlock Irrigation District. Personal communication with Stillwater Sciences, 1998.

Ford, Kirk. Stanislaus County Department of Planning & Community Development. Personal communication with Robert Hilman, EDAW, June 14, 2000.

Kchel, Bob. Planning Director, Stanislaus County Department of Planning and Community Development. Personal communication with Robert Hilman, EDAW, June 14, 2000.

McBain, S. Principal/Geomorphologist, McBain and Trush, Arcata, California. Personal communication. June 2000.

Mobley, C. Biologist, National Marine Fisheries Service (NMFS), Sacramento, California. Personal communication with Janelle Nolan, EDAW. 1998.

Mossman, H. Biological technician, U. S. Fish and Wildlife Service, Sacramento, California. Personal communication with Robert Hilman, EDAW, June 26, 2000.

Mobley, C. Biologist, National Marine Fisheries Service (NMFS), Sacramento, California. Personal communication 1998.

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