

Yuba River Daguerre Point Dam 3MW Hydropower Project

Before the United States of America
Federal Energy Regulatory Commission



Pre-Application Document (PAD)



July 9, 2012
FERC No.



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Yuba River Daguerre Point Dam 3MW Hydropower Project FERC #

Pre-Application Document (PAD)

Applicant:

ARCHON Energy 1, Inc.

101 E. Kennedy Blvd., Suite 2800
Tampa, FL 33602

Prepared By:

Global Environmental Permitting, LLC.
3914 Murphy Canyon Road Suite A164
San Diego, CA 92123
(858)-505-0759

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Definitions of Terms, Acronyms, and Abbreviations

AE	Archon Energy 1, Inc. (the Applicant)
APE	Area of Potential Affect
BCD	Barge Canal Datum
BLM	Bureau of Land Management
BMPs	Best Management Practices
CDFG	California Department of Fish and Game
CDWR	California Department of Water Resources
CFS	Cubic feet per second
CVP/SWP	California State Water Project-Central Valley Project
DPD	Daguerre Point Dam
DPDP	Daguerre Point Dam Hydropower Project ("The Project")
EDR	Environmental Data Report
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
FPIP	Fish Passage Improvement Project
GEPERMIT	Global Environmental Permitting, LLC.
GIS	Geographic Information System
HEC-RAS	Hydrologic Engineering Centers River Analysis System
JAM	Joint Agency and Public Meeting
MRY	Marysville
MWh	MegaWatt-hours
NGOs	Non-governmental Organizations
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation Service
OEHHA	Office of Environmental Health Hazard Assessment
PAD	Pre-Development Application
PG&E	Pacific Gas and Electric Company
PM&E	Protection, Mitigation & Enhancement

PNF	Plumas National Forest
RM	River Mile
RWQCB	Regional Water Quality Control Board
SWRCB	State Water Resources Control Board
TCP	Tribal Cultural Properties
TDML	Total Maximum Daily Loads
T & E	Threatened and Endangered Species
TLP	Traditional Licensing Process
TNF	Tahoe National Forest
USACE	U.S. Army Corps of Engineers
USDA	U.S. Dep. of Agriculture
USFWS	U.S. Fish and Wildlife Service
USDOI	United States Department of Interior
USGS	U.S. Geological Survey
YCWA	Yuba County Water Agency

Executive Summary

Archon Energy 1, Inc. (AE) applies to the Federal Energy Regulatory Commission (FERC) licensing for the Daguerre Point Dam Hydropower Project ("DPDP" or "the Project"), a small hydroelectric project that is proposed to have an installed capacity of 3 megawatts (MW) or less and operate for 50 years. This Pre Application Document (PAD) commences the first of three steps in the FERC process for review of the DPD Hydroelectric plans for the addition of hydroelectric power at the U.S. Army Corps of Engineers' (USACE) Daguerre Point Dam on the Yuba River in Yuba County, CA. The main purpose of this document is to advise interested agencies and parties of the features of the existing dam, the proposed plans for adding hydropower (hydrokinetic power) adjacent to the existing dam, present an estimate of potential impacts of the Project, and request any plans for studies that are necessary to add critical information about the resources that could be impacted. There will be several opportunities for interested agencies and persons to participate in the licensing process and consult with the Applicant. As further discussed below in the section entitled "Application Process Plan and Schedule," reviewers may participate in an upcoming public meeting and site visit to discuss the Applicant's proposal and the PAD. Interested parties may submit written comments suggesting studies that they believe are necessary to determine the potential effects of the Project on resources.

AE is proposing to build and install a hydropower facility, utilizing Hydrodynamic Archimedean Screw Turbines. Hydrodynamic turbines are new proven devices that are placed parallel to drop structures in rivers or controlled water ways. The turbines utilize kinetic energy of flowing water to drive turbines without requiring construction of new dams or other obstacles. The proposed project site is at the location of the existing Daguerre Point Dam and will incorporate interconnection lines that will run north of the dam itself. Applicant proposes to install eight turbines and eight generators. There will be a powerhouse to house the generator units that will be located within the proposed turbine structure, located at the top of the screw turbines. The Applicant plans to build the most economical plant to be competitive in the power market. The Applicant does not propose to do any new studies and is not aware of any studies that should be conducted to provide critical information to determine the potential impacts, which should be determined before licensing. There is sufficient information that is both current and readily available on water quality, cultural resources, and fish species in the Yuba River.

The Project was identified by AE as a suitable location to introduce low head, low impact, fish-friendly, Archimedean hydro-electric screw turbine generators. This state-of-the-art eco-turbine allows downstream migration of fish with minimal harm and is a highly efficient turbine for this type of application.

AE is proposing a 3 MW installation as an appropriate scale to impose minimal to no impact to the existing operations and proposed future programs.

This PAD summarizes existing information on geology and soils, water resources, fish and aquatic resources, wildlife and botanical resources, recreation and land use, aesthetic and visual resources, cultural resources, socioeconomic resources, and Tribal resources in the proposed Project vicinity. The PAD presents preliminary engineering descriptions of proposed Project facilities and describes a proposed environmental study program to determine potential Project impacts. Finally, the PAD summarizes early consultation efforts to gather existing information and begin development of environmental studies for the Project area.

AE is requesting FERC approval to use the Traditional Licensing Process (TLP). The DPDP is a new, relatively small (3 MW), low impact, fish friendly hydropower project. As proposed, the Project would not affect flows in the Yuba River and it would not change water levels. The overall footprint of the proposed Project covers a relatively small geographic area. The licensing process should be scaled appropriately to the potential impacts of the proposed Project and size of the proposed Project area.

The Applicant looks forward to working with interested agencies and persons throughout the licensing process. Should any agency or interested person believe other or different studies are necessary for evaluating potential Project effects before licensing, please discuss such studies in detail in written comments and at the planned public and agency meeting. Any such recommendations will be considered and responded to by the Applicant. They will be forwarded to the FERC with the Applicant's response for its evaluation of necessary action.

1 Process Plan and Schedule {§ 5.6 (D)(1)}

This PAD is intended to inform the resource agencies and other interested parties of the background information on the existing Project area, describe the planned hydropower installation and its operation, discuss potential impacts of the proposed Project and describe any studies that are required to allow further evaluation of potential impacts. A public meeting (“Joint Meeting”) for agencies, tribes and interested members of the public will be held within 60 days, upon approval of the TLP request by FERC, in Marysville about 7 miles from the dam. A public notice will be published in the local Marysville/Yuba City newspaper, the *Appeal Democrat*, about the public meeting. A site visit will be held at the Daguerre Point Dam earlier on the same day of the meeting. If sufficient interest is expressed, the Applicant will hold a second meeting in Sacramento to accommodate state agencies and interested persons for which that location is more convenient. The Joint Meeting will include a presentation describing the proposed Project with an opportunity for interested stakeholders to ask questions or discuss studies. A summary of the meeting will be prepared and filed with FERC along with a tape of the stated comments for the record. The purpose of the site visit will be to describe the planned installation while identifying key locations relative to the dam facilities and answer any questions about site construction.

After the Joint Meeting, agencies and any other interested parties that wish to make comments should do so within 30 days. As set forth in FERC’s regulations, 18 C.F.R. § 4.38(b)(5), each interested resource agency and Indian tribe that proposes additional studies must provide the Applicant with written comments:

- Identifying its determination of necessary studies to be performed or the information to be provided by the potential applicant;
- Identifying the basis for its determination;
- Discussing its understanding of the resource issues and its goals and objectives for these resources;
- Explaining why each study methodology recommended by is more appropriate than any other available methodology alternatives, including those identified by the potential applicant pursuant to paragraph (b)(2)(vii) of this section;
- Documenting that the use of each study methodology recommended by is a generally accepted practice; and
- Explaining how the studies and information requested will be useful to the agency,

- Indian tribe, or member of the public in furthering its resource goals and objectives that are affected by the proposed project.

After reviewing comments, the Applicant will prepare a draft license application, which will have a more detailed and possibly revised discussion of the proposed Project, its operation and potential impacts. The draft application will also discuss any studies that the Applicant plans to determine the extent of certain impacts and include Applicant's response to any written comments received, as well as copies of the comments. Applicant does not propose to conduct any new studies prior to filing a final license application. The draft application is expected to be circulated about 2 weeks after the deadline for comments on the PAD.

Interested agencies and stakeholders will then have the opportunity to provide additional written comments on the draft application within 30 days. If an agency or tribe has a substantive disagreement with the Applicant's conclusions regarding resource impacts or proposed protection, mitigation and enhancement measures, the agency or tribe should notify the Applicant of the nature of the disagreement within 15 days after the draft application is sent. If, after contacting the agency or tribe, a meeting is necessary, Applicant will convene a meeting with the agency or tribe to resolve any such disagreement consistent with FERC's regulations, 18 C.F.R. § 4. With this schedule and prompt action, the result of the meeting can be reflected in the agencies' or tribes' comments on the draft license application.

Applicant plans to file a final license application with FERC about 15 days after receipt of comments on the draft license application. The application will include the comments of all interested parties and any additional Protection, Mitigation & Enhancements (PM&E's) or studies suggested by parties with the Applicant's response. FERC will review the filed license application and determine if it is adequate or whether additional information is needed before accepting the application. Once FERC accepts the application, it will issue public notice, identifying the dates for further comments, intervention and protests. FERC will direct the Applicant to file a final application with any additional information to interested parties. Following receipt of such comments FERC will complete its environmental and engineering analysis of the proposal and alternatives, including preparation of an Environmental Assessment (EA) under the National Environmental Policy Act. Prior to preparation of the EA, FERC will issue a further public notice soliciting final comments, recommendations, terms and conditions, and prescriptions. FERC will then review the record and decide whether, and on what conditions, to issue a license for the Project. Review of the filed license application by FERC staff will probably take a year.

1.1 Time Frames for Pre-Application Consultation, Information Gathering, and Studies

Accompanying this PAD are the following materials:

- Notice of Intent (NOI) to File Application for License;
- Request for Use of Traditional Licensing Process (TLP);

As reflected in the Request for Use of Traditional Licensing Process (TLP Request), the Applicant believes that the simplicity of this project suggests that TLP will be a more practical process, given a previous license and no complicated issues. Consistent with the Commission's new regulations, the Integrated Licensing Process will be the default process, Applicant is requesting the Commission's approval to use the Traditional Licensing Process, set forth in 18 C.F.R. Part 4, to prepare a license application for this project. As noted in the TLP Request, interested agencies and persons may comment on this request to use TLP to FERC by August 9, 2012.

The agencies and other reviewers will initially have 90 days to review the PAD including 30 days after the public meeting and site visit. The Applicant does not expect any new study requests and believes the 30 days allowed for comments on the draft application will be sufficient, because it should be quite similar to the PAD, which has a long review period. The Applicant requests the following schedule for the process leading up to filling the final application, as discussed in further detail below.

1.2 Proposed Process Milestones

Table 1.1 summarizes milestones in the TLP along with dates pursuant to timelines identified in 18 CFR § 4.38. AE will offer a site visit to agencies, Tribes, and the public on September 26, 2012, in conjunction with a Joint Meeting date.

Table 1.1 Proposed Schedule

Entity	Action	Deadline
AE	File NOL, PAD, TLP Request	July 9, 2012
Stakeholders	Comment on AE's TLP Request	Aug. 9, 2012
Agencies Tribes	Notify AE of any Disagreement Regarding Protection, Mitigation and Enhancement Measures	Aug. 9, 2012
FERC	Action on TLP Request	Sep. 10, 2012
AE Stakeholders	Joint Meeting and Site Visit	Sep. 26, 2012
Stakeholders	Comments on AE's proposal and the PAD	Oct. 15, 2012
AE Stakeholders	Resolve any study disputes	None expected
AE	Circulate Draft License Application for Stakeholder Comment	Nov. 3, 2012
Stakeholders	Comment on Draft License Application and Study Results	Jan 7, 2013
AE	File Final License Application	Jan 21, 2013

1.3 Proposed Location and Date For Joint Agency Meeting and Site Visit [§ 5.8 (B)(3)(VIII)]

If FERC approves the use of the TLP with enhanced scoping, AE will host a joint agency and public meeting (JAM) and site visit of the Daguerre Point Dam per 18 CFR § 16.8 (b)(A) within 30 days of the TLP approval. AE will also invite FERC to begin early up-front scoping of issues at this meeting, as well. The purpose of the meeting is to provide the opportunity for stakeholders to visit the Project and discuss information presented in the PAD, as well as to identify project-related issues. The exact meeting date

and location will be determined in consultation with jurisdictional agencies and interested licensing participants following FERC's decision on approval for the Applicant's use of a TLP process with enhanced scoping.

1.4 Communications and Document Distribution

This Communication Protocol (Protocol) is intended to facilitate communication and cooperation among AE, federal and state agencies, Indian tribes, native corporations other interested organizations and members of the public (collectively, Participants) during the preparation of AE's Application for Original License for the Project. This Protocol is structured based on the assumption that FERC will approve the use of the TLP for the pre-filing consultation period for the Project. Given AE's understanding based on its outreach efforts that agencies and others are concerned with the rigid timeframes and deadlines of the Integrated Licensing Process (ILP) it believes that the TLP, supplemented by the provisions outlined below, would be the most effective process for completing the necessary pre-filing work while providing for meaningful participation by agencies and other interested organizations.

AE conducted a successful pre-formal consultation with agencies and other interested stakeholders regarding informal study efforts in early 2012. These efforts included conference calls, e-mail communication, and a PAD questionnaire was mailed to potential stakeholders in May 30, 2012 with a 30 day response request. Several agencies responded to the questionnaire and recommended resources to utilize in the development of this PAD (See Appendix B).

This Protocol will govern communications among all Participants and provide public access to information regarding the consultation activities related to the licensing of the Project. The Protocol also applies to communications made by contractors or consultants on behalf of AE or any of the Participants. This Protocol does not apply to communications solely between Participants, or to any Participant's internal communications.

1.4.1 Participation in the Licensing Process

The licensing process for the Project is open to the general public and interested parties are encouraged to participate. A contact list, compiled by AE, will be maintained to identify those agencies, organizations, individuals or groups that have been identified as interested parties or who have requested to be included as Participants. The contact list will be used to provide notice of any public meetings, as well as notice of the availability of information for public review. The contact list will be updated periodically by AE and inactive Participants will be asked to re-affirm their interest in participating in the process.

In response to concerns with the TLP identified by agencies and other interested parties, AE proposes to supplement the TLP process with additional consultation steps to provide an enhanced level of engagement and transparency. These enhancements include:

- Working with agencies and other stakeholders on the scheduling of meetings and conference calls,
- Providing opportunities for the review of draft study plans and study reports and addressing those comments in final plans/reports,
- Allowing for more than the minimum 30 days for review of significant documents when possible without jeopardizing the overall project schedule.

To the extent possible, AE is committed to working with agencies and other Participants to identify opportunities to make adjustments to timeframes throughout the pre-filing period. Given that this licensing effort will occur within a TLP, these decisions regarding adjustments to timeframes can be made by AE in coordination with Participants.

1.4.2 Maintenance of the Public Reference File

AE has developed and will maintain a public reference file at AE's environmental consultant GEPPermit's San Diego office at 3914 Murphy Canyon Road, Suite A164, San Diego, CA 92123. The public reference file will include copies of all written correspondence (including e-mails), documentation of phone conversations, meeting notices, agendas and summaries, study plans, study reports, status reports, and other documents developed during consultation or submitted for inclusion in the public reference file. All documents in the public reference file will be submitted to FERC as part of the formal licensing record.

For the duration of the licensing proceeding AE will also make available to the public for inspection in a form that is readily accessible, reviewable and reproducible during regular business hours, the PAD, materials referenced in the PAD and other information that will make up the complete application for license, including all exhibits, appendices, and any amendments, pleadings, supplementary or additional information, or correspondence filed by AE with the FERC.

1.4.3 Meetings

AE shall be responsible for scheduling all consultation meetings involving AE and Participants. For the meeting specified in 18 CFR Section 4.38(b)(3), AE will provide the required notice in appropriate local and other forums. AE will solicit input from Participants on meeting agendas and objectives and will seek to locate meetings to facilitate Participant attendance to most effectively accomplish those objectives.

AE will notify all Participants of meetings scheduled by AE at least 30 days prior to the meeting date. This notification may be made in writing, via fax, via email, or by telephone conversation. Under special circumstances, AE may hold a meeting with less than thirty (30) day notice.

AE shall propose the meeting agenda and will strive to provide a written meeting agenda to all Participants at least two weeks prior to a scheduled meeting. Participants may submit comments on the agenda to AE up to one week before the scheduled meeting. AE will address any proposed changes to the agenda and will distribute a final agenda at the meeting. In addition, the agenda may be modified at the beginning of the meeting.

AE and all Participants will endeavor to make available all documents and other information necessary to prepare for a consultation meeting at least two weeks prior to the scheduled meeting. In the alternative, materials can be provided at the meeting.

1.4.4 Documentation

All of the documentation requirements described below apply to substantive communications regarding the licensing of the Project; communications related to procedural matters (e.g., responding to inquiries regarding meeting scheduling) are not subject to the same documentation requirements.

Meeting Summaries

AE will be primarily responsible for providing a written summary of the matters addressed at all meetings involving AE and Participants. A draft meeting summary will be distributed to all meeting attendees within 15 days of the meeting. Any corrections to the draft meeting summary should be submitted to AE within 15 days. AE will finalize the meeting summary within 30 days after receiving corrections. If no corrections are submitted, the meeting summary will become final 30 days after the date of the meeting and will be distributed via e-mail.

Oral Communications

Any oral communication (i.e., telephone conversations) between AE and any Participant regarding any substantive aspect of the Project licensing shall be documented in writing by AE and included in the public reference file, with a copy provided to those participating in the oral communication.

Technical Documents

A variety of technical documents will be produced during the course of licensing consultation, including the PAD, study plans, study reports, and draft and final license applications. Whenever comments are solicited on documents, review periods will be established and communicated to Participants. Review periods will typically be 30 days, unless longer periods are required by FERC regulations (e.g., 90 day comment period on the draft application). Participants will strive to provide comments to AE within the timeframes specified for comment periods. AE will consider adjusting comment periods longer or shorter in order to better utilize available time within the course of pre-filing consultation, without jeopardizing the overall project schedule. Any such adjustments will be made with the concurrence of the Participants.

Written Correspondence

Any written correspondence (including e-mails) regarding the licensing of the Project between AE and Participants will become part of the public reference file. All written correspondence should be sent to AE at the following address:

ARCHON ENERGY 1, INC. (AE)
Attn: Paul Grist and Kevin Ablett
101 E Kennedy Blvd.
Suite 2800
Tampa, Florida 33602

With a copy sent to:
GLOBAL ENVIRONMENTAL PERMITTING, LLC.
Attn: Gulsum Rustemoglu
3914 Murphy Canyon Rd. Suite A164
San Diego, CA 92123

Or by email: paul@archonenergy.com and grustemoglu@gepermit.com.

1.4.5 Distribution of Licensing Documentation

Distribution of licensing documents will be accomplished primarily by email notice. If a Participant has indicated a preference to receive hard-copy mailings, AE will send paper documents through regular mail. A Participant may also request to receive a paper copy of any specific licensing document by contacting Gulsum Rustemoglu at grustemoglu@gepermit.com. Fees in accordance with regulations may apply. Distribution of licensing documents (aside from brief letters, notices, etc.) will include a copy of the distribution list.

1.5 Revisions to the Communications Protocol

This protocol may be revised at any time upon general agreement of AE and the Participants.

1.6 Duration of the Communication Protocol

This Communications Protocol will remain in effect until FERC notices that the License Application is accepted for filing.

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2 Project Location, Facilities, and Operations [§ 5.6 (D)(2)]

2.1 Contact Information of Each Person Authorized to Act as Agent for Application (Exact Name, Business Address, and Phone Number)

The exact name and business address of the Applicant(s) is:

Applicant's Name:	Paul Grist, President
Address:	Archon Energy 1, Inc. 101 E. Kennedy Blvd. Suite 2800 Tampa, Florida 33602
Phone:	403-618-2018
E-mail:	paul@archonenergy.com

The exact name and business address of each person authorized to act as agent for the Applicant(s) in this PAD is:

Name of Agent:	Gulsum Rustemoglu, Environmental Consultant GLOBAL ENVIRONMENTAL PERMITTING, LLC.
Address:	3914 Murphy Canyon Rd. Suite A164 San Diego, CA 92123
Phone:	858-505-0759
Fax:	858-430-2571
E-mail:	grustemoglu@gepermit.com

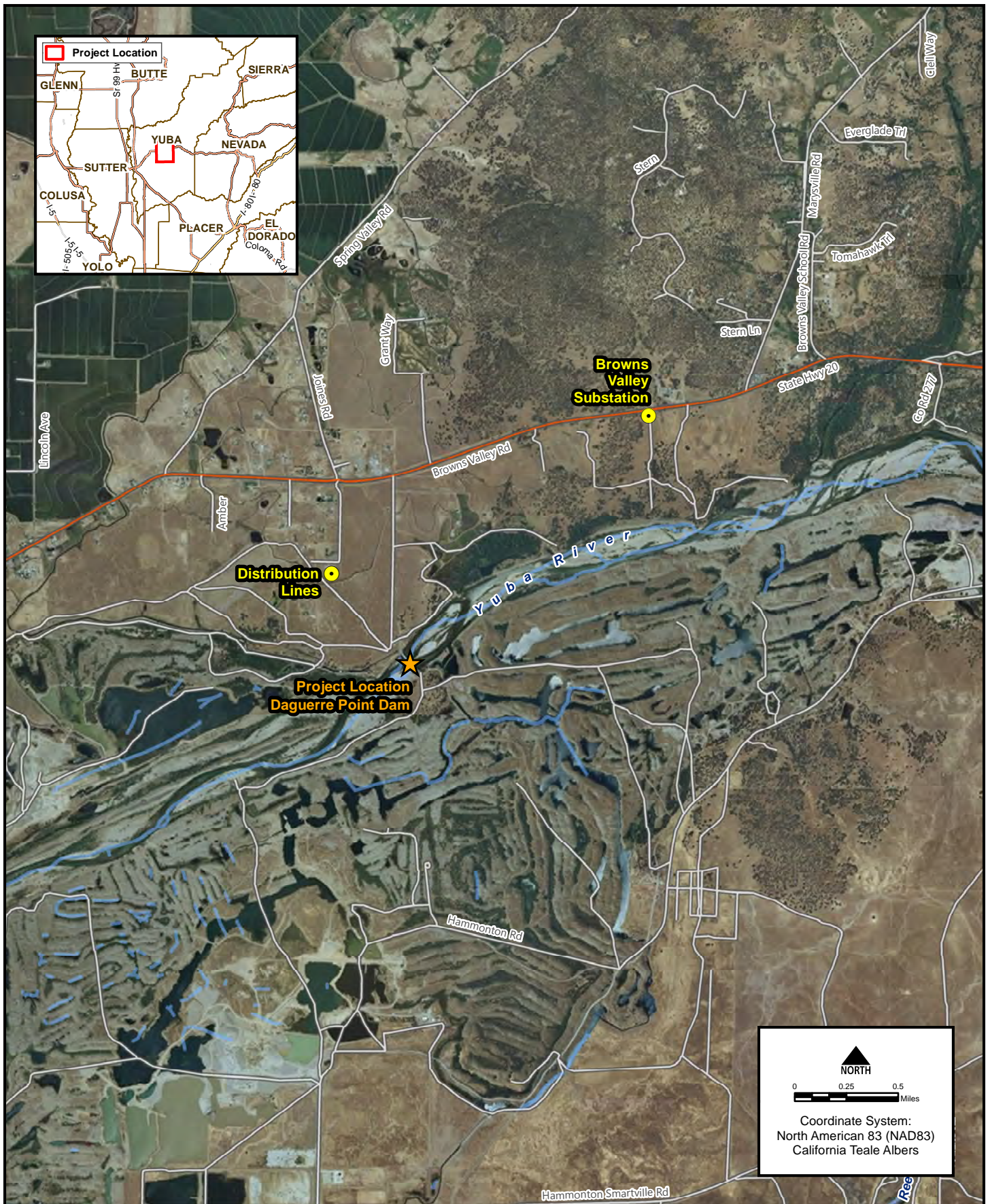
2.2 Maps of Land Use Within Project Boundaries (Township, Range and Section, State, County, River, River Mile, and Closest Town) And, if Applicable, Federal and Tribal Lands, and Location of Proposed Facilities

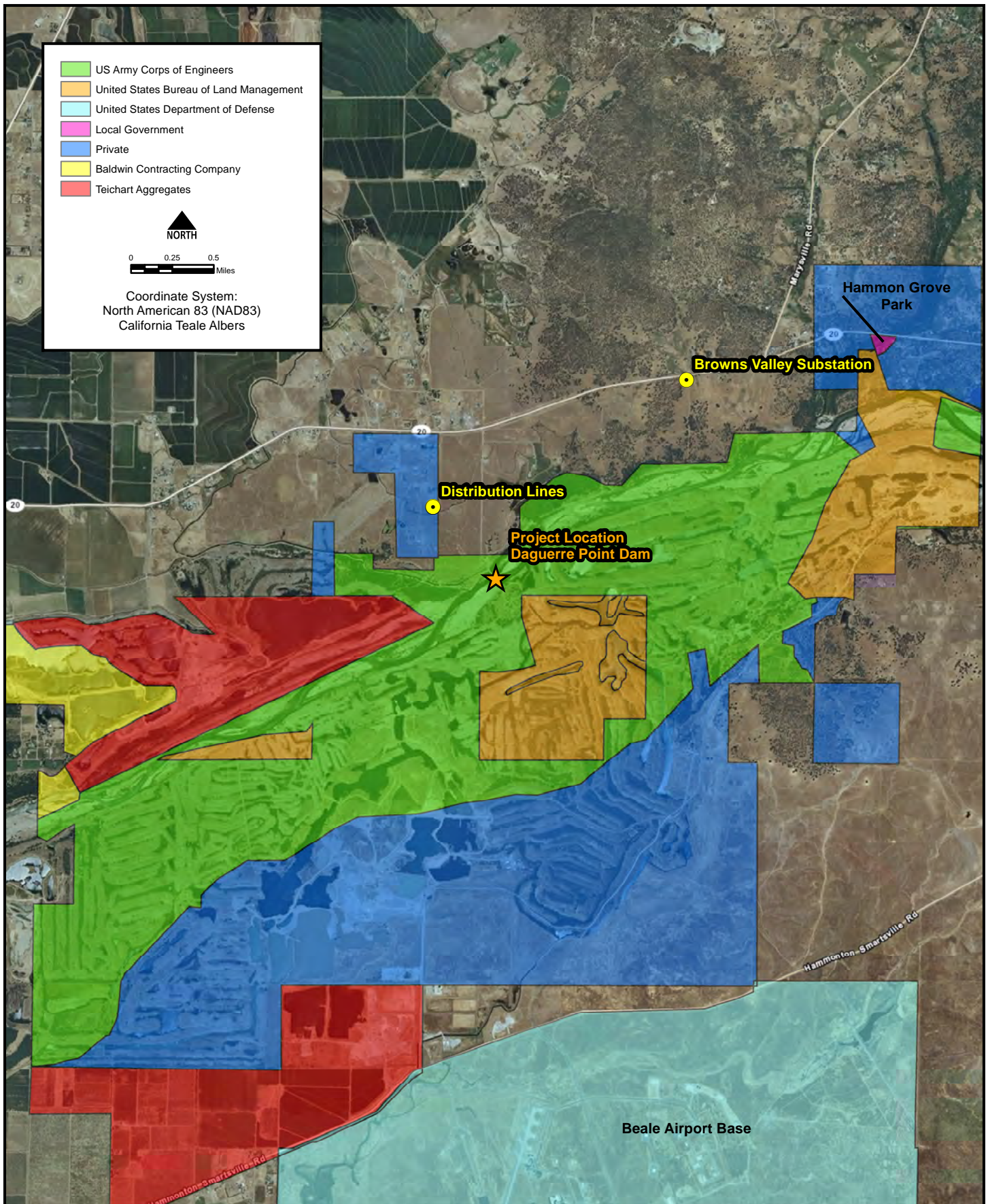
The Project is proposed to be located at the Daguerre Point Dam, which is located in Yuba County, California, approximately eleven miles northeast of the City of Marysville, within the SW ¼ of Section 29, Township 16 N, Range 5 E, MDB&M. The facility is on the Yuba River approximately 11.4 miles upstream of the confluence with the Feather River. The dam and associated diversion facilities are positioned in the proximity of the remnant Yuba River Gold Fields. Marysville Lake is the nearby body of water.

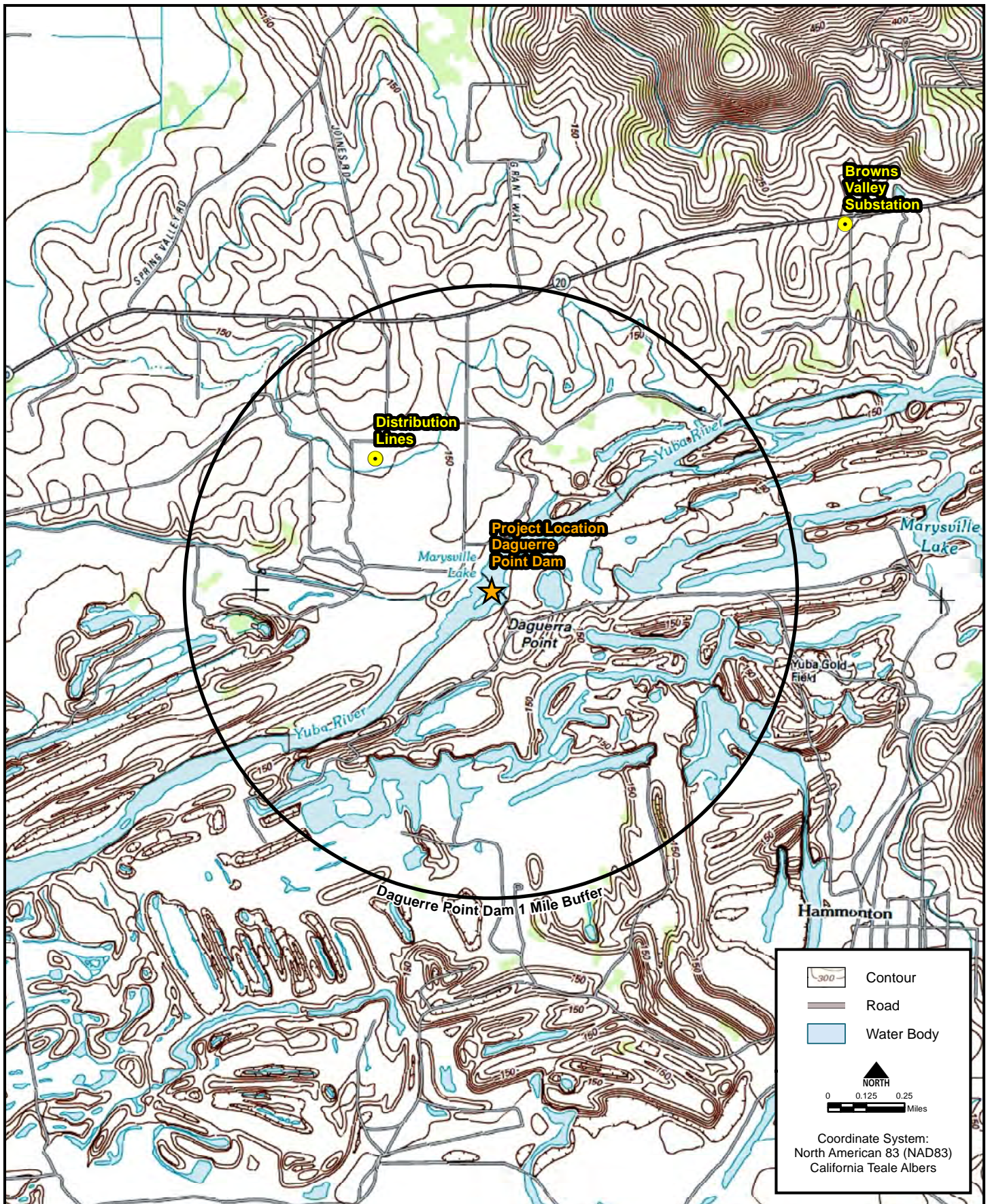
The 24-foot-high, 680 foot wide Daguerre Point Dam is owned by the U.S. Army Corps of Engineers (USACE). The dam was built on the Yuba River in 1906 to prevent mining debris from washing into the lower Rivers. The dam currently provides hydraulic head for upstream diversions. The dam was equipped with two fish ladders in 1937 that Chinook salmon and steelhead have difficulty, under certain flow conditions, locating and navigating. The dam was rebuilt in 1964 following damage from floods.

The Project area is being studied recently and one of the most recent publications is the *Daguerre Point Dam Fish Passage Improvement Project*. The Daguerre Point Dam is a concrete structure with the two fish ladders on the left and right extremities of the dam. The Daguerre Point Dam Fish Passage Improvement Project aims to improve upstream and downstream passage for all life stages of native anadromous fish, while keeping water interests whole and with no increase in downstream flood risks. Several documents related to the Daguerre Point Dam Fish Passage Improvement Project have been completed or are in the process of completion. There is a draft of the [Daguerre Point Dam Fish Passage Improvement Project Alternative Concepts Evaluation](#) (19.5 MB) that was released on September 2003. There is also a stakeholder review draft of the [Analysis of Potential Benefits to Salmon and Steelhead from Improved Fish Passage at Daguerre Point Dam](#) (8.5 MB). In June 2003, ENTRIX, Inc. released a [Fish Passage Improvement Project 2002 Water Resources Study](#) (4.1 MB) for DWR and the USACE. These studies are referenced in the PAD while evaluating proposed Projects' potential impacts.

Figure 2.1 shows the Project Location Map, Figure 2.2 shows the Land Ownership Map, and Figure 2.3 shows the Topography Map.







2.3 Detailed Description of Proposed Facilities

The proposed Project features have been developed based upon existing physical and environmental information and are conceptual in nature. As part of the pre-filing consultation process additional information will be obtained through technical and environmental studies, research and consultation with equipment manufacturers and resource agencies. As new information becomes available, the design features presented below can be expected to be refined and/or modified to accommodate any changed conditions, including constant maintenance of in stream flow requirements. Project features as currently envisioned are described in this section.

Project Boundary

The project boundary will encompass each of the Project features described in this section and presented conceptually in Exhibits 1 and 2. The footprint of the proposed project will consist of a total of 1 acre (approximate intake canal .72 acres, turbine structures .17 acres, and discharge to the riverbank .7 acres). The specific delineation of the proposed Project Boundary, in terms of survey coordinates, will be made after study work has been completed and will be included as part of the License Application.

2.3.1 Composition, Dimensions, and Configuration of Dams, Spillways, Penstocks, Powerhouses, Tailraces, etc. Proposed to be Included as Part of the Project or Connected Directly to It

With the exception of minor infrastructure to deliver power to the local electrical grid, the proposed Project will have limited to no effect on any structures or facilities at Daguerre Point Dam (Photo 2.1). No alteration to flow regimes or water levels will occur. The proposed features of the installation include a diversion canal up-stream from the DPD which follows the South bank of the Yuba River and feeds the turbine structure. After water passes through the turbines it is discharged into another short canal and is returned to its natural course in the Yuba River. Access to the fish ladder and below the dam will be maintained with a public pedestrian bridge (See Exhibits 2.1 and 2.2). According to the USACE, operators of the fish ladders, the capacity is closer to 15 cubic feet per second (“cfs”) to 25 cfs. The majority of proposed fish passage upgrade concepts only require up to 200 cfs.



Photo 2.1 Daguerre Point Dam

The features for the proposed 3-MW Hydropower Project will include the following:

8 Generators: 375kW Asynchronous Generator

480VAC Induction Generator and a frequency of 60 Hz – 1000 RPM

Powerhouse: The powerhouse to house the generator units will be located within the proposed turbine structure, located at the top of the screw turbines. Approximate measurements of the turbine structure will be 115ft by 65ft by 35ft which will enclose the powerhouse.

Intake: The proposed project will have a gated water intake canal located upstream of the dam that will feed the turbines below.

Diversion Structures: The proposed facility involves a simple concrete diversion that will divert a significant portion of the river flows from just upstream of the existing dam into an array of Archimedean screw turbines, before returning 100% of the diverted flow back into the Yuba River immediately downstream of the turbines and existing dam. The diversion will be adjacent to the Daguerre Point Dam and existing fish ladder on the south bank of the river.

Other Features: The operation requires minimal land resources, and consists of a concrete trough diversion channel, that connects to (8) Screw Turbines, each protected by a coarse screen to prevent any oversized debris from entering the array. Each turbine shall also be protected by emergency sluice gates to halt water flow when required. Each turbine is positioned within individual steel troughs within the greater concrete structure.

Low Flow Fish Pass: The proposed installation may include a state of the art low flow baffled fish pass adjacent to the turbine structure. The proposed addition of a new fish pass would serve as a statement of goodwill. Any participation would be coordinated with relevant authorities to assist with current environmental concerns primarily related to fish migration.

Exhibits 2.1 and 2.2 show conceptual layouts distinguishing current Dam structures than the proposed Project feature.



Exhibit 2.1 Conceptual Layout



Exhibit 2.2 Conceptual Layout

2.3.2 Reservoir Normal Maximum Water Surface Area and Elevation and Gross Storage Capacity

The DPDP will not utilize storage capacity for power generation. It will also not require modification to existing navigational facilities and will use existing flows to produce hydroelectric power. The area and capacity of the impoundment will not be affected by the operation of the DPDP. No changes to the operating reservoir pool elevations or downstream river flows are proposed.

2.3.3 Number, Type and Capacities of Turbines and Generators, and Installed (Rated) Capacity of Proposed Turbines or Generators

Turbines: The proposed turbines are classified as Archimedes-style hydrodynamic screw turbines. The preliminary designed capacity is 3 MW based on an average rated optimal intake of 2,120 cfs and a net head of 24 feet and 8 side by side 375 KW turbines. The turbines operate at a consistent rotation speed of 20.2/min (RPM). The turbine length is 54 feet and has a diameter of 13.2 feet. The turbine array structure covers a width of approximately 115 feet. Each hydropower screw turbine has a combined screw & trough weight of 55 tons and is set at an angle of 26 ° for optimal efficiency. The image on the right is a profile shot of the Archimedes screw turbine. Exhibit 2.3 shows a sample turbine image.

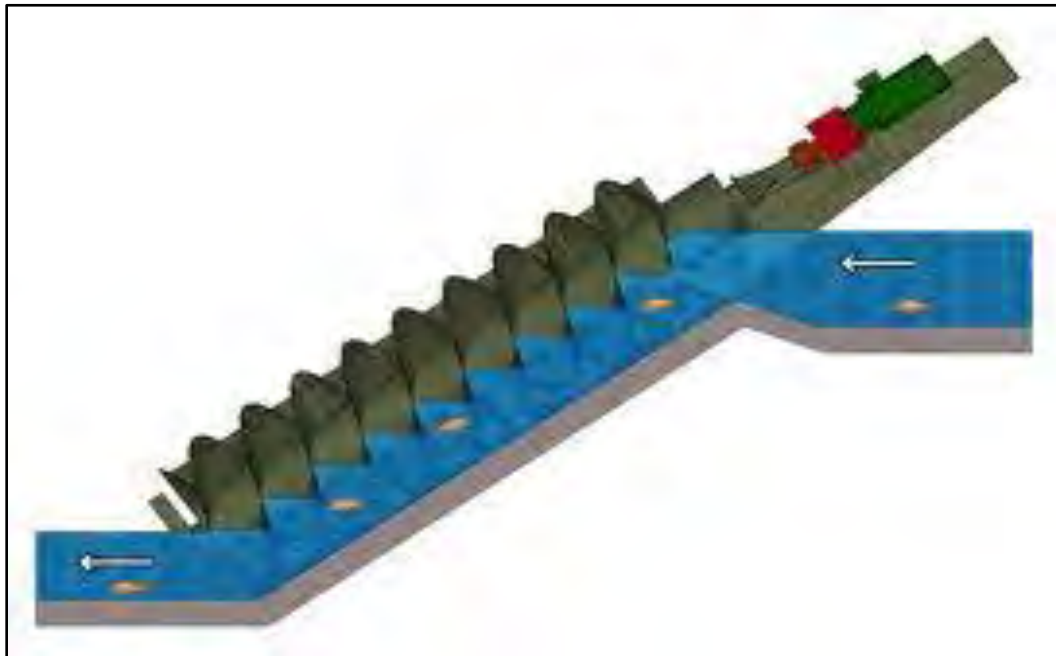
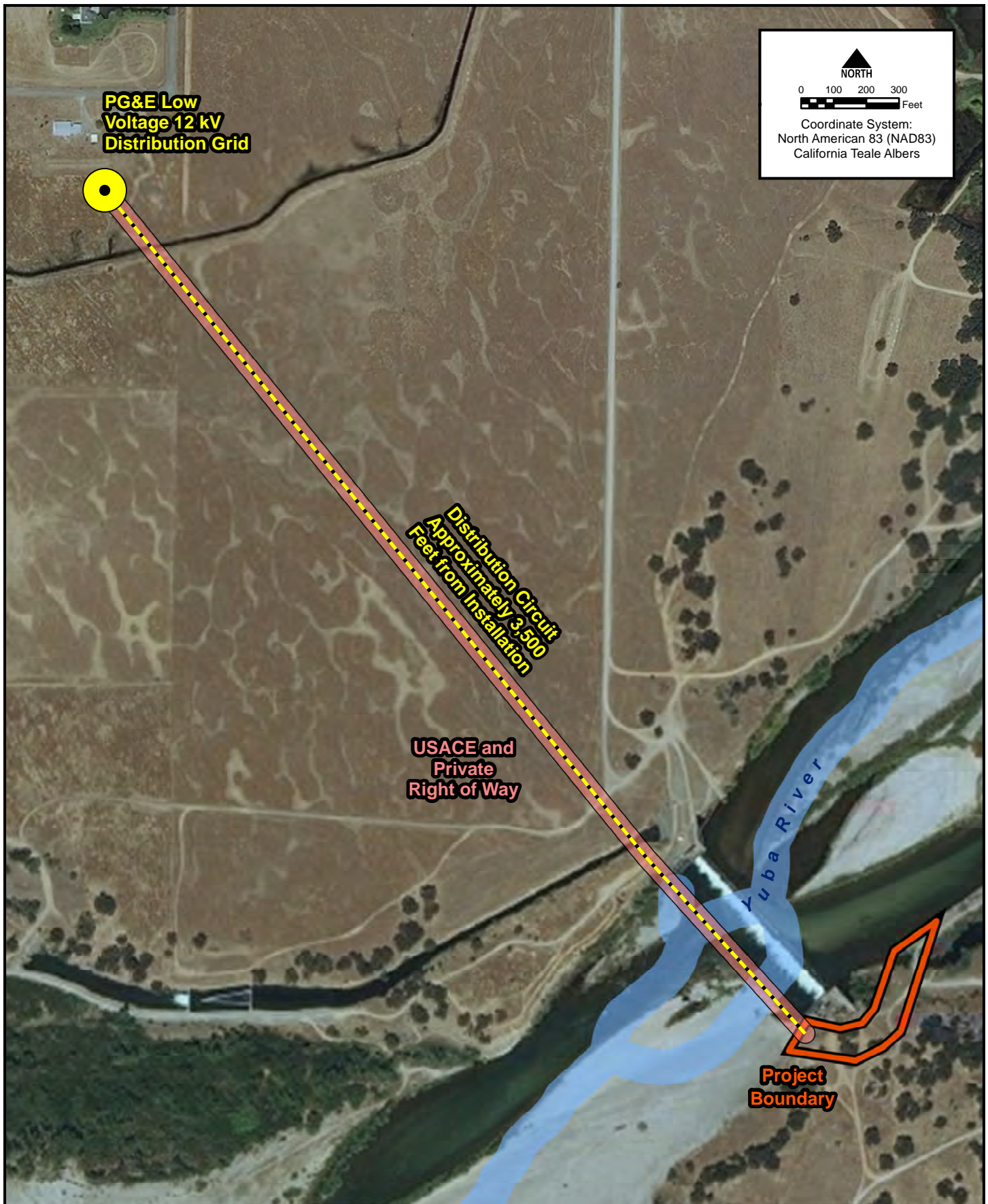


Exhibit 2.3 Turbine Image

Generating Units: The Daguerre Point Dam currently has no generating units.

2.3.4 Number, Length, Voltage, and Interconnections of Any Primary Transmission Lines Proposed to be Included as Part of the Project, Including a Single-Line Diagram Showing the Transfer of Energy from the Project to the Transmission Grid or Point of Use

The project does not propose installation of any new transmission line. The Project will require a distribution circuit that will connect to the Pacific Gas and Electric (PG&E) low voltage 12 kV distribution grid located approximately 3,500 feet to the North of the installation. The line will cross the Yuba River overhead from the South bank to the North bank. Right of way will be required for the distribution line with the USACE and private land owners. Transmission lines will require right of way with private landowners to the North of the installation. Existing access roads will be used to maintain the transmission line corridor. Figure 2.4 illustrates the interconnection layout through the USACE.

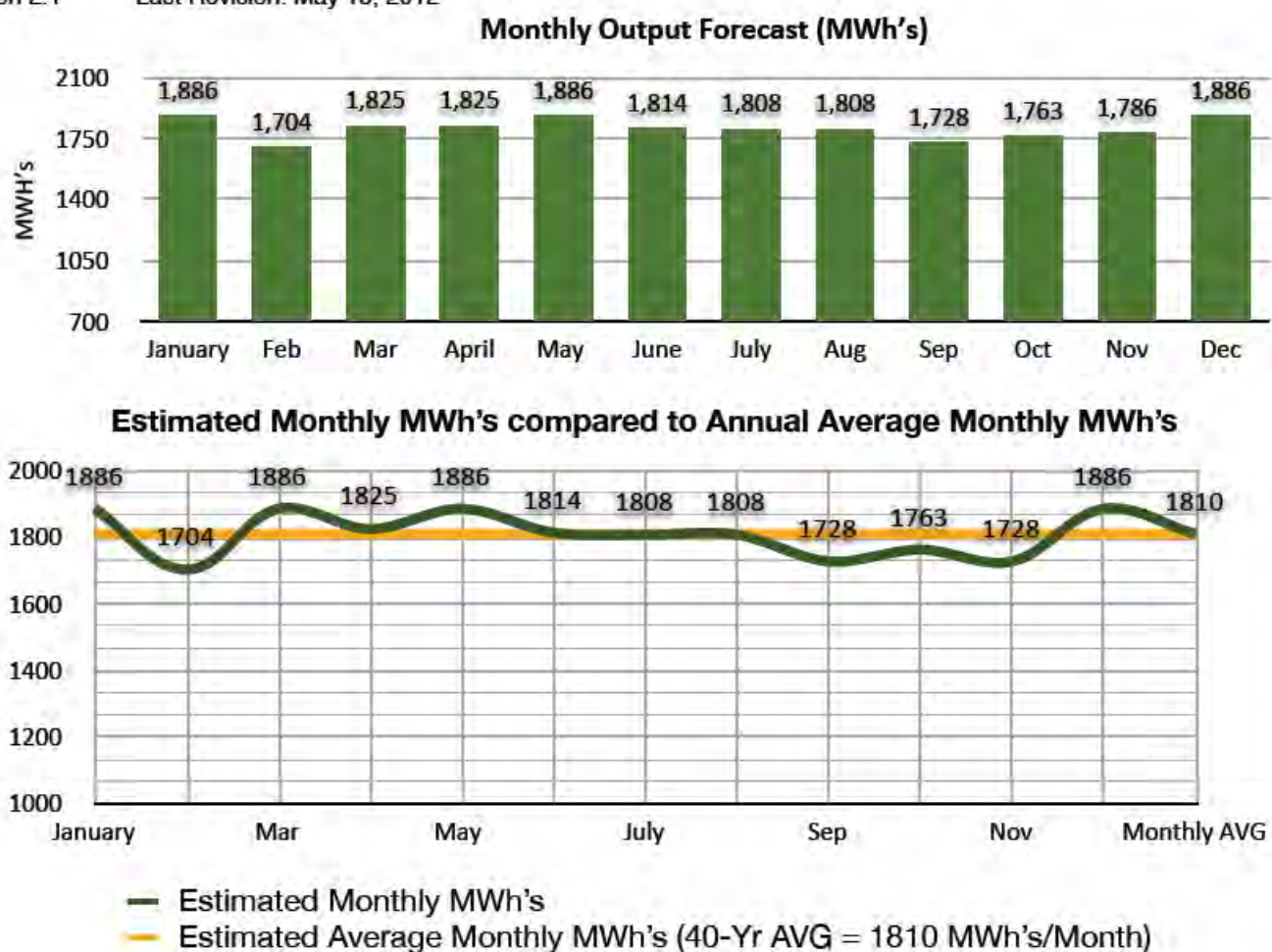


2.3.5 Energy Production (Estimate of Dependable Capacity, Average Annual, and Average Monthly Energy Production)

A mathematical model was developed to depict the daily simulation of energy production for the DPDP by using California Department of Water Resources (CDWR) data, and the average daily flow data recorded at the Marysville (MRY) recording station located downstream from the DPD. The results of the energy model indicate that the project will surpass 21,000 Megawatt-hours (MWh) on an average annual basis. Energy production would be highest in the months of May and December and lowest in February. Chart 2.1 shows the monthly output forecast.

Chart 2.1 Monthly Output Forecast

Version 2.1 Last Revision: May 18, 2012



2.4 Proposed Project Operation, Including Any Daily or Seasonal Ramping Rates, Flushing Flows, Reservoir Operations, and Flood Control Operations

The generating equipment proposed for the DPDP will be fully adjustable and automated to accommodate necessary changes in operating conditions and operate at peak efficiencies over a wide range of flows, which will optimize and maximize the renewable energy production from this site. Development of the DPDP will not modify or interfere with the current operation of the existing operations. Project operation will be based solely on the flow release requirements mandated by authorities.

Project Flow: The average annual historic flow rate for the Yuba River below the Daguerre Point Dam is 2,400 cfs. The project is planned to operate year round however extreme low flow rates in the Yuba River may cause the operation to halt turbine activity. The estimated annual average capacity factor is 80% which is phenomenally good when compared to just about any other form of renewable power. The individual turbines have a maximum hydraulic capacity of 282 cfs each or 2,120 cfs combined. The lowest recorded flow rate from 1972 to 2011 was approximately 71 cfs in 1979; the maximum flow was over 15,100 cfs in 1983. The estimated minimum hydraulic capacity of the turbine array is approximately 248 cfs respectively. Chart 2.2 in the following page shows Yuba River Flow Statistics.

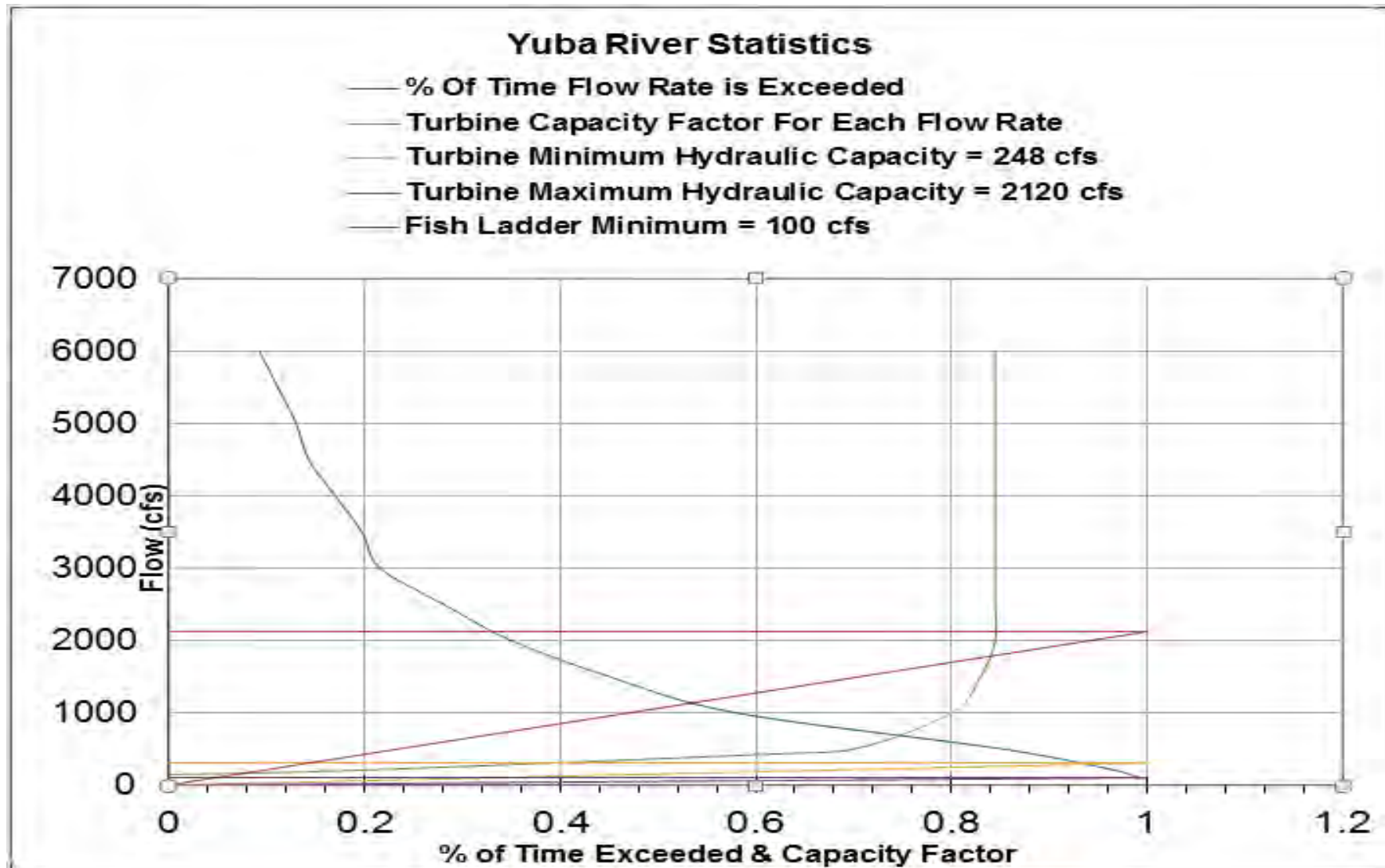
2.5 A Description of Any New Facilities or Components to be Constructed, Plans for Future Development or Rehabilitation of the Project, and Changes in Project Operation

The project has no impoundment area. However, the gated diversion canal will act as a short penstock. No new damming or changes to upstream water levels are anticipated.

2.6 Emergency and Normal Operation

As will be required in the license, an operating plan will be arranged with the USACE to ensure that operation of the existing dam is not altered in any unacceptable way. This plan will include emergency operating procedures. The Applicant will work with the USACE personnel in developing a comprehensive emergency operation plan. There will always be excess water flow. Current fish ladders will always be in full capacity and in case of low water flow, the Project operation will be temporarily shut down. There will be no interference between power operation and dam operation.

Chart 2.2 Yuba River Flow Statistics



2.7 References

- Hydroelectric Generation. 2012. Yuba County Water Agency. Retrieved from <http://www.ycwa.com/about/hydroelectric>
- River Dart: Fish Monitoring and Live Fish Trials.” Ritz Atro Archimedes Screw Turbine. 2007. FishTek Ltd.
- Yuba County, CA. 2012. City-Data.com. Retrieved from http://www.city-data.com/county/Yuba_County-CA.html.

3 Existing Environment and Resource Impacts [§ 5.6 (D)(3)(I)]

While the Project presents a minimal footprint and no modifications to water levels or flow regimes, there is a potential for limited, short term Project installation impacts. All of the potential impacts are mitigable by utilizing proper and regulatory compliance measures. Accordingly, the Applicant has reviewed available information related to potentially affected resources, as required by FERC. The following sections provide a discussion of the existing environmental, cultural, and socioeconomic resources of the project vicinity. The “project vicinity” is considered to be the general geographic area in which the project is located for the purposes of establishing an environmental baseline within licensing documents. For this PAD, the immediate project vicinity has been assumed to be a radius of 1 mile surrounding the Project. Each resource section discusses potential Project effects and proposed protection, mitigation, and enchantment measures.

The resources that will not be significantly affected based on current information are:

- Geology
- Wildlife
- Wetland, riparian and littoral habitat
- Known occurrences of rare, threatened and endangered species
- Recreation
- Land Use
- Cultural resources
- Tribal resources

Resources that will potentially benefit if this project is implemented are:

- Increase water quantity flowing in river
- Socio-economics

Resources that could be adversely affected if appropriate measures are not incorporated into the project plans and operations are:

- Soil (erosion during construction)
- Water quality (dissolved oxygen level). Proposed turbines improve the water quality in deeper waters by oxygenation.

- Fish and aquatic resources
- Aesthetic resources

Resource area existing environmental conditions and potential impacts are described in this section of the PAD. Most of the identified issues can be addressed through consultation with resource agencies and other parties. Some issues will require site-specific studies or further information gathering. The issues that can be addressed through consultation are:

- Appropriate permitting and controls to mitigate soil erosion and sedimentation need to be identified (typically done through the construction permitting process)
- The design of the proposed fish passage needs to be specified.
- The design of the proposed pedestrian bridge needs to be specified.
- The absence of wetlands in the project area needs to be confirmed.
- Tribal resources consultation needs to be completed.

3.1 Geology, Topography, and Soils [§ 5.6 (D)(3)(II)]

3.1.1 Description of Geological Features, Including Bedrock Lithology, Stratigraphy, Structural Features, Glacial Features, Unconsolidated Deposits, and Mineral Resources

The proposed Project is located within the City of Marysville, in the County of Yuba. The Project Region geology is a product of many complex interactions between both large-scale and small-scale processes. These processes include both world-scale plate tectonics, where continents are periodically created and pulled apart, and smaller scale local processes, such as erosion and sedimentation, which constantly change the landscape. The Sierra Nevada physiographic province is a product of all these processes, and the geology in the Project Region exhibits many of these influences (Preliminary Information Project, 2009). A complete list of rock type and percentages can be found below in Table 3.1. See Figure 3.1 for an illustration of region soils.

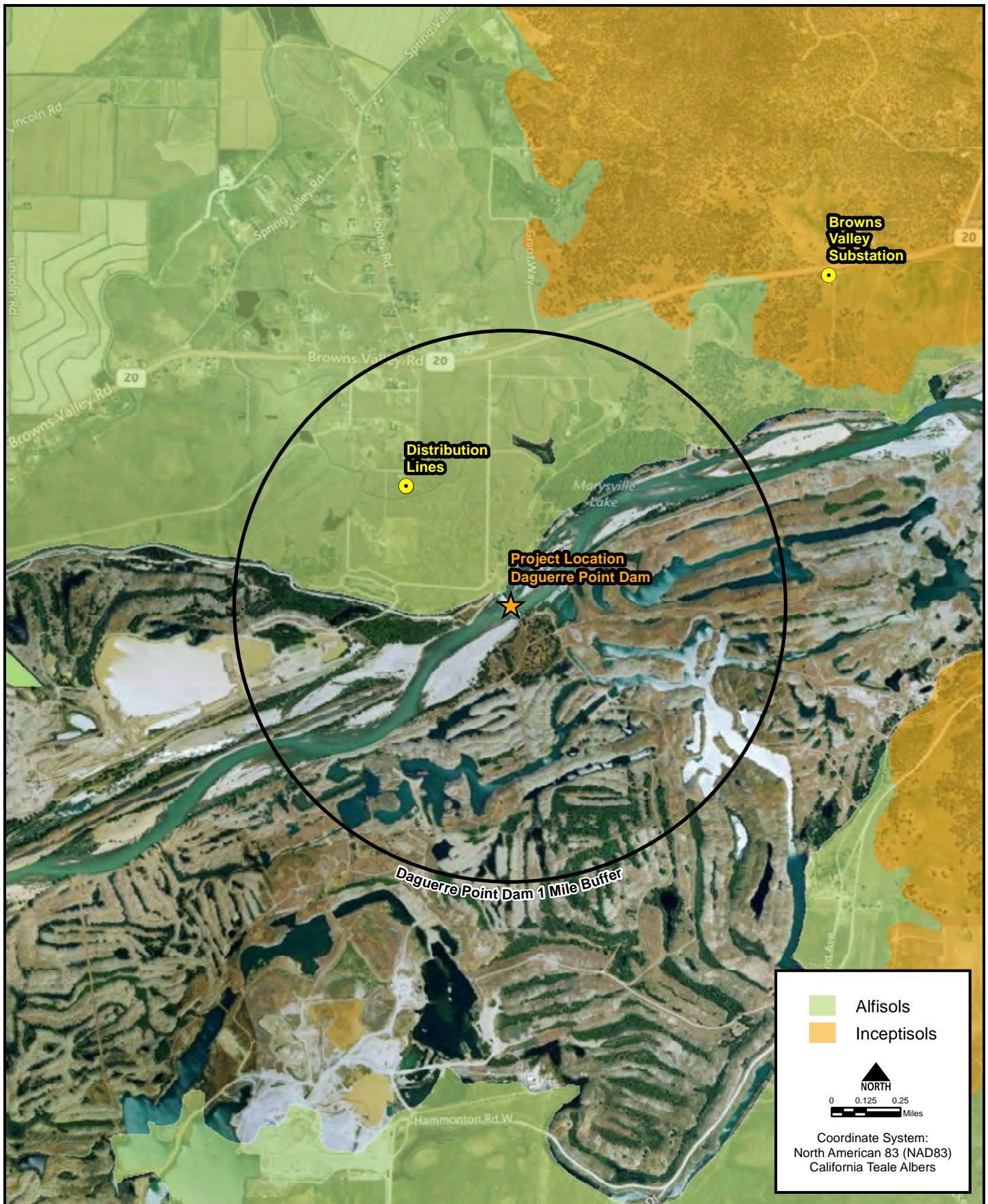
The topography of Yuba County varies from mountains in the Sierra Nevada, in the eastern portion of the county, to rolling foothills to the flat valley floor of the floodplains of the Yuba and Feather Rivers. The relevant geologic history of the Project Region can be summarized by describing its development for the period spanning the mid-Paleozoic (i.e., approximately 300-400 million years ago, or Mya) to the present day. The bedrock geology in the Project Region is composed of Paleozoic metasediments and metavolcanics (i.e., undifferentiated), Paleozoic and Mesozoic granitics (i.e., Valley Pluton, Cascade Pluton, Yuba Rivers Pluton), and Mesozoic ophiolite (i.e., Smartville Complex) (Preliminary Information Project, 2009).

Table 3.1**Description of Generalized Geologic Rock Types in the Project Vicinity**

Rock Type	Area (Acres)	Percent (%)	Description	Age
Granodiorite	62,967	27	granitic rocks, mostly granodiorite	Permian to Tertiary
Mafic Volcanic	63,554	27	Metavolcanic rock	Jurassic
Gabbro	25,198	11	Part of ophiolite complex	Triassic to Cretaceous
Alluvium	22,050	10	Terraces, alluvium, riverbanks	Pliocene to Holocene
Argillite	21,181	9	Weakly manipulated metasedimentary rock	Permian to Jurassic
Intermediate Volcanic Rock	18,772	8	Metavolcanic rock	Permian to Jurassic
Andesite	4,852	2	Lava flow/pyroclastic flow	Tertiary
Peridotite	2,439	1	Ultramafic rock associated with Big Bend Wolf Creek	Late Proterozoic
Sandstone	2,315	1	Ancestral Yuba River deposits	Eocene to Pleistocene
Slate	2,484	1	Undifferentiated metasedimentary	Triassic to late Cretaceous
Schist	3,235	1	Metasedimentary schist	Early Proterozoic
Water	3,814	2	N/A	N/A
Total	232,861	100%		

Gold mining is the dominant mineral resource activity, the dominant influence on how the Yuba River looks today, and the primary reason people settled in the area. Many abandoned and active mines are scattered throughout the Yuba River system, and damage from historic hydraulic mining for gold is visible throughout the river corridor. Mercury was imported from the Coast Range and used for gold extraction. Mercury remains sequestered in sediments within the Project Region and continues to be a potential source of mercury to Yuba River surface water. Erosion of exposed mining material and transport of it to local river channels are the most likely indirect effects of mining operations, with sediment transport potentially affecting stream channel morphology.

Most of the entire western belt is geologically permissive for gold, chromium (i.e., chromite ore), copper, and manganese. “Geologically permissive” is defined by the environment of formation, including estimates of undiscovered resources to a depth of 0.6 mile, though not all deposits are known. About a third of the belt has one or more of these metals. Also included are barite, molybdenite, tungsten, and chrysotile (i.e., white asbestos) which are found in veins in serpentinized ultramafic rocks near margins of serpentinite bodies.



Mineral Resources

A portion of Yuba County falls within the Mineral Resources Zone described in Surface Mining and Reclamation Act (SMARA) Mineral Land Classification Special Report 132 (Habel 1988). These classification projects assisted the State Mining and Geology Board (SMGB) in adopting and designating lands needed for their mineral content. The classification system is intended to ensure the County's consideration of statewide or regionally significant mineral deposits in planning and development administration. These mineral designations are intended to prevent incompatible land use development on areas determined to have significant mineral resource deposits.

Permitted uses within a mineral resource zone include mining, uses that support mining such as smelting and storage of materials, or uses that will not hinder future mining such as grazing, agriculture, large-lot rural development, recreation, and open space. In order to maintain the future viability of mineral resource extraction, Yuba County's ordinance code chapter 11.55 includes a disclosure requirement at property transfer or issuance of a building permit. This disclosure statement identifies the possibility of disturbance associated with mining activities. The most important zone with respect to the presence of resources is Mineral Resource Zone 2 (MRZ-2), which is defined as "areas where adequate information indicates that significant mineral (aggregate) deposits are present or where it is judged that there is a high likelihood for their presence." This zone is applied to known mineral deposits or where well-developed lines of reasoning, based on economic geologic principles and adequate data, demonstrate that the likelihood for occurrence of significant mineral deposits is high. MRZ-3 zones suggest the potential for aggregate deposits. This zone is less definitive than MRZ-2 and is defined as "areas containing mineral deposits the significance of which cannot be evaluated from available data."

Known mineral resource zones in Yuba County consist primarily of an area along the Yuba River, extending from Marysville on the west to approximately Smartville on the east. The approximate boundary of the area defined as MRZ-2 is illustrated in Exhibit GS-5. Sand and gravel resources in MRZ-2 along the Yuba River are made up of alluvial deposits from Tertiary to recent times, deposited as the Yuba River carried large volumes of sand, gravel, and silt into the Central Valley. Additional deposits were the result of upstream hydraulic mining.

Other deposits classified as MRZ-2 include Jurassic metavolcanic rocks (used primarily for riprap), Tertiary stream channel deposits (used primarily for base), and the Yuba River dredge field of recent deposits, mined both for aggregate materials and gold. A complete list of mineral resources can be seen below in Table 3.2.

Table 3.2**Available Mineral Resources in Lower Yuba**

Mine Name	Mineral Resource Produced
Ore No. 1 Plant	Sand and Gravel
Parks Bar Quarry	Stone—Crushed and Broken
Pearson Quarry	Stone—Crushed and Broken
R-5 Gold Field Pit And Mill	Sand and Gravel
River Rock Sand & Gravel	Sand and Gravel
Simpson Lane Pit	Sand and Gravel
Speckert Pit	Sand and Gravel
Sperbeck Quarry	Stone—Crushed and Broken
Wheatland Pit	Clay—General
Willow Creek Pit	Sand and Gravel
Yuba Consolidated Gold Fields	Gold
Yuba River Pit	Sand and Gravel
Yuba Silica	Silica

Source: USGS 2005

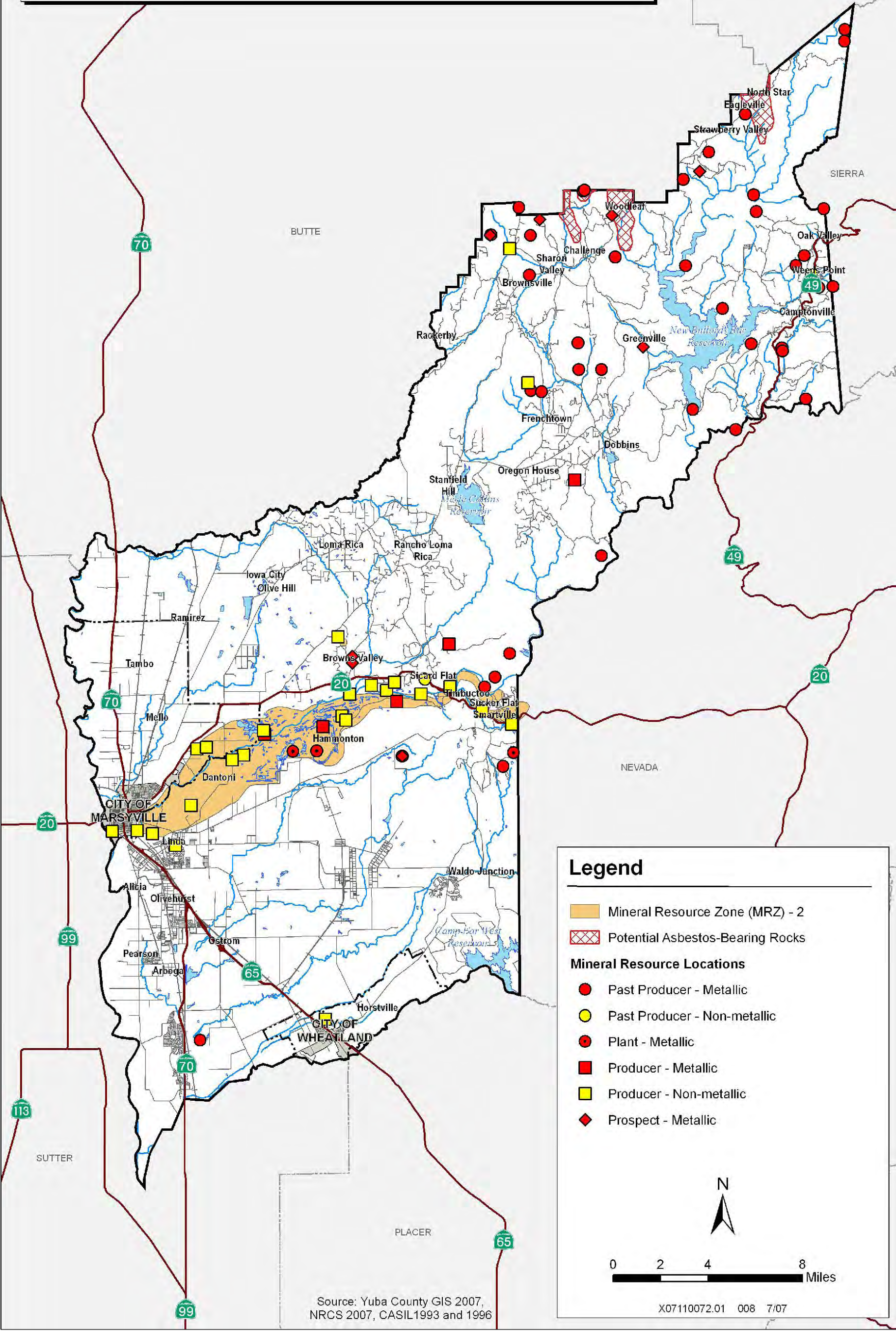
Gold, Silver, and Silica

As shown in Exhibit GS-5, several mines are located in Yuba County that extract gold (one mine also extracts silver). Mines that produce gold include Browns Valley-Smartville, Brownsville-Challenge-Dobbins, Hammonton-Yuba River (gold and silver), and Yuba Consolidated Gold Fields. Mines producing gold (and silver) ore are located along the Yuba River (including dredge tailings from historic hydraulic mining) and in the Dobbins area. Past producers of gold and silver are located throughout the Sierra Nevada in the eastern portion of the county. One producer of silica, Yuba Silica, is also present in the eastern portion of the county.



YUBA COUNTY GENERAL PLAN

Exhibit GS-5: Mineral Resource Locations



3.1.2 Description of Soil Types, Occurrence, Physical and Chemical Characteristics, Erodability, and Potential for Mass Soil Movement, and Soil Characteristics

Soils are strongly influenced by underlying bedrock. Soil Orders in the Project Vicinity include Alfisols, Andisols, Entisols, Inceptisols, Mollisols, and Ultisols in combination with mesic or frigid soil temperature regimes and zeric, udic, aridic, or aquic soil moisture regimes, with a full list of soils in Table 3.3.

Table 3.3 Soil Association in the Project Vicinity

Soil No.	Soil Association	Acres	% of Total
s25	Josephine-Holland-Aiken	6,975	3
s620	McCarthy-Cohasset-Aiken	34,010	2
s1109	McCarthy-Ledmount	4,858	2
s844	Musick-Holland-Hoda-Chaix	41,669	18
s873	Orose-Mildred-Flanly	16,580	7
s821	Redding-Corning	1,966	1
s845	Rock outcrop-Mariposa-Jocal	32,869	14
s825	San Joaquin	2,962	1
s837	Secca-Rock outcrop-Boomer	134	trace
s841	Sierra-Rock outcrop-Auberry-Ahwahnee	13419	6
s848	Sites-Rock outcrop-Boomer	9,225	4
s840	Sobrante-Rock outcrop-Auburn	38,755	17
s855	Sycamore-Shanghai-Nueva-Columbia	9,963	4
s870	Tisdale-Kilaga-Conejo	16	trace
s528	Wapi-Holland-Chaix-Arrastre	1,975	1
s8369	Water	2,401	1
s523	Weitchpec-Rock outcrop-Ishi Pishi-Ipish-Grell-Beaughton	302	trace
s874	Woodleaf-Surnuf-Sites-Mariposa	37,837	16
s822	Xerorthents-Xerofluvents	7,546	3
Total		2,328,601	100%

Hill slopes in the Project region are generally less than 50 percent. The exceptions are within the inner gorges where channels have cut deeply into the underlying parent material. In the Project region, hillslope erosion rates are low compared to more rapidly eroding landscapes such as the Pacific Northwest. The Sierra Nevada mountain block continues to uplift, and the rate of down cutting and erosion depends in large part on the rate of tectonic uplift. In the upper Yuba River basin, hillslope sediment sources indicate low hillslope erosion rates and 95 percent of the watershed has negligible to moderate hillslope erosion potential (Curtis et al. 2005b). Historic mining sediment remains the dominant sediment source; more recent modern 20th Century hydraulic mining sediment constitutes less than 2 percent of the total volume, with logging, road construction, and other sources of increasing importance in the basin (James 1988).

Faults

Yuba County is located within an area of California with relatively low seismic activity and is not located within a highly active fault zone. Seismic activity may result in geologic and seismic hazards including seismically induced fault displacement and rupture, ground shaking, liquefaction, lateral spreading, landslides and avalanches, and structural hazards. Exhibit GS-6 shows the location of known faults in the county. The county's fault systems and associated seismic hazards are described below.

Alquist-Priolo Earthquake Fault Zoning Act of 1972

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. The purpose of the act was to prevent construction of buildings used for human occupancy on the surface trace of active faults. There are no Alquist-Priolo Earthquake Fault Zones Yuba County (CDMG 2007a).

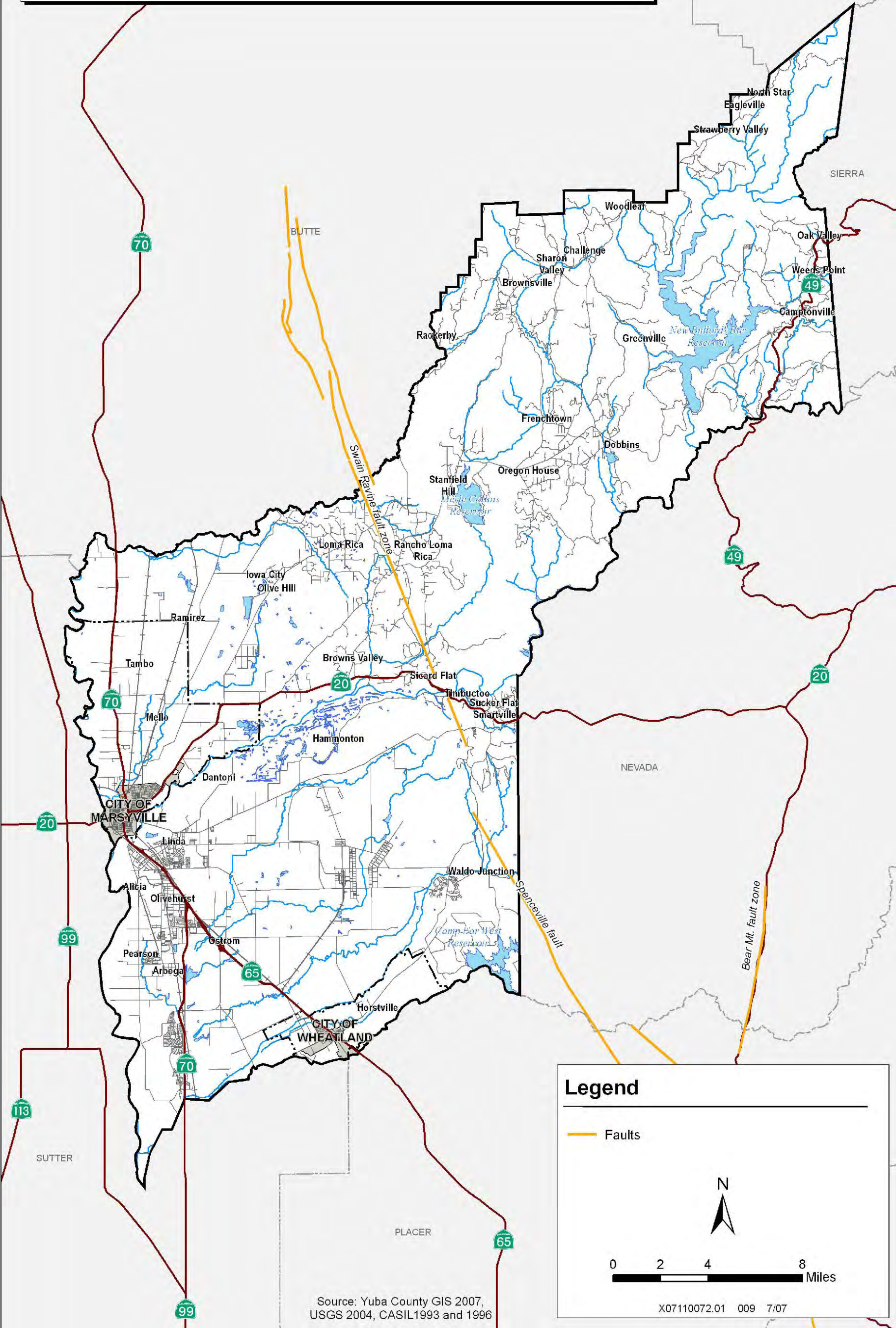
Faults in Yuba County include primarily inactive faults of the Foothills Fault System, running south-southeastward across the central portion of the county near Loma Rica, Browns Valley, and Smartville. Faults include the Prairie Creek Fault Zone, the Spenceville Fault, and the Swain Ravine Fault. Known fault traces are shown on Exhibit GS-6.

According to the Probabilistic Seismic Hazard Assessment for the State of California (CDMG 1996), Yuba County is not believed to have experienced earthquake-induced ground shaking of MMI VII or greater (the range of damage to buildings) between 1800 and 1996. Several faults that have experienced displacement within the past 10,000 years are located within a 60-mile radius of Yuba County (CDMG 1994). Displacement has occurred on three faults during recorded time—the Cleveland Hill Fault in south Butte County (near Oroville Dam) in 1975, the Dog Valley Fault northeast of Truckee in 1966, and the Warm Springs Valley Fault between Doyle and Calneva in 1950. Other faults with movement during the Holocene (less than 10,000 years ago) include the Dunnigan Hills Fault between Dunnigan and Zamora, the Hunting Creek Fault (north of Lake Berryessa), faults on the south end of Clear Lake, the Indian Valley Fault southeast of Lake Almanor, and the North Tahoe Fault in Lake Tahoe.



YUBA COUNTY GENERAL PLAN

Exhibit GS-6: Fault Traces



Potential Seismic Hazards

Seismic activity along fault systems poses substantial hazards to property and human health and safety. Types of hazards that are commonly associated with seismic activity include ground shaking, fault rupture, liquefaction, lateral spreading, landslides/ avalanches, and structural hazards. Proposed project's temporary construction period (approximately 3 months) does not create potential seismic hazards in the area.

Erosion Hazards

A number of soils within Yuba County are considered to have high potential for erosion. Highly erosive soils can damage roads, bridges, buildings, and other structures. National Resources Conservation Service (NRCS) soil erosivity is based on slope and on soil erodibility factors. Soil loss is caused by sheet or rill erosion in areas where 50 to 75% of the surface has been exposed by logging, grazing, mining or other kinds of disturbance (USDA 2004). Exhibit GS-2 shows erosion hazards in Yuba County by NRCS erosion hazard ratings. Erosion hazards of disturbed soil are described as slight, moderate, severe, or very severe:

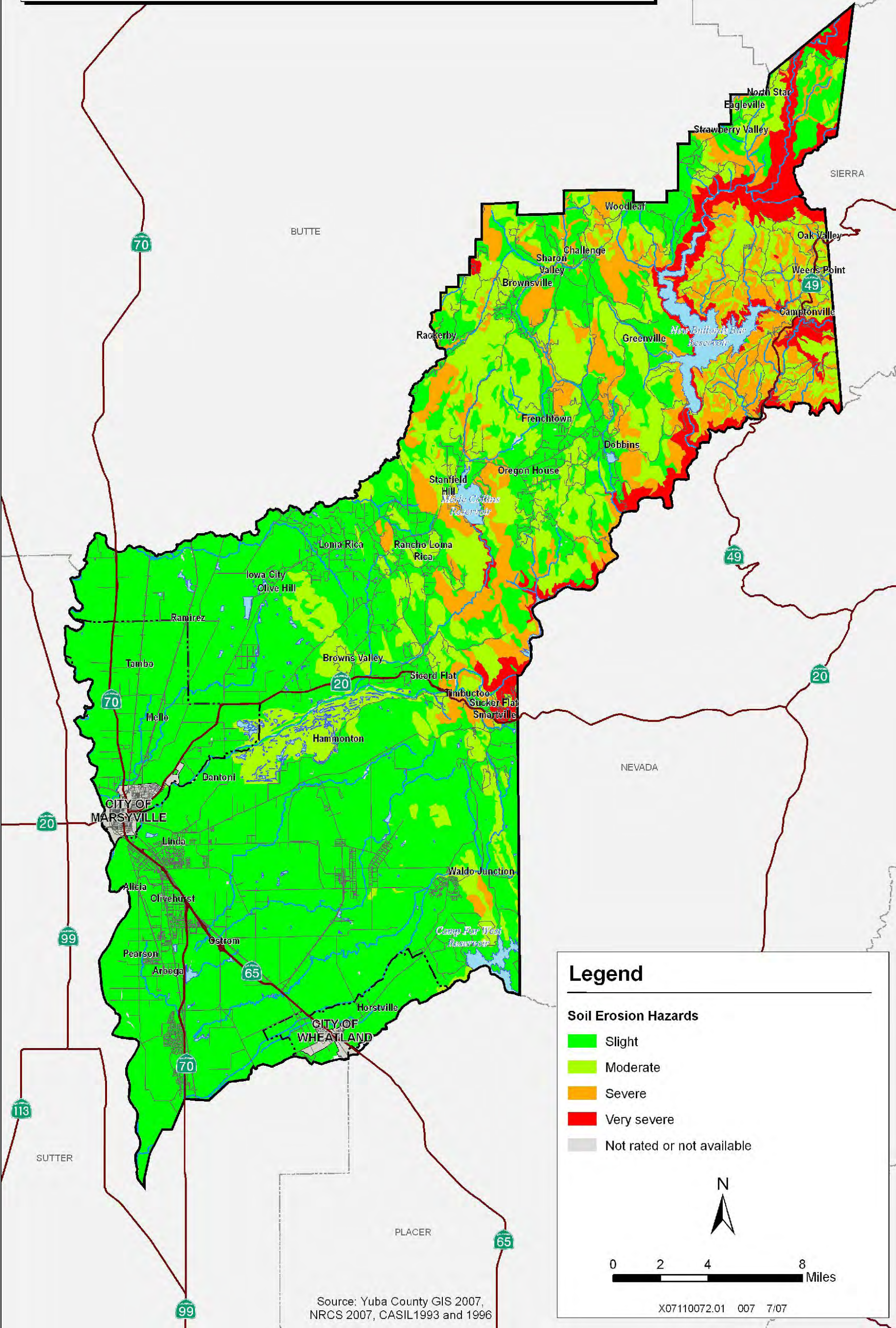
- Slight: Erosion is unlikely under ordinary climatic conditions.
- Moderate: Some erosion is likely and erosion control measures may be needed.
- Severe: Erosion is very likely and erosion control measures such as revegetation of bare areas may be needed.
- Very severe: Significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion control measures are costly and generally impractical.

As shown in Exhibit GS-2, areas that have erosion hazards with moderate to very severe potential are located in the foothill and mountain areas in the central and eastern part of the county. Areas with the most severe erosion hazards include the Yuba River and North Yuba River valleys upstream from Smartville. While the proposed project will not create erosion hazards, various voluntary erosion control measures utilizing current Best Management Practices (BMPs) will be implemented to ensure that these impacts are minimized and continuous water quality monitoring will occur during construction to monitor compliance with the State of California's water quality standards. These plans and proposed actions will undergo extensive review by the appropriate resource agencies and by the FERC to ensure that they provide adequate protection for both geological resources and water quality.



YUBA COUNTY GENERAL PLAN

Exhibit GS-2: Soil Erosion Hazards



3.1.3 Description of Reservoir Shorelines and Stream Banks, Including Steepness, Composition (Bedrock and Unconsolidated Deposits), Vegetative Cover, and Existing Erosion, Mass Soil Movement, Slumping, or Other Forms of Instability, Including Identification of Project Facilities or Operations that are Known to or May Cause these Conditions

In Yuba County, unstable soils are most likely in more mountainous areas and areas with steep topography or along rivers and streams.

Waterway 13

The Yuba Goldfields, consisting of more than 8,000 acres, are located along the Yuba River near Daguerre Point Dam. As a result of the high permeability of the Goldfields' rocky soil, water from the Yuba River freely migrates into and through the Goldfields, forming interconnected ponds and canals throughout the undulating terrain. Generally, water from the Yuba River enters the Goldfield area from upstream of Daguerre Point Dam, then migrates down-gradient through the Goldfields. A portion of this migrating water eventually returns to the Yuba River approximately 1 mile downstream of Daguerre Point Dam via an outlet canal, referred to as Waterway 13. According to the CDWR, this outlet canal helps to drain water out of the Goldfields to the Yuba River, which reduces the impact of high water levels on current mining and aggregate operations (DWR 1999).

3.1.4 Potential Adverse Effects and Issues

Operation and construction of the Project could potentially cause limited erosion during the temporary construction period. Material will need to be excavated to place the powerhouse and intake canal at the appropriate elevation. The Applicant will develop plans to address erosion associated with project construction in a comprehensive Erosion and Sedimentation Control Plan. This plan will be developed in response to subsequent, more detailed project designs, and completed in a cooperative manner with the USACE and the appropriate resource agencies. The Soil Erosion Control Plan will be filed with the FERC as part of the preliminary licensing proposal. These plans and proposed actions will undergo extensive review by resource agencies and the FERC to ensure that they provide adequate protection for geological resources, water quality downstream of the project and wetlands adjacent to the proposed project site and to the existing fish ladders.

3.1.5 Proposed Mitigation and Enhancement Measures

The project will utilize existing facilities as much as possible and implement current Best Management Practices (BMPs) to control sedimentation and prevent soil erosion. California state law and the Federal Clean Water Act both require National Pollutant Discharge Elimination System (NPDES) permits for

construction-related activities. As the project moves forward, the Applicant will work with the Regional Water Quality Control Board (RWQCB) to establish a Soil Erosion Control Plan during the 401 Water Quality certification process to monitor each stage of the project and ensure compliance with applicable water quality standards.

3.1.6 References

- Geology and Soils: General Plan Update Background Report. (2008). Yuba County General Plan. Retrieved from <http://www.yubavision2030.org/GPU%20-%20DOCUMENTS/Background%20Reports/Background%20Reports/Geology%20and%20Soils.pdf>.
- Preliminary Information Package: Yuba River Development Project. (2009). Yuba County Water Agency. Retrieved from http://www.ycwarelicensing.com/Relicensing%20Documents/Relicensing%20Documents%2001%20-%20Preliminary%20Information%20Package/7_01%20-%20Geology%20and%20Soils.pdf.
- Draft 2030 General Plan EIR, Yuba County, prepared by AECOM
[http://www.yubavision2030.org/DEIR/4\[1\].6_Geology.pdf](http://www.yubavision2030.org/DEIR/4[1].6_Geology.pdf)

3.2 Water Resources (Quality and Quantity) [§ 5.6 (D)(3)(III)]

The RWQCB regulates State water quality standards in Yuba County. Beneficial uses and water quality objectives for surface water and groundwater resources in the area are established in the water quality control plans (basin plans) of each RWQCB, as mandated by the State Porter- Cologne Act and the CWA. The RWQCBs also implement CWA Section 303(d) total maximum daily load (TMDL) process, which consists of identifying candidate water bodies where water quality is impaired by the presence of pollutants. The TMDL process is implemented to determine the assimilative capacity of the water body for the pollutants of concern and to establish equitable allocation of allowable pollutant loading within the watershed. Section 401 of the CWA requires an applicant pursuing a federal permit to conduct any activity that may result in a discharge of a pollutant to obtain a water quality certification (or waiver) from the applicable RWQCB. The RWQCBs primarily implement basin plan policies through issuing waste discharge requirements for waste discharges to land and water. The RWQCBs are also responsible for administering the NPDES permit program, which is designed to manage and monitor point and nonpoint source pollution. NPDES stormwater permits for general construction activity are required for projects that disturb one or more acres of land.

Regulatory Compliance

To receive a new FERC operating license, AE is required to request and receive water quality certification (WQC) pursuant to Section 401 of the federal Clean Water Act from the State Water Resources Control Board (State Water Board). The State Water Board is the lead agency responsible for complying with the California Environmental Quality Act (CEQA). For the State Water Board to issue a WQC, an environmental analysis of the project that complies with CEQA must be prepared.

Section 401 Water Quality Certification (WQC)

Section 401 of the Federal Water Pollution Control Act (Clean Water Act) requires recipients of federal permits for activities that have the potential to discharge into the waters of a state to present state certification that the project will comply with water quality standards. To continue to operate, the DPDP must receive a FERC license and State Water Board WQC. FERC regulations require PG&E to file as part of its license application a copy of the WQC provided by the State Water Board, or proof that such a certificate has been applied for, or that the requirement has been waived.

3.2.1 Drainage Area

The Yuba River Watershed is approximately 40 miles long and covers approximately 1,340 square miles. It spans from the west slope of the Sierra Nevada to the Feather River near Yuba City. The Yuba River's three main tributaries: North Yuba, Middle Yuba, and South Yuba Rivers, provide the majority of the flow for the river. The Daguerre Point Dam is located along the South Yuba River which is responsible for draining an area of only 352 square miles.

3.2.2 The Monthly Minimum, Mean, and Maximum Recorded Flows in Cubic Feet Per Second of the Stream or Other Body of Water at the Power Plant Intake or Point of Diversion, Specifying Any Adjustments Made for Evaporation, Leakage, Minimum Flow Releases, or Other Reductions in Available Flow

The average annual historic flow rate for the Yuba River below the Daguerre Point Dam is 2,400 cfs. The project is planned to operate year round however extreme low flow rates in the Yuba River may cause the operation to halt turbine activity. The estimated annual average capacity factor is 80% which is phenomenally good when compared to just about any other form of renewable power.

3.2.3 Monthly Flow Duration Curve Indicating the Period of Record and the Location of Gauging Station(s), Including Identification Number(s), Used in Deriving the Curve; and a Specification of the Critical Stream Flow Used to Determine the Project's Dependable Capacity

Surface water of the Yuba River is monitored by three United States Geological Services (USGS) gauging stations. Two are located upstream of Daguerre Point Dam near Smartville and Englebright Dam and the other is located downstream near Marysville. The Smartville gauging station operated up to 1940 before it was moved upstream to its current location below Englebright Dam. These two stations have a combined record length extending from 1903 to 1998 and the downstream station has a record length from 1943 to 1999. The Yuba River flow is controlled by numerous upstream dams including Englebright Dam, located about 11 miles upstream of Daguerre Point Dam. Two major tributaries, Deer Creek and Dry Creek have been monitored for several years. Deer Creek, which enters the Yuba River downstream of Englebright Dam has been monitored since 1935. Flow in Deer Creek is controlled by Lake Wildwood and Scotts Flat Reservoir. The flow of Dry Creek has been monitored at several locations from 1948-1980. The longest record extends from 1964-1980. Dry Creek flow is controlled by Collins Lake.

Average Flow

A time series of historic Yuba River flow at Englebright Dam shows the annual variation between high and low flows, and also the low flows during drought periods in the 1970's and 1990's (Chart 3.1). On average, the Yuba River experiences its highest flows in February and March. Chart 3.2 shows the monthly average flow for USGS gauge below Englebright Dam and has a peak average monthly flow of approximately 4,000 cfs between February and May. About 80% of the time, the average monthly flow exceeds 1,000 cfs from January through June. During the same period, about 20% of the time average monthly flow exceeds 5,000 cfs (Chart 3.2). The time series of daily flow recorded at Marysville is similar to the Englebright record in terms of the pattern of flow and the peaks and drought periods (Chart 3.3). Chart 3.4 is the monthly average flow for USGS gauge near Marysville downstream of Daguerre Point Dam and has maximum average monthly flow of 4,600 cfs between January and February. Comparing the average monthly flows for Marysville and Englebright shows the effects of additions and depletions to the reach of river between the two gauges. For example, 20% of the time, the average monthly Marysville flow is greater than the Englebright flow in the winter, most likely because of the tributary inflow. During low flows (80 percentile), the average monthly Marysville flow is less than the Englebright flow, because of diversions.

Peak Flow

Major flooding of the Yuba River has occurred throughout the historic record has damaged farmland, homes, and infrastructure. Flooding has occurred in response to high water and levee failure. The five

largest floods in the lower Yuba River, including the most recent major flood, January 1-2, 1997, are shown in Chart 3.1. The average monthly flow below Englebright Dam is shown in Chart 3.2 and the average monthly flow at Marysville is shown in Chart 3.4. The observed flows are shown below, daily historic flow Chart 3.3. Currently, options for improving flood protection around the cities of Marysville and Yuba City is being investigated by the Yuba County Water Agency.

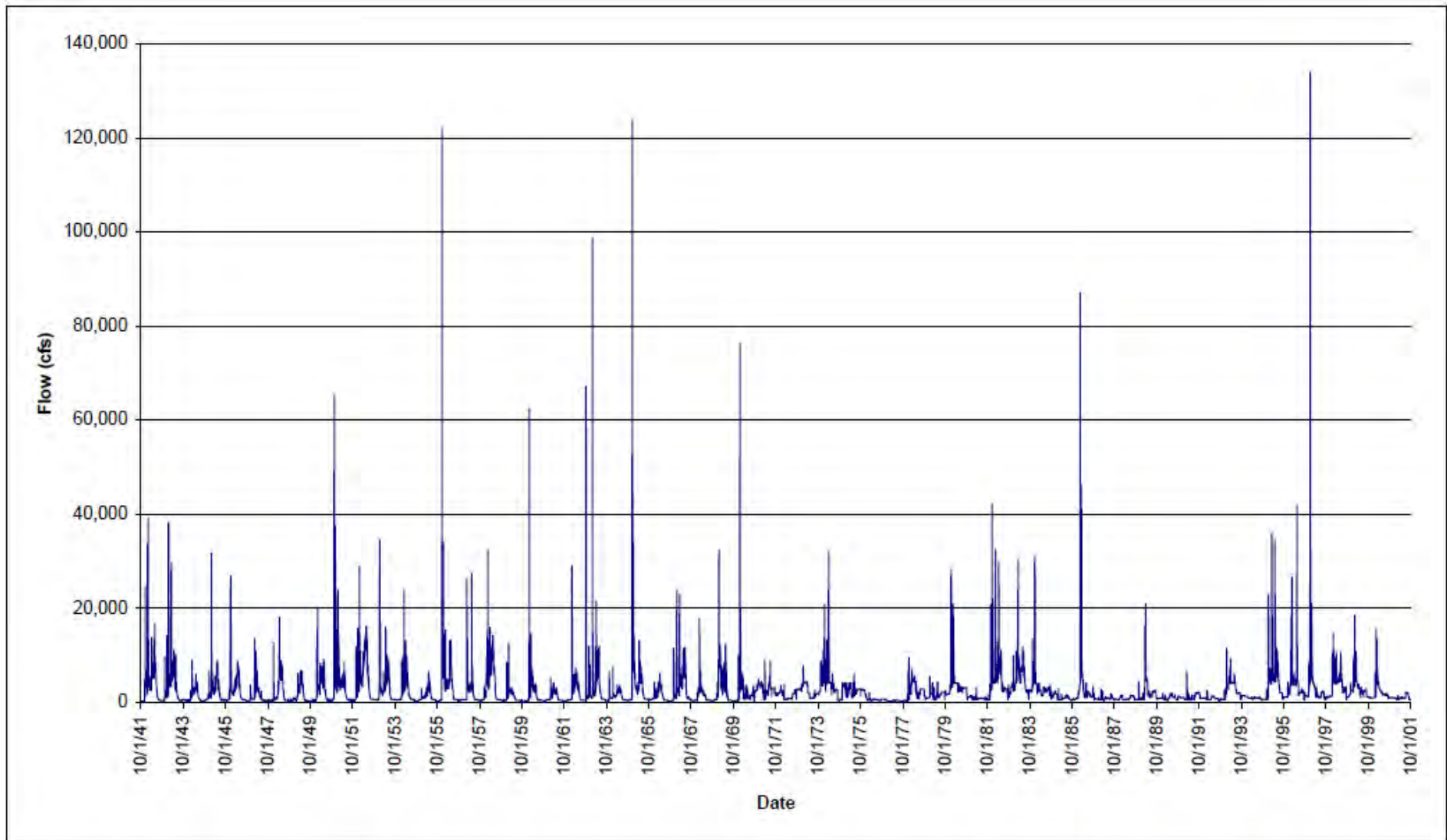


Chart 3.1 Historic Daily Flow of Yuba River below Englebright Dam.

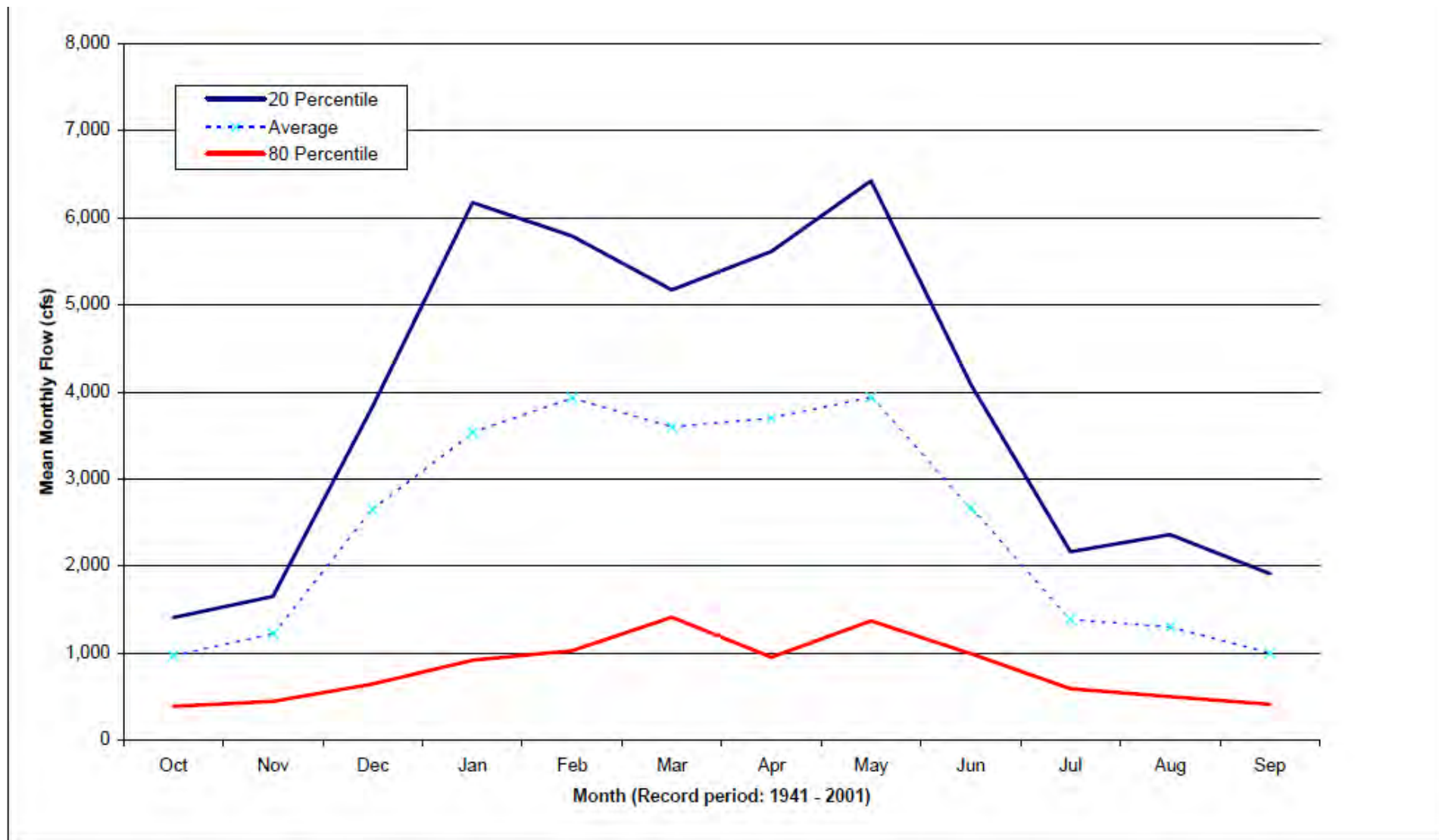


Chart 3.2 Average Monthly Flow of Yuba River Below Englebright Dam.

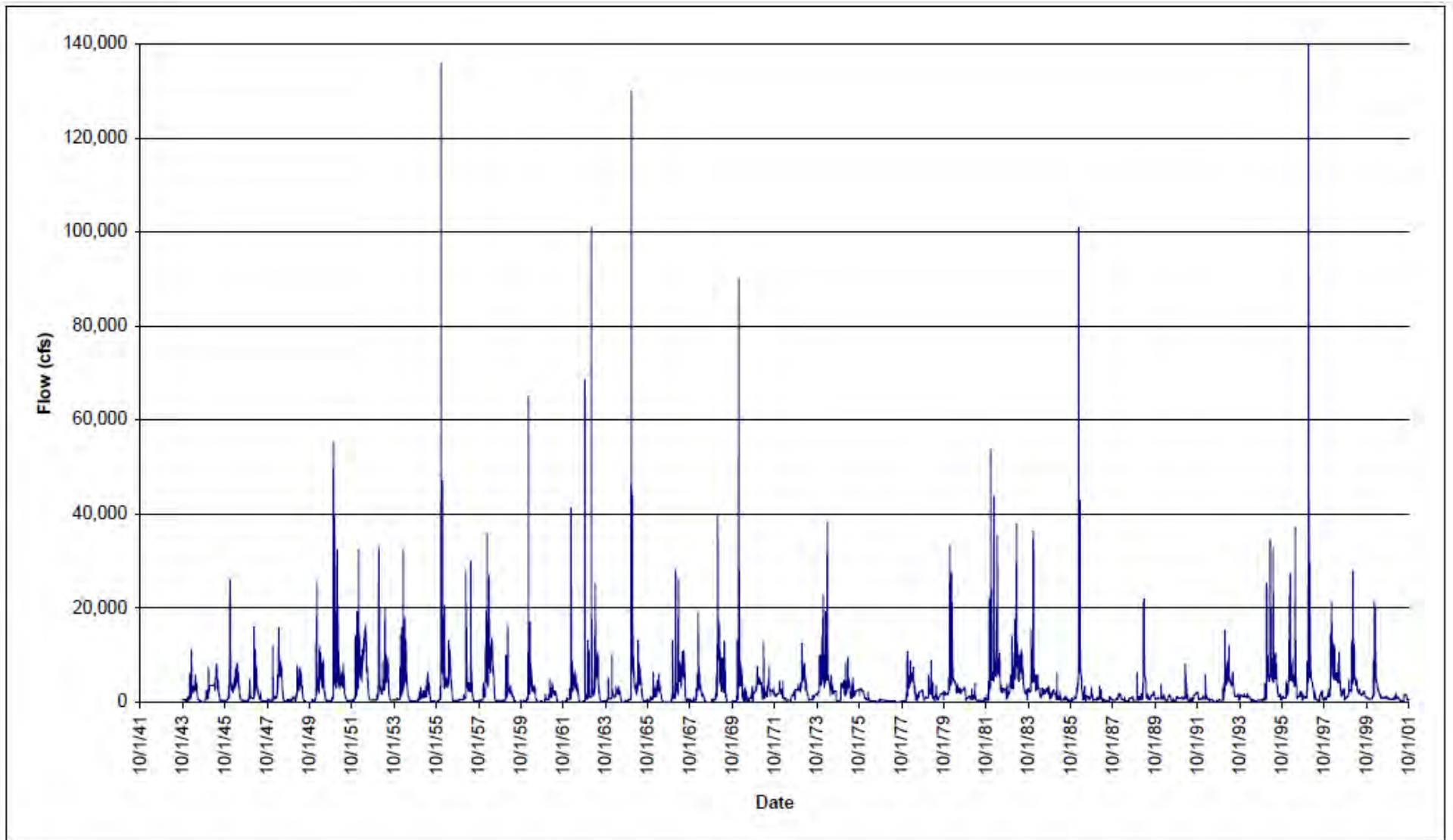


Chart 3.3 Historic Daily Flow of Yuba River at Marysville.

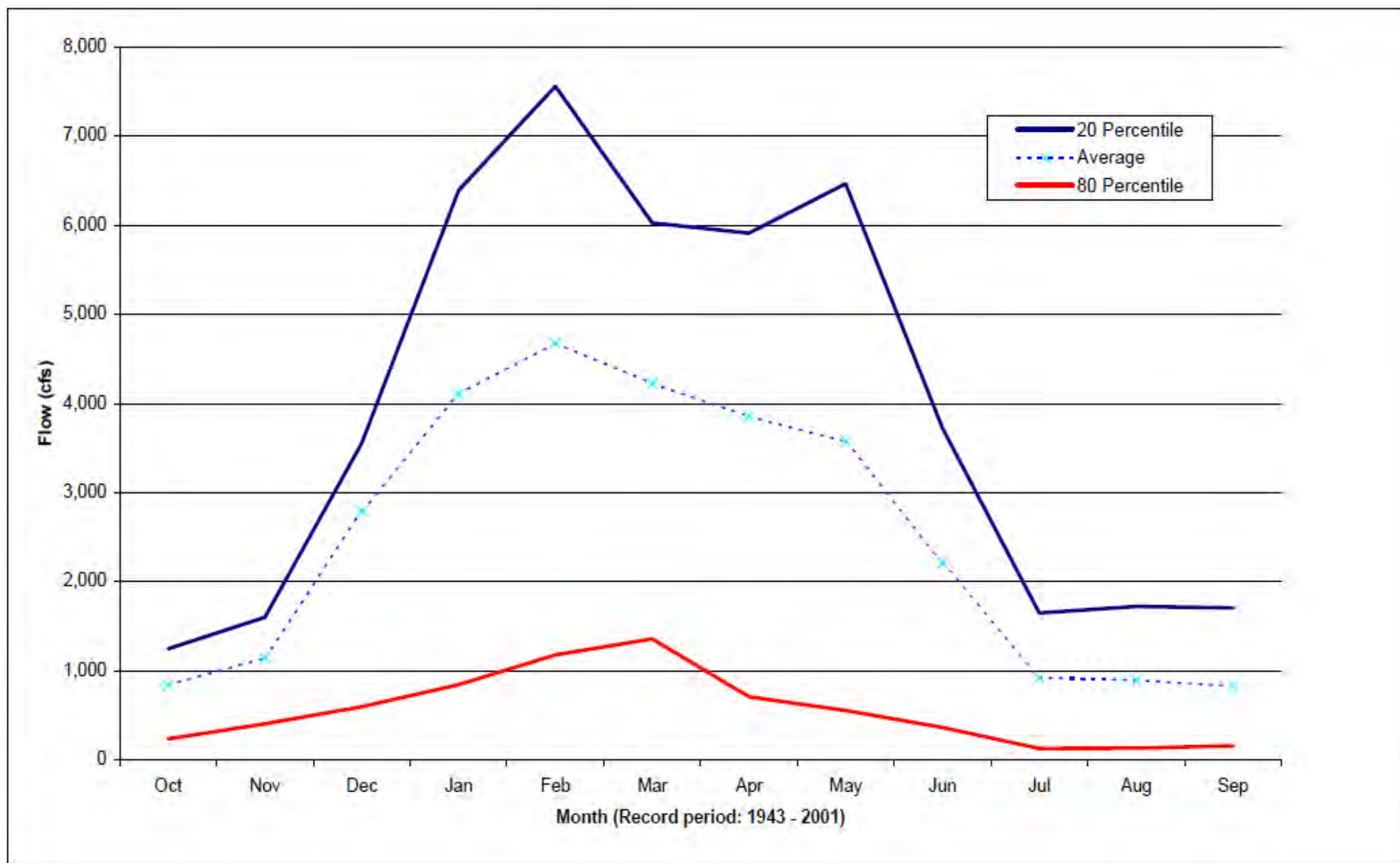


Chart 3.4 Average Monthly Flow of Yuba River at Marysville.

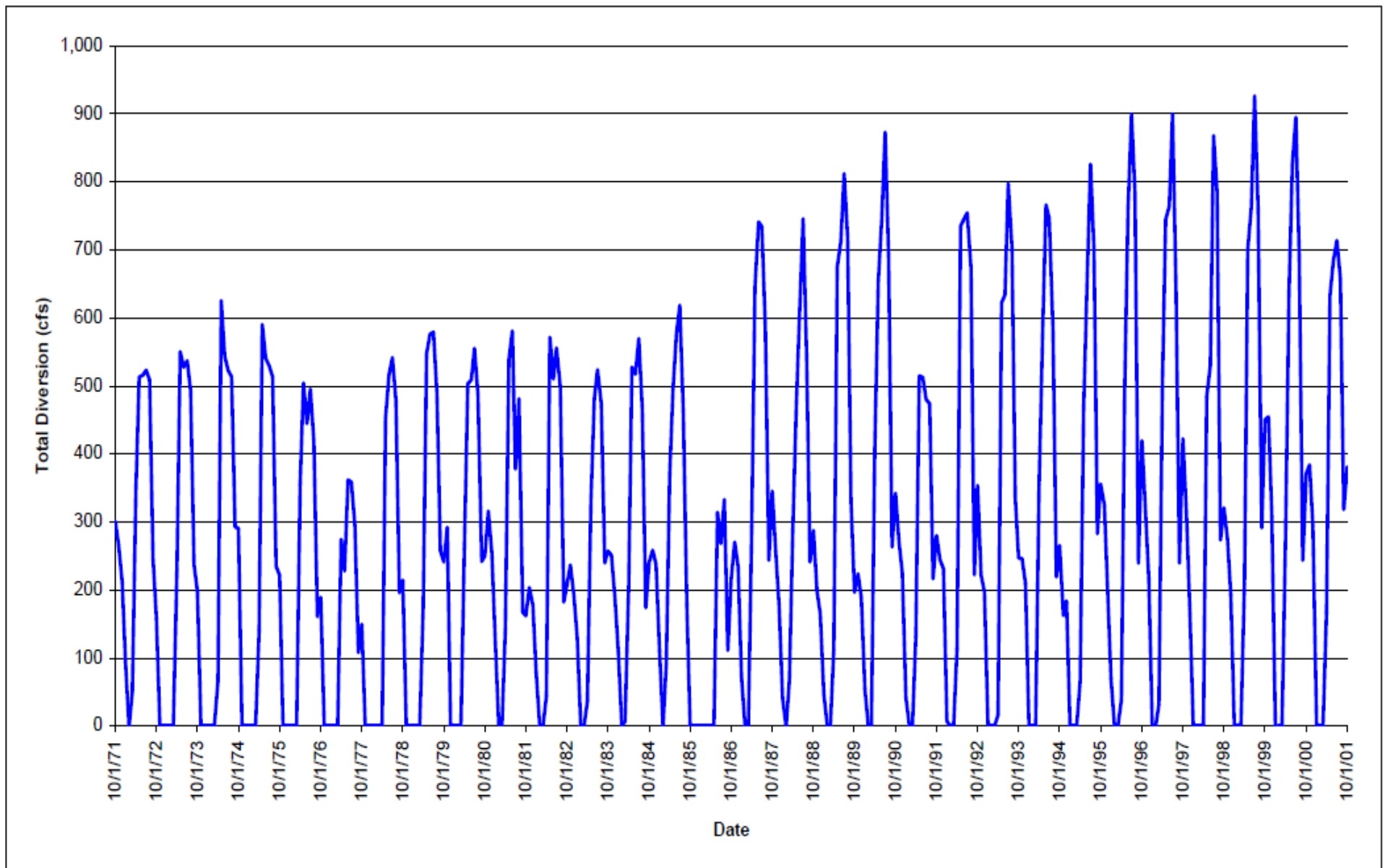


Figure 3.5 Historic Average Monthly Diversions Upstream of Daguerre Point Dam

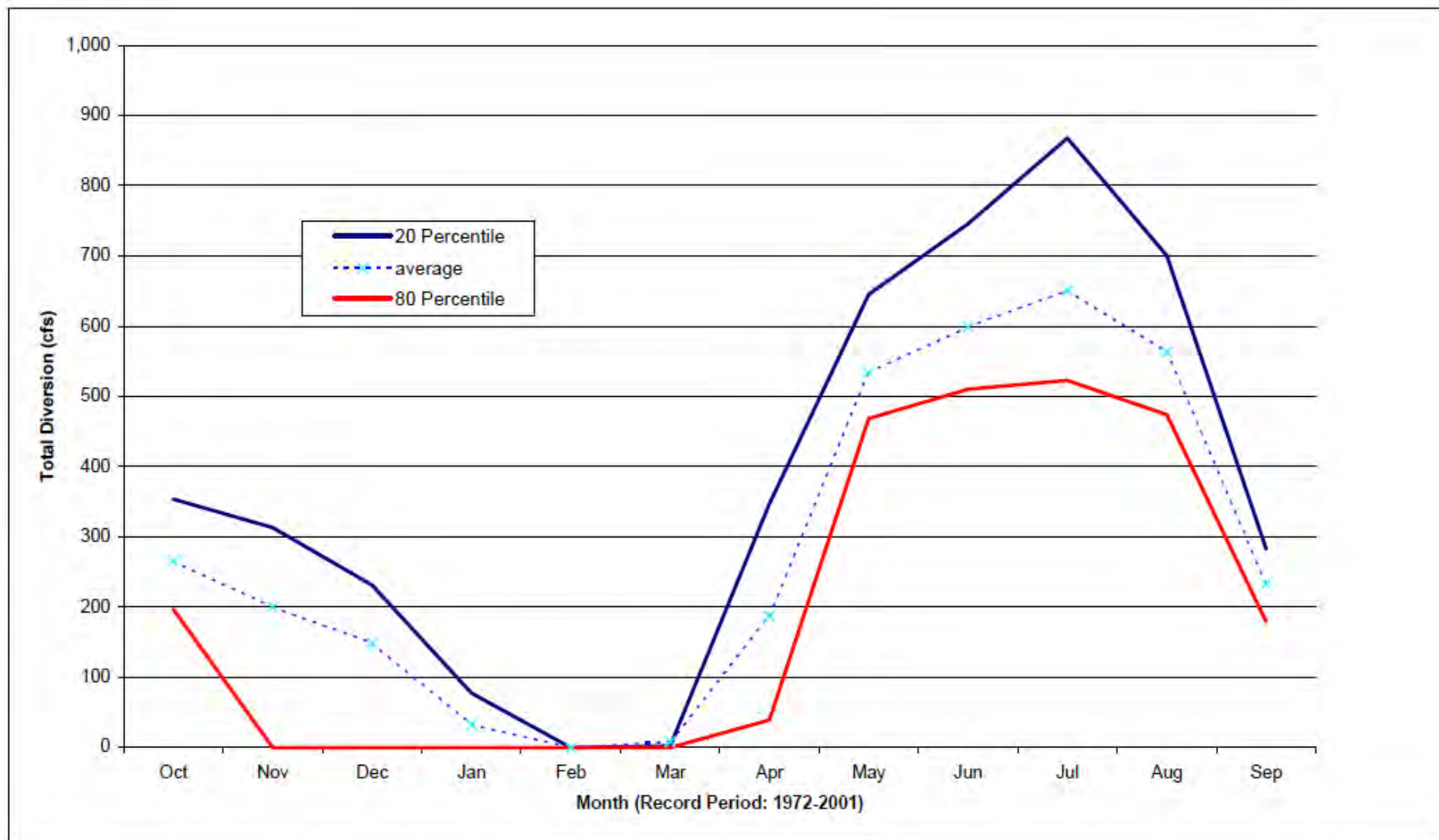


Figure 3.6 Average Monthly Diversions Upstream of Daguerre Point Dam (Record Period: 1972-2001)

3.2.4 Existing and Proposed Uses of Project Waters for Irrigation, Domestic Water Supply, Industrial and Other Purposes, Including Any Upstream or Downstream Requirements or Constraints to Accommodate Those Purposes

Groundwater in the project area is an important water supply resource. Wells located throughout the area are used to supply water for agriculture and domestic use. The primary aquifer in the region is an unconfined aquifer that receives water from rainfall, stream flow, and runoff from up slope areas. The proposed project will have no water uses other than for generating electricity from excess water supply from upriver sources and any generation would take a secondary role to navigation.

Irrigation Diversions

Three Diversion located at the Daguerre Point Dam site convey water to irrigated agricultural land in the area. Two of the diversions are located just upstream of the dam, on the south side is the Brophy-South Yuba Water District (SYWD) Canal and on the north side is located the Cordura-Hallwood Canal. The third, the Browns Valley Irrigation District Canal located approximately 1 mile upstream from Daguerre Point Dam. The diversion amount differs between the three sites over the record period of 1971 to 2001. The Cordura-Hallwood Canal has the largest monthly average diversion of 12,314 acre-feet and Brown Valley Irrigation District has the smallest diversion at an average of 1,059 acre-feet for a given month. Diversions typically occur from April through December. On average, the total diversion peaks in July with an average diversion of about 650 cfs. The largest diversion year was 2000, where 290,110 acre-feet were diverted. The average diversion for the 30-year record is 208,000 acre-feet. Irrigation water is delivered to farmers to meet water needs. Water also seeps into the groundwater from unlined canals.

3.2.5 Existing Instream Flow Uses of Streams in the Project Area that Would Be Affected by Project Construction and Operation; Information on Existing Water Rights and Water Rights Applications Potentially Affecting or Affected by the Project

Environmental instream flow is the water maintained in a stream or river for instream beneficial uses such as fisheries, wildlife, aesthetics, recreation, and navigation. It is one of the major factors influencing the productivity and diversity of California's rivers and streams. For wildlife, instream flow sustains the stream bank and floodplain riparian zones and provides aquatic food resources (e.g., fish, invertebrates, and plants). It has a direct effect on fisheries by creating riffles, pools, and glides as habitat for game and nongame species. Instream flow is also important because it provides a corridor for migratory aquatic species to reach upstream spawning and rearing habitat. Many organisms, especially invertebrates, depend on streamflow to deliver their food. Instream flow also has a vital role in maintaining water quality for aquatic species. It helps sustain proper water temperatures and oxygen levels and serves to remove natural sediment and agricultural, municipal, or industrial wastes that could otherwise accumulate in the system.

Water Rights

The California Debris Commission constructed the Daguerre Point Dam in the early 1900's as a component of the Yuba River Debris Control Project to entrap tailings from hydraulic gold mining operations. Its primary objective was to retain and control sediments discharged into the Yuba River from mining operations. As development intensified within the Yuba Valley in the early 1950's, the Yuba River and Daguerre Point Dam took on a new purpose. The people of Yuba and Sutter counties recognized the demand for securing, utilizing, and distributing the Valley's available water resources consistent with the impending domestic and agricultural development. The function of the dam has subsequently evolved to provide additional benefits from the standpoint of water supply. The Daguerre Point Dam and associated facilities are the shared operational responsibility of the USACOE, Construction Operations Division and the California Department of Water Resources (DWR). Yuba County Water Agency (YCWA), located in Marysville, California, is a public agency formed in 1959 pursuant to California State law (Water Code § 20500 *et seq.*). The provisions of the California Water Code, under which YCWA was formed (WC§§ 20500–29978; 22115), permit YCWA to generate, distribute and sell electricity. Proposed project is located within the Lower Yuba River. The Lower Yuba can really be considered two rivers — the 12-mile stretch from the mouth up to Daguerre Point Dam and the section from Daguerre up to the Englebright Dam. The lower section is not much of a fishery anymore — a few trout here and there and some good shad and striped bass fishing in high water years but that's about it. Migrating species like salmon and steelhead negotiate the lower river quickly and are difficult to catch.

Lower Yuba River: The Yuba River system drains approximately 1,300 square miles of the western slope of the Sierra Nevada. This area encompasses parts of Sierra, Placer, Yuba, and Nevada counties. Flows in the lower Yuba River are regulated by Englebright Dam and Daguerre Point Dam. There are several diversions by local irrigation districts, mostly in the Daguerre Point Dam area.

Instream flows in the Yuba system are stipulated in a 1965 agreement between Yuba County Water Agency and CDFG. Major provisions of the agreement include minimum fish flows below Englebright and Daguerre Point dams and streamflow reduction and fluctuation criteria. These standards have been consistently met and actual flows in the river generally have been higher than the minimum requirements.

The status of existing flow requirements in the lower Yuba River is under review by the SWRCB as part of the Yuba County Water Agency Water Right hearings. These hearings are at the request of CDFG and a coalition of angler groups, who filed a complaint in 1988 alleging that the existing instream flow

requirements and screening facilities do not adequately protect fishery resources. Several water right issues are also being examined.

A major discussion topic at the hearings is CDFG's Lower Yuba River Fisheries Management Plan, which reviews the environmental water needs of the system. The plan proposes a revised flow schedule to optimize habitat for chinook salmon, steelhead trout, and American shad. The plan also includes maximum temperature limits as well as limitations in the amount of daily and long-term fluctuation in flow and water quality. In some months, flows under the proposed new fishery requirements would be at least seven times higher than in the old agreement. Yuba County Water Agency estimates that the flow and temperature revisions would result in water supply deficiencies for urban and agricultural uses of up to 200,000 af, causing cutbacks in water deliveries at least 75 percent of the time. DFG also made recommendations for habitat protection and improvement, new fish screens at existing water diversions, public access for recreation, and additional studies. The Federal Energy Regulatory Commission, in its February 1993 order issuing the new license for PG&E's Narrows Project, changed the flow requirements to help meet the CDFG recommended flows.

3.2.6 Relevant Federally-Approved Water Quality Standards Applicable to Project Waters

Beneficial uses and water quality objectives for the Project Area are documented within the Central Valley Regional Water Quality Control Board's (CVRWQCB) *Water Quality Control Plan (Basin Plan) for the Sacramento and San Joaquin Rivers*, the fourth edition, which was initially adopted in 1998 and most recently revised in 2007 (CVRWQCB 1998). The Basin Plan's designations for Daguerre Point Dam Project and the area downstream of the Project include freshwater aquatic habitat (COLD) and water contact recreation (REC-1), which incorporate the uses commercial or recreational collection of fish, shellfish, or organisms. Since the main concern with mercury is that it bioaccumulates in aquatic systems to levels that are harmful to fish and their predators, including humans, the presence of mercury in its bioavailable form (methylmercury) has the potential to impair Project waters due to toxicity.

The toxicity water quality objective states that “...*all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*”

Section 303(d) of the Clean Water Act (CWA) requires that every two years each State submit to the United States Environmental Protection Agency (EPA) a list of impaired rivers, lakes and reservoirs for which pollution control or requirements have failed to provide for water quality. Based on a review of

this list and its associated Total Maximum Daily Load (TMDL) Priority Schedule, in the Project Vicinity, USACE Englebright Reservoir has been identified by the State Water Resources Control Board (SWRCB) as CWA §303(d) State Impaired for potential toxicity due to mercury (SWRCB 2006). There are currently no approved TMDL plans for the Yuba River. Kanaka Creek, which is a tributary to the Middle Yuba River 4 miles upstream of Our House Diversion Dam, is listed under Section 303(d) of the Clean Water Act as “impaired” due to arsenic levels and contributes to the measured high levels of arsenic.

In 2009, the CVRWQCB recommended including additional surface waters in the Project Vicinity to the 303(d) list as impaired for mercury: New Bullards Bar Reservoir, the Middle Yuba River, the North Fork Yuba River from New Bullards Bar Dam to Englebright Reservoir, the South Yuba River from Lake Spaulding to USACE’s Englebright Reservoir, and the Lower Yuba River from USACE’s Englebright Reservoir to the Feather River (CVRWQCB 2009).

These recommendations were based on fish tissue mercury data provided in SWRCB (2002) and Melwani et al. (2007) [See Section 4.2.] and the potential impairment of beneficial uses due to toxicity. These recommendations must be approved by the SWRCB and the United States EPA before the list is modified. Along a parallel regulatory path, using available fish tissue data and risk-based methodologies, the Office of Environmental Health Hazard Assessment (OEHHA) has issued species-specific fish ingestion advisories for trout, sunfish and bass caught in USACE’s Englebright Reservoir (OEHHA 2003, OEHHA 2009). In the Project Vicinity, fish ingestion advisories previously issued for Deer Creek, a tributary to the Yuba River, and the Lower Yuba River from USACE’s Englebright Reservoir to the Feather River were recently retracted (OHHEA 2009). Based upon these standards, Table 3.4 below shows mercury concentrations in fish around the Project vicinity.

Table 3.4 Mercury Concentrations Measured in Fish Tissue in the Project Vicinity

Daguerre Point Dam Reach, Lower Yuba River, approximately 0.9 miles upstream of its confluence with the Feather River	Rainbow Trout	1	0.02	≥ 150	SWRCB (2002) <i>IN</i> CVRWQCB (2009)
	Sacramento Pikeminnow	1	0.46		
	Sacramento Sucker	2	0.22 and 0.38		
	Smallmouth Bass	4	0.26-0.72 (avg 0.43)		
Lower Yuba River, approximately 3.6 miles upstream of its confluence with the Feather River	Sacramento Pikeminnow	2	0.31 and 1.43	≥ 150	Davis et al. (2002) <i>IN</i> CVRWQCB (2009)
	Sacramento Sucker	5 (composite)	0.39		
	Rainbow Trout	3	0.08-0.1 (avg 0.09)	310 (avg)	Grenier et al. (2007) <i>IN</i> CVRWQCB (2009)
	Sacramento Pikeminnow	5	0.19-1.58 (avg 0.84)	≥ 150	
	Sacramento Sucker	3	0.11-0.73 (avg 0.26)	420 (avg)	

3.2.7 Project Effects on Seasonal Variation of Water Quality Data, Including Water Temperature and Dissolved Oxygen, Including Seasonal Vertical Profiles in the Reservoir and Other Physical and Chemical Parameters to Include, as Appropriate for the Project; Total Dissolved Gas, pH, Total Hardness, Specific Conductance, Chlorophyll a, Suspended Sediment Concentrations, Total Nitrogen (mg/L as N), Total Phosphorous (mg/L as P), and Fecal Coliform (E Coli) Concentrations

Figure 3.2 illustrates Project vicinity's overall hydrography. The proposed project will not affect water quantity or quality in any sections of the Yuba River, as it will not change project operation of the USACE Daguerre Point Dam. There is also some concern over mercury from previous mining operations. However, this is an existing condition at the project site and construction and operation of the DPDP will not adversely affect this potential of concern which was a result of past mining operations. Proposed hydrodynamic turbines have self-regulating system that adapts automatically to the water volume and mains frequency. Additionally, these turbines improve the water quality in deeper waters by oxygenation.

Water Temperature

The Yuba River has been developed for water supply, hydropower generation, flood control, sedimentation control, and recreation over a period extending back to the Gold Rush in the mid-1800s. These developments have varied and have resulted in complex impacts to the water temperature regime of the Yuba River.

The lower Yuba River is the 24-mile reach stretching from Englebright Dam to the confluence with the Feather River, south of Marysville. The construction of the Yuba River Development Project, and specifically New Bullards Bar Reservoir in 1970, has played a significant role in reducing the lower Yuba River water temperature in the spring, summer, and fall. Inflows from tributaries intermix with releases from reservoirs to develop the water temperature profile within the river channel. The flows emanating from Englebright Reservoir and Narrows I and II powerhouses provide the base flow of cold water in the upper reaches of the lower Yuba River. During certain periods of the year, inflows from Deer Creek (RM 22.7) near Smartville, and Dry Creek (RM 13.6) have significant effects on the heat gain of the river. During the irrigation season, a portion of the river flow is diverted at Daguerre Point Dam (RM 11.6).

Due to the Yuba Accord flows, water temperatures during the summer months are generally colder than they would be under the natural hydrograph due to cold water releases from New Bullards Bar Reservoir. While the lower Yuba River does have generally cool water temperatures, they are not consistently suitable for salmonids throughout the year. Upstream from Englebright Dam, the South Yuba River is at thermal barrier to salmonids during the months when water is diverted out-of-basin. The Middle Yuba River, below Our House Dam, and Oregon Creek, below Log Cabin Dam, are thermally impaired due to diversion of water that ends up in New Bullards Bar Reservoir. While there is a flow gage at the mouth of Deer Creek, there are limited temperature data for any of these locations and there are no flow gages below Deer Creek, except for the Marysville Gage. Factors controlling Yuba River temperature at Daguerre Point include temperature of the releases from Englebright Dam and heat exchange in the river, which is affected by both climatic conditions and volume of the flow in the river. Chart 3.7 and Chart 3.8 illustrates predicted and observed release temperature at Daguerre Point Dam from 1999 to 2005 and 1999-2004 respectively.

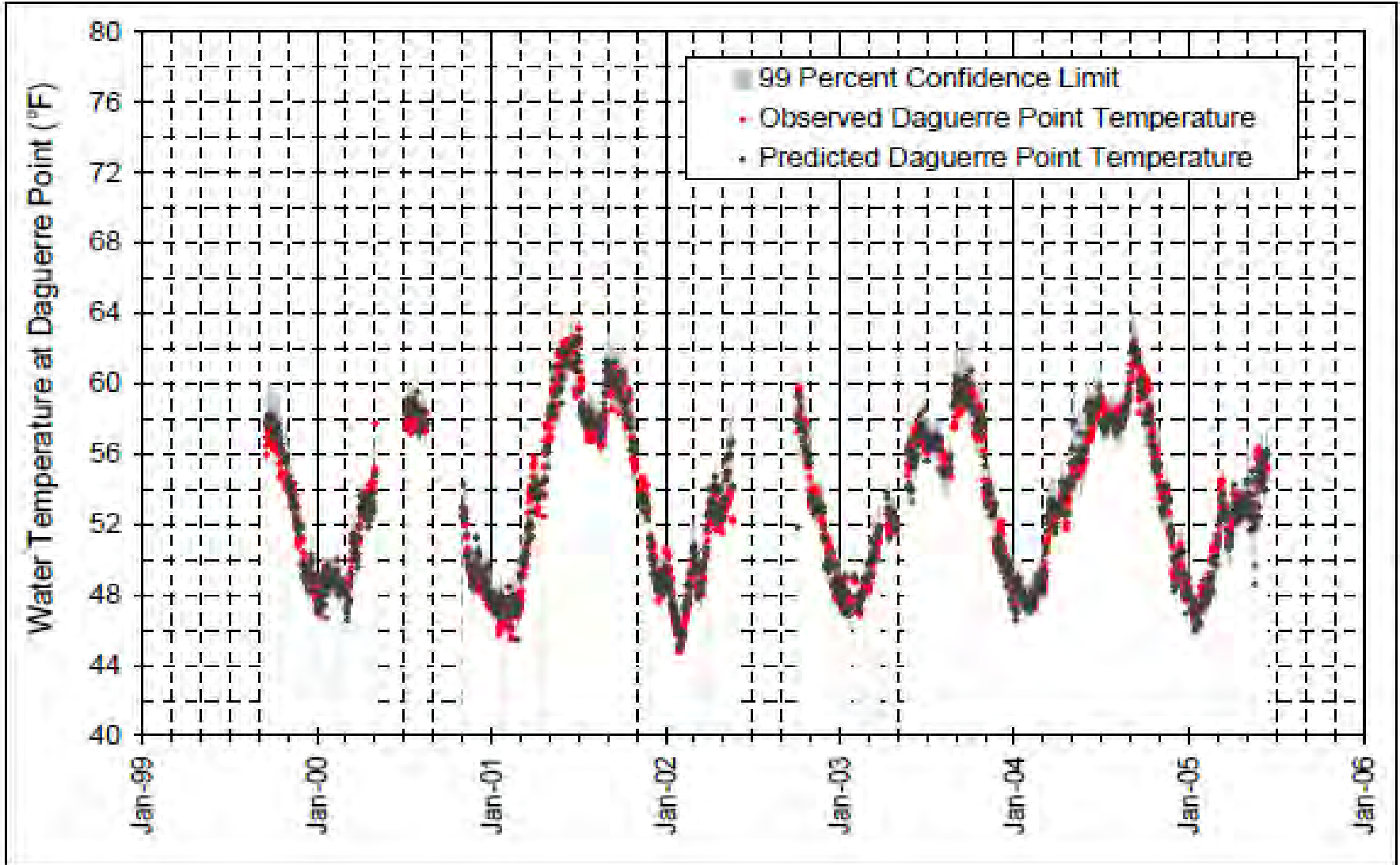


Chart 3.7 Predicted and Observed Release Temperature at Daguerre Point Dam for the Period 1999 to 2005

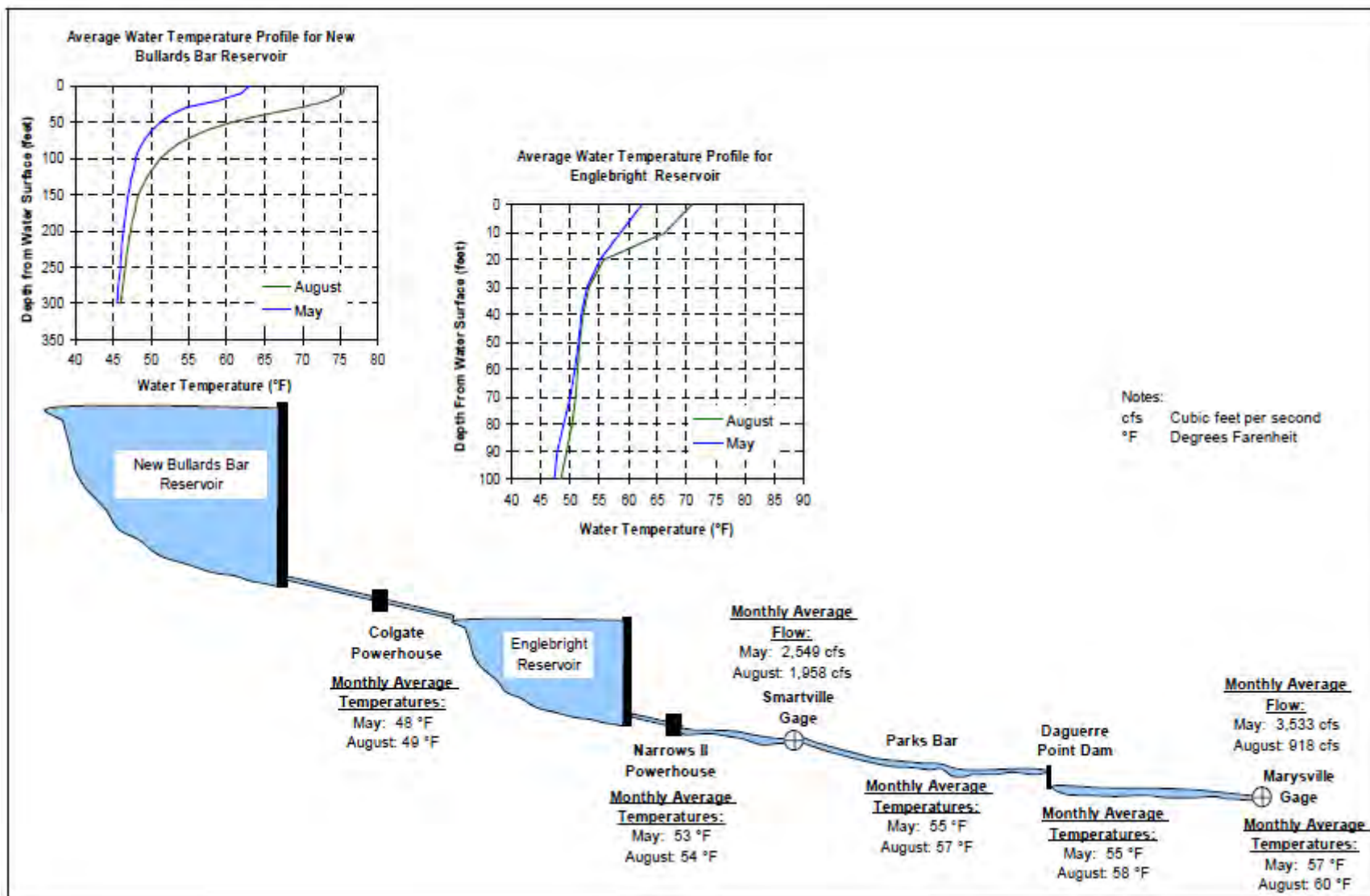
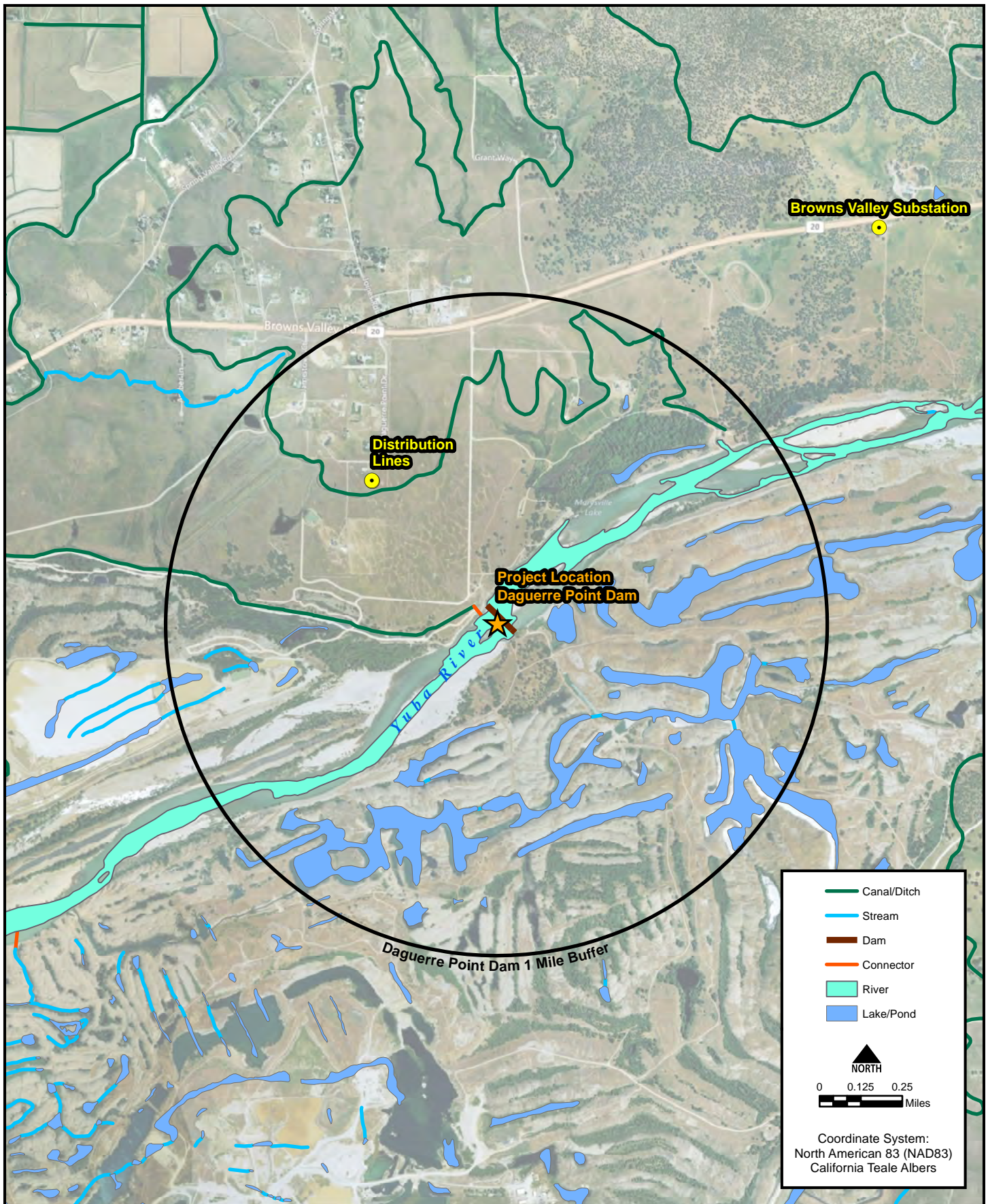


Chart 3.8 Average Monthly Water Temperature Profile in the Lower Yuba River for May and August for the Period 1999 to 2004*

Source: Draft EIS/EIR Proposed Lower Yuba River Accord, June 2007 Section: Lower Yuba River Water Temperature Evaluation

*Flow data is from U.S. Geological Survey (USGS) gages 11421000 (Marysville) and 11418000 (Smartville). Water temperature data is from YCWA.



3.2.8 The Following Data with Respect to Any Existing or Proposed Lake or Reservoir Associated with the Proposed Project; Surface Area, Volume, Maximum Depth, Mean Depth, Flushing Rate, Shoreline Length, and Substrate Composition

There is no reservoir associated with the proposed Project.

3.2.9 Gradient for Affected Downstream Reaches

Daguerre Point Dam is approximately 12 miles downstream of Englebright Dam. The terrain for this reach of the river varies significantly from a steep, narrow gorge near Englebright Dam to a wide, flat, open area near Daguerre Point. Also, there are multiple accretions and depletions between Englebright Dam and Daguerre Point, including Deer Creek, Dry Creek, and the Yuba River Goldfields.

3.2.10 Potential Adverse Impacts and Issues

The project will not have significant impact on the volume of water flowing through the dam and into the Yuba River because flows will be released using the current USACE operating criteria and the USACE will retain all control of flow releases. Maintaining the current flow regime should limit project operation impacts on water resources. BMPs including the implementation of the Erosion and Sedimentation Control Plan will eliminate possible short term construction impacts to water quality.

The Applicant does not anticipate effects on other water-quality parameters as the volume of water passing through the dam will not change. The project will not have an impact on temperature because water will be supplied to the powerhouse via conduits at the same elevations as those that currently pass water through the dam. Water will not be heated as it moves through the powerhouse.

3.2.11 Proposed Mitigation and Enhancement Measures

Construction-Related Effects

Operation of heavy machinery and the storage of fuel, oil or other contaminants at the construction site involve the potential for unintentional pollution of project waters. To address this issue, an Oil and Hazardous Substances Spill Prevention and Management Plan will be developed prior to construction, subject to review and approval by state and federal agencies. General goals of such a plan will be to (1) transport, store, handle, and dispose of oil, fuels, lubricant products and hazardous liquid substances in a safe and environmentally acceptable manner, (2) institute a responsive alert procedure in the event of a spill and be prepared to rapidly respond in the containment and cleanup of a spill, and (3) plan for and cooperate with other federal, state, interstate and local government agencies to ensure that public health and welfare are provided adequate protection from the discharge of oils and other hazardous liquid substances. To minimize sedimentation from potential erosion at the construction site, a Soil

Erosion Control Plan will be submitted as part of the preliminary licensing process. A Clean Water Act Section 401 Water Quality Certificate application will also be submitted to the California Regional Water Quality Control Board for approval. These plans will include detailed descriptions of BMPs that will be implemented to: (1) minimize potential erosion; (2) monitor as necessary for any evidence of erosion; and (3) monitor continuously for violations of state turbidity standards versus background conditions, and 4) recommend courses of action in immediate response to any such evidence or violations. All BMPs must be accepted in California.

Contaminants

Operation of heavy machinery and the storage of fuel, oil or other contaminants at the construction site involves the potential for accidental introductions to project waters. To address this issue, an Oil and Hazardous Substances Spill Prevention and Management Plan will be developed prior to construction, subject to review and approval by state and federal agencies. General goals of such a plan would be to 1) transport, store, handle, and dispose of oil, fuels, lubricant products and hazardous liquid substances in a safe and environmentally acceptable manner, 2) Institute a responsive alert procedure in the event of a spill and be prepared to rapidly respond in the containment and cleanup of a spill, and 3) plan for and cooperate with other federal, state, interstate and local government agencies to ensure that the public health and welfare are provided adequate protection from discharge of oils and other hazardous liquid substances.

Erosion and Siltation

Sedimentation from any source may degrade water quality. Erosion may occur during activities associated with excavation and construction of the powerhouse, tailrace, roads and other project features. To minimize such impacts, a Soil Erosion Control Plan will be submitted to the applicable agencies for approval during the FERC Integrated Licensing Process. A Clean Water Act Section 401 Water Quality Certificate application will also be submitted to RWQCB for approval as pre-licensing studies and analyses are completed. These plans will include detailed descriptions of best management practices (BMPs) that will be implemented to: 1) minimize potential erosion, 2) monitor as necessary for any evidence of erosion, 3) monitor continuously for violations of state turbidity standards versus background conditions, and 4) recommend courses of action to respond immediately to violations.

3.2.12 References

- Bioaccumulation: Yuba River Development Project Study 2.4. (2011). Yuba County Water Agency. Retrieved from <http://www.ycwa-relicensing.com/FERCAproved%20Studies/Study%2002-04%20-%20Bioaccumulation.pdf>.

- *Stakeholder Review Draft*, Daguerre Point Dam Fish Passage Improvement Project 2002 Water Resource Studies, ENTRIX, Inc. June 2003
- Draft EIS/EIR Proposed Lower Yuba River Accord, June 2007 Section: Lower Yuba River Water Temperature Evaluation.
- http://www.water.ca.gov/fishpassage/docs/yuba/yuba_salmon.pdf
- <http://www.waterplan.water.ca.gov/previous/b160-93/b160-93v1/tbls/t8-3.cfm>

3.3 Fish and Aquatic Resources: Description and Impacts [§ 5.6 (D)(3)(IV)]

3.3.1 Overview

The original purpose of the Daguerre Point Dam was to retain hydraulic mining debris. The Hallwood-Cordua diversion predated construction of Daguerre Point Dam and was licensed by the Secretary of War to continue their water diversion at Daguerre Point Dam. Later, the hydraulic head from the dam began to be used for other diversions of water for irrigation, primarily between April and October. The dam is not operated for flood control. The dam and appurtenances consist of an overflow concrete ogee spillway with concrete apron and concrete abutments, concrete fishways on both abutments, and a locally owned and operated irrigation diversion structure at the northern end of the dam (Corps 1966). Two fish ladders, and three licensed irrigation diversions, depend on either the hydraulic head created by the dam or the continuance of diversion capabilities due to the influence of the dam preventing additional channel incision upstream of the dam. The park personnel of the Corps administer the operation of the fish ladders and maintenance of the dam in coordination with California Department of Fish and Game (CDFG).

Daguerre Fish Passage Project

Daguerre Point Dam is a 26-ft high irrigation diversion structure located at RM 12.0 that creates a slope break and partial sediment barrier. The dam stores sediment and creates head for irrigation diversions, but is also considered an impediment to the movement of anadromous fish. The Daguerre Point Dam Fish Passage Improvement Project (FPIP) was initiated with a goal of improving fish passage at the dam.

The California Debris Commission constructed the original Daguerre Point Dam in 1906 as part of the larger Yuba River Debris Control Project. The goal of constructing the Daguerre Point Dam was to provide a storage basin for tailings from hydraulic mining in the Yuba River Watershed. The dam was

intended to retain and prevent sediment from being washed into the Feather and Sacramento Rivers. Daguerre Point Dam is located approximately 11.4 miles upstream from the confluence with the Feather River (USACE 2002).

At present, the Dam is operated by the U.S. Army Corps of Engineers (USACE), who shares the cost of operation and maintenance with the California Department of Water Resources (CDWR). The dam also functions to create head for water diversions to six area irrigation districts: Hallwood Irrigation Company, Cordua Irrigation District, Ramirez Water District, South Yuba Water District, Brophy Water District, and Browns Valley Irrigation District. Irrigation water is diverted through three separate diversions within the impoundment area upstream of the dam.

3.3.2 Identification of Existing Fish and Aquatic Communities

Primary aquatic habitats in Yuba County include the Feather River, Yuba River, Bear River, North Yuba River, Englebright Lake, New Bullards Bar Reservoir, Camp Far West Reservoir, and Collins Lake. These waterways provide vital fish spawning, rearing, and/or migration habitat for a diverse assemblage of native and nonnative fish species.

Native species can be separated into anadromous (i.e., species that spawn in fresh water after migrating as adults from marine habitat) and resident species. Native anadromous species that occur or have the potential to occur in Yuba County rivers and streams include four runs of chinook salmon (*Oncorhynchus tshawytscha*), steelhead trout (*O. mykiss*), green and white sturgeon (*Acipenser medirostris* and *A. transmontanus*), and Pacific lamprey (*Lampetra tridentata*). Nonnative anadromous species are limited to American shad (*Alosa sapidissima*) and striped bass (*Morone saxatilis*). Native resident species include Sacramento pikeminnow (*Ptychocheilus grandis*), Sacramento splittail (*Pogonichthys macrolepidotus*), Sacramento sucker (*Catostomus occidentalis*), hardhead (*Mylopharodon conocephalus*), Sacramento roach (*Lavinia symmetricus* sp. *symmetricus*), and rainbow trout (*O. mykiss*). Nonnative resident species include largemouth bass (*Micropterus salmoides*), smallmouth bass (*M. dolomieu*), redeye bass (*M. coosae*), white and black crappie (*Pomoxis annularis* and *P. nigromaculatus*), channel catfish (*Ictalurus punctatus*), white catfish (*Ameiurus catus*), brown bullhead (*Ictalurus nebulosus*), bluegill (*Lepomis macrochirus*), green sunfish (*L. cyanellus*), golden shiner (*Notemigonus crysoleucas*), brown trout (*Salmo trutta*), kokanee salmon (*Oncorhynchus nerka*), and brook trout (*Salvelinus fontinalis*).

Fish Species

The Yuba River provides habitat to dozens of various fish species including several anadromous species, like the Chinook salmon, steelhead and Pacific lamprey River (Yuba River Development Project: Aquatic Resources, 2009). Many other freshwater species exist, but their natural habitat has been significantly altered over the past century from heavy gold mining and dam operation and development. The Daguerre Point Dam and surrounding area of the lower Yuba River has been particularly altered by gold mine activity. However, the lower Yuba River is among the last Central Valley floor tributaries supporting populations of naturally-spawning spring-run Chinook salmon and steelhead. There is no fish hatchery located on the lower Yuba River.

While the lower Yuba River historically served primarily as a migration corridor for anadromous salmonids to upstream habitats, since completion of New Bullards Bar Reservoir by Licensee in 1970, higher, colder flows in the lower Yuba River have improved conditions for adult oversummer holding , spawning and juvenile rearing of anadromous salmonids in the lower Yuba River. Compared to pre-Project hydrology, present Project operations provide flows that are generally lower during the winter and spring and higher during the summer and fall, and provide generally suitable flows and water temperatures throughout the year for anadromous salmonids. With the recent implementation of the Lower Yuba River Accord (Yuba Accord), including its schedules of minimum flow requirements based on indices of water availability, identified flow related major stressors including flow-dependent habitat availability, flow-related habitat complexity and diversity, and water temperatures are expected to be further alleviated. Presently, the lower Yuba River is one of the few Central Valley floor tributaries that consistently provides suitable water temperatures for salmonids throughout the year (Yuba River Development Project: Aquatic Resources, 2009).

Reptile Species and Habitat

There are only a few reptile species that exist in the Project vicinity. They include the Western pond turtle, the Sierra garter snake, the Western terrestrial garter snake, and the common garter snake. Of these species the Western pond turtle and the Sierra garter snake are the most aquatic and most likely to be found in and around the river. The other two reptile species are not aquatic and simply forage near aquatic habitats. The reptile habitat associated with these species is primarily along the banks of the river as they do not often forage out into deep or fast moving waters. They have been found and sighted all along the upper and lower Yuba River (Yuba River Development Project: Aquatic Resources, 2009).

3.3.3 Identification of Essential Fish Habitat As Defined Under the Magnuson-Stevens Fishery Conservation and Management Act and Established by the National Marine Fisheries Service

Under the Magnuson-Stevens Fisheries and Conservation Act, the United States Department of Commerce (USDOC), National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS) has identified “Essential Fish Habitat” (EFH) for Chinook salmon in the North, Middle and South Yuba rivers. EFH on the Yuba River includes all water bodies NMFS believes were occupied or historically accessible to Chinook salmon within the United States Geological Survey’s Hydrologic Unit Code (HUC) 18020125.

On the Middle Yuba River, NMFS’ EFH includes; “The lower river, near where the North Fork joins” (i.e., a distance of about 14 miles). This assessment is presumably based on Yoshiyama et al. (2001) who considered a 10-foot-high falls on the lower Middle Yuba River near river mile (RM) 14 as the effective upstream limit of salmon movement, and who cited 1938 unpublished California Department of Fish and Game (CDFG) data supposedly documenting both salmon and steelhead in this lower part of the Middle Yuba River (Yuba River Development Project: Aquatic Resources, 2009).

3.3.4 Temporal and Spatial Distribution of Fish and Aquatic Communities and Trends

Information on the temporal and spatial distribution of fish and aquatic communities can be useful in planning the design and operation of hydroelectric projects to minimize impacts on these resources. Such information and data gathering has not been completed yet, it will be completed during the PAD comment and agency consultation stage of the Project.

3.3.5 Potential Adverse Impacts and Issues

Turbine Strike

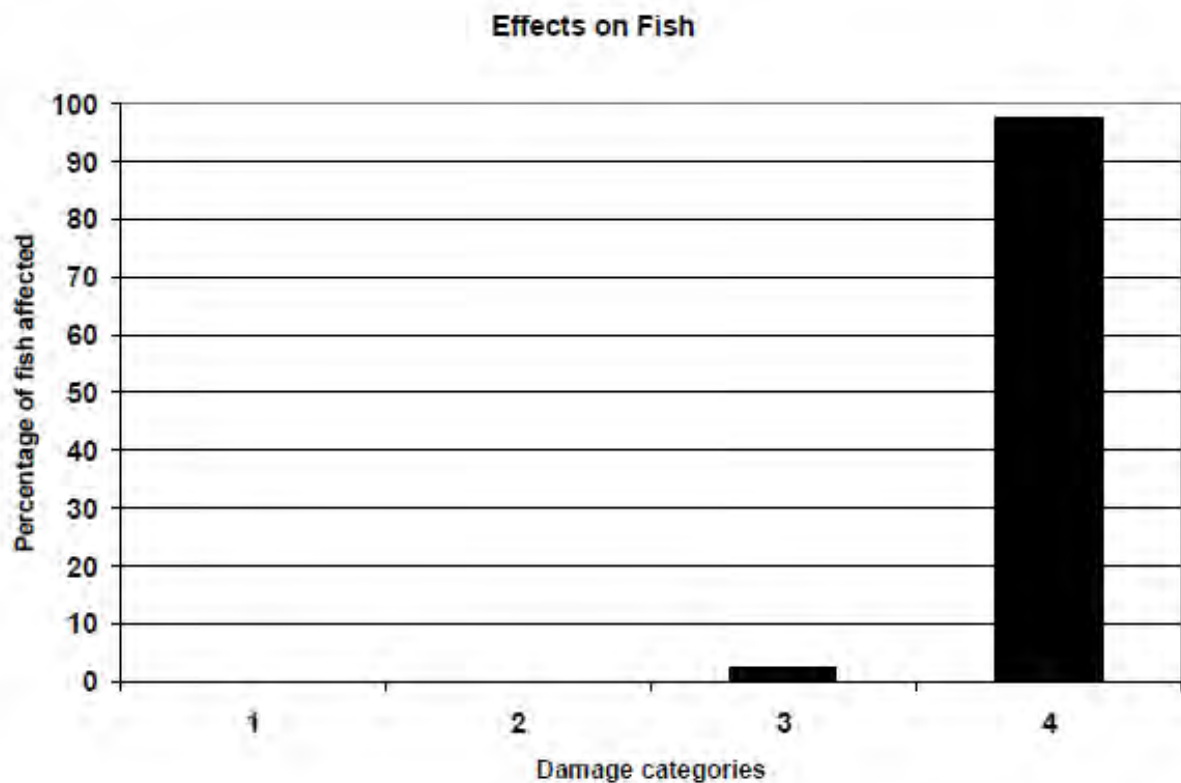
Typical turbines are believed to cause fish mortality due to the turbine strikes. However, The DPDP has a unique fish friendly turbine mechanism. Therefore, it will not have adverse impact on the fish habitat. The hydrodynamic screw consists of a trough bed, the screw itself and a drive unit for generating energy. It has a much simpler design than any others in the market. Therefore, these turbines transports fish and floating particles unharmed. A fish friendliness study named “*Fish Monitoring and Live Fish Trials. Ritz Atro Archimedes Screw Turbine*” was conducted by a firm named FISHTEK Ltd., from United Kingdom in 2007. (Appendix C) Effects on the turbines were analyzed and very little damage induced by passage through the Screw was observed. Based upon this trial, all fish passed

through safely. 3 fish had limited scale loss of between 3 and 8% and were recorded in category 3. Of the 120 fish passed through, 97.5 % had no damage at all. It is unlikely that the 3 fish that suffered minor scale loss would have been adversely affected, as fish usually survive descaling of 5-10%. If scale loss is above 15%, the risk of mortality increases. Chart 3.9 illustrates study results.

Damage categories

- 1) Death or serious injury likely to cause death within 24 hours. Deep wounding exposing internal organs.
- 2) Moderate damage, including abrasions to skin, fin damage, and significant scale loss above 15 %.
- 3) Very little damage. Limited if any fin damage. Between 1% and 15% scale loss.
- 4) No damage observed.

Chart 3.9 Ritz Atro Archimedes Screw Turbine Effects on Fish



3.3.6 Proposed Mitigation and Enhancement Measures

The operation of hydrodynamic screw turbines allows for safe downstream migration however does not allow upstream migration. This is why a state of the art low flow baffled fish pass might be installed adjacent to the turbines. The proposed addition of a new fish pass will serve as a statement of goodwill to assist with current environmental concerns primarily related to fish migration. This will allow fish to move freely up and down the river without impediment to migratory spawning or being endangered by the 24 foot drop over the dam. Exhibit 2.1 and 2.2 illustrates Conceptual Layouts outlining proposed fish passage.

3.3.7 References

- CA Department of Fish and Game Hunting and Fishing Regulations, Retrieved from <http://www.dfg.ca.gov/regulations/>
- *Stakeholder Review Draft*, Daguerre Point Dam Fish Passage Improvement Project 2002 Water Resource Studies, ENTRIX, Inc. June 2003
- Yuba River Development Project: Aquatic Resources. (2009). Yuba County Water Agency: Preliminary Information Package. Retrieved from http://www.ycwa-relicensing.com/Relicensing%20Documents/Relicensing%20Documents%2001%20-%20Preliminary%20Information%20Package/7_03%20-%20Aquatic%20Resources.pdf.
- Yuba River Redd Dewatering and Juvenile Stranding Report. (2010). USFWS Energy Planning and Instream Flow Branch. Retrieved from <http://www.yubaaccordmt.com/Studies%20%20Reports/Redd%20Dewatering%20and%20Fry%20Stranding/Yuba%20River%20Mon%20and%20Eval%20Plan.pdf>.
- River Dart: Fish Monitoring and Live Fish Trials. Ritz Atro Archimedes Screw Turbine. (2007). Fishtek.

3.4 Wildlife and Botanical Resources [§ 5.6 (D)(3)(V)]

The complex array of habitats in Yuba County supports abundant and diverse fauna because large tracts of land are covered by habitats known to have outstanding value for wildlife, such as mixed coniferous forests and oak woodlands. Sierran mixed conifer habitat supports 355 species of animals (Verner and Boss 1980), while oak woodlands provide habitat for more than 100 species of birds, 60

species of mammals, 80 species of amphibians and reptiles, and 5,000 species of insects (Verner and Boss 1980, Pavlik et al. 1991).

The floodplains and riparian forests of western Yuba County are essential for aquatic communities and many species of terrestrial plants and wildlife. Although the riparian forests of the Feather, Yuba, and Bear Rivers have been adversely affected by past and current human activities, they continue to support areas of high biological value. Wildlife diversity is generally high in the lower montane coniferous forest types that occupy the eastern portion of the county. Amphibians and reptiles found in lower montane forest and woodlands include Pacific treefrog (*Hyla regilla*) and rubber boa (*Charina bottae*). Common resident birds in these forests include Stellar's jay (*Cyanocitta stelleri*) and hairy woodpecker (*Picoides villosus*). Migratory species that use these forests for breeding during summer months include western tanager (*Piranga ludoviciana*), Nashville warbler (*Vermivora ruficapilla*), and black-headed grosbeak (*Pheucticus melanocephalus*). Common mammals in lower montane coniferous forests include Douglas' squirrel (*Tamiasciurus douglasii*), mule deer (*Odocoileus hemionus*), and black bear (*Ursus americanus*).

Oak and other hardwood habitats at middle elevations are important for a large percentage of the wildlife species found in Yuba County. Reptiles and amphibians found in oak woodlands include California slender salamander (*Batrachoseps attenuatus*), western fence lizard (*Sceloporus occidentalis*), and common kingsnake (*Lampropeltis getula*). Common birds in oak woodland include acorn woodpecker (*Melanerpes formicivorus*), western scrub-jay (*Aphelocoma californica*), and oak titmouse (*Baeolophus inornatus*). Mammals that characterize oak woodland habitat include mule deer, western gray squirrel, gray fox (*Urocyon cinereoargenteus*), and bobcat (*Lynx rufus*).

Chaparral generally has lower wildlife diversity than most forest and woodland habitats. However, chaparral does provide habitat for many wildlife species, including some that are considered rare elsewhere. Reptiles found in chaparral include western rattlesnake (*Crotalus viridis*), western fence lizard, and western whiptail (*Aspidoscelis tigris*). Common birds in chaparral at low elevations include wrentit (*Chamaea fasciata*), Bewick's wren (*Thryomanes bewickii*), California towhee (*Pipilo crissalis*), and California quail (*Callipepla californica*). At higher elevations, chaparral can provide habitat for mountain quail (*Oreortyx pictus*), fox sparrow (*Passerella iliaca*), and green-tailed towhee (*Pipilo chlorurus*). Mammals such as coyote, gray fox, bobcat, mule deer, and mountain lion use this habitat through established wildlife trails and areas disturbed by fire and brush removal.

Annual grasslands generally support lower wildlife diversity than woodland and shrub dominated habitats but are invaluable to the grassland-dependent species found in the county. A great diversity and abundance of insects rely on grasslands. Reptiles found in annual grasslands include western

fence lizard and gopher snake (*Pituophis catenifer*). Birds that are common in this habitat include western meadowlark (*Sturnella neglecta*), Say's phoebe (*Sayornis saya*), and savanna sparrow (*Passerculus sandwichensis*). Mammals known to use this habitat include California ground squirrel (*Spermophilus beecheyi*), black-tailed jackrabbit (*Lepus californicus*), pocket gopher (*Thomomys mazama*), and coyote (*Canis latrans*).

Agricultural land and lands dominated by urban development support many wildlife species, most of which are highly adapted to these disturbed environments. Agricultural land is not generally considered important wildlife habitat, but is used by many species, particularly as foraging habitat. Wildlife found in agricultural areas varies by crop type and time of year. Common wildlife expected in most agricultural regions of Yuba County include Brewers blackbird (*Euphagus cyanocephalus*), American crow (*Corvus brachyrhynchos*), red-tailed hawk (*Buteo jamaicensis*), house finch (*Carpodacus mexicanus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and opossum (*Didelphis virginiana*).

Wildlife found in urban areas is often dependent upon surrounding land uses and the presence or absence of nearby natural vegetation. In the more urbanized areas, a large percentage of the wildlife can be made up of exotic species such as rock pigeon (*Columba livia*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), house mouse (*Mus musculus*), and brown rat (*Rattus norvegicus*). Urban areas provide habitat for species also found in agricultural areas, such as mourning dove, American robin (*Turdus migratorius*), and western gray squirrel.

3.4.1 Upland Habitat(s) in the Project Vicinity, Including the Project's Transmission Line Corridor or Right-of-Way and a Listing of Plant and Animal Species that Use the Habitat(s)

The project location site is approximately eleven miles northeast of the City of Marysville and is situated roughly 11 miles upstream of the confluence with the Feather River. The areas surrounding the project site consist of rural undeveloped land, grazing land, great valley riparian forest, and low density residential developments. This valley landscape is characterized by variable terrain, which is primarily flat and has historically been covered by grasslands. Over the years, this region has been increasingly transformed into agricultural developments and shrub lands. The landscape along the river is very fertile with much vegetative growth, but as you move away from the river it becomes increasingly dry and sparse. Elevation ranges from 100 feet to 400 plus feet and continues to rise in an easterly direction towards the Sierra-Nevada Mountains. The elevation at the Daguerre Point Dam is roughly 145 feet.

Prominent conifer tree types include: Chaparral, Douglas-Fir, Ponderosa Pine, Sierran Mixed Conifer, and Mountain Hardwood-Conifer. Other trees include: Montane Hardwood, Blue Oak Woodland, Blue

Oak-Foothill Pine, Valley Oak Woodland, and Valley Foothill Riparian. In shrub dominated habitats the two main plant types are Montane Chaparral and Mixed Chaparral. Grassland areas are covered with a mix of annual grasses and freshwater plant growth. Figure 3.3 illustrates overall land cover for the Project vicinity. Additionally, Yuba River Development Project identified recent list of wildlife habitat types in the Yuba River area as shown in the Chart 3.10 below.

Chart 3.10 List of Wildlife Habitat in Yuba River Area

CWHR ¹	CalVeg Types ²	Acres ³	%
Annual Grassland (AGS)	Annual Grasses/Forbs	781	2.3
Barren (BAR)	Barren	1,524	4.5
Blue Oak—Foothill Pine (BOP)	Gray Pine, Blue Oak	608	1.8
Blue Oak Woodland (BOW)	Blue Oak	1,328	3.9
Cropland (CRP)	Agriculture	69	0.2
Douglas-fir (DFR)	Pacific Douglas-fir, Sitka Spruce, Douglas Fir, White Fir, Ponderosa Pine, Grand Fir	7,872	23.2
Fresh Emergent Wetland (FEW)	Tule-Cattail	1	0.003
Lacustrine (LAC)	Agriculture Ponds, Water Features, General Water (i.e., lakes, ponds, reservoirs, diversion impoundments)	5,359	15.8
Mixed Chaparral (MCH)	Lower Montane Mixed Chaparral, Manzanita Chaparral	273	0.8
Montane Chaparral (MCP)	Deerbrush, Greenleaf Manzanita, Huckleberry Oak, Pinemat Manzanita, Upper Montane, Mixed Chaparral	245	0.7
Montane Hardwood—Conifer (MHC)	California Black Oak, Canyon Live Oak, Live Oak-Madrone, Interior Mixed Hardwood, Ponderosa Pine, Douglas Fir, Incense Cedar	2,219	6.5
Montane Hardwood (MHW)	California Black Oak, Canyon Live Oak, Interior Live Oak, Interior Mixed Hardwood, Montane Mixed Hardwood	7,683	22.7
Montane Riparian (MRI)	Bigleaf Maple, Black Cottonwood, Cottonwood-Alder, Dogwood, Fremont Cottonwood, Mixed Riparian Hardwood, Mountain Alder, Red Alder, Riparian Mixed Shrub, White Alder, Willow, Willow-Alder, Willow-Aspen	17	0.1
Ponderosa Pine (PPN)	Ponderosa Pine	2,200	6.5
Riverine (RIV)	General water (i.e., rivers and streams)	649	1.9
Sierran Mixed Conifer (SMC)	Mixed Conifer-Fir, Mixed Conifer-Pine, Ponderosa Pine-White Fir	2,483	7.3
Urban (URB)	Urban	239	0.7
Valley Oak Woodland (VOW)	Black Walnut, Valley Oak	32	0.1
Valley Foothill Riparian (VRI)	California Sycamore, Giant Reed/Pampas Grass	310	0.9
Wet Meadow (WTM)	Unknown Wet Grasses/Forbs, Wet Grasses/Forbs	6	0.02
Total	20 CWHR habitat types	33,897	100

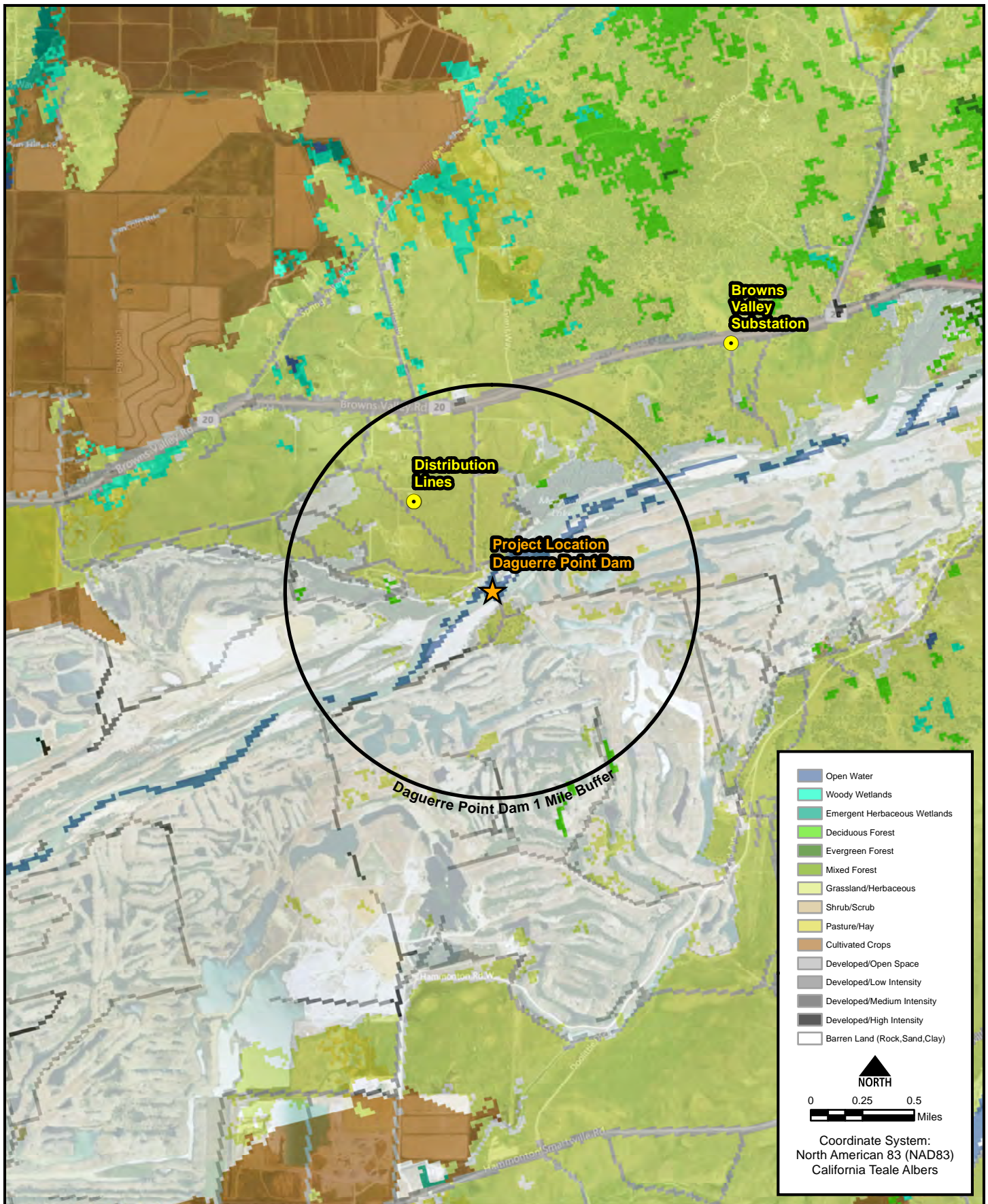
¹ de Becker and Sweet 1988, CDFG 2009a, 2009d

² USFS 2004

³ Rounded to nearest acre

3.4.2 Temporal or Special Distribution of Commercially, Recreationally, or Culturally Important Species

As identified in the Yuba River Water, there are various commercially, recreationally, or culturally important species. Table 7.4.3-1, extracted from the Yuba County Water Agency's Yuba River Development Project PAD, identifies a comprehensive list of important species (Appendix D). However, many of these species that have the potential to occur within the project vicinity may only inhabit those lands at certain times of the year. As the Project will occupy no upland habitat there are no effects to species within these areas.



3.4.4. Potential Adverse Impacts and Issues

The new powerhouse structure will be constructed integral to the existing dam. The small amount of land area (approximately 0.4 acres) that will be directly impacted by the construction of the new facilities is located to the north of the dam and will have interconnection lines to a substation approximately 1.5 miles away. The ground cover in this area is very sparse and includes a light vegetative screening of grass, shrubs, and small trees. The majority of the surrounding land is dry with little vegetative cover. Necessary removal of any screening material during construction of the project will be replaced by similar screening material at the conclusion of the construction project. Neither temporary construction nor subsequent operation of the project will modify the current vegetative cover. Therefore, no significant adverse impacts are anticipated. However, the Applicant will implement preventive measures to minimize any potential adverse impacts to wildlife and botanical resources.

3.4.3 Proposed Mitigation and Enhancement Measures

Wildlife Resources

The Applicant's objectives are to: (1) minimize disturbance to wildlife and habitats, and (2) protect sensitive species in the project area. Construction timing and methods will be planned in accordance with these goals. Operation of the facilities will also be in harmony with these objectives.

Botanical Resources

The Applicant's objectives are to: (1) maintain existing plant communities, (2) protect species with conservation priority, and (3) prevent the spread of noxious weeds. Prior to construction, the Applicant will identify any sensitive plants within areas to be disturbed and either prevent or mitigate effects to these species. Construction activities will be planned to avoid disturbance to existing communities and prevent the spread of noxious weeds. A comprehensive weed management plan will be included in the preliminary licensing proposal. All disturbed areas will be actively managed to facilitate return to their original vegetation condition. Once operational, project facilities will be run in a manner that minimizes disturbance to plant communities.

3.4.4 References

- Yuba County Water Agency, Yuba River Development Project. Retrieved from http://www.ycwarelicensing.com/Relicensing%20Documents/Relicensing%20Documents%2003%20-%20Pre-Application%20Document/2010-1105%20-%20Pre-Application%20Document/020%20-%207_04%20-%20Wildlife%20Resources.pdf
- Yuba County General Plan Update, November 2007. Retrieved from <http://www.yubavision2030.org/GPU%20%20DOCUMENTS/Background%20Reports/Background%20Reports/Biological%20Resources.pdf>

3.5 Description of Floodplains, Wetlands, Riparian, and Littoral Habitat [§ 5.6 (D)(3)(VI)]

Yuba County participates in the National Flood Insurance Program and therefore the regulatory floodplain is identified for many watercourses in the county. Participation in the program requires the county (for unincorporated areas) to manage development in the floodplain to conform with the Flood Insurance Rate Map (FIRM) for the river. The FIRM for the study area near Daguerre Point Dam is dated May 17, 1982. The Yuba River and adjoining Goldfields are located in the regulatory floodplain, as defined on the FIRM (Figures 3.4 and 3.4b). The area is listed as Zone A and was determined through approximate methods. That is, the floodplain was delineated by estimating the boundaries based on historic flooding and professional judgment, as opposed to hydraulic modeling. The floodplain that was delineated with hydraulic modeling extends from the Feather River confluence upstream to near Walnut Avenue (about river mile 8), downstream of Daguerre Point Dam.

Upstream of the dam, flow depths ranged from 20 to 34 feet at various locations along the river (USACE 2002). The slope of the river bed and water surface elevation becomes flatter with distance downstream. Water surface elevations in the lower reaches of the river are influenced by backwater from the Feather River to about river mile (RM) 6. The inflow hydrograph that the ACOE used for the modeling was based on the January 1997 flood, with a flood peak of 161,000 cfs. The flood hydrograph is about 15 days long from initial rise to the return to baseflow. The peak flow occurs 181 hours (7.5 days) after the initial rise. The magnitude of the 1997 flood is similar to the 100-year flood peak and therefore, the peak flow of 161,000 cfs was used in the Hydrologic Engineering Centers River Analysis System (HEC-RAS) model. Table 3.5 shows the five largest measured floods in the Lower Yuba River as a comparison and reference.

The USACE recently developed a HEC-RAS model of the lower Yuba River to simulate a flood profile to use in designing levee improvements in the Marysville area. This hydraulic model is based on new topography and new river cross sections, relative to the 1982 FIRM prepared for the Marysville area. The purpose of the revised model is to develop a flood profile for use in the levee design project.

The HEC-RAS model was intended to address the one-dimensional flow conditions during flood events. The HEC-RAS model provided calibration information that was then used in the FLO-2D and MODFLOW models developed by the USACE (2002). The model extended from the Feather River confluence to about 5 miles upstream of Daguerre Point Dam. The reach was simulated with two models; one model upstream of Daguerre Point Dam and one downstream. The dam is about 20 feet high and therefore creates a discontinuity in the water surface. The HEC-RAS analysis performed for the lower Yuba River Investigations (USACE 2002) suggest a flow depth ranging from approximately 18 feet just downstream of Daguerre Point Dam to 55 feet near the confluence with the Feather River.

Table 3.5

Five Largest Measured Floods in the Lower Yuba River

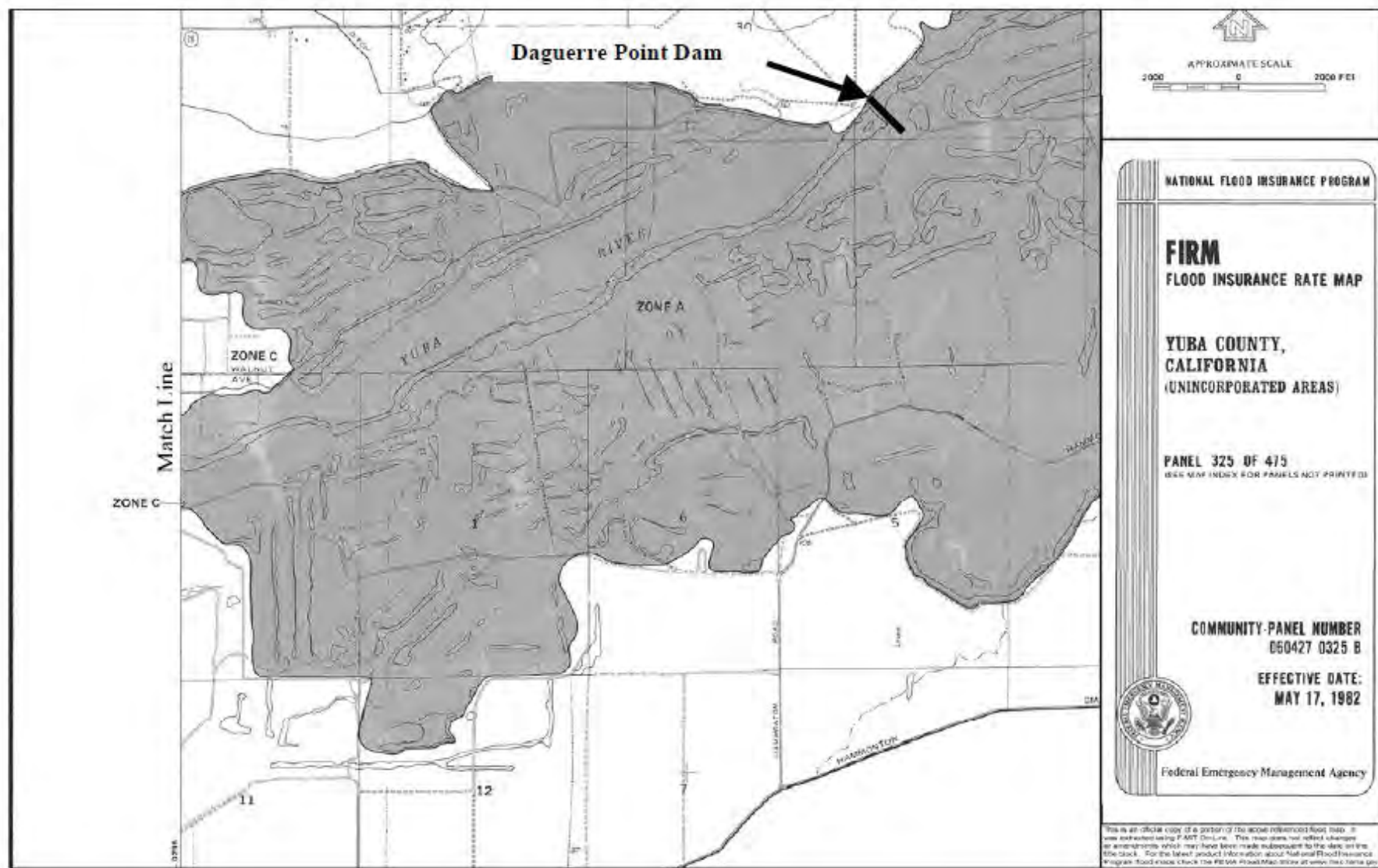
Location	Gauge Number	Peak Flow Peak Day				
		1 st	2 nd	3 rd	4 th	5 th
Yuba River At Smartville	11419000	120,000 3/26/28	111,000 1/15/09	100,000 3/19/07	95,000 12/11/37	64,700 3/30/40
Yuba River Below Englebright	11418000	171,000 12/22/64	150,000 2/1/63	148,000 12/23/55	135,000 1/2/97	109,000 11/21/50
Yuba River At Marysville	11421000	180,000 12/22/64	161,000 1/2/97	146,000 2/1/63	136,000 12/23/55	111,000 2/19/86
Deer Creek Near Smartville	11418500	14,000 3/28*	12,100 2/17/86	11,600 10/13/62	11,400 1/1/97	11,300 3/9/43

* - No day provided in record

Flood Seepage

The USACE studied the surface and groundwater flows along the Yuba River to support design of flood protection improvements for Marysville (USACE 2002). The study estimated groundwater discharge from the river to the area south of the Yuba River levees during floods. The findings show that during flood events, inundation of areas inside the levees recharges the aquifer and drives water from the aquifer to the land surface outside the levees. The modeling estimated that during the 50-, 100-, and 200- year flood events, the total seepage volume to the ground surface is approximately 2, 74, and 194 acre-feet, respectively. Note that these volumes do not directly indicate how much recharge to the aquifer is occurring. Although some of the seepage predicted by the model would occur in the Goldfields near Daguerre Point Dam, most of the predicted seepage is at the downstream end of the Goldfields. The seepage rate is simulated to reach a maximum rate of 1.44 cfs at 672 hours (28 days) after the initial rise of the 100-year flood. Most of the seepage for the 100-year and 200- year floods would occur downstream of Daguerre Point Dam, near Patrol Levee (about RM 7).

Assuming that the total groundwater recharge were 1,000 times the amount of seepage, the seepage to the ground surface during the 200-year flood (194 acre-feet), the recharge volume would be equivalent to approximately 0.06 inches of rain falling on the watershed of the Yuba River downstream of Englebright Dam (37,121 acres). Thus, the recharge produced by the river flooding is expected to be much smaller than the potential recharge resulting from a significant rainfall on the watershed. From these data it appears that seepage from the channel does not affect the peak flood flow at the dam site.



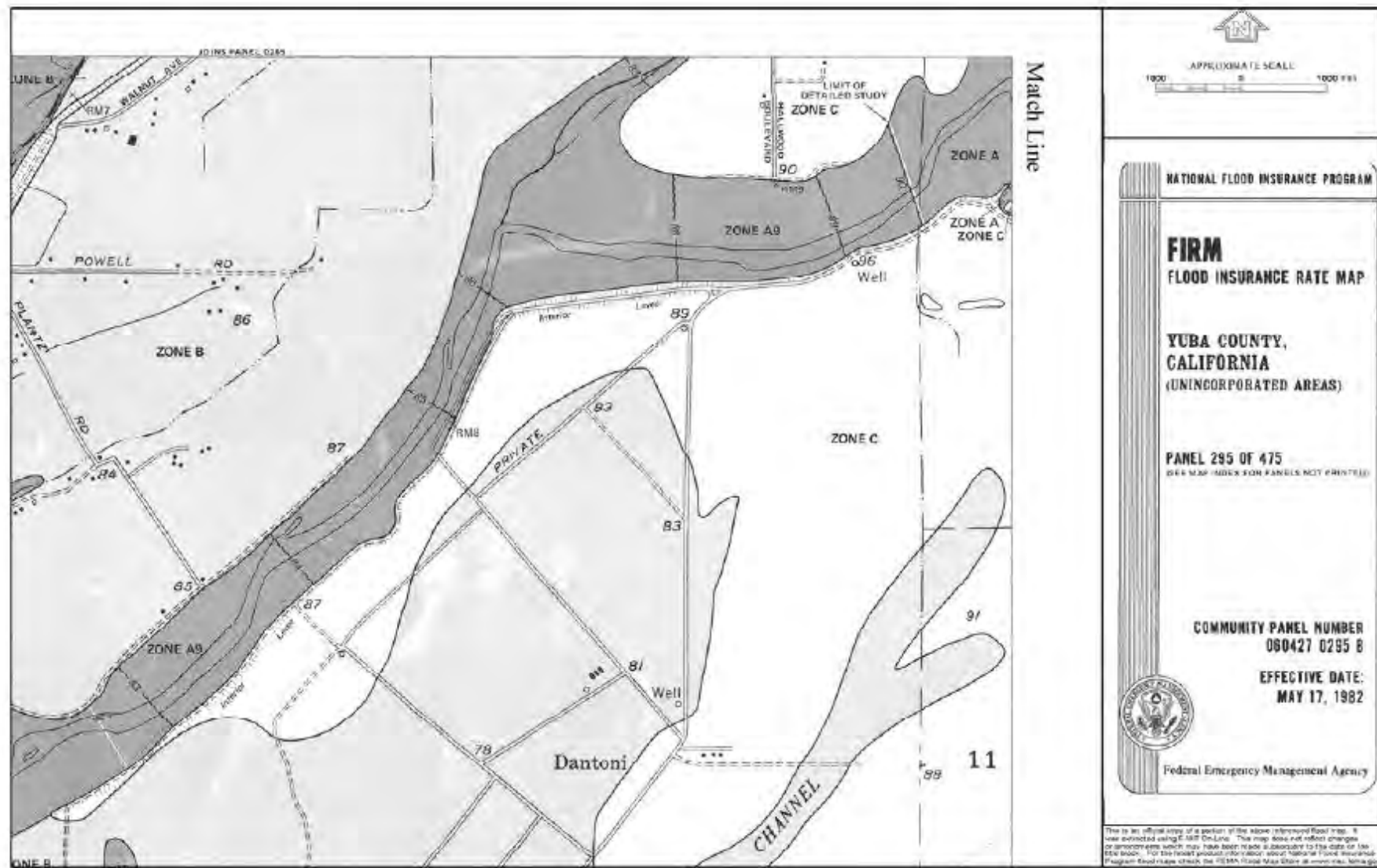


Figure 3.4b Flood Insurance Rate Map for the Daguerre Point Dam Area (continued)

3.5.1 A List of Plant and Animal Species, Including Invasive Species, That Use the Wetland, Littoral, and Riparian Habitat

Yuba County supports habitat ranging from very disturbed areas to high-quality native plant communities. However, much of the habitat's value is decreased because of adjacent urban development and agricultural uses. Table 3.6 shows the acreage of all habitat types occurring in Yuba County. The major habitats in the county have been grouped into five categories:

1. coniferous forest habitats;
2. woodland habitats;
3. shrub-dominated habitats;
4. herbaceous-dominated habitats, and
5. other habitats.

Table 3.6
Habitat Types in Yuba County and Acreage

Category	Habitat Type	Total Acres
Coniferous Forest Habitats	Sierran Mixed Conifer	28,599
	Douglas-Fir	33,514
	Ponderosa Pine	13,579
	Closed-Cone Pine-Cypress	74
Woodland Habitats	Montane Hardwood-Conifer	14,983
	Montane Hardwood	41,460
	Blue Oak Woodland	46,443
	Blue Oak-Foothill Pine	3,189
	Valley Oak Woodland*	1,176
	Valley Foothill Riparian*	343
Shrub-Dominated Habitats	Montane Chaparral	753
	Mixed Chaparral	1,803
Herbaceous-Dominated Habitats	Annual Grassland	42,701
	Freshwater Emergent Wetland*	21
	Wet Meadow	7
Other Habitats	Urban, Barren, Agriculture, Open Water	15,870
Not Yet Mapped		167,540
Total		412,097

Sensitive habitats are marked with * and are described in more detail below under "Sensitive Biological Resources."

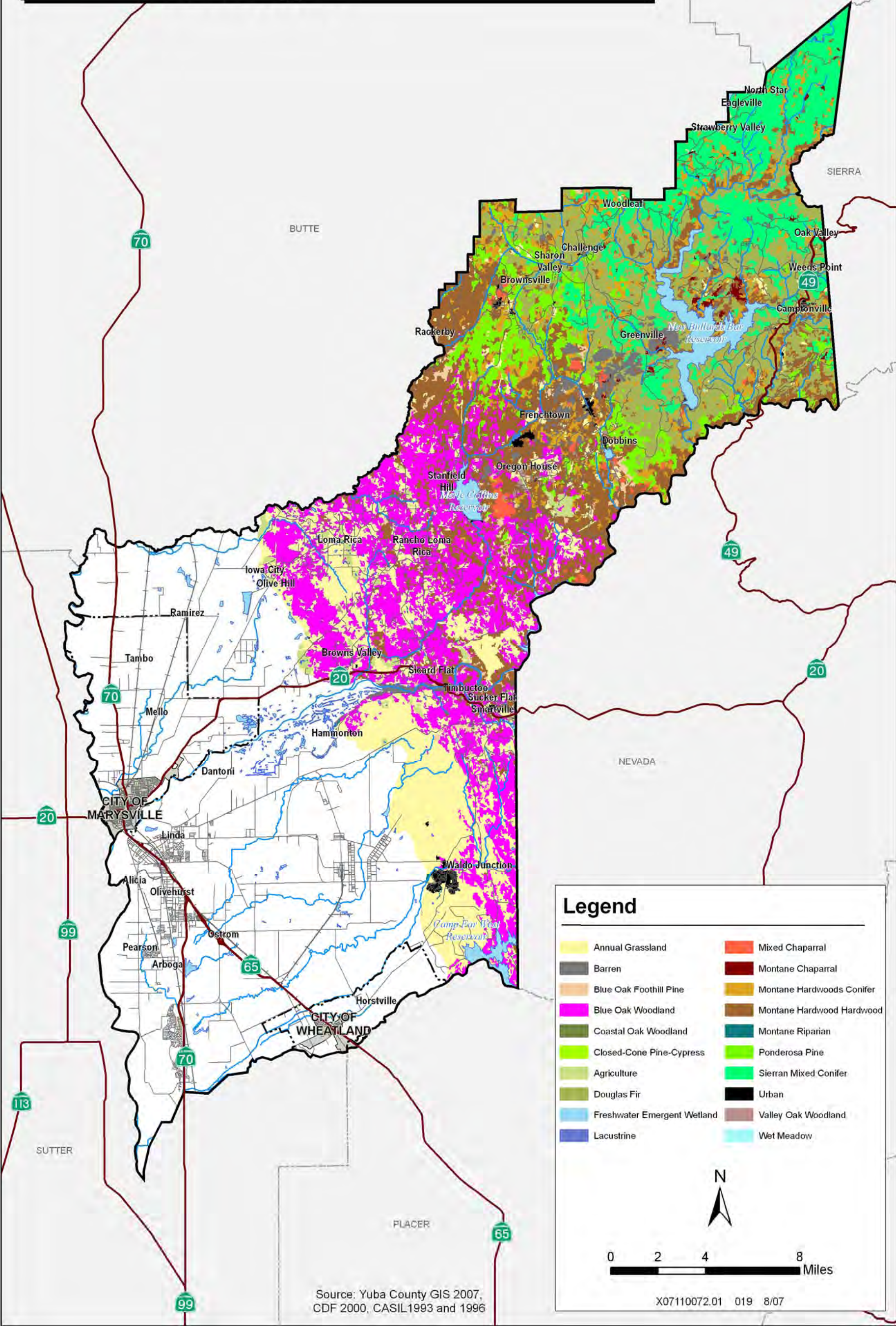
Sources: CDF-FRAP 2002, data compiled by EDAW in 2007

Yuba County General Plan Biological Resources Exhibit BIO-1 shows types of habitat in Yuba County.



YUBA COUNTY GENERAL PLAN

Exhibit BIO-1: Extent and Location of Habitat Types



Wetlands

Any wetlands that meet the criteria of “waters of the United States” are thereby under the jurisdiction of the USACE and the United States Environmental Protection Agency (EPA) pursuant to Section 404 of the federal Clean Water Act (CWA). The definition developed by USACE considers those areas which *“...are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions”* as wetlands. Under the USACE definition, all three of the following conditions must be present (CWIS 1998):

- a dominance of wetland plants
- hydric soils (low oxygen concentrations in the upper layers during the growing season)
- wetlands hydrology

Based on the desktop analysis, there are some fringing wetlands along the sides of the Yuba River, especially down at the bottom of the two fish ladders. The Applicant will assess impacts on wetlands by conducting a site survey during the draft license application stage.

Riparian Habitat

Riparian applies to the vegetation zone and other biological resources “...contiguous to and affected by surface and subsurface hydrologic features of perennial or intermittent lotic (lakes) and lentic (rivers, streams, or drainage ways) water bodies.” (USFWS 1997a). Although traditionally applied only to lotic systems, in the western United States riparian is also used to describe the distinctive vegetation associated with the moister conditions around lakes. Wetlands may occur within riparian areas (i.e., riparian wetlands), but are differentiated on the basis of wetter conditions and related criteria.

Littoral Habitat

In lacustrine, or lake, systems, the littoral habitat corresponds to the shallow water area beginning at the lowest depth at which rooted aquatic plants occur, regardless of whether plants are present. Cowardin *et al.* (1979) describes the littoral zone as the wetland habitats, which extend to a depth of 6.6 feet below the low water line. Submerged bars, beaches, and flats are examples of littoral habitats. On reservoirs with a pronounced seasonal drawdown, the seasonally exposed shallows may be classified as “...littoral unconsolidated shore, seasonally flooded, impounded (L2USCh).” Emergent wetlands along the shallow edges of lakes are technically littoral, but are classified in the NWI system as palustrine. Based upon the desktop study and Yuba River Development Project PAD review, there are no existing, relevant, and reasonably available descriptions of littoral habitat in the Project Area.

3.5.2 Map of Wetlands, Riparian, and Littoral Habitat

Figure 3.5 wetlands data is gathered through the USFWS mapping tool and it shows project area wetlands data. .



Figure 3.5

Data Sources:
ESRI Basemap (Imagery)
US Fish and Wildlife Services
Prepared by Matthew McSpadden
Version: 3
Last Revised: 08 Jun, 2012

3.5.3 Estimates of Acreage for Each Type of Wetland, Riparian , or Littoral Habitat, Including Variability in Such Availability As a Function of Storage at a Project That is Not Operated in Run-of-River Mode

The total project footprint is approximately 1 acre. No significant amount of land will be covered by any type of unique land formation, and variability will not be fluctuating by the project operations.

3.5.4 Potential Adverse Impacts and Issues

Due to the small footprint of the DPDP and non-existence of significant wetlands, riparian, and littoral habitat, no adverse impacts are anticipated. However, site survey and biological habitat assessment will be conducted during the license application preparation.

3.5.5 Proposed Mitigation and Enhancement Measures

The Applicant's primary objective is to maintain and protect the existing riparian, littoral zone, and associated wetlands. All project areas will be formally surveyed for jurisdictional wetlands. In the event that a project feature cannot be accommodated outside of a local wetland, the Applicant will complete the appropriate permitting and just mitigation will be provided.

3.5.6 References

- *Stakeholder Review Draft*, Daguerre Point Dam Fish Passage Improvement Project 2002 Water Resource Studies, ENTRIX, Inc. June 2003
- Yuba River Development Project. Retrieved from http://www.ycwarelicensing.com/Relicensing%20Documents/Relicensing%20Documents%2001%20-%20Preliminary%20Information%20Package/7_06%20-%20Wetlands,%20Riparian%20and%20Littoral%20Habitat.pdf

3.6 Rare, Threatened, and Endangered Species [§ 5.6 (D)(3)(VII)]

3.6.1 Description of Listed Rare, Threatened, and Endangered, Candidate, or Special Status Species in the Project Vicinity

There are no mammals in the project area included in either the California State or Federal list as endangered, threatened, or special concern. According to the Environmental Data Report (EDR), in Appendix E, there are two endangered species of birds listed in the project area. They are the Brown Pelican and the Bald Eagle, which are both listed as endangered species in California.

There are three types of fish and crustaceans that are listed as endangered in this area. They are the Vernal Pool Fairy Shrimp, the Vernal Pool Tadpole Shrimp, and the Steelhead of California. These aquatic animals are listed as endangered and reside within the project area. To limit the impact on these species the dam a fish ladder will be constructed and located on the side of the dam. Below is a table of endangered species identified for Yuba County based on USFWS data. Table 3.7 lists federal and state Threatened and Endangered Species (T&E) species identified for Yuba County.

Table 3.7 Threatened & Endangered Species Identified for Yuba County

COMMON NAME	FED STATUS	CAL STATUS
California red-legged frog	Threatened	None
bald eagle	Delisted	Endangered
Swainson's hawk	None	Threatened
California black rail	None	Threatened
western yellow-billed cuckoo	Candidate	Endangered
burrowing owl	None	None
great gray owl	None	Endangered
bank swallow	None	Threatened
chinook salmon - Central Valley spring-run	Threatened	Threatened
Pacific fisher	Candidate	None
giant garter snake	Threatened	Threatened
vernal pool fairy shrimp	Threatened	None
vernal pool tadpole shrimp	Endangered	None
valley elderberry longhorn beetle	Threatened	None
Hartweg's golden sunburst	Endangered	Endangered
Layne's ragwort	Threatened	Rare

3.6.2 Identification of Habitat Requirements *Aquatic*

Central Valley fall and late fall-run Chinook salmon

The Yuba supports runs of wild Chinook salmon and steelhead trout. Estimates of historic (pre-gold rush) runs suggest that the Yuba once supported 10% of the total Sacramento Basin salmon and steelhead runs of 1-2 Million fish per year. In recent years, spring Chinook runs have held steady at 200-300 returning adults per year. Wild Fall-run Chinook numbers have dropped to a few thousand returning adults in 2007 and 2008, compared to an average of 15,000 fish in recent decades. Steelhead runs are also depleted with some annual estimates as low as 100 returning adults.

The Yuba River is one of the few major rivers in the Sacramento Valley without a fish hatchery. The Yuba likely produces the highest number of wild (non-hatchery) Chinook salmon in the entire Central Valley watershed. Habitat activities in recent years caused loss of some wild salmon and steelhead; and efforts are underway to improve habitat conditions including riparian and side channels in the lower river, and to restore wild salmon and steelhead in the upper river. Additionally a dozen miles downstream, inadequate fish ladders at Daguerre Point Dam delay and prevent adult salmon from reaching their best available spawning grounds between the two dams. Daguerre Point Dam is believed to kill juvenile salmonids through entrainment and increased predation. Daguerre Point and Englebright Dams, operated by the Army Corps of Engineers, will be improving the fish passage with the implementation of a state of the art low flow baffled fish pass.

Four principal life history variants of Chinook salmon are recognized in the Central Valley and are named for the timing of their spawning runs: fall-run; late fall-run; winter-run; and spring-run. Seventeen distinct groups, or ESUs, of naturally-spawned Chinook salmon occur from southern California to the Canadian border and east to the Rocky Mountains; five of these groups occur in California (Yuba River Development Project: Aquatic Resources, 2009). All variants (i.e., fall-, late fall-, winter-, and spring-runs) occur in the Project Vicinity (NMFS 2008a) and the spring-, fall-, and late fall-runs have been documented in the lower Yuba River (Yuba River Development Project: Aquatic Resources, 2009). Of these variants, the Central Valley fall-/late fall-run Chinook salmon ESU (a combination of the fall- and late fall-runs as characterized by NMFS) was included on the Species of Concern List under the ESA in 2004 due to concerns about population size and hatchery influence. Although an important commercial and recreational fish species, recent declines in populations of this species have resulted in harvest management restrictions.

Pacific Salmon

NMFS has recently (August 2011) completed an updated status review of five Pacific salmon ESUs and one steelhead DPS, including both the Central Valley spring-run Chinook salmon ESU and Central

Valley steelhead DPS, and concluded that the species' status should remain as previously listed (76 FR 50447). The 2011 Status Reviews (NMFS 2011a, NMFS 2011b) additionally stated that although the listings will remain unchanged since the 2005/2006 reviews, the status of these populations have worsened over the past five years and recommended that their status be reassessed in two to three years as opposed to waiting another five years. The status reviews in 2005 and 2006 had also concluded that the species' status should remain as previously listed (70 FR 37160 and 71 FR 834).

California Central Valley Steelhead

California Central Valley steelhead was listed as threatened under the ESA on March 19, 1998 (63 FR 13347). This DPS consists of steelhead populations in the Sacramento and San Joaquin rivers (inclusive of and downstream of the Merced River) basins in California's Central Valley. The Coleman National Fish Hatchery and FRFH steelhead populations have been included as part of the Central Valley steelhead DPS in the 2006 modification of the Central Valley steelhead listing status (71 FR 834, January 5, 2006). These populations were previously included in the DPS but were not deemed essential for conservation and thus not part of the listed steelhead population. Critical habitat was designated for steelhead in the Central Valley on September 2, 2005 (70 FR 52488). Critical habitat includes the stream channels to the ordinary high water line within designated stream reaches such as those of the American, Feather, and Yuba rivers, and Deer, Mill, Battle, Antelope, and Clear creeks in the Sacramento River basin; the Calaveras, Mokelumne, Stanislaus, and Tuolumne rivers in the San Joaquin River basin; and the Sacramento and San Joaquin rivers and the entire Delta.

Hardhead Minnow

The hardhead minnow is a large cyprinid species that can reach lengths of over 23 inches, and generally occurs in large, undisturbed, low- to mid-elevation, cool- to warm water rivers and streams (Moyle 2002). Hardhead was designated CSC by CDFG in 1995, and is listed as a Class 3. Watch List species, meaning that it occupies much of its native range but was formerly more widespread or abundant within that range (CDFG 2009a, b). Historically, hardhead were considered a widespread and locally abundant species in California, but their specialized habitat requirements, widespread alteration of downstream habitats, and predation by smallmouth bass, have resulted in population declines and isolation of populations (Yuba River Development Project: Aquatic Resources. 2009).

Sacramento Splittail

The Sacramento Splittail, a minnow, was federally listed as threatened on February 8, 1999, and delisted on September 22, 2003 (USFWS 2003b). However, the Sacramento Splittail are designated CSC (CDFG 2009a, b). Splittail are large cyprinids, growing in excess of 12 inches and are adapted to

living in freshwater and estuarine habitats as well as alkaline lakes and sloughs (Yuba River Development Project: Aquatic Resources. 2009).

Sacramento-San Joaquin Roach

The Sacramento-San Joaquin roach, a California species of special concern, is part of the California roach complex, which is composed of various subspecies. The Sacramento- San Joaquin roach is found in the Sacramento and San Joaquin River drainages, except the Pit River, as well as tributaries to San Francisco Bay. Sacramento-San Joaquin roach are generally found in small, warm intermittent streams, and are most abundant in mid-elevation streams in the Sierra foothills and in the lower reaches of some coastal streams(Yuba River Development Project: Aquatic Resources. 2009).

3.6.3 References to Known Biological Opinion, Status Reports, or Recovery Plans Pertaining to a Listed Species

In 2000, and again in 2007, the Sacramento District initiated Endangered Species Act consultation with the National Marine Fisheries Service (NMFS) for a Biological Opinion on the impacts of routine operation of the dams to threatened salmon, steelhead trout and green sturgeon. The 2007 Biological Opinion recommended several measures the district could take to improve habitat for these species, including adding gravel to the river for spawning habitat, which the district has implemented. A Sacramento federal court ordered NMFS to redraft the Biological Opinion in 2010, and in July 2011, required additional fish passage improvement measures at Daguerre Point Dam, which the district has also implemented.

2012 Jeopardy Biological Opinion

In October 2011, the district again initiated consultation with NMFS for a Biological Opinion on routine dam operation, submitting a draft Biological Assessment of the dam operation impacts developed under contract by leading Yuba River expert Paul Bratovich. On Feb. 29, 2012, NMFS issued a jeopardy Biological Opinion, meaning it had concluded that the dams threaten the existence of the species, recommending fish passage at Englebright and eventual removal of both dams. Under federal law, measures required by jeopardy opinions must be ‘reasonable and prudent,’ meaning they ‘can be implemented consistent with the scope of the action agency’s legal authority and jurisdiction (50 CFR §402.02).’ Neither dam removal nor fish passage at Englebright is currently authorized by Congress.

Future Fish Passage Study

To date, the Sacramento District has taken many positive steps to improve habitat in the Yuba River. A program to add gravel to the river to provide spawning habitat, designed by Dr. Greg Pasternack of the University of California-Davis, is underway. Use of that gravel by Chinook salmon has been documented by the Pacific States Marine Fisheries Commission. Additional gravel placement is

scheduled for summer 2012, as is placement of woody debris to further improve river habitat. Also, a fish passage study at Englebright Dam has been included in President Obama's fiscal years 2012 and 2013 budget proposals, a sign of the President's commitment to this issue. If authorized and funded, the study would allow the Sacramento District to investigate what further measures are feasible to improve habitat. The Sacramento District will continue to implement all measures within its authority to avoid jeopardizing these threatened species.

3.6.4 Extent and Location of Federally-Designated Critical Habitat or Other Habitat for Listed Species in the Project Area

Based upon the desktop study, no federally-designated critical habitat or other habitat for listed species occurs in the Project area.

3.6.5 Temporal and Spatial Distribution of the Listed Species within the Project Vicinity

There is no site-specific information on the temporal distribution of important animal species. However, temporal distribution and activity of species in the area will be typical of the species and overall climate conditions.

3.6.6 Potential Adverse Impacts and Issues

Proposed Project operations will not change the water level at the Dam. Project operation will not alter flows. However, temporary construction impacts might occur and to assist in this effort, studies are planned to inventory potentially affected terrestrial wildlife, bird species, and sensitive plants.

3.6.7 Proposed Mitigation and Enhancement Measures

The Applicant is proposing to operate the Project using existing flows, which provide existing baseline downstream water quality and aquatic habitat. Also the turbines used in the Project are specially designed to reduce and minimize impact to aquatic species. The specific turbines used in this project are the Ritz Atro Archimedes Screw Turbines, which have been tested and shown to have little to no impact on fish population and fish mortality (River Dart, 2007).

This study was conducted by Fishtek Ltd. And they conclude that, "so far 120 fish have been passed through without any fatalities or serious injuries likely to cause death. A few fish (3) suffered minor scale loss of a level unlikely to significantly influence long term survival. After 48 hours observation in tanks, all the fish were alive and swimming normally" (River Dart, 2007). No fish mortality are anticipated as a result of the proposed turbine mechanism.

3.6.8 References

- Jeopardy Biological Opinion: Englebright and Daguerre Point Dams. (2012). US Army Corps of Engineers. Retrieved from <http://www.spk.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/2137/Article/587/englebright-and-daguerre-point-dams.aspx>
- River Dart: Fish Monitoring and Live Fish Trials. Ritz Atro Archimedes Screw Turbine. (2007). Fishtek.
- Yuba River Development Project: Aquatic Resources. (2009). Yuba County Water Agency: Preliminary Information Package. Retrieved from http://www.ycwa-relicensing.com/Relicensing%20Documents/Relicensing%20Documents%2001%20-%20Preliminary%20Information%20Package/7_03%20-%20Aquatic%20Resources.pdf.

3.7 Recreation and Land Use [§ 5.6 (D)(3)(VIII)]

Wildlife viewing, fishing, waterfowl hunting, swimming, motor boating, rafting, sailing, and windsurfing are important water-enhanced or water-dependent recreational activities throughout California. The quality of recreation at lakes and reservoirs depends largely on surface water levels. Rafting and boating are popular activities that are often dependent on appropriate river flows and reservoir water levels for maximum enjoyment.

3.7.1 Text Description Illustrated by Maps of Existing Recreational Facilities, Type of Activity Supported, Location, Capacity, Ownership and Management

Potential changes in reservoir water surface elevations and river flows could affect water enhanced and water-dependent recreational activities such as boating, swimming, and fishing. Recreational resources analyzed in the Yuba Region include water-enhanced and water dependent recreation activities within the Yuba River Basin, including New Bullards Bar Reservoir, the North Yuba River downstream of New Bullards Bar Reservoir, Englebright Reservoir, areas along the lower Yuba River downstream of Englebright Reservoir to the confluence with the Feather River. The California State Water Project-Central Valley Project (CVP/SWP) waterways with recreational activities potentially influenced by altering facilities operation include the Sacramento River, Oroville Reservoir, the Feather River, the Delta and San Luis Reservoir.

Yuba County offers a variety of outdoor recreational opportunities but most of the recreation is water-oriented and includes boating, swimming, and fishing. Water-related and water enhanced recreational resources in the Yuba Region include New Bullards Bar Reservoir, the North Yuba River between New Bullards Bar Reservoir and Englebright Reservoir, Englebright Reservoir, and the lower Yuba River from below Englebright Dam to the confluence with the Feather River. Hunting and wildlife viewing opportunities in this region are enhanced by natural or impounded shallow water areas that attract waterfowl. Ducks nesting along natural streams and other waterways is common. Large numbers of ducks and geese are observed in Yuba County during the fall and winter. Most of the organized waterfowl hunting clubs are north of Marysville in rice producing areas. Agricultural water supplies used to flood rice fields in Yuba County are administered through water contracts and conjunctive use agreements between YCWA and its Member Units.

3.7.2 Recreational Use of Lands and Waters Compared to Facility or Resource Capacity

The area surrounding the Daguerre Point Dam and the proposed Project is very rural and has little use besides hydropower generation. There are no major developments in this area or in a one mile radius. Residents may utilize it for fishing or recreation, but it is not designated for such use. There are larger lakes nearby that are more popular for fishing and recreational use.

There is no formal fishing access currently available at the existing dam. Informal fishing that presently occurs in this area just west of the City of Marysville is done without city or county permission. This is a particularly narrow part of the Yuba River, so it does not offer many recreational uses. In more urbanized areas community and local parks are maintained. As urban and farm development progresses this area may become increasingly utilized by residents for recreational use, but as of now it has very few uses besides hydropower generation. Figure 3.6a shows the public lands that provide recreational opportunities within the Yuba Region. Figure 3.6 illustrates project vicinity recreational resources.

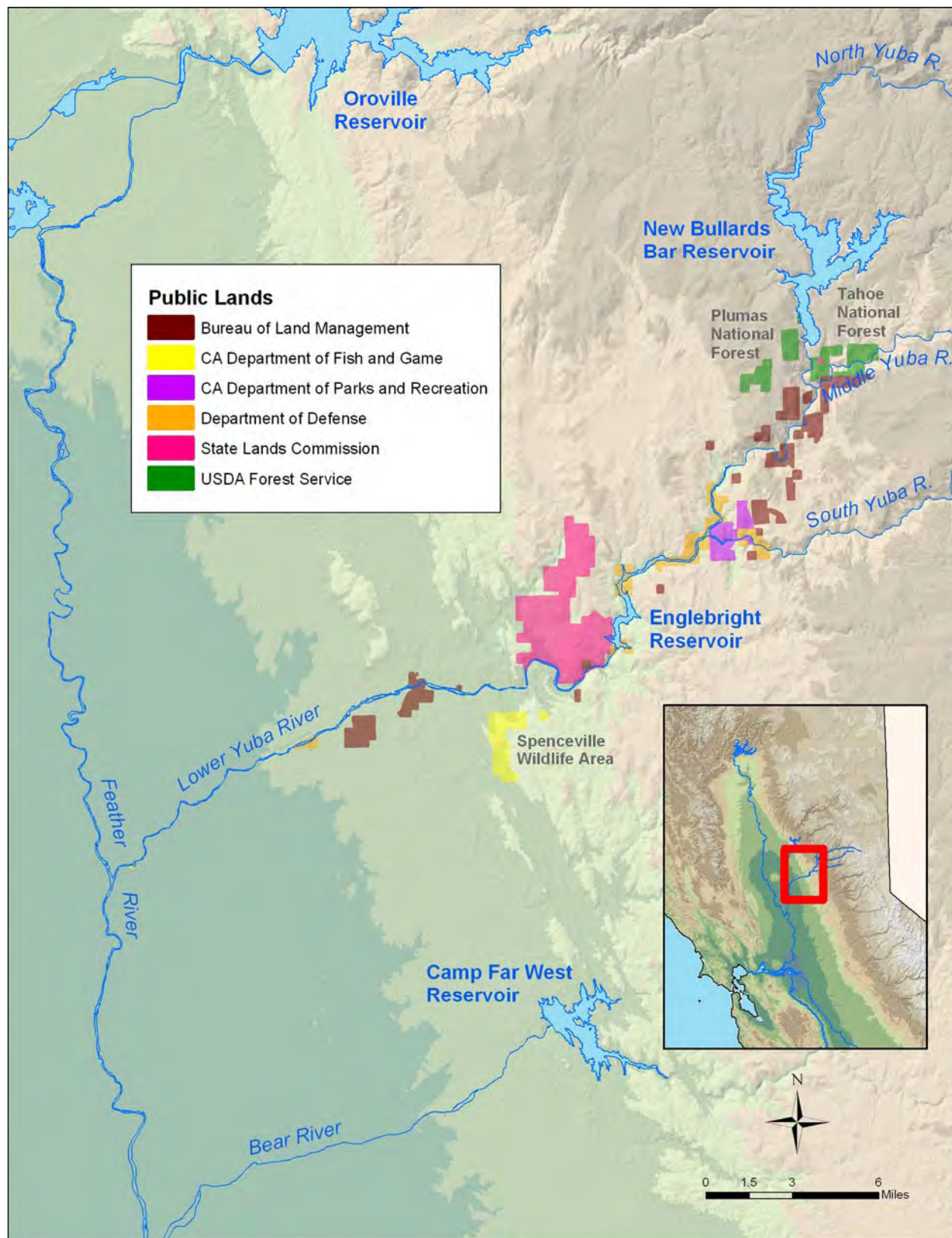


Figure 3.6a Public Lands that Provide Recreational Opportunities Within the Yuba Region

Lower Yuba River

The 24-mile long lower Yuba River extends from Englebright Dam to the Feather River confluence. Hiking and boating opportunities in the lower Yuba River are limited by poor access. Public river access in the 24-mile long lower Yuba River is available at Parks Bar approximately five miles northeast of Smartville, Sycamore Ranch near the Dry Creek and lower Yuba River confluence, and the Hallwood Avenue Access approximately five miles northeast of Marysville. Where access is available, fishing, picnicking, rafting, kayaking, tubing, and swimming are the dominant recreational uses. The lower Yuba River offers excellent American shad, Chinook salmon, and steelhead, smallmouth bass, and striped bass fishing.

Public Lands Managed by the Forest Service

The Forest Service manages two national forests in the Project region: The Tahoe National Forest (TNF) and Plumas National Forest (PNF). Each of these is described below.

Tahoe National Forest (TNF)

The TNF was initially established in 1891 as a 136,335 acre area within the Sierra Reserve established by President Benjamin Harrison. With the addition of the Yuba Forest Reserve in 1904, and the Tahoe Forest Reserve in 1905, TNF encompasses 800,000 acres (1,250 square miles) within Sierra, Nevada, and Placer counties. The Forest Service manages the TNF and PNF in accordance with the TNF Land and Resource Management Plan (LRMP) and the PNF LRMP, which establishes standards and guidelines. The LRMP sets two levels of management direction. One is forest-wide and the other is area specific. With respect to forest-wide management, direction comes from forest-wide goals, objectives, standards, and guidelines. Area-specific direction is set forth in the management direction for 106 areas and includes management area emphasis, standards, guidelines, and practices.

Plumas National Forest (PNF)

The PNF was established as the Plumas Forest Reserve by the General Land Office (GLO) in 1905. In 1906, the forest was transferred to the Forest Service, and in 1907, it became a national forest. In 1908, a portion of Diamond Mountain National Forest was added. PNF comprises 1,146,000 acres (1,791 square miles) of which 62,402 acres (92.5 square miles) are found in northern Sierra and northeastern Yuba counties. The PNF specific management area in the Project Area is the Challenge Management Area, managed by the Feather River Ranger District. The TNF specific management areas in the Project Area are the Oregon, Forty-Niner, and Bullards Management areas, managed by the Yuba River Ranger District.

Public Land Administered by the Bureau of Land Management

The United States Department of Interior (USDOI) Bureau of Land Management (BLM) administers public lands in the Project Region as part of Sierra Resource Management Area. The Sierra Resource Management Area encompasses approximately 230,000 acres of public land within Alpine, Amador, Calaveras, Colusa, El Dorado, Mariposa, Merced, Nevada, Placer, Sacramento, San Joaquin, Stanislaus, Sutter, Tuolumne, and Yuba counties (BLM 2007). BLM manages these resource management areas in accordance with the Sierra Resource Management Plan (SRMP).

Public Land Administered by the USACE

The USACE administers two areas in the Project Region: Englebright Dam Area and Daguerre Point Dam Area.

Englebright Dam Area

Englebright Dam was constructed in 1941 by USACE to trap sediment derived from anticipated hydraulic mining operations in the Yuba River watershed. Hydraulic mining in the Sierra Nevada was halted in 1884, but resumed on a limited basis until the 1930s (during the Great Depression) under the regulation of the California Debris Commission. Although no hydraulic mining in the upper Yuba River watershed resumed after the construction of the dam, the historical mine sites continued to contribute sediment to the river. Englebright is performing its primary function by trapping hydraulic mining sediment. It is approximately 25% full of sediment. Today, USACE's Englebright Reservoir is used primarily for recreation and hydropower. The lake is unique in that it offers boat-in camping only. USACE's Englebright Reservoir has a capacity of 70,000 ac-ft of which 45,000 ac-ft is usable capacity. Since the Yuba River Development Project began operation in 1970, the USACE's Englebright Reservoir water surface elevation is normally maintained between 517 feet and 525 feet for flat water recreation on the reservoir.

USACE's Daguerre Point Dam Area

USACE owns the 24-foot high Daguerre Point Dam on the Yuba River that was built in 1906 to prevent hydraulic mining debris from washing into the Feather and Sacramento rivers and it continues to perform this function. As described earlier, the dam was equipped with two fish ladders in 1937 that Chinook salmon and steelhead have difficulty, under certain flow conditions, locating and navigating. The dam was rebuilt in 1964 following damage caused by floods, and currently provides hydraulic head for upstream diversions and groundwater recharge to the Yuba North and South groundwater basins.

3.7.3 Existing Shoreline Buffer Zones within the Project Boundary

There are no formal shoreline buffer zones for the Lower Yuba River. Human caused erosion is minimized by the physical structure and condition of stream banks.

3.7.4 Current and Future Recreation Needs from Existing State or Regional Plans

The current recreational facilities are sufficient for current and near-future population in the area.

3.7.5 If the Potential Applicant is an Existing Licensee, its Current Shoreline Management Plan or Policy, if Any, with Regard to Permitting Development of Piers, Boat Docks and Landings, Bulkheads, and Other Shoreline Facilities on Project Lands and Waters

The Applicant is not an existing licensee.

3.7.6 A Discussion of Whether the Project is Located Within or Adjacent to a: Designated or Under Study for Inclusion in the National Wild and Scenic River System

Thirty-nine miles of the South Yuba River are designated and federally recommended as California Wild and Scenic River. This stretch of river between Lake Spaulding and Englebright Reservoir are noted for their large sculptural smooth boulders and bedrock, deep emerald pools, falls, and steep canyon walls. Swimming, viewing, and exploring opportunities attract thousands of people every year. Furthermore, the historic covered bridge at Bridgeport and the small, rustic town of Washington provide further aesthetic value and historic character. The Deguerre Point Dam is not located within this stretch of river. It is located approximately 10 miles South West of the Englebright Reservoir.

A State-Protected River Segment

No state-protected river segments are in or affected by the Proposed Project.

3.7.7 Description of Project Lands Under Study for Inclusion in the National Trails System or as a Wilderness Area

Exhibit 3.7 illustrates wilderness areas in Yuba River and the location of the DPDP. Based on this exhibit, there are no wilderness areas in the immediate vicinity of the Project.

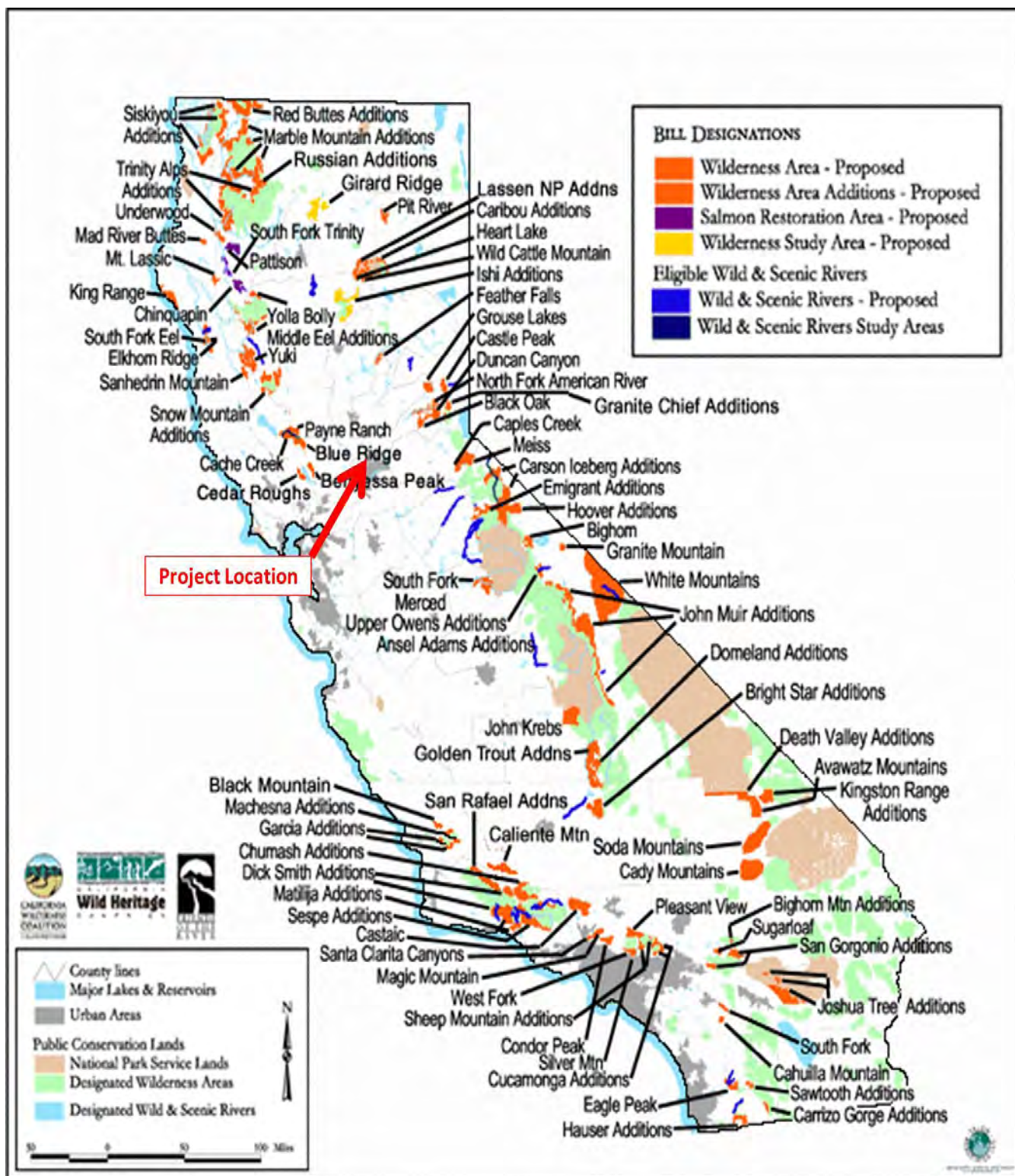


Exhibit 3.7 Wilderness Areas in Yuba River

3.7.8 Regionally or Nationally Important Recreation Areas

The South Yuba River State Park is located approximately fifteen miles north east of the Daguerre Point Dam in Nevada County. The 11,000 acre park running along the South Yuba River Canyon is owned by the California Department of Parks and Recreation (2,000 acres) and the Federal Government (9,000 acres).

3.7.9 Non-Recreational Land Use and Management Within the Project Boundary

The vast majority of private land within the FERC Project Boundary is located in Yuba County. Yuba County land use is varied and classified for either private or public use. The predominant land uses in Yuba County are agriculture (278,943 acres), forested lands (56,000 acres), open space/grazing (132,416 acres), and military installation (22,944 acres). Yuba County comprises 411,444 acres whose ownership information is contained in Table 3.8.

Table 3.8
Yuba County Land Use Ownership

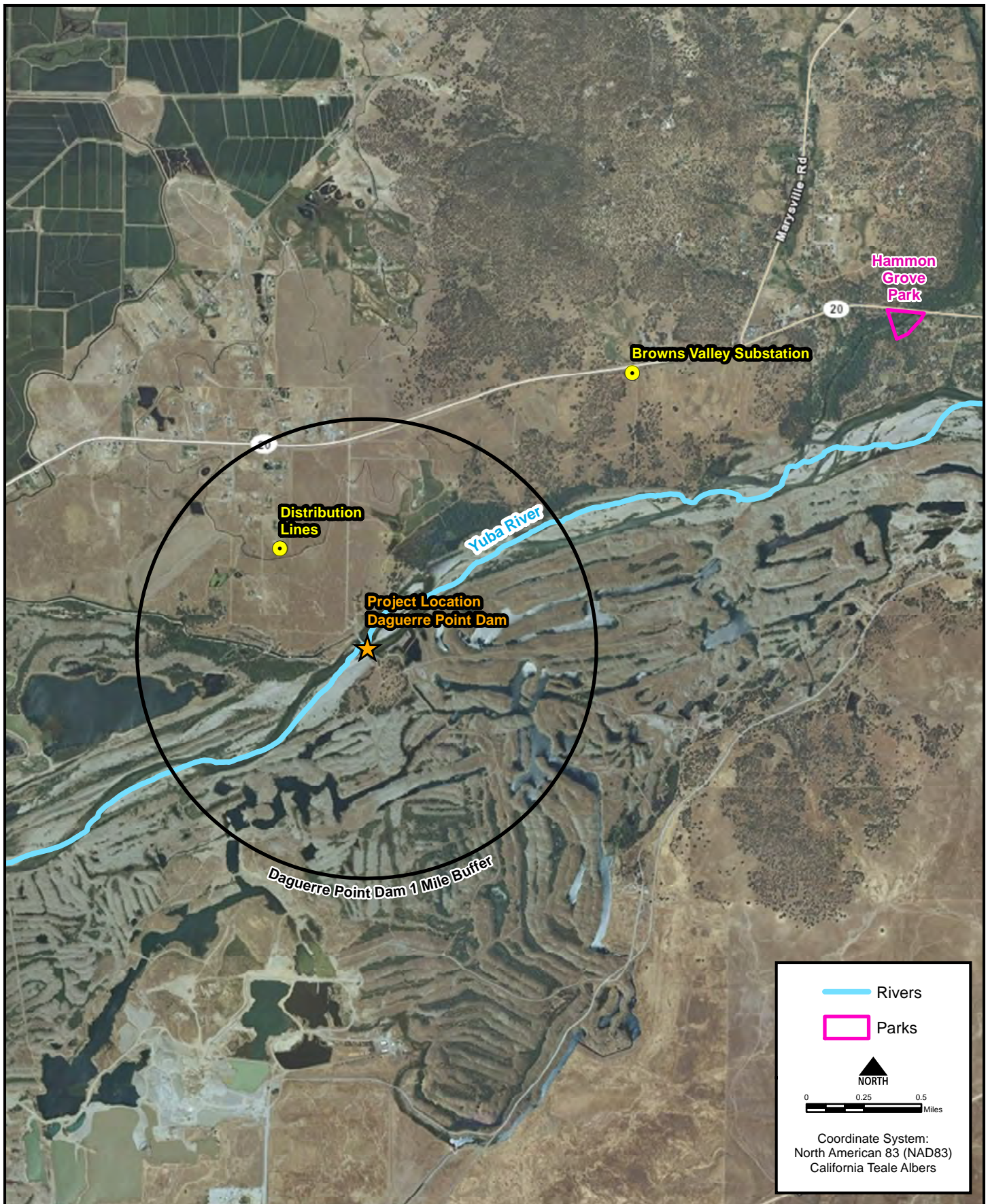
Public Agency or Private Ownership	Number of Parcels	Average Acreage of Parcels	Total Acreage per Agency	Public Agency Lands as a Percentage of County
Bureau of Land Management	23	70	1,619	.4
United States Army Corp of Engineers	12	52	621	.2
Department of Defense	120	192	22,944	5.6
Forest Service	233	189	43,958	10.7
State of California	122	157	19,170	4.7
Yuba County Water Agency	51	85	4,346	1.1
Private (or other)	31,285	10	318,386	77.4
TOTAL			411,444	100.0

Source: Yuba County General Plan 1994.

The lower Yuba River Basin includes storage and hydropower facilities located in the basin; the riparian corridor along the North Yuba River downstream of New Bullards Bar Dam; the lower Yuba River downstream of Englebright Dam to the confluence with the Feather River; the YCWA Member Unit water service areas; local groundwater basin; and lands overlying the groundwater basin.

3.7.10 Recreational and Non-Recreational Land Use and Management Adjacent to the Project Boundary

Hammon Grove Park is located roughly 2.5 miles north east of Daguerre Point Dam and directly south of Browns Valley. The 40 acre park is owned by Yuba County. The park contains a nine hole disc golf course, a hiking trail, and a picnic area within riparian forest and oak woodland.



3.7.11 Potential Adverse Impacts and Issues

Proposed project will not be impacting public access to the current recreational facilities and resources. Therefore, no adverse impacts are anticipated.

3.7.12 Proposed Mitigation and Enhancement Measures

The Applicant's objectives are to: (1) minimize disturbances to recreational resources, and (2) protect recreational resources in the project area. Construction timing and methods will be planned in accordance with these goals. The Applicant will work closely with state and federal resource agencies to ensure that construction activities are in balance with these objectives. In addition, the Applicant will work closely with the resource agencies to ensure that recreational resources are not compromised by project operation.

3.7.13 References

- Proposed Lower Yuba River Accord Draft EIR/EIS, June 2007
http://www.usbr.gov/mp/nepa/documentShow.cfm?Doc_ID=2761
- Yuba River Development Project
http://www.ycwarelicensing.com/Relicensing%20Documents/Relicensing%20Documents%2001%20-%20Preliminary%20Information%20Package/7_09%20-%20Land%20Use.pdf

3.8 Aesthetic Resources [§ 5.6 (D)(3)(IX)]

3.8.1 A Description of the Visual Characteristics of the Lands and Waters Affected by the Project. Components of this Description Include a Description of the Dam, Natural Water Features, and Other Scenic Attractions of the Project and Surrounding Vicinity.

Yuba County has three physiographic regions. The Sacramento Valley makes up the western part of the County, the Sierra Nevada foothills comprise the central part, and the Sierra Nevada Mountains are in the eastern part. Yuba County is characterized by landscapes that are marked by transitions, including topographic transitions from valley to foothills to mountains, and land use transitions from agricultural to rural residential to urban density. Viewer awareness is usually heightened in areas of transition, and travelers would be aware of their surroundings and sensitive to changes in the landscape in these areas. The main viewer groups that have views of scenic areas consist of travelers on roadways located in the County, including SR 49, SR 20, SR 65, SR 70, and county roadways. Other viewer groups would be composed of people engaged in recreational activities such as sight-seeing, boating or fishing on reservoirs and rivers, hiking and camping, and bicycling on roadways or trails.

Travelers could be residents of the County or visitors engaged in business or recreational travel. Residents of an area tend to have a higher concern and awareness of visual change taking place near to where they live. People engaged in recreational pursuits such as sight-seeing, fishing, boating, hiking or bicycling would have a heightened awareness of their surroundings and would be sensitive to changes in the visual environment. People engaged in work related activities tend to focus on their immediate visual environment, rather than distant views.

The primary aesthetic resource of the project area is the Yuba River itself, which stretches from the Sierra-Nevada Mountains and well past Marysville. The area surrounding the dam project location is a unique compared to other sections of the Yuba River because in this area and the areas to the east of Marysville there was heavy gold mining done in the 1800s. Due to heavy sedimentation from mining and past flooding this section of the river bows out into a series of small diversions and canals. Much of this section is unnavigable today besides the main Yuba River where the dam is located.

Farther up the river, to the east, there is another much larger dam known as the New Colgate Powerhouse. The reservoir this dam creates is known as the Harry L. Englebright Lake, which is the largest body of water in proximity to the project site. This lake is a popular recreation area for fishing and boating, but ends at the mouth of the dam.

The new powerhouse will be constructed integral to the Daguerre Point Dam and will be visible from the banks of the river and from several hundred feet in any direction. Due to the isolated and rural nature of this region it will not be visible from any large city or urban areas. The configuration and construction of the powerhouse will be designed to complement the existing dam and the connection points will not be in the way of any existing features.

3.8.2 Potential Adverse Impacts and Issues

The addition of the project's powerhouse and turbines has the potential to visually alter the project area. The impact the project will have on the aesthetic resources of the DPDP and any cumulative effects on the visual character of the local area will be dependent on how well this facility blends with the existing facilities at the dam. Proposed Archimedean screw turbines are small in size and have elegant screw mechanism that will blend in with the visual harmony of the DPD. No adverse impacts are anticipated.

3.8.3 Proposed Mitigation and Enhancement Measures

It is the Applicant's objective to minimize the project's impact on aesthetic resources in the vicinity of Daguerre Point Dam. This will be done by constructing the facilities in a manner that does not compromise the local character of the landscape and is visually consistent with existing structures. In

addition, the Applicant will work closely with the appropriate resource agencies to ensure that aesthetics at the project site are not compromised.

3.8.4 References

- Draft 2030 General Plan EIR, Yuba County, AECOM
[http://www.yubavision2030.org/DEIR/4\[1\].1%20Aesthetics.pdf](http://www.yubavision2030.org/DEIR/4[1].1%20Aesthetics.pdf)

3.9 Cultural Resources [§ 5.6 (D)(3)(X)]

3.9.1 Identification of Any Historic or Archaeological Site in the Proposed Project Vicinity, With Particular Emphasis on Sites or Properties Either Listed In, or Recommended By the State Historic Preservation Officer or Tribal Historic Preservation Officer for Inclusion in, The National Register of Historic Places

The National Historic Preservation Act (16 U.S.C. 470 et seq.) (as amended) requires federal agencies to manage cultural resources under their jurisdiction and authorizes the Secretary of the Interior to maintain a National Register of Historic Places (National Register). The law also provides for the creation of State Historic Preservation Offices to facilitate the implementation of federal cultural resource policy at the state level, and for the responsible federal agency to consult with Native American tribes who attach religious or cultural importance to cultural resources under their jurisdiction. Section 106 of the Act requires federal agencies to take into account the effect of any proposed undertaking on properties listed in, or eligible for, listing in the National Register. If the agency official determines that the undertaking may have adverse effects on properties listed in or eligible for listing in the National Register, the agency official must afford an opportunity for the Advisory Council on Historic Preservation to comment on the undertaking. The licensing of the DPDP is considered as an undertaking, and FERC acts as the agency official. FERC staff will be continuing Section 106 consultations.

An initial Historical Site assessment has been completed by Environment Data Resources Inc. (EDR), copy of which is included in Appendix D. According to this initial assessment, within a one mile radius, there are no historical sites.

Area of Potential Affect (APE)

The preliminary Area of Potential Affect (APE) will include the Project area, and will be specified during the FERC licensing process in consultation with Tribes, the SHPO, and other interested parties.

Historic Sites Map



- ★ Target Property
- ◇ Historic Sites
- Streets
- ▨ Federal Historic Areas
- ▨ County Boundary
- ▨ State Historic Areas
- Waterways
- ▨ US Indian Reservations
- Water
- ▲ Scenic Trail



Figure 3.7

SITE NAME: Daguerre Point Dam Hydropower
 ADDRESS: Daguerre Point Dam
 Marysville CA 95901
 LAT/LONG: 39.2083 / 121.4439

CLIENT: Global Environmental Permitting
 CONTACT: Gulsum Rustemoglu
 INQUIRY #: 3312412.1s
 DATE: April 27, 2012

3.9.2 Existing Discovery Measures, Such As Surveys, Inventories, and Limited Subsurface Testing Work, For the Purpose of Locating, Identifying, and Assessing the Significance of Historic and Archaeological Resources That Have Been Undertaken Within or Adjacent to the Project Boundary

A consultation with the State Historic Preservation Office needs to be completed. Normal measures to protect cultural resources found during construction can be used to mitigate impacts to cultural resources that may be found during construction. Such measures would include the stoppage or relocation of work if human remains or artifacts were found. In the event of such a discovery, the State Historic Preservation Office would be notified in addition to Native American tribes as necessary.

3.9.3 Identification of Indian Tribes That May Attach Religious and Cultural Significance to Historic Properties Within the Project Boundary or in the Project Vicinity; As Well As Available Information on Indian Traditional Cultural and Religious Properties, Whether on or off of Any Federally-Recognized Indian Reservation

Historic or archaeological sites in the proposed project vicinity will be identified, including, sites or properties either listed in, or recommended by the State Historic Preservation Officer or Tribal Historic Preservation Officer for inclusion in, the National Register of Historic Places.

3.9.4 Potential Adverse Impacts and Issues

Ground disturbing activities associated with the DPD to accommodate hydropower could potentially disturb local archaeological sites or traditional cultural properties. The powerhouse will be placed on fill material, existing roads will be used during construction. A total of 3,500 feet interconnection line will extend from the dam towards an existing PG&E transmission distribution line. Activities associated with project operation are not expected to affect cultural and historical resources.

3.9.5 Proposed Mitigation and Enhancement Measures

A comprehensive cultural resources survey and post-survey consultation with the appropriate tribes might be completed prior to assessing compensatory mitigation.

3.9.6 References

- Yuba River Development Project, Cultural Resources, Yuba County Water Agency
http://www.ycwarelicensing.com/Relicensing%20Documents/Relicensing%20Documents%2001%20-%20Preliminary%20Information%20Package/7_12%20-%20Cultural%20Resources.pdf

3.10 Socio-Economic Resources [§ 5.6 (D)(3)(XI)]

3.10.1 A Description of Socio-Economic Conditions in the Vicinity of the Project. Components of this Description Include General Land Use Patterns (e.g., Urban, Agricultural, Forested), Population Patterns, and Sources of Employment in the Project Vicinity.

The City of Marysville is the largest community in proximity to the project area. The data given below is based on 2010 census data and is shown in comparison to data gathered from the 2000 census. Marysville is one of the smallest cities in Yuba County, 3.42 square miles, which is only a fraction of Yuba County's 644 square miles. Less than .5 square miles is water, but compared to Marysville overall size a large portion of it is covered by water. The average age in the city of Marysville is 32.5, which is considerably lower than the state average of 45.6. 43.9% of the population is currently married with an average household size of 2.4 people. 28.9% have never been married and 14.7% are divorced.

3.10.2 Population Patterns

The population in 2010 was 12,072 which is slightly smaller than it was in 2000. The two largest demographics in the city are white 61.3%, and Hispanic 24.2%. Other prominent races in the city include African American 4.1%, Asian 3.8%, American Indian 1.7%, and Pacific Islander 0.2%. Of all of these residents 1,451 are foreign born. Figure 3.8 shows current Project Vicinity population and demographics data.

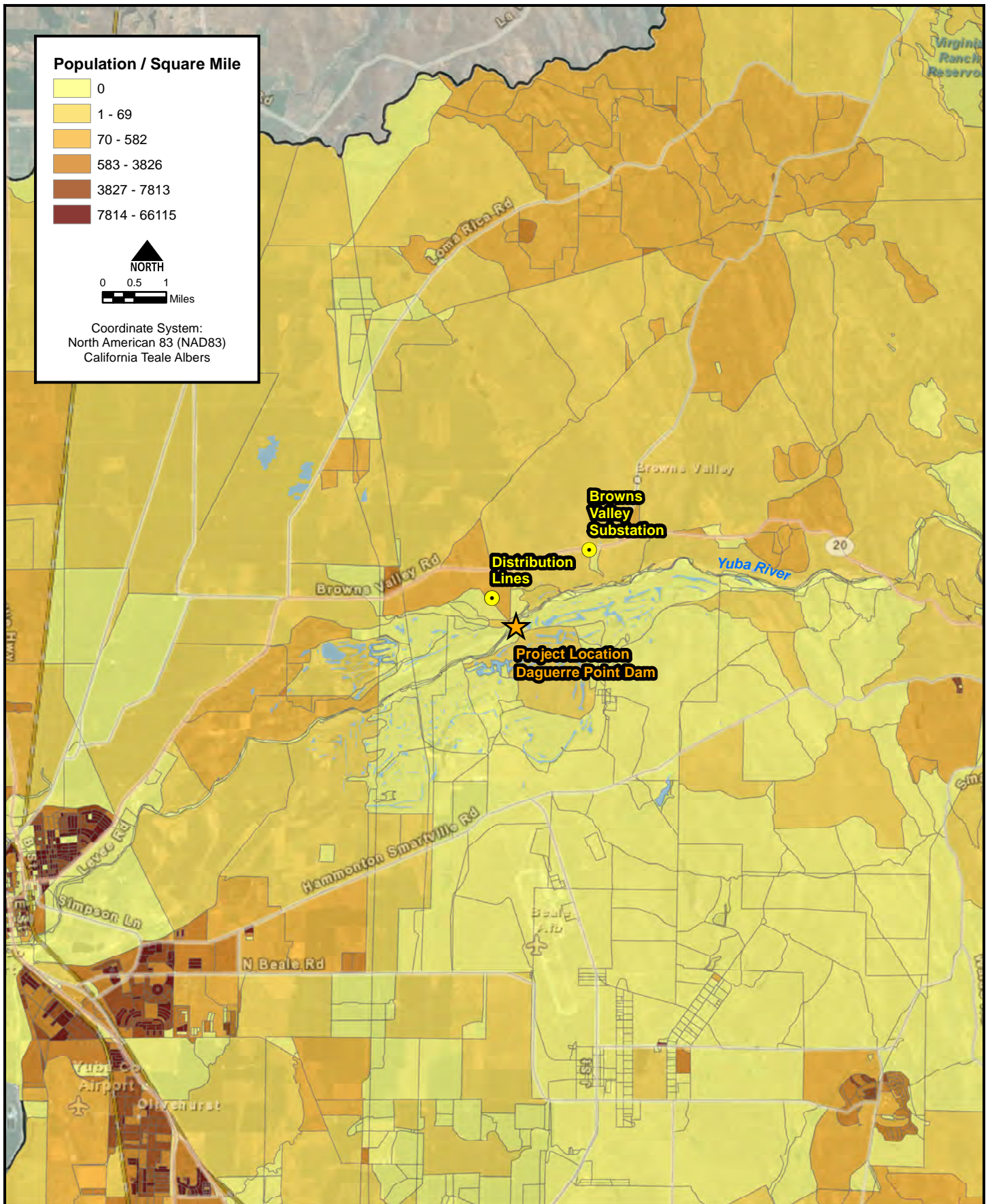
3.10.3 Household/Family Distribution and Income

Of the 5,012 housing units, which is based on 2000 data, 57.9% of them are family households with the rest composed of single residents or group living. The percentage of households with unmarried partners is 7.4%.

The median household income from 2006-2010 was \$37,858 and the per capita income for the same period was \$18,454. Of the total population (12,072) 23.2% were living below the poverty line, which is lower than the California state average of 13.7%. The total number of firms are 1,084 and of these, 41.5% are female owned.

3.10.4 Project Vicinity Employment Sources

The unemployment rate as of March 2012 was 18.3% which has increased considerably since the year 2000. The most common industry is construction with 13% followed by manufacturing with 9%. Marysville has a higher than average number of construction workers, electricians, and mechanics compared to California statistics.

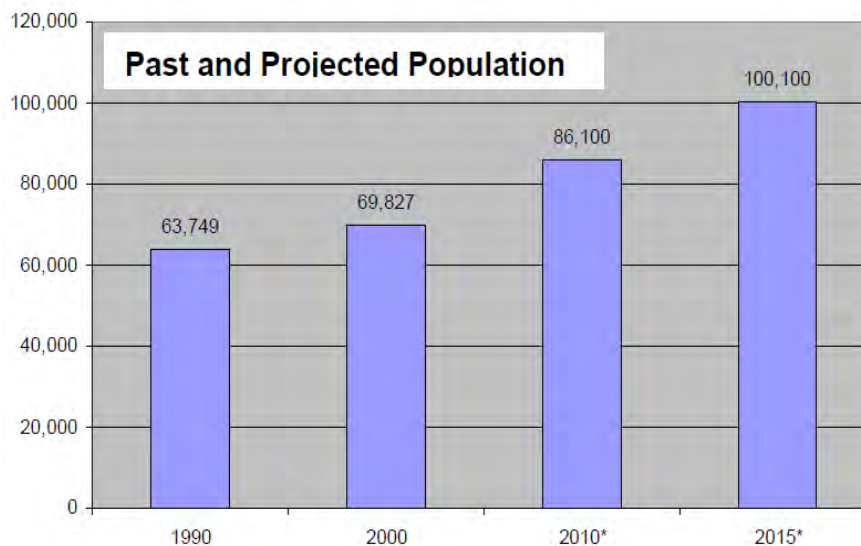


3.10.5 Regional Economy

In 2005, there were 39,700 non-farm jobs in Yuba County. Government employment; leisure, hospitality and other services; educational and health services; professional, finance, and information; and trade, and transportation, and utilities accounted for more than 80% of Yuba County's jobs. Government employment alone made up 38% of jobs located in the county, with about half of government employment in the County associated with Beale Air Force Base.

Job growth in Yuba County since 1997 has been primarily in government, educational and health services, and mining and construction. Professional and business services, finance, and farm labor have all seen job reductions between 1997 and 2005. The largest employers in Yuba County are government agencies and construction and steel fabrication. Chart 3.11 shows past and projected population in Yuba County. Chart 3.12 shows Yuba County sector distribution.

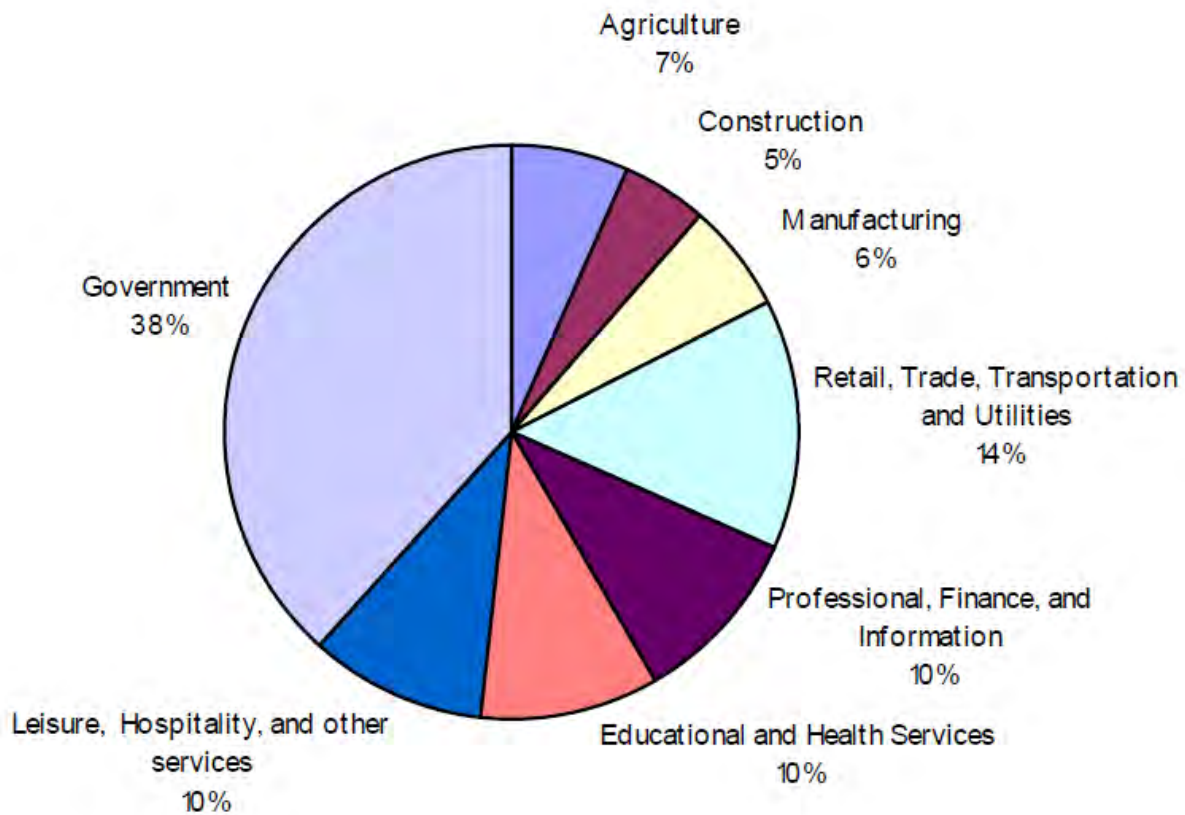
Chart 3.11 Yuba County Population



Population

Yuba County's population increased to 69,827 from 63,749 between 2003 and 2006, a 9.53% increase. Yuba County was the fastest growing county in California in 2006, and the population is projected to increase to 86,100 by 2010 and 100,100 in 2015.

Chart 3.12 Yuba County Sector Distribution



3.10.6 Potential Adverse Impacts and Issues

No adverse socioeconomic impacts have been identified at this time. The project activity provides direct and indirect job opportunities to the local population during Erection & Operation of the Hydro Power Project. Employment generation, infrastructure development for the project and increase in the energy availability of the region will also improve the living standard of the local population.

The proposed project activity creates job opportunities for local people during construction and operation period. The generated electricity is proposed to feed into the PG&E Grid. The generation of electricity by the project activity will improve availability of electricity to the State.

The proposed hydropower project will have a positive impact on socioeconomic resources within the region. The benefits garnered from this power generation will easily offset the negative impacts associated with non-renewable energy sources such as burning fossil fuel, the generation of solid waste, the discharge of wastewater and the discharge of polluted air emissions. In the event of a

regional major power outage, this proposed project could provide some measure of emergency power to local utilities and power consumers.

3.10.7 References

- Draft 2030 General Plan EIR, Yuba County, AECOM
<http://www.yubavision2030.org/documents/Public-Student-TH-Wrkshp%20Docs/Economy%20Handout.pdf>

3.11 Tribal Resources [§ 5.6 (D)(3)(XII)]

Traditional Cultural Properties (TCPs).

TCPs are defined as any property that is

(a) "...eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and

(b) are important in maintaining the continuing cultural identity of the community" [NR Bulletin 38 (Parker and King 1998:1)].

TCPs can be additionally defined as:

- Locations associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world.
- A rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long-term residents.
- An urban neighborhood that is the traditional home of a particular cultural group, and that reflects its beliefs and practices.
- Locations where Native American religious practitioners have historically gone and are known or thought to go to today, to perform ceremonial cultural rules of practice.
- Locations where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historic identity (NR Bulletin 38, 1998:1).

3.11.1 Identification of How Existing Project Construction and Operations, and Their Effects (On Water Resources, Fish and Aquatic Resources, Wildlife and Botanical Resources, Wetland, Rare Species, Recreation and Land Use, Aesthetic Resources, Cultural Resources and Socio-Economic Resources) May Impact Tribal Cultural or Economic Interests

Based upon the EDR report, no tribal entities exist within the project area. There is only one potential tribe that might have potential interest in the Project due diligence process, and that is the United Auburn Indian Community. The tribe was sent a PAD questionnaire, no response was received. The Applicant anticipates that as part of its licensing studies, archival and field research will be required to gather data collected to date in order to identify whether TCPs are present in the project area.

Repositories that will or may be included for additional data include: the Forest Service's TNF and PNF; Geographic Information System (GIS) files containing locations of cultural resources and prior cultural resources studies; BLM; the State Library; Bancroft Library; local museums and historical societies; and other appropriate facilities identified during the relicensing.

Consultation with Tribes will continue, with activities and reporting consistent with the Archaeological Resources Protection Act of 1979, 16 U.S.C. 470w-3, and the National Historic Preservation Act of 1966, 16 U.S.C. 470hh).

3.11.2 Potential Impacts

Ground disturbing activities associated with the modification of the DPDP to accommodate hydropower could potentially disturb local archaeological sites or traditional cultural properties. However, the powerhouse will be placed on fill material, existing roads will be used during construction, and no modifications will occur on the dam itself.

3.11.3 Mitigation Measures

Because contacted tribes were unaware of any tribal resources in the project area, no additional measures other than those in the Section 3.9.5 regarding cultural resources encountered during construction are needed.

3.11.4 References

- Yuba River Development Project, Tribal Resources
http://www.ycwarelicensing.com/Relicensing%20Documents/Relicensing%20Documents%2001%20-%20Preliminary%20Information%20Package/7_13%20-%20Tribal%20Resources.pdf

3.12 Description of River Basin and Sub-Basin [§ 5.6 (D)(3)(XIII)]

3.12.1 Area of River Basin and Sub-Basin and Length of Stream Reaches

The Yuba River Basin is approximately 40 miles long and covers approximately 1,300 square miles. It spans from the west slope of the Sierra Nevada to the Feather River near Yuba City. It is made up of seven sub-basins; North Yuba, Middle Yuba, South Yuba, Deer Creek, Dry Creek, Englebright, and Lower Yuba. The Daguerre point dam is located in the Lower Yuba Sub-Basin which covers approximately 352 square miles. The Lower Yuba Sub-Basin is drained primarily by the Yuba River which has a reach of 24 miles.

3.12.2 Major Land and Water Use in Project Area

All land necessary for the construction of the 3MW Hydroelectric Project is currently owned by the Army Corps of Engineers. No change in land usage will be required for this project. The dam and most of the surrounding land is within eastern part of Yuba County and the City of Marysville. The land west of the dam is mainly owned by Marysville and Marysville is incorporated within Yuba County.

The City of Marysville has a total land area of 3.42 square miles, with a considerable amount of surrounding water features. The city itself is completely surrounded by levees due to the large Yuba River and surrounding water features. According to 2010 census data there are 12, 072 people who reside in Marysville, which has decreased by 1.6% from 2000. The population density is 3445 people per square mile. Marysville does not have a comprehensive or master plan.

Yuba County adopted a General Plan June 2011 and is continuant until 2030. Yuba County is composed of 644 square miles that stretch into portions of the Sierra-Nevada foothills. 13 square miles of this area is covered by water, which comes primarily from the Yuba River. Yuba County has a population of 72, 925 with the majority living in Yuba City, according to 2010 census data. The population density is 116 people per square mile, with over 70% of the population living in urbanized areas. There are several powerhouses that already exist along the Yuba River. These dams provide a considerable amount of power to the residents in Marysville and Yuba County. The county has three different physiological regions: 1) the valley floor, 2) the foothills, and 3) the Mountain area. The river

and the majority of the water areas exist in the valley floor, which is also where the majority of the population resides. According to the general plan, the dam site is designated as a natural resources area, which means there is little land development.

3.12.3 All Dams and Diversion Structures in the Basin or Sub-Basin, Regardless of Function

Daguerre Point Dam is located approximately 11.4 miles upstream from the confluence with the Feather River (ACOE 2002). The dam was completely replaced once, in 1965, after it was damaged and breached by floods in 1963 and 1964. At present, the Dam is operated by the U.S. Army Corps of Engineers, who shares the cost of operation and maintenance with the California Department of Water Resources (DWR). The dam also functions to create head for water diversions to six area irrigation districts: Hallwood Irrigation Company, Cordua Irrigation District, Ramirez Water District, South Yuba Water District, Brophy Water District, and Browns Valley Irrigation District. Irrigation water is diverted through three separate diversions within the impoundment area upstream of the dam.

The existing features at the DPD consists of the following components, which are owned by The Yuba County Water Agency. All features expressed below are hydroelectric generating units situated in Yuba County and supply power to Pacific Gas and Electric Company (PG&E). All elevations are expressed in local Barge Canal Datum (BCD). For conversion, BCD equals U.S. Geological Survey (USGS) datum plus 0.99 feet.

- Hydrologic unit: 18020125 known as New Colgate Powerhouse provides more energy than any other hydroelectric facility supplying power directly to PG&E. The Colgate turbines are the largest of their kind ever built. Water carried nearly five miles from the New Bullards Bar Reservoir travels through a 26-foot-diameter tunnel, then plunges down a 15 foot diameter penstock to drive the two turbines which produce a total of 315 megawatts of electricity.

- Hydrologic unit: 18020125 known as Narrows 2 Powerhouse, located just downstream of Englebright Dam, gets the water to drive its turbine from Englebright reservoir. Narrows 2 supplements the smaller PG&E Narrows Powerhouse, which is visible on the other side of the river and accessible only by a short, very steep funicular railway.

- The Fish Release Powerhouse has the same hydrologic unit number as the Narrows 2 Powehouse (18020125). It is located 2,000 feet downstream from the Englebright Dam and is so named because it generates power from the water released at the base of the New Bullards Bar Dam for fishery maintenance on the river. This facility was added by

the Agency in 1986. If there is a power outage at the dam, this tiny powerhouse can be used to operate the massive spillway gates of the New Bullards Bar Dam.

- Deadwood Creek Powerhouse is the most recent addition to the Agency's power producing capability (Hydrologic unit: 18020125). Located at the upper end of the New Bullards Bar Reservoir, it is accessible only by boat or hiking trail. It went into service in 1993, after the Agency bought the uncompleted project from creditors.

3.12.4 Tributary Rivers and Streams, the Resources of Which Are or May Be Affected By Project Operations

The project will be operated in a run-of-river manner, utilizing flows controlled by the USACE. As there will be no change to storage volume or volume of flows in the river below the dam for the purpose of power generation, no impacts are anticipated.

3.12.5 References

- California Department of Water Resources website accessed on June 3, 2012
<http://www.water.ca.gov/fishpassage/projects/daguerre.cfm>

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4 Preliminary Issues and Studies List For Each Resource Area [§ 5.6 (D)(4)]

This section summarizes the issues the proposed project may have on the various resources.

4.1 Issues Pertaining to the Identified Resources

A primary purpose of this PAD is to identify potential environmental issues associated with Project installation or operation and to determine if additional information is necessary to understand potential Project effects on those resources. To assist in early identification of any issues, the Applicant distributed a PAD questionnaire to a comprehensive distribution list (including state, federal, and local resources agencies, and local and national NGOs) to determine if these stakeholders had existing information about resources at or near the proposed Project.

The Applicant used the information provided by the agencies and stakeholders, in addition to its own research, to develop baseline descriptions of the resources described above in Section 3.0. Additionally in Section 3.0, the Applicant discusses preliminary issues for potentially affected resources. The Applicant does not anticipate any issues pertaining to the identified resources beyond those described above, and provides more detail on proposed study plans below.

Table 4.1 Resource Areas / Potential Issues and Proposed Studies and Plans

Resource Areas	Potential Issues	Proposed Studies & Plans
Geology and Soils	The project may have impacts on fill material at the powerhouse site because the area will need to be excavated to place the powerhouse at the proper elevation. The project has the potential to cause soil minor erosion during construction. Construction activities could potentially release sediment into the river downstream of the project and have a similar effect of heaving rains on local wetlands.	<p>-Desktop Hydraulic Modeling and Sediment Transport Study</p> <p>- Erosion and Sedimentation Control Plan: The Applicant will develop an erosion and sedimentation control plan to minimize turbidity in the reservoirs and downstream rivers for construction activities.</p>
Water Resources	The project will divert up to 2,100 cfs of the water flowing normally over the dam and return the flow into the Yuba River below the dam. However, there are some potential impacts of the proposed project that are associated with its temporary construction period or operation. Construction issues include the potential release of contaminants such as fuel, lubricants and other wastes into adjacent waters via construction equipment and machinery however no contaminants will be brought or stored on sight. In addition, construction and excavation may cause minor temporary erosion and increases the possibility of sediment release into the Yuba River during construction excavations.	<p>No water quality study is proposed as there is considerable water quality information already available for the Project area and associated river basin.</p> <p>Erosion and Sedimentation Control Plan</p>
Fishing and Aquatic Resources	<p>General potential concerns associated with turbine originated projects' construction include: (1) impacts on fish habitat (Central Valley spring-run Chinook salmon and Central Valley steelhead) trapped (2) sediment issues, and (3) oil or other contaminant spills.</p> <p>Potential concerns associated with project operation include:</p> <p style="padding-left: 40px;">(1) reduction in quantity and/or quality of fish habitats</p> <p>Proposed project's new technology is fish friendly and environmentally safe. Therefore, these typical impacts are not anticipated for the DPDP.</p>	<p>- Desktop Hydraulic Modeling and Sediment Transport Study</p> <p>- Erosion and Sedimentation Control Plan</p> <p>- Fish Study Analysis of the Proposed Hydrodynamic Archimedean Screw Turbines: Completed and attached to the PAD.</p>

Wildlife and Botanical Resources	The proposed project has the potential to affect wildlife in three ways. Increased human presence and noise during construction activities may disturb wildlife. DPD Project will not likely to significantly disturb local plant communities.	Inventory of Wildlife: An inventory of wildlife and botanical resources at the Project site and assess the impact on such resources due to temporary construction activities.
Floodplains, Wetlands, Riparian, and Littoral Habitat	There are some fringing wetlands along the sides of the river, especially down at the bottom of the fish ladders. Potential effects of temporary construction activities on wetlands and riparian vegetation.	Site Survey: The Applicant will assess the impacts on wetlands, riparian and littoral resources at the Project site due to temporary construction activities.
Rare, Threatened, and Endangered Species	The proposed project has the potential to displace sensitive plant species that occur within the proposed footprint.	Vegetation Characterization: The Applicant will conduct an inventory of rare, threatened and endangered species resources at the Project site and assess the impacts on such resources due to the temporary construction activities.
Recreation and Land Use	The nature and extent of public recreational access and facilities and effects of construction of the turbines on recreational access and facilities. Applicant is proposing a public pedestrian bridge.	Desktop Study The Applicant will assess construction-related impacts on recreation and land uses in the development site.
Aesthetic Resources	The addition of the eight turbines has the potential to visually alter the project area. The impact the Project will have on the aesthetic resources of the DPD and any cumulative effects on the visual character of the local area will be dependent on how well this facility blends with the existing facilities at the dam. Proposed Archimedean screw turbines are small in size and have elegant screw mechanism that will blend in with the visual harmony of the DPD.	None Anticipated.
Cultural Resources	Project construction may disturb existing cultural or historical resources known to the project area or discovered during onsite comprehensive cultural resource assessment surveys. Project operation is not expected to affect cultural or historical resources.	None Anticipated.

Socio-Economic Resources	The proposed project will have a positive impact on socioeconomic resources within the region. It is expected that the project will add substantially to the parish taxable base with annual property tax payments. It will also create temporary construction jobs and permanent operating and maintenance positions.	None Anticipated.
Tribal Resources	As there are no identified local archaeological sites or traditional cultural properties, project construction and operation are not likely to negatively impact the interest of tribes officially associated with the project site.	None Anticipated.
River Basin Description	The project will operate in a run-of-river manner and no changes to flows or water levels will occur due to project operation.	None Anticipated.

4.2 Potential Studies and Information Gathering Requirements Associated With the Identified Issues

The Applicant believes that additional studies will not be necessary beyond the following:

- Desktop Hydraulic Modeling and Sediment Transport Study

4.3 Relevant Qualifying Federal and State or Tribal Comprehensive Waterway Plans

Section 10(a) of the Federal Power Act (FPA), 16 U.S.C. § 803(a)(2)(A), requires FERC to consider the extent to which a project is consistent with Federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the Project. On April 27, 1988, FERC issued Order No. 481—A revising Order No. 481, issued October 26, 1987, establishing that FERC will accord FPA Section 10(a)(2)(A) comprehensive plan status to any Federal or state plan that:

- is a comprehensive study of one or more of the beneficial uses of a waterway or waterways;
- specifies the standards, the data, and the methodology used; and
- is filed with the Secretary of the Commission.

FERC currently lists 75 comprehensive plans for the state of California. Table 4.2 lists potentially relevant plans that may be useful in the licensing proceeding for characterizing desired conditions.

Table 4.2

Applicable Comprehensive Plans

Agency	Comprehensive Plans per Agency
Bureau of Land Management	Bureau of Land Management. 2005. California Coastal National Monument Resource Management Plan. U.S. Department of the Interior. Sacramento, California. September 2005.
Bureau of Land Management- Forest Service	Bureau of Land Management. Forest Service. 1994. Standards and guidelines for management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl. Washington, D.C. April 13, 1994.
California Advisory Committee on	California Advisory Committee on Salmon and Steelhead Trout. 1988.

Salmon and Steelhead	Restoring the balance: 1988 annual report. Sausalito, California. 84 pp.
California Department of Fish and Game	California Department of Fish and Game. 1975. California wild trout management program: Hat Creek management plan. Sacramento, California. September 1975. 53 pp.
	California Department of Fish and Game. 1979. Rubicon River wild trout management plan. Sacramento, California. July 1979. 46 pp.
	California Department of Fish and Game. 1979. East Fork Carson River wild trout management plan. Sacramento, California. July 1979. 30 pp.
	California Department of Fish and Game. 1979. East Fork Carson River wild trout management plan. Sacramento, California. July 1979. 30 pp.
	California Department of Fish and Game. 1979. Nelson Creek wild trout management plan. Sacramento, California. July 1979. 27 pp.
	California Department of Fish and Game. 1981. Yellow Creek wild trout management plan. Sacramento, California. August 1981. 18 pp.
	California Department of Fish and Game. 1982. South Fork Kings River wild trout management plan. Sacramento, California. July 1982. 17 pp.
	California Department of Fish and Game. 1986. California wild trout management program: Fall River management plan. Sacramento, California. April 1986.
	California Department of Fish and Game. U.S. Fish and Wildlife Service. 2010. Final hatchery and stocking program environmental impact report/environmental impact statement. Sacramento, California. January 2010.
	California Department of Fish and Game. 2007. California wildlife: Conservation challenges, California's wildlife action plan. Sacramento, California. 2007.
	California Department of Fish and Game. 1991. Lower Mokelumne River fisheries management plan. Sacramento, California. November 1991.
	California Department of Fish and Game. 1990. Central Valley salmon and steelhead restoration and enhancement plan. Sacramento, California. April 1990. 115 pp.
	California Department of Fish and Game. 1996. Steelhead restoration and management plan for California. Sacramento, California. February 1996.
	California Department of Fish and Game. 2003. Strategic plan for trout management: A plan for 2004 and beyond. Sacramento, California. November 2003.
California Department of Fish and Wildlife	California Department of Fish and Wildlife. 2000. Upper Klamath River wild trout management plan, 2000-2004. Redding, California. September 8, 2000.

	California Department of Fish and Wildlife. 2004. Lower McCloud River wild trout area fishery management plan, 2004-2009. Redding, California.
National Marine Fishery Service	California Department of Fish and Game. U.S. Fish and Wildlife Service. National Marine Fisheries Service. Bureau of Reclamation. 1988. Cooperative agreement to implement actions to benefit winter-run Chinook salmon in the Sacramento River Basin. Sacramento, California. May 20, 1988. 10 pp.
California Department of Parks and Recreation	California Department of Parks and Recreation. 1998. Public opinions and attitudes on outdoor recreation in California. Sacramento, California. March 1998.
	California Department of Parks and Recreation. 1980. Recreation outlook in Planning District 2. Sacramento, California. April 1980. 88 pp.
	California Department of Parks and Recreation. 1980. Recreation outlook in Planning District 3. Sacramento, California. June 1980. 82 pp.
	California Department of Parks and Recreation. California Outdoor Recreation Plan (SCORP). Sacramento, California. April 1994.
California Department of Water Resources	California Department of Water Resources. 1983. The California water plan: projected use and available water supplies to 2010. Bulletin 160-83. Sacramento, California. December 1983. 268 pp.
	California Department of Water Resources. 1994. California water plan update. Bulletin 160-93. Sacramento, California. October 1994. Two volumes and executive summary.
	California Department of Water Resources. 2000. Final programmatic environmental impact statement/environmental impact report for the CALFED Bay-Delta Program. Sacramento, California. July 2000. CD Rom, including associated plans.
California State Water Resource Control Board	California State Water Resources Control Board. 1995. Water quality control plan report. Sacramento, California. Nine volumes.
	California State Water Resources Control Board. 2011. Water quality control plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. Sacramento, California. December 13, 2006.
The Resources Agency	California - The Resources Agency. Department of Parks and Recreation. 1983. Recreation needs in California. Sacramento, California. March 1983.
	California - The Resources Agency. 1989. Upper Sacramento River Fisheries and Riparian Habitat Management Plan. Sacramento, California. January 1989.
Department of the Army, Corps of Engineers	Department of the Army, Corps of Engineers. Sacramento District. 1996. Kaweah River Basin investigation: final feasibility report and final environmental impact statement. Sacramento, California. September 1996. Three volumes.

Forest Service	Forest Service. 1988. Plumas National Forest land and resource management plan. Department of Agriculture, Quincy, California. August 26, 1988.
	Forest Service. 1988. Eldorado National Forest land and resource management plan. Department of Agriculture, Placerville, California. December 1988.
	Forest Service. 1990. Tahoe National Forest land and resource management plan. Department of Agriculture, Nevada City, California. March 1990.
	Forest Service. 1988. Lake Tahoe Basin management Unit: Land and resource Management Plan. South Lake Tahoe, California. 1988.
	Forest Service. 1995. Mendocino National Forest land and resource management plan. Department of Agriculture, Willows, California.
National Parks Service	National Park Service. The Nationwide Rivers Inventory. Department of the Interior, Washington, D.C. 1993.
Pacific Fishery Management Council	Pacific Fishery Management Council. 1988. Eighth amendment to the fishery management plan for commercial and recreational salmon fisheries off the coasts of Washington, Oregon, and California commencing in 1978. Portland, Oregon. January 1988.
State Water Resource Control Board	State Water Resources Control Board. 1999. Water quality control plans and policies adopted as part of the State comprehensive plan. April 1999.
U.S. Fish and Wildlife Service	U.S. Fish and Wildlife Service. 2001. Final restoration plan for the anadromous fish restoration program. Department of the Interior, Sacramento, California. January 9, 2001.
	U.S. Fish and Wildlife Service. Undated. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C.

4.4 Relevant Resource Management Plans

In addition to the qualifying federal, state, and tribal comprehensive waterway plans listed in above, some resource agencies have developed resource management plans to help guide their actions regarding specific resources of jurisdiction. The resource management plans listed below may be relevant to the Project and may be useful in the licensing proceeding for characterizing desired conditions. These plans may include updated versions of plans previously identified by the FERC as comprehensive waterway plans but that FERC has not yet reviewed and listed.

- *SWRCB 1995 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*
- *Bay-Delta Conservation Plan*
- *Delta Vision*
- *Lower Yuba River Accord*
- *Lower Yuba River Fisheries Management Plan (CDFG 1991)*
- *BLM Sierra Resource Management Plan*

4.5 References

- Federal Energy Regulatory Commission. 2011. List of Comprehensive Plans. January, 2011. [Online] URL: <http://www.ferc.gov/industries/hydropower/geninfo/licensing/complan.pdf>. Accessed May 30, 2012.

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5 Summary of Contacts Used to Prepare the PAD Including: [§ 5.6 (D)(5)]

The Applicant will distribute this PAD and accompanying Notice of Intent (NOI) simultaneously to FERC, federal and state resource agencies, local governments, Native American tribes, NGOs, and others potentially interested in the licensing proceeding. Appendix A details the distribution list for the PAD and NOI. This PAD appropriately references all information sources cited and Appendix B contains a record of all contacts made with agencies and other organizations to date to obtain Project resource data and information.

5.1 Federal, State and Interstate Resource Agencies

Peck Ha, USACE 1325 J St., Room 1350 Sacramento, CA 95814	Geoff Rabone, Yuba County Water Agency 1220 F Street Marysville, CA 95901
Nancy Haley, USACE 1325 J St. Room 1350 Sacramento, CA 95814	Rachel Hersh-Burdich, USACE 1325 J St. Sacramento, CA 95814
Alan Mitchnick, FERC 888 First St. N.E. Washington DC, 20426	Gary Sprague, NOAA 650 Capital Mall, Suite 5-100 Sacramento, CA 95814
Regional Administrator, FEMA 1111 Broadway Suite 1200 Oakland, CA 94607	Deborah A. Giglio-Willoughby Supervisory Fish and Wildlife Biologist U.S. Fish and Wildlife Service 2800 Cottage Way, Suite W-2605 Sacramento, CA 95825
Regional Administrator, NOAA 501 W. Ocean Blvd. Suite 4200 Long Beach, CA 90802	Director, NOAA 3333 North Torrey Pines Court La Jolla, CA 92037
SHPO, Office of Historic Preservation P.O. Box 942896 Sacramento, CA 94296	Sharon J. Stohrer, Department of Fish and Game 1701 Nimbus Road Rancho Cordova, CA 95670

5.2 Indian Tribes

President, United Auburn Indian Community 10720 Indian Hill Road Auburn, CA 95603

5.3 Non-Governmental Organizations and Members of the Public

Hydro Reform Policy Advocate, Friends of the River 1418 20th St. Suite 100 Sacramento, CA 95811	Conservation Director Friends of the River 1418 20th St. Suite 100 Sacramento, CA 95811
Julie Leimbach Foothills Water Network P.O. Box 713 Lotus, CA 95651	

6 PURPA Benefits [§ 5.6 (E)]

The Applicant is not currently seeking the Public Utility Regulatory Policies Act of 1978 (PURPA) benefits for the proposed Project.